SWEET'S ARCHITECTURAL CATALOGUES

VOLUME B

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BLUE DIAMOND BRAND
BUILDING MATERIALS

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Creswell, Samuel J., Iron Works.....B1732–1733
Crex Patent Column Co.....B1724–1725
Dean, Olney J., & Co.....B1736
Donley Brothers Co.....B1750–1751
Duplex Hanger Co.....B1728
Flockhart Foundry Co.....B1734
Floor Accessories Co., Inc.....B1764
Heatilator Co.....B1752–1753
Housing Co.....B1705
Ideal Hanger Co.....B1729
Indiana Foundry Co.....B1754–1756
Jackson, Edwin, Inc.....B1757
James Mfg. Co.....B1730
Kewanee Mfg. Co.....B1758
Lally Column Co.....B1726–1727
Lincoln Electric Co.....B1703
Louden Machinery Co.....B1731
Majestic Co.....B1760–1763
McClintic-Marshall Co.....B1706
National Vault Light Co.....B1742
Peerless Mfg. Co., Inc.....B1759
Steel Frame House Co.....B1707–1722
Truscon Steel Co.....B1723
Watertite Drain & Scupper Co., Inc.....B1737
Windshield Scupper Co.....B1738

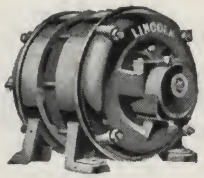
THE LINCOLN ELECTRIC COMPANY

13030 Coit Road, CLEVELAND, OHIO

BRANCH OFFICES AND AGENTS

ALLENTOWN, PA. ATLANTA, GA. BALTIMORE, MD. BIRMINGHAM, ALA. BOSTON, MASS. BUFFALO, N. Y. CHARLOTTE, N. C. CHICAGO, ILL. CINCINNATI, OHIO COLUMBUS, OHIO DETROIT, MICH. FORT WORTH, TEX. GRAND RAPIDS, MICH. HOUSTON, TEX. INDIANAPOLIS, IND. KANSAS CITY, MO. LANCASTER, PA. LOS ANGELES, CAL. MILWAUKEE, WIS. MINNEAPOLIS, MINN. MOLINE, ILL. MONTREAL, QUE. NEW HAVEN, CONN. NEW ORLEANS, LA. NEW YORK, N. Y. PHILADELPHIA, PA. PITTSBURGH, PA. PORTLAND, ORE. ST. LOUIS, MO. SAN FRANCISCO, CAL. SCRANTON, PA. SEATTLE, WASH. SYRACUSE, N. Y. TOLEDO, OHIO TORONTO, ONT. TULSA, OKLA.

General Specifications for Structural Arc Welding



Lincoln "Linc-Weld" Motor

Intent of Specification—It is the intention of this Specification and the accompanying drawings that all arc welding shall be performed only by a firm experienced in this kind of work and by operators fully qualified to execute it. All labor and material required for the complete execution of the work shall therefore be furnished under this heading on a definite time schedule. This Contractor shall plan his operations so that they fit in properly with the work of other trades and shall co-operate with them so that all building operations may be carried out smoothly and speedily.

Scope of Work—The following is included under this heading:

(A clear description of the work which is to be welded should here be given, avoiding general terms as much as possible. It will be appreciated that in a large operation, unless the welded work is properly defined in the Specification or listed on the Drawings, it will be difficult to arrive at a correct cost estimate. Particular mention should be made of the handling of the steel to be welded, stipulating by whom it is to be furnished and placed—by the Steel Contractor or by the Welding Contractor, if the operations are specified under separate trades.)

Drawings—Complete drawings shall be submitted by this Contractor showing the positions of all welded members, the location of all continuous welds, tacks, and electric rivets, the size and length of fillets and all dimensions necessary for shop and field welding.

Design—The size of any fillet weld shall be the width of its contact with the material to be welded. The following fillet weld values shall be used in tension and in shear for arc-welded connections:

$\frac{3}{16}$-in. full fillet weld.....1500 lbs. per lin. in.
$\frac{1}{4}$-in. full fillet weld.....2000 lbs. per lin. in.
$\frac{5}{16}$-in. full fillet weld.....2500 lbs. per lin. in.
$\frac{3}{8}$-in. full fillet weld.....3000 lbs. per lin. in.
$\frac{1}{2}$-in. full fillet weld.....3500 lbs. per lin. in.

For compression the above values may be increased 20%.

The value of electric rivets shall be the value of the fillet weld used multiplied by the perimeter of the center of section of the fillet weld. Connections to be as direct as possible; to avoid details which will cause bending or tearing stresses on the welds.

No tack weld used for stitching parts of composite members shall be made less than 2 in. long.

Fillet welds larger than ½ in. are to be avoided; use longer fillet welds instead of larger ones.

Use as few different size fillet welds as possible.

The maximum space between pieces or members to be welded together shall not exceed the thickness of the thinner member or piece. Whenever the distance between members or pieces to be welded together—as for instance, a column and the end of a beam—is so great that it would be necessary to build up a weld between the two members or pieces use connecting plates arc welded to both members instead of a direct built-up weld.

Where necessary, the edge of plates or shapes shall be beveled to form a "V."

When two or more fillet welds are used to connect one end of a member to another member, each fillet weld is to be designed of a suitable length to take its proper share of the load or stress.

Welding Equipment—Welding machines employed shall be of an approved direct-current, low voltage type, of a make that has been previously used successfully on structural welding. The amperage capacity shall be sufficient to overcome line drop and to give adequate welding heat. Machines and cables used on the job shall be located with due regard to interference with other trades. Enough machines, cables of suitable length and cross section, electrodes, holders and shields shall be furnished to carry the work along expeditiously and according to time schedule. Electrodes shall be selected to give a dense weld, and free from splashing; they shall be smooth, free from rust, oil and grease. Electrodes for shop welding may be bare. Electrodes for field work shall be coated with an approved flux. All electrodes used shall conform to Specification E-1A or E-1B of the American Welding Society.

Personnel—Only experienced operators, employed regularly, not occasionally, on structural arc welding shall be used. They must be able to execute vertical and overhead work satisfactorily. Tests of operators' competence and ability will be required and shall be supplied by this Contractor at no extra cost to Owner. All welding shall be done under the direct supervision of a competent foreman or superintendent who has had experience in structural arc welding. It shall be this foreman's or superintendent's particular duty to check the competence of his men, to see that they understand the work entrusted to them and that they execute it diligently.

Execution—Before any welding is started, remove all paint, scale, grease, dirt, or any other foreign material; leave the steel bare and clean. Clean the weld each time the electrode is changed. All work shall be properly clamped or bolted and then tack welded in place before finish welding starts. Superintendent shall see that the position of members is correct before start of finish welding.

Fillet welds shall be laid in positions indicated on the drawings, and to size shown. All fillet welds shall be laid down perpendicular to direction of finished fillet, never parallel to it, and with proper current to avoid splashing and honeycombs. Taking account of size of electrode and amperage required, operators shall hold shortest arc possible and keep electrode at forward edge of crater.

Wherever possible fillet welds shall be laid in one layer, using proper size electrode and amperage for the purpose.

All burned or flame-cut edges which are to be welded shall be chipped clean before welding and all metal affected by burning shall be removed.

In making long welds procedure must make proper allowance for expansion and contraction stresses; wherever necessary, welds shall be laid in alternate fillets or stepped back. The procedure shall in all cases, be definitely established by shop tests, not by trials on the job itself.

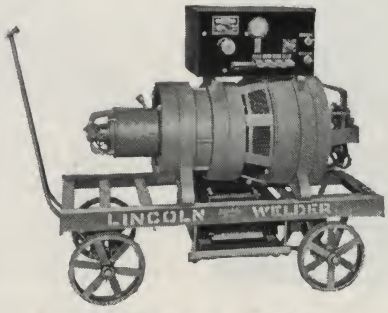
Electric rivets shall be made by depositing the size of fillet weld specified all around the hole.

No field welding shall be done in a strong wind until adequate wind protection has been provided and set up.

Any welds or parts of welds found defective shall be cut out and replaced.

Superintendent shall inspect the welds while they are being laid.

Tenders—Lump sum (or Unit price) tenders are requested for the work shown on the drawings and described in this Specification. Sealed proposals will be received at..... on or before..... Bidders are also to quote price per lineal foot for the various sizes of fillets for additional work not now definitely shown or which may later be required; quote also price per foot for deductions from the work shown or described herein; also unit price for electric rivets.



Lincoln "Stable-Arc" Welder
Portable Truck Type

"Stable-Arc" Welders

Lincoln "Stable-Arc" Welders are built in a complete range of sizes of motor driven and gasoline engine driven types. Their exclusive patented features of design permit faster production of sound welds of deep penetration. Lincoln "Stable-Arc" electrodes are the approved and preferred electrodes for structural welding.

"Linc-Weld" Motors

The superior operating characteristics of "Linc-Weld" Motors are due to their (1) larger bearings, (2) larger shaft through motor, (3) waterproof insulation, (4) steel frame, (5) greater overload capacity. These outstanding features of "Linc-Weld" Motors make them particularly well adapted for pump, fan, or blower service as well as for general use. "Linc-Weld" Two-speed Elevator Motors simplify the equipment required for elevator service. All the desired operating characteristics are secured at lower cost with these motors.

BETHLEHEM STEEL COMPANY

BETHLEHEM, PA.

DISTRICT OFFICES

NEW YORK, BOSTON, PHILADELPHIA, BALTIMORE, WASHINGTON, D. C., ATLANTA, PITTSBURGH, BUFFALO, CLEVELAND, CINCINNATI, DETROIT, CHICAGO, ST. LOUIS, HOUSTON

PACIFIC COAST DISTRIBUTOR: Pacific Coast Steel Corporation, San Francisco, Los Angeles, Seattle, Portland and Honolulu

EXPORT DISTRIBUTOR: Bethlehem Steel Export Corporation, 25 Broadway, New York, N. Y.

Products

Bethlehem Wide-Flange Structural Shapes, including Girder Beams, I-Beams and H-Columns; Bethlehem Joists and Stanchions.

PROPERTIES OF BETHLEHEM GIRDER BEAMS, I-BEAMS, STEEL JOISTS AND STANCHIONS

Section No.	Weight per ft., lb.	Section modulus, in.³	Section No.	Weight per ft., lb.	Section modulus, in.³	Section No.	Weight per ft., lb.	Section modulus, in.³
Bethlehem Girder Beams								
G36	300.0	1103.6	G24a	140.0	350.1	G15b	147.0	222.9
	280.0	1030.8		132.0	329.9		141.0	212.9
	260.0	949.5	G24	128.0	320.7		135.0	202.9
	250.0	911.2		120.0	300.6		127.0	191.9
	240.0	872.0		113.0	281.7	G15a	111.0	174.5
	230.0	833.9		107.0	266.9		105.0	164.2
G33	260.0	884.2	G22	132.0	312.9		99.0	154.3
	245.0	831.0		124.0	293.2		94.0	147.3
	230.0	778.0		116.0	273.2	G15	80.5	129.3
	220.0	741.4		108.0	254.9		74.0	119.0
	210.0	707.3		101.0	236.8		69.0	109.6
	200.0	672.4	G20a	149.0	311.6		64.5	104.1
G30	240.0	742.9		142.0	296.1	G12a	76.5	98.1
	220.0	680.5		135.0	280.6		70.5	90.6
	200.0	617.8		127.0	264.0		66.0	83.7
	190.0	585.5	G20	120.0	251.3	G12	61.0	79.8
	180.0	556.2		113.0	236.3		55.5	72.6
	173.0	528.5		107.0	222.0		51.5	67.3
G28	186.0	537.2		99.0	206.0	G10	50.0	54.8
	175.0	499.7	G18	99.0	193.7		44.5	49.3
	165.0	473.2		92.0	179.8		41.5	45.6
	156.0	446.1		86.0	167.1	G9	43.5	42.8
	145.0	416.0		80.0	154.4		38.5	38.2
G26	160.0	431.0	G16	94.0	165.1		36.0	35.9
	151.0	406.9		87.0	152.7	G8	36.5	32.6
	144.0	385.1		81.0	141.4		33.0	29.0
	138.0	370.4		74.5	130.2		29.5	25.6
G24a	148.0	371.3						
Bethlehem I-Beams								
B36	190.0	659.9	B24	79.5	188.2	B16	45.0	73.8
	173.0	595.0		73.5	175.7		40.0	65.8
	164.0	561.1		70.0	163.7		35.0	55.1
	155.0	530.4	B22a	96.5	213.4	B15b	71.5	106.6
	147.0	503.4		89.0	197.9			
B33	165.0	527.5		83.0	184.2	B15a	59.5	89.4
	152.0	480.4		77.0	170.6		54.5	82.3
	143.0	449.4	B22	73.0	161.5		50.5	75.7
	135.0	422.3		67.5	148.1		46.0	68.9
	125.0	395.1		62.5	135.9	B15	42.5	65.2
B30	163.0	474.4		58.0	124.7		40.0	61.6
	149.0	434.1		54.5	113.3		38.5	59.7
	137.0	398.5	B20a	78.0	157.8		36.0	55.1
	129.0	373.4		73.0	148.5	B14	42.0	61.3
	121.0	351.3		68.5	137.4		37.5	54.3
	115.0	330.8	B20	64.5	128.7		33.0	47.8
	110.0	314.8		62.0	123.6		30.0	42.5
B28	133.0	364.0		59.5	118.2	B12a	48.5	60.9
	119.0	327.5		56.0	109.3		44.0	55.3
	112.0	306.4	B18a	74.0	137.9		40.0	50.2
	104.0	284.7		69.0	128.2	B12	36.0	46.0
	97.0	265.1		64.5	118.5		31.5	40.5
	91.0	246.9		59.0	108.2		28.0	35.6
	85.0	222.1	B18	54.5	98.9		25.0	31.2
B26	98.0	247.4		52.0	94.3	B10	28.5	30.2
	91.0	230.2		49.0	89.2		26.0	27.3
	85.5	214.3		47.0	85.2		23.5	24.6
	81.0	201.7					21.0	21.8
B24b	104.5	248.8	B16a	71.5	119.8	B9	22.0	20.7
	99.5	236.8		66.0	110.2		20.5	19.2
	95.5	225.2		60.5	101.5			
				56.5	93.5	B8	19.0	15.8
B24a	90.5	214.6	B16	50.0	82.3		17.5	14.4
	84.5	200.5						

Bethlehem Steel Joists and Stanchions

Joists						Stanchions		Least radius of gyration
BJ12	21.0	24.2	BJ8	16.0	12.9	BS6	15.5	1.41
	18.5	20.2		14.5	11.2		18.0	1.43
BJ10	19.0	18.6	BJ6	11.0	6.43			
	16.5	15.5						

Uses

Bethlehem Girder Beams and I-beams are used in buildings, short-span bridges and as bridge floor beams; H-columns, in all sizes of buildings and bridges. Joists are used especially for floor construction in buildings designed for lighter floor loads; also in the roof construction of all types of buildings. Stanchions are used as columns or posts in connection with Bethlehem Joists and other structural shapes.

Advantages

Bethlehem Wide-Flange Structural Shapes, commonly known as Bethlehem Sections, are rolled on Bethlehem's Patented Grey Mills. These sections combine the advantages of economy in weight and cost of fabrication.

PROPERTIES OF BETHLEHEM H-COLUMNS

Section No.	Weight per ft., lb.	Least radius of gyration	Section No.	Weight per ft., lb.	Least radius of gyration	Section No.	Weight per ft., lb.	Least radius of gyration
H16	143.0	3.90	H14	227.0	3.91	H10	185.0	3.76
	151.0	3.92		236.0	3.92		192.0	3.77
	160.0	3.93		245.0	3.93		200.0	3.78
	169.0	3.95		254.0	3.94		208.0	3.79
	177.0	3.96		262.0	3.96		215.0	3.80
	186.0	3.98		271.0	3.97		222.0	3.81
	195.0	4.00		280.0	3.98		230.0	3.83
	203.0	4.01		289.0	3.99		238.0	3.84
	212.0	4.02		298.0	4.01		246.0	3.85
	221.0	4.04					49.5	2.47
	230.0	4.05	H13/8	40.5	1.90			
	238.0	4.07		45.5	1.92		55.0	2.50
	247.0	4.08		50.5	1.93		60.5	2.51
	256.0	4.10		55.0	1.94		66.0	2.53
	265.0	4.11	H11/8	52.5	2.44		72.0	2.54
	274.0	4.12		58.0	2.45		77.5	2.56
	288.0	4.14		64.0	2.47		83.5	2.57
	301.0	4.16		70.0	2.49		89.0	2.59
	314.0	4.18	H12	65.5	2.96		95.0	2.60
	328.0	4.20		72.5	2.98		100.5	2.61
	342.0	4.22		79.0	2.99		106.5	2.63
	356.0	4.24		85.5	3.01		112.0	2.64
	370.0	4.26		92.5	3.03		118.0	2.65
	384.0	4.27		99.5	3.04		124.0	2.66
	399.0	4.29		106.0	3.06		130.0	2.68
	413.0	4.31		113.0	3.07		136.5	2.69
	427.0	4.33		119.5	3.09	H8.5	23.5	1.57
H1/4	43.0	1.86		126.5	3.10		27.0	1.59
	48.0	1.88		133.5	3.11		30.5	1.61
	53.5	1.89		140.5	3.13		34.5	1.62
	58.5	1.90		147.5	3.14		32.0	1.96
H1 1/8	55.0	2.39		154.5	3.15		35.0	2.00
	61.5	2.41		162.0	3.17		39.5	2.01
	67.5	2.43		169.0	3.18		44.0	2.03
	73.5	2.44		176.0	3.19		48.5	2.04
H1 1/4	69.0	2.93		183.0	3.20		53.0	2.06
	76.0	2.95		190.0	3.22	H8	58.0	2.07
	83.0	2.97	H19/8	33.5	1.93		62.5	2.09
	90.0	2.98		38.0	1.96		67.5	2.10
H14	84.0	3.45		42.5	1.97		72.0	2.11
	92.0	3.47		47.5	1.99		77.0	2.12
	100.0	3.49	H12	62.0	3.04		81.5	2.14
	107.5	3.50		68.0	3.05		86.0	2.15
	115.5	3.52		75.0	3.08		91.0	2.16
	123.5	3.54		82.0	3.09		20.0	1.49
	131.5	3.55		88.0	3.11		23.0	1.51
	139.0	3.57		94.0	3.12	H6	26.5	1.53
	147.0	3.58		100.0	3.14		30.0	1.54
	155.0	3.60		107.0	3.16		33.5	1.55
				113.0	3.17		37.0	1.57
	161.0	3.80	H112	125.0	3.65		40.5	1.58
	168.0	3.82		133.0	3.66		40.0	2.46
	177.0	3.83		140.0	3.68		46.0	2.49
	185.0	3.84		148.0	3.69		53.0	2.52
	194.0	3.86		155.0	3.70		60.0	2.55
	202.0	3.87		162.0	3.72	H1/8	67.0	2.58
	210.0	3.88		170.0	3.73		73.0	2.60
	219.0	3.89		177.0	3.74		80.0	2.62
							88.0	2.65

HOUSING COMPANY

PRESSED STEEL DIVISION

Manufacturers of Housing Company Residential Framing Steel

40 Central Street, BOSTON, MASS.

PLANTS

PORTSMOUTH, N. H. CAMBRIDGE, MASS. WAVERLEY, MASS.

For Acoustex Sound Absorbent Tiles, Thermatex Insulation and Heirloom Panel, see Manufacturers' Index

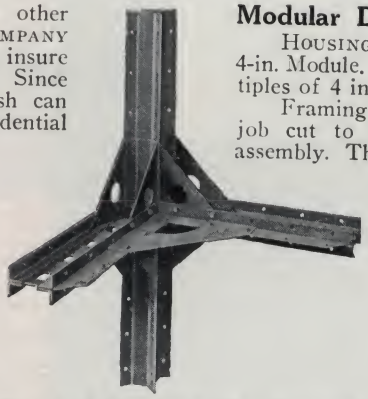
FRAMING STEEL

(TYPE A)

A Practical Framing Steel

HOUSING COMPANY Framing Steel is a practical, tested framing steel for residence construction, developed after years of careful research in laboratory and field.

The use of structural steel for large buildings differs from its use as framing for residences. In large buildings steel is used to carry the entire weight of the structure. HOUSING COMPANY Framing Steel is entirely supplementary to the secondary materials. It makes the forming frame, outlining the skeleton of the building, and facilitating the placing of other structural and finish materials. HOUSING COMPANY Framing Steel is used only where required to insure rigidity, alignment and eliminates shrinkage. Since wood is necessary as a base to which the finish can be nailed, HOUSING COMPANY'S system of residential steel framing utilizes wood where its sound structural qualities are economically advantageous.



Post and Girt Assembly, Showing Basic Parts and Rigidity of Construction

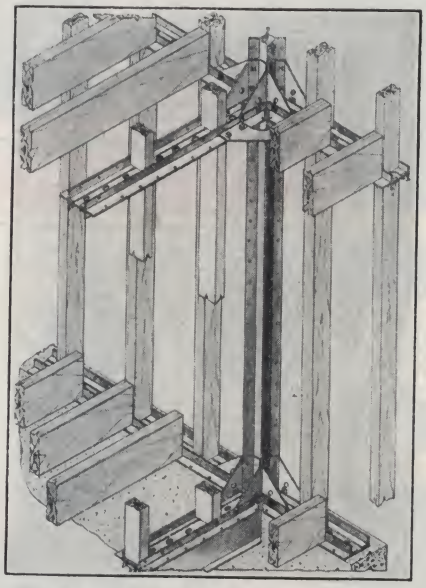
Description

HOUSING COMPANY Framing Steel locates and anchors the other members in position.

It has many advantages over a wood forming frame as it gives greater strength and rigidity, does not shrink or swell, warp, twist or rot.

HOUSING COMPANY Framing Steel gives permanence of dimension, positive aligning value, and eliminates across grain movement and cracking of walls.

Carefully made and thoroughly protected against corrosion, HOUSING COMPANY Framing Steel is the practical framing for residence construction.



Details Showing Relation of Steel Parts to Wood Members in Standard Residential Construction

Ease of Erection

Light Weight—In comparison with other frames, HOUSING COMPANY Steel Frame is very light, weighing less than the wood it replaces. For example a 4x4 post weighs only 30 lb. per story, whereas the equivalent in wood (4x6) weighs about 56 lb. Two men can handle any of the parts for the ordinary dwelling, all but the heaviest pieces being easily put in place by one man. No hoists are required.

Speeds Up Construction—As all parts are pre-cut to exact dimensions, there is no cutting to be done on the job, no waste, no forcing or wedging. All dimensions are permanent. Each piece is easily identified for position.

Members are punched at intervals of exactly 4 in. Measuring is unnecessary in erection as erectors can quickly align the parts by counting the holes. Pieces are bolted together with ¼-in. bolts in a minimum of time. No special workmen or tools are necessary—anyone can assemble the members.

There is no riveting. The whole process of erection is very quiet—quieter, in fact, than the usual wood construction.

HOUSING COMPANY Framing Steel does not require new construction methods or materials other than the steel itself. It is suited to all periods of architecture and does not limit the scope of architectural expression.

Modular Dimensions

HOUSING COMPANY Framing Steel is designed on a 4-in. Module. Parts vary from each other in length by multiples of 4 in., holes for joining being punched every 4 in.

Framing Steel for any building is delivered on the job cut to exact dimensions and identified for easy assembly. The lengths of members thus are governed by the measurements of the structure.

Advantages

Exact Specifications Assured—HOUSING COMPANY Framing Steel assures the architect that exact specifications will be carried out. Pre-cut to exact dimensions there is no possibility of error or carelessness in size or position of members.

Increased Property Value—The well-built house is always more salable and commands a better price than one which is less carefully built. The strength and rigidity of framing steel in itself assures a substantial, durable structure.

Reduced Maintenance Cost—Since framing steel dimensions and alignment are permanent, there is no weaving, no movement or shrinkage to cause displacement of wood members and resulting repairs.

Architectural Service

Architects are invited to confer with HOUSING COMPANY engineers on any question regarding the use of framing steel. When desired, HOUSING COMPANY furnishes to its clients without charge, detailed framing drawings and specifications.

Colonial House, Dedham, Mass.
MISS FAITH BEMIS, Consulting Architect
Walls of HOUSING COMPANY Framing Steel

McCLINTIC-MARSHALL COMPANY

Steel

Oliver Building, PITTSBURGH, PA.

DISTRICT OFFICES

NEW YORK, N. Y., 39 Broadway
PHILADELPHIA, PA., 1201 Morris Building
BALTIMORE, MD., 200 Scott Street
BOSTON, MASS., 68 Devonshire Street
BUFFALO, N. Y., 1628 Marine Trust Building
CHARLOTTE, N. C. 406 First National Bank Building
CHICAGO, ILL., 1416 First National Bank Building
DETROIT, MICH., 1242 Book Building
ST. LOUIS, MO., 1546 Telephone Building
CINCINNATI, OHIO, 1208 Union Central Building
CLEVELAND, OHIO, 1538 Hanna Building
LOS ANGELES, CAL., Pacific Southwest Building
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FOREIGN CONTRACT DEPARTMENT: McCLINTIC-MARSHALL PRODUCTS CO., 39 Broadway, NEW YORK, N. Y.

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Hudson River Bridge

New Willamette River Bridge, Oregon City, Ore.

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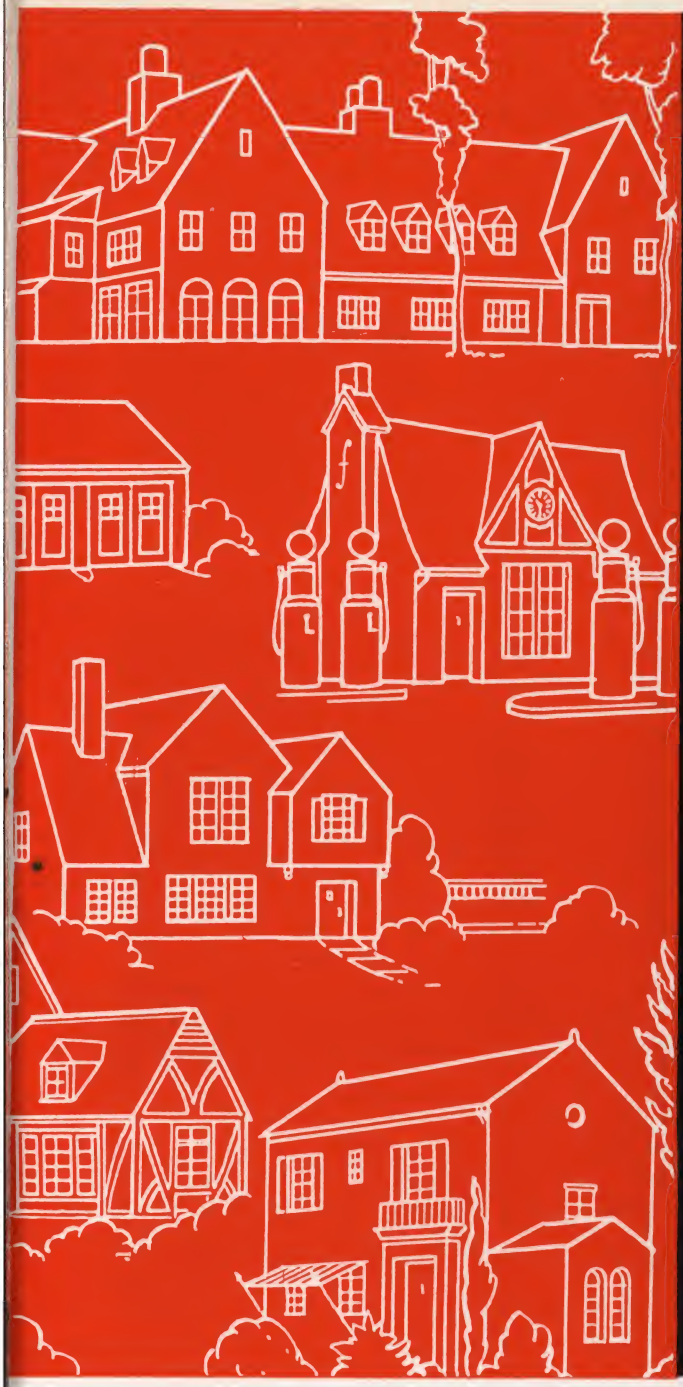
City Hall, Los Angeles, Cal.



How to Build with

MAC-MAR STEEL FRAMING

MANUFACTURED BY
STEEL FRAME HOUSE COMPANY
SUBSIDIARY OF
McCLINTIC-MARSHALL CORPORATION
PITTSBURGH, PA.

MAC-MAR STEEL FRAMING

Made by

STEEL FRAME HOUSE COMPANY

SUBSIDIARY OF McCLINTIC-MARSHALL CORPORATION

PITTSBURGH, PA.

DISTRIBUTORS IN ALL PRINCIPAL CENTERS

Products

MAC-MAR STEEL FRAMING for homes and other buildings, including all Structural Elements, Attachment Devices, etc.

Also Mac-Mar Steel Stud Partitions for fireproof buildings; Mac-Mar Standardized Steel Garages; Mac-Mar Junior Trusses (steel joists); Brisbane Steel Frame Cottages and Mac-Mar Poster Panels.

MAC-MAR STEEL FRAMING

Patents Pending

Uses and Advantages

Mac-Mar Steel Framing is adapted for the construction of any building three stories or less in height, having live floor loads not exceeding 100 lbs. per sq. ft.

It may be employed for taller buildings in conjunction with a structural steel frame. It is particularly adapted to homes and residences of all types and sizes.

Fig. 1. Mac-Mar Steel Framing for a House in Indianapolis

FREDERICK WALLICK, Architect

Fig. 2. Same House Finished

Mac-Mar Steel Framing fits any architectural style

General Information

Any builder familiar with standard methods of framing structures in wood can erect Mac-Mar Steel Framing. This modern system of construction employs rigid, durable steel for sills, studs, girts, and plates, and for floor beams and rafters, each member corresponding to a similar member of wood in ordinary frame buildings. The members are bolted together on the job and the contractor merely substitutes a wrench and screwdriver for hammer, square, rule and saw.

All parts of Mac-Mar Steel Framing are fabricated to fit the structure for which they are ordered. No cutting or fitting on the job.

The special feature distinguishing Mac-Mar Steel Framing is the use of members perforated on 2-in. centers (sills, girts, plates and studs), permitting absolute flexibility of design to any multiple of 2 in. for allover dimensions. Fractional dimensions can be provided by special offsets if necessary. Furthermore, all studs are normally assembled on 16-in. centers, permitting the use and attachment of all standard building materials by means of labor-saving clips fitting the perforated members.

Fig. 3. Complete Mac-Mar Steel Frame Ready to Ship

It is equally suited for the development of small, fireproof apartment houses, and for club-houses, small hospitals, and schools, small garages, gasoline filling stations, one- to three-story tax-payer buildings, and all other structures which have usually been framed in wood.

Mac-Mar Steel Framing is rigid, durable, noncombustible, and obviously cannot be attacked by termites, rot, fungus, or vermin.

It produces a substantial fireproof construction at low cost. It is free from warping, twisting, shrinkage, and thus assures freedom from plaster cracks due to structural causes.

Mac-Mar Steel Framing produces buildings that are remarkably soundproof, weathertight and efficiently insulated against heat losses.

Adapted to All Designs

No limitation is imposed upon the designer in the shape or form of the building to be constructed with Mac-Mar Steel Framing. Irregular roof lines, dormers, gables, hip roofs and projecting bay windows as readily framed in steel as in any other structural material. Additions and alterations are effected with equal simplicity.

Continued on next page

MAC-MAR STEEL FRAMING FOR RESIDENCES AND OTHER BUILDINGS

Service to Architects

The STEEL FRAME HOUSE COMPANY offers its fullest co-operation to the architect and owner contemplating the use of Mac-Mar Steel Framing. Our distributors in all parts of the country can furnish preliminary information and a complete engineering staff at the home office is at your service.

The architect will encounter no unusual problems in the use of Steel Framing. The building should be designed and detailed exactly as for any other materials.

These plans and specifications should then be submitted to our home office in Pittsburgh where framing plans, heating and plumbing layouts, specifications and a complete estimate of cost will be promptly prepared for the consideration of the architect and owner.

Fig. 4. Tydol Chain Gasoline Filling Station with a Mac-Mar Steel Frame
One of many similar stations ordered by the Tidewater Oil Co.

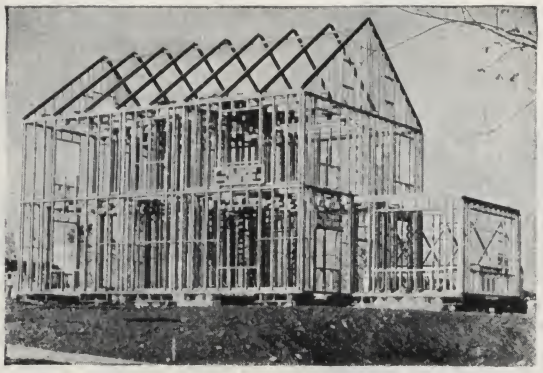


Fig. 6. Mac-Mar Steel Frame for a House at Syracuse, N. Y.

Fig. 5. Arlington Club House at the Famous Arlington Racetrack, Chicago
Built in record time with Mac-Mar Steel Framing
BENJAMIN H. MARSHALL, Architect

Strength and Durability

All structural members employed in Mac-Mar Steel Framing are of hot-rolled, copper-bearing steel except standard I-beams and channel sections used for girders, floor joists and rafters which are of hot-rolled, open hearth, structural steel according to A. S. T. M. standards. All members are further protected after fabrication with a coat of anti-corrosive paint known as the most effective protective coating available for steel.

More than adequate strength is assured with Mac-Mar Steel Framing because more steel is used than is actually required for structural purposes in order to provide for the attachment of standard building materials.

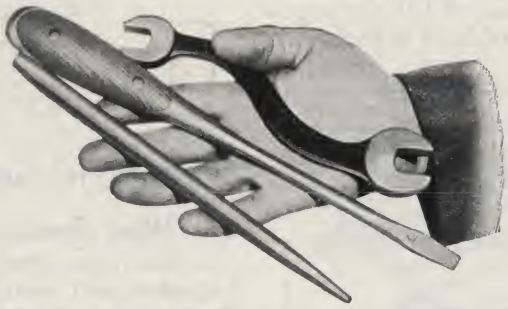


Fig. 7. Tools Used in Assembling Mac-Mar Steel Framing—a Wrench, Screwdriver and a Connecting Pin

Easy to Build

Because Mac-Mar Steel Framing follows well-established principles of design, any contractor familiar with present methods of construction can assemble Mac-Mar Steel Framing and attach thereto any type of building material normally applied adjacent to the frame.

The following pages show the elements of Mac-Mar Steel Framing, the sequence of operations in assembling them for all types of buildings, and standard methods of attaching all normal building materials.

Fig. 8. Mac-Mar Steel Framing Has Reserve Strength for Rigidity and Durability
Hot-rolled, copper-bearing steel is used

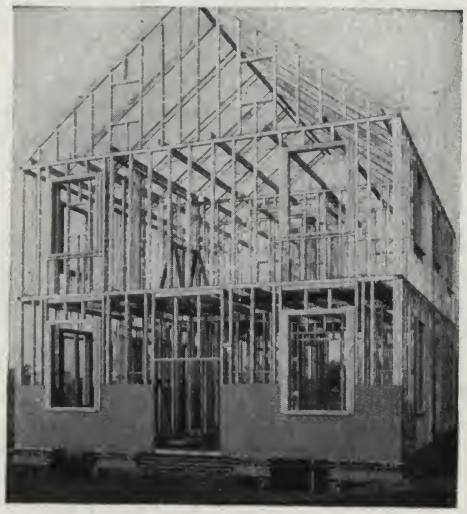


Fig. 9. Mac-Mar Steel Framing Is Easy to Erect
No cutting or fitting on the job

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THE MEMBERS EMPLOYED IN MAC-MAR STEEL FRAMING

Only four basic types of members plus wire cable wind bracing are required for the construction of a Mac-Mar Steel Frame. Typical elements are described on this page.

(1) Studs

Mac-Mar Steel Studs are made of two hot-rolled, copper-bearing steel angles, mill fabricated to length and assembled with bolted, riveted or welded clips forming a unit 3¾ in. deep from face to face. All members are perforated with $\frac{7}{16}$-in. holes 2 in. on centers. Short lengths of these units are used for framing openings and similar details.

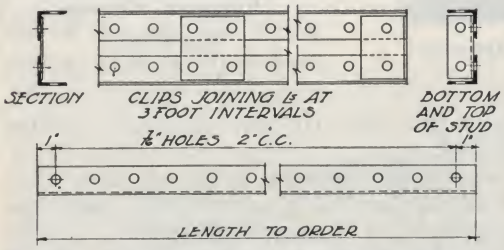

Fig. 10. Standard 3¾-in. Mac-Mar Steel Stud Made Up of Two Angles with Spacing Clips

Fig. 11

(2) Sills (Also Girts and Plates)

Sills, girts and plates are identical in Mac-Mar Steel Framing. They are made of two channels having flanges perforated on 2-in. centers, assembled back to back with

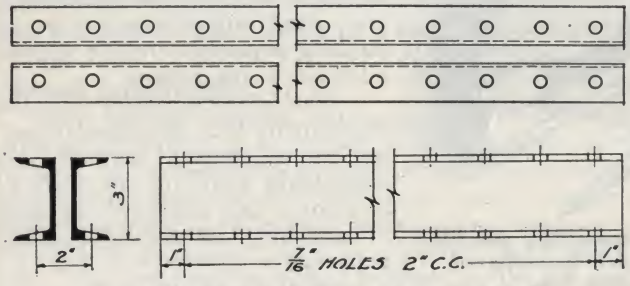

Fig. 12. Sills, Girts, and Plates Are Made of Two Standard Channels

clips joining the channels at required intervals. Studs, beam connections and rafter connections are bolted to the sills, girts, or plates at any desired spacing which is a multiple of 2 in. Odd dimensions are fitted by means of offsets.

(3) Girders and Floor Joists

Girders used to span basement areas are standard structural steel I-beams of whatever size is required to carry the load across the given span.

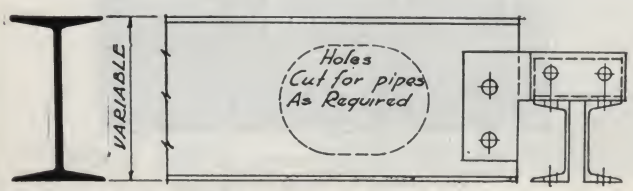

Fig. 13. Floor Joists Are Usually Light Weight Beams

Floor joists are usually made of light I-beam sections. These joists are connected to sills, girts, or plates with special end connections similar to those shown in Fig. 13. Where pipes or conduit pass through the floor across the floor joists, holes are cut in the webs at the required points. This cutting is done at the mill.

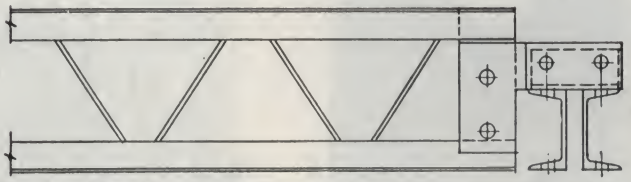

Fig. 14. Mac-Mar Junior Trusses Are Optional for Floor Joists

An optional type of floor joist is the Mac-Mar Junior Truss. This is a steel joist having flat top and bottom chords, with a web made of welded bars in the form of a Warren truss. Where these members are used as floor joists, pipe and conduit can be run through the webs. See Fig. 14.

(4) Rafters

Rafters are made of standard channels to which are bolted various types of ridge and eave connections in accordance with job requirements. The channels may be perforated on their flanges at 2-in. intervals, or may have web perforations to allow the bolting of a nailing stringer as required.

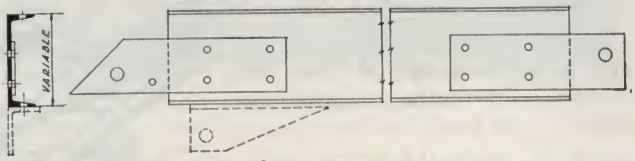

Fig. 15. Rafter with Typical Connections

(5) Wind Bracing

Mac-Mar Steel Frame buildings are thoroughly braced against wind stresses and distortions by means of steel cables and turnbuckles as pictured in Figs. 16, 24 and 25. The cables pass through center of studs.

All other special elements required in any building are mill-fabricated from these standard members.

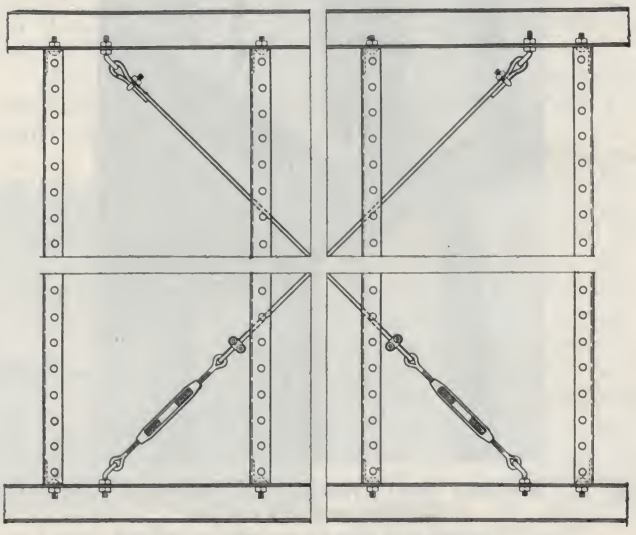

Fig. 16. Standard Cable Bracing

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HOW TO ERECT MAC-MAR STEEL FRAMING

Foundations

Foundations must be brought true to level and grade and anchor bolts inserted on center line of sills.

(1) Set Girders and Basement Columns

Large girders spanning basement areas are set in notches in foundation walls, bringing their top flanges level with the top of foundation. Interior columns of standard I-beams are set on footings in the customary manner. Girders can usually be slid over foundation walls without special rigging and fitted as shown in Fig. 17. Girders are punched at mill to receive columns and sills.

Fig. 17. Foundations Notched to Receive Floor Girders

(2) Set Sills

Sills are set on foundations and joined at corners with bolted bottom plate shown in Fig. 18. Before tightening nuts over anchor bolts, the sills are shimmed

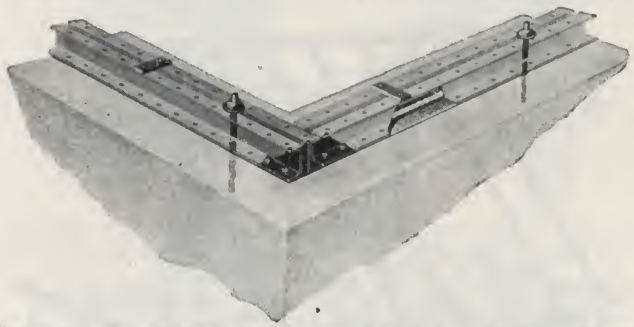

Fig. 18. Sills Bolted at Corners, Leveled and Grouted with Cement

to exact level and grade and grouted with cement mortar. Anchor bolts, which have previously been set in foundations on center lines of sills, are then made fast.

(3) Set Floor Joists

Floor joists are laid across the first floor spans at required intervals as shown in Fig. 19. The angle connection is then bolted to the sill at the proper point

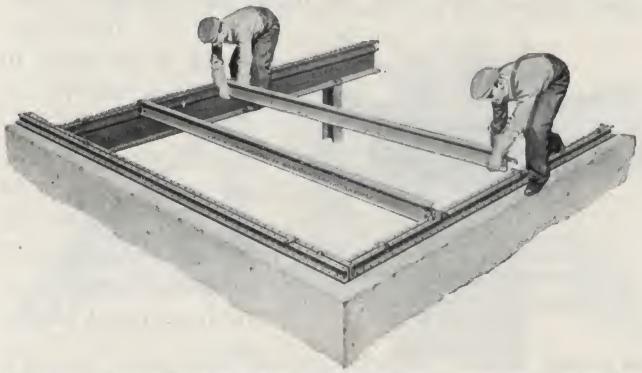

Fig. 19. Floor Joists Laid Across Spans at Proper Intervals

and to this the floor joist hanger is bolted as shown in Fig. 20.

Since the sills are properly aligned and level, the resulting floor comes true without further adjusting or fitting. Headers framing interior floor openings are similarly bolted to the proper floor joists.

Fig. 20. Floor Joists Bolted to Sills, Using Angle Connections Previously Installed

(4) Assemble and Erect Studs

Instead of erecting studs individually, it is much easier to assemble panels of studs in a horizontal position as shown in Fig. 21. A girt piece is bolted to the

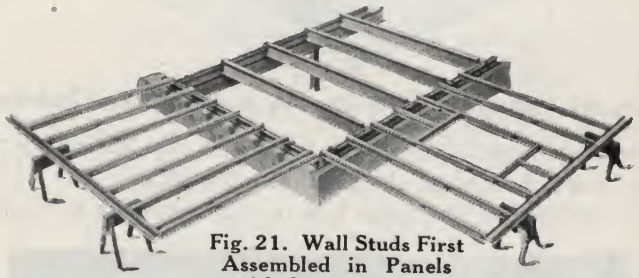

Fig. 21. Wall Studs First Assembled in Panels with Girt at the Top

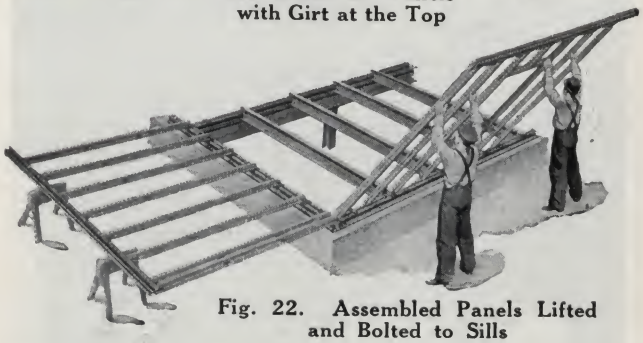

Fig. 22. Assembled Panels Lifted and Bolted to Sills

heads of the studs and any window or door openings are fitted and assembled at the same time. The bottom ends of the studs rest on the sill. The entire panel is then raised as shown in Fig. 22, the the studs catching in the space between the two channels forming the sill. While the panel is temporarily held upright by one man, the other completes the bottom connections, bolting the studs to the sill.

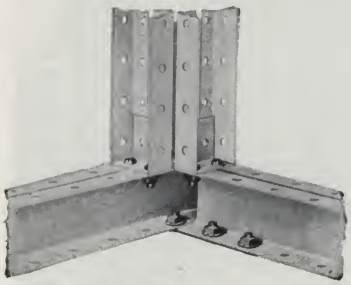

Fig. 23. Typical Corner Connection

A similar panel is then raised at the adjacent corner and the corner posts bolted together at the top with the connecting plate shown in Fig. 28. Corner posts are formed of three studs as shown in Figs. 21, 22 and 24, forming attaching points at both exterior and interior angles for application of finishing materials. See also Fig. 23.

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(5) Install Wind Bracing

Lateral stiffness to resist wind pressures is introduced into the Mac-Mar Steel Frame by means of wire cable bracing as illustrated in Figs. 24 and 25. This

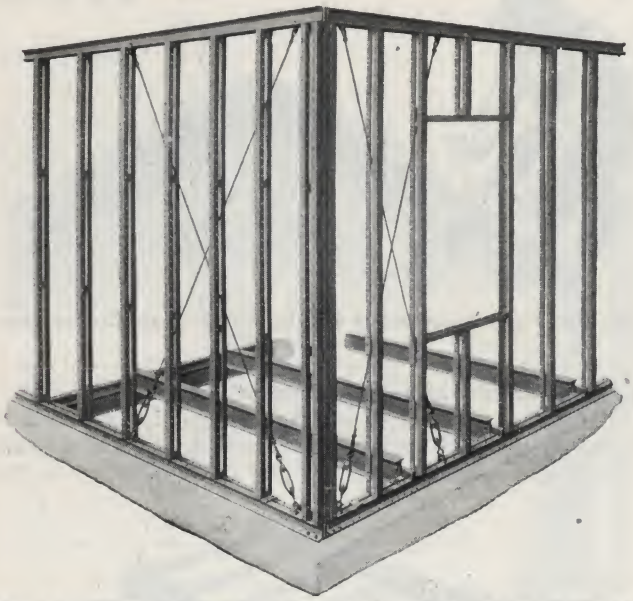


Fig. 24. Wire Cable Wind Bracing Supplies Lateral Stiffness

bracing consists of U-bolts fastened to the sill and girt or plate, steel wire, clamps, and turnbuckles. The wire is installed on the center line of studs, passing through

Fig. 25. Typical Wind Bracing on Panel

the space between the angles forming each stud, and the turnbuckles are then tightened until the structure is absolutely plumb and true. Similar cable bracing is used to stiffen roof panels where shown on drawings.

(6) Set Second and Third Floor Joists

Second and third floor joists are installed in exactly the same manner as the first floor joists (see Figs. 19 and 20). The connections are identical because the same type of member forms the sill, girt, or plate.

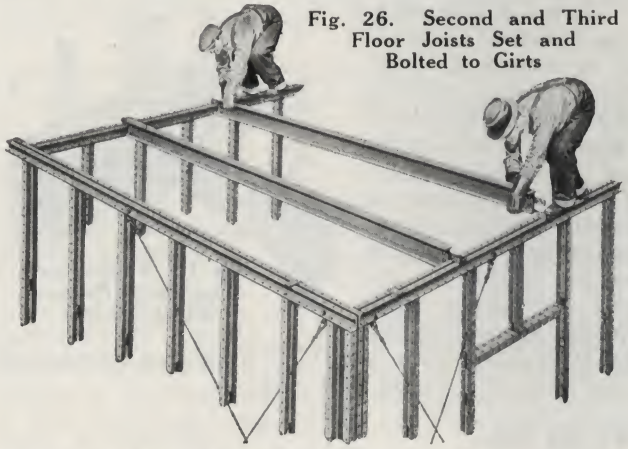


Fig. 26. Second and Third Floor Joists Set and Bolted to Girts

(7) Erect Second Floor Studs

All studs for the upper floors, walls and bearing partitions are assembled in a horizontal position on tem-

Fig. 27. Second Floor Studs Assembled in Panels and Raised from Within

porary planks laid over the upper floor joists. When panel is thus prepared, it is lifted in place as shown in Fig. 27, with the bottom of the studs resting in the groove of the girt. Girts are bolted at corners with a special angle connection shown in Fig. 28.

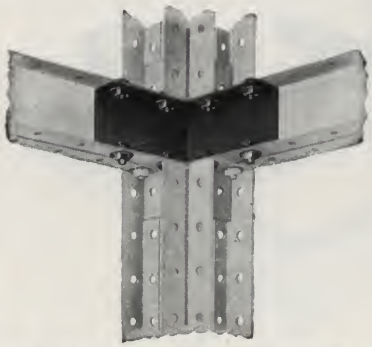


Fig. 28. Corner Connection at Girt

In this manner, the entire frame is assembled and carried up to the eave line, with wind bracing installed and the entire structure made true and rigid.

Continued on next page

(8) Rafters and Roof Details

At each rafter location angle connections (see Fig. 29) are bolted to the plate. The rafters are then bolted through their end connections, using a single bolt as shown in Figs. 30 and 31. The end connections which are attached to the rafters vary in type according to the style of the roof.

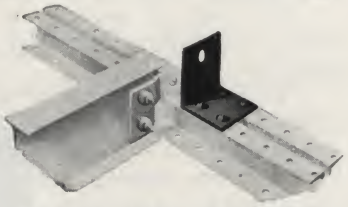


Fig. 29. Rafter Connections Bolted to Plates

A pair of rafters, having thus been hinged at the eaves, is then raised as shown in Figs. 32 and 34, and the ridge connection is completed with a single bolt as shown in detail in Fig. 33.

No ridge board is used. In its place, two light angles are supplied which are bolted to the lower edges of the rafters at either side of the ridge connection.

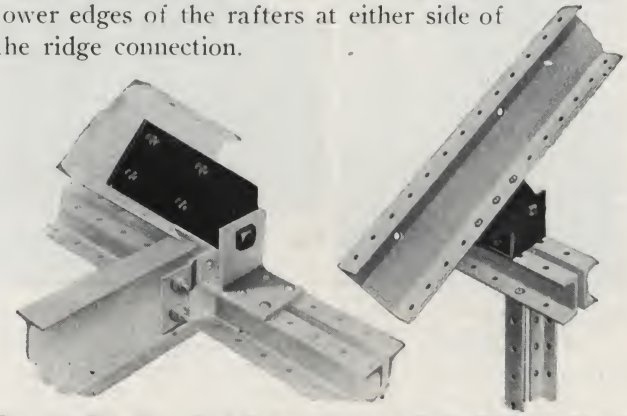


Fig. 30, Fig. 31. End Connections on Rafters Fastened with a Single Bolt (Forming a Hinge) to the Rafter Support

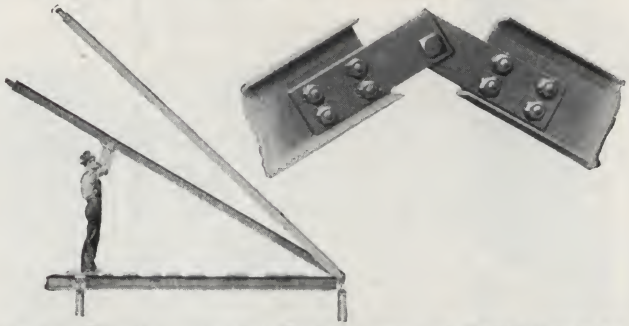


Fig. 32, Fig. 33. Rafters Raised from the Eave Hinge and Each Pair Joined with a Pin-connected Ridge Construction

Fig. 34. Three Men Quickly Raise Each Pair of Rafters and Complete the Ridge Connection

All special roof details, including gables, dormers, hip roofs, gambrel roofs and the like, are assembled following the same principles.

(9) Partitions (Non-bearing)

Non-bearing partitions do not rest on the partition sills but are suspended from floor joists above. The bottom ends of the studs are spaced by bolting them to a flat perforated steel plate which in turn is attached to floor joists below and later becomes embedded in the concrete structural floor. The tops of studs are attached to two angles thus forming a panel, which is then raised into place and top angles securely bolted to floor joists directly above.

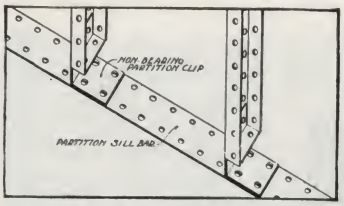


Fig. 35. Bottom Plate of Non-bearing Partitions

(10) Completed Frame

In this manner, all parts of a Mac-Mar Steel Frame structure are assembled, ready for the attachment of other building materials. The isometric drawing below (Fig. 36) shows how the typical members are used and their relationship to each other.

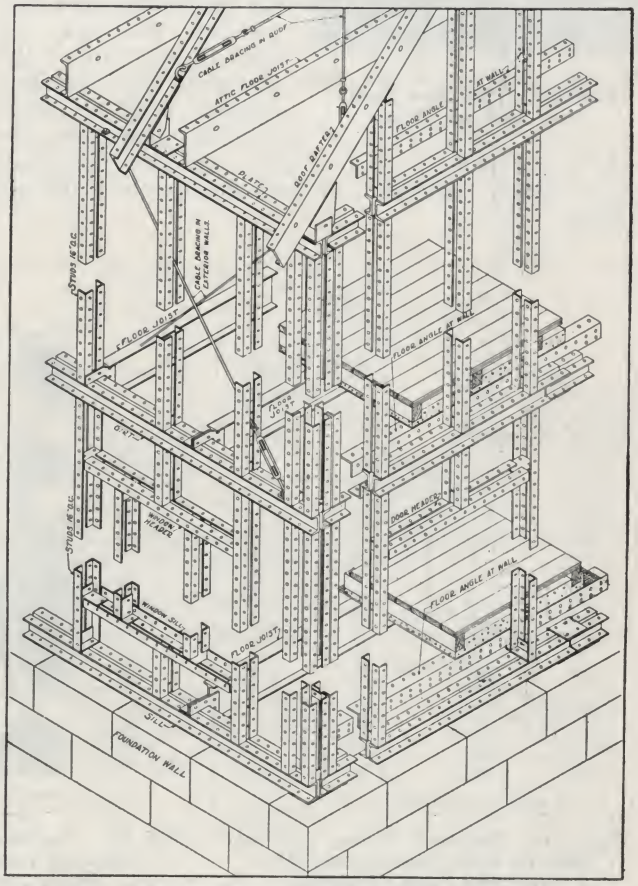


Fig. 36. Diagram Showing Relationship of All Typical Members

It is to be especially noted that there is no cutting, fitting or fabrication required on the job. All elements are prepared at the mill and properly numbered to fit together in accordance with the erection diagram prepared by the Engineering Department of the Steel Frame House Company. Assembly is exceedingly simple if these instructions are followed.

Continued on next page

INSTALLATION OF MECHANICAL EQUIPMENT

Provision is made in the design of Mac-Mar Steel Framing for the installation of all types of mechanical equipment. Plumbing and heating contractors and electricans follow their usual practices in making their installations, except locations are predetermined.

(1) Electric Wiring

Where armored cable or non-metallic sheathed cable are specified for electrical circuits, the cable is strung through the Mac-Mar Steel Studs in the space between each pair of perforated angles. This space will receive any standard type of armored cable or non-metallic sheathing. Outlet boxes are secured to perforated metal strips, wired or bolted to adjacent studs as shown in Figs. 37 and 38.

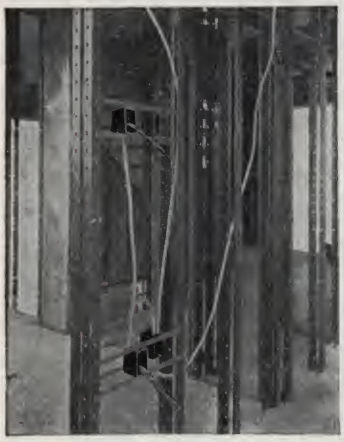


Fig. 37. Electric Wires and Flexible Cable Are Easily Run Through Studs

Where rigid conduit is specified, it is laid in the floors like other pipe systems, and may be carried up into the partitions by bending around sills or girts. Conduit may also be run in the hollow faces of sills and girts for baseboard outlets with vertical lines bent around the sill flanges.

Heating plans and requirements should be submitted to the Steel Frame House Company.

(3) Piping Systems of All Kinds

All types of heating and plumbing pipe lines are readily installed in Mac-Mar Steel Framing, following standard methods.

Vertical lines of small pipes are run through partitions with angle offsets around girts and plates. Larger sizes, including soil pipes, are run through chases provided in the frame for this purpose; the girts and plates being cut away at the mill at the required points. Large sizes of soil pipes that will not fit in a 3¾-in. partition are framed around in the usual manner.

Fig. 41. Typical Installation of Pipes and Warm Air Ducts

Horizontal lines are carried between or through the floor beams; in the latter case the beam webs are perforated at the mill at the proper points.

Where flexible or semi-flexible copper pipe is specified for water lines. this may be run without special provision through any part of the framing, except that holes are provided to carry pipes through horizontal members.

Pipes are supported with standard hangers bolted or wired to the structural members.

To simplify installation problems, complete heating and plumbing plans should be supplied to the Steel Frame House Company Engineering Department together with diagram showing preferred location of all pipe lines.

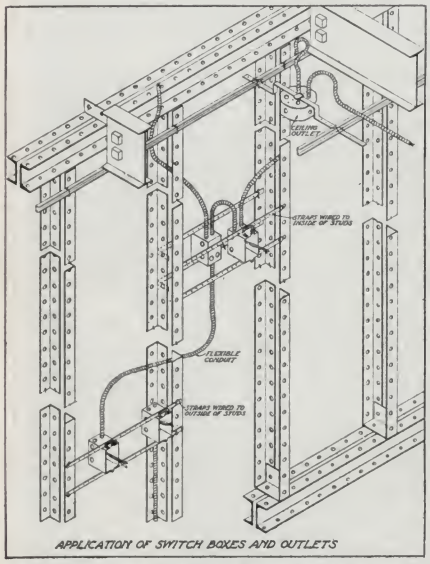


Fig. 38. Standard Wiring Materials May Be Used Throughout Mac-Mar Steel Frame Buildings with Utmost Simplicity

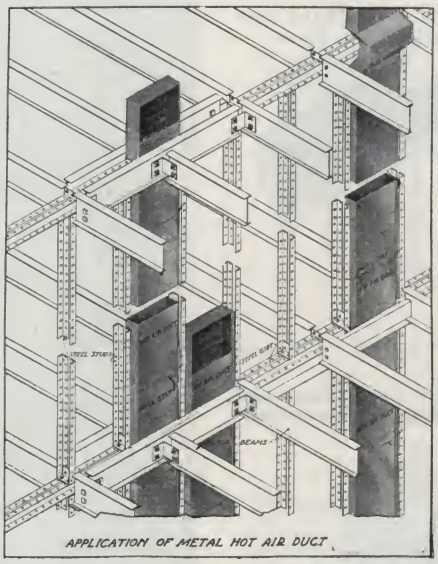


Fig. 39. Provision Is Made in the Steel Framing Itself for Introducing Warm Air Ducts Wherever Required

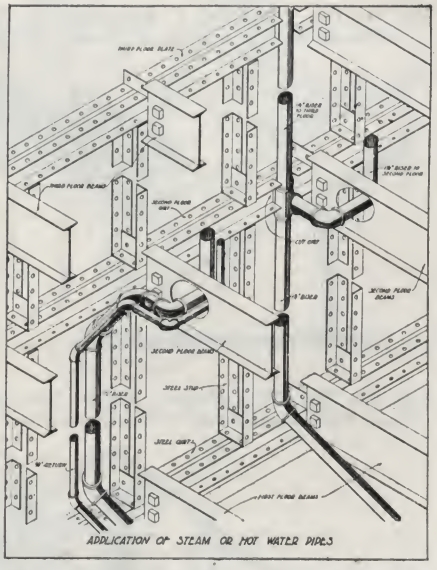


Fig. 40. Heating and Plumbing Systems of All Types Are Installed Through Openings Provided for the Purpose

(2) Warm Air Ducts

Special provision is made in the framing plan for rectangular warm air ducts where they are carried through girts or plates of outside walls or interior partitions. The ducts used are the standard 3½-in. ducts employed with wood framing. They are supported with wire stays fastened through the perforations of adjacent studs. Horizontal ducts are carried between floor beams where possible, but when run across the floor beams, the

Continued on next page

HOW TO APPLY STANDARD BUILDING MATERIALS

(1) Forming Fire-resistive Concrete Floors

To gain full advantage of the fireproof characteristics of Mac-Mar Steel Framing, the structural floor slabs should be of concrete or gypsum. Standard methods used for forming such floors over steel joists are followed.

(A) With Fibrous-backed Wire Fabric—

This material, consisting of a welded galvanized wire mesh to which is attached a heavy fibrous waterproof backing, is usually supplied in large rolls. A sheet is unrolled across the floor span, as shown in Fig. 42, and cut to length. One end of the sheet is then clipped

Fig. 42. Unrolling Fibrous-backed Wire Fabric Over Steel Joists

Fig. 43. Fabric Is Fastened at One End and Stretched Taut

to the nearest sill, using labor-saving wire clips made for the purpose. The sheet is then stretched from the other end until taut and again clipped to the adjacent sill or girt. Similarly, the fabric is fastened with clips to each

Fig. 44. Where Wood Top Floor Is Specified, Sleepers Are Set in Place Before Pouring Concrete

of the intervening floor joists. Repeat the process with each additional sheet overlapping the other in accordance with manufacturer's instructions until the area is completely covered.

If a top finished floor of wood is specified, screeds or sleepers are installed, as shown in Fig. 44. The sleepers are lifted 1 in. off the fabric by means of metal sleeper chairs (No. 301). See Figs. 44 and 46.

The floor is then ready to be poured as shown in Fig. 45. The waterproof fibrous backing of this reinforcing fabric will permit the use of any desired water-cement ratio in the mix and will function as a form while the mortar sets. The reinforcing wires become embedded in the slab.

Concrete slabs of this type are usually from 2 to 3 in. in thickness. When screeds are not used for nailing

Fig. 45. Concrete of Any Desired Water-cement Ratio May Be Poured Directly on Fibrous-backed Wire Fabric

the top floor, the cement is troweled to a smooth finish ready to receive linoleum, rubber tile or other flooring.

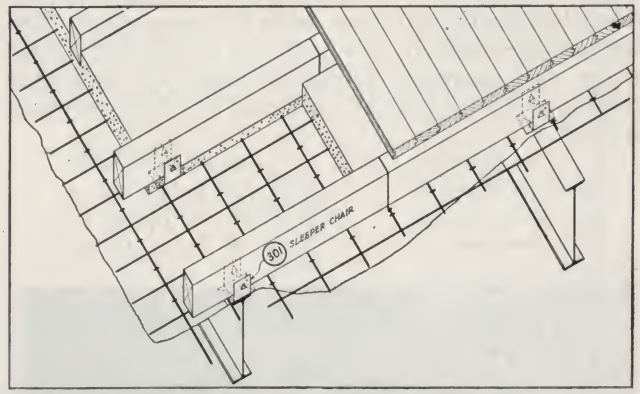


Fig. 46. Isometric Diagram Showing Floor Construction with Fibrous-backed Wire Fabrics

(B) With Wood or Metal Forms—

Similarly, concrete slabs may be poured over tem-

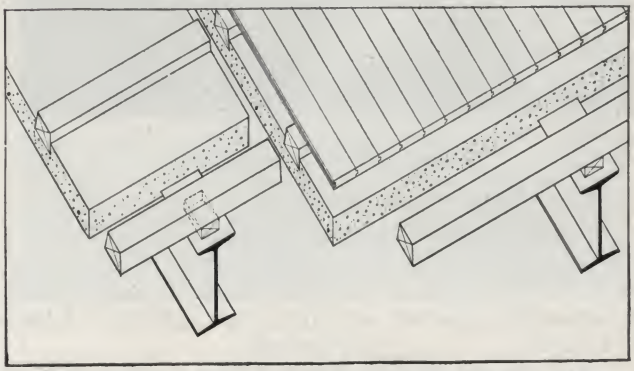


Fig. 47. Diagram Showing Concrete Slab Floors Poured Over Removable Wood or Metal Forms

porary wood or metal forms supported on the lower flanges of the steel joists with top surfaces approximately

Continued on next page

½ in. below the top flange. Rod or wire reinforcing is laid across the joists and the slab is poured as indicated in Fig. 47. When the floor has hardened, the forms are removed, and are re-used for other floor areas.

(C) With Ribbed Sheet Metal or Metal Lath—

Sheet metal with a stiffening rib, as shown in Fig. 48, may be used as a form for these concrete slabs. It is merely laid across the steel joists with overlapping

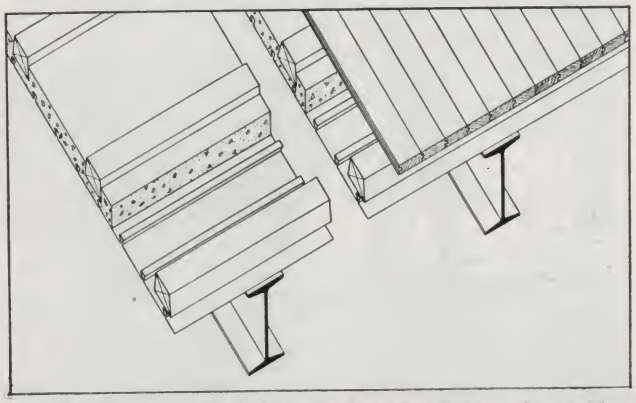


Fig. 48. Concrete Slab May Be Cast on Ribbed Sheet Metal Which Is Laid Across the Steel Joists

seams and the concrete is poured with or without additional reinforcement.

Ribbed metal lath is also commonly used, as shown in Fig. 49. It is laid across the joists and clipped thereto with labor-saving wire clips made for the purpose. The concrete used must be of a very dry mix to prevent the cement and aggregate falling through. The following weights of metal lath are specified by the Steel Joist Institute:

Joist Spacing	Type of Laths
Up to 19-in. centers	⅜ in.—3.4 lb. per sq. yd.
19 to 24-in. centers	⅜ in.—4 lb. per sq. yd.
24 to 30-in. centers	¾ in.—46 lb. per 100 sq. ft.

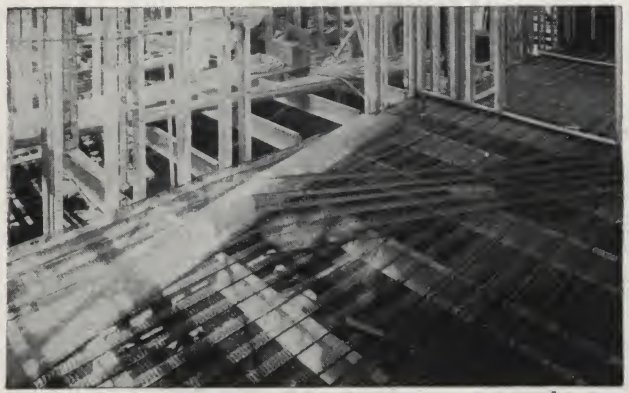


Fig. 49. Ribbed Metal Lath Is Frequently Employed for Forming Concrete Slab Floors

(D) Other Types of Floors—

Complete data sheets and construction information will be supplied where any other type of floor is specified. These types include pre-cast and cast-in-place gypsum slabs, pre-cast concrete, wood plank and steel deck floors.

Any desired type of finished floor surface may be installed in Mac-Mar Steel Frame buildings. The method of laying hardwood strip and plank flooring is indicated in Figs. 46, 47 and 48. Wood block flooring may be cemented directly to the concrete slab. Linoleum, rubber tile, cork tile, etc., are likewise cemented to the slab. Ceramic tiles, slates and stones are set in mortar directly on the concrete.

(2) Exterior Wall Construction

Mac-Mar Steel Frame buildings should have exterior walls of masonry in some form. This includes brick, stone, and stucco. Wood siding cannot be advantageously used, but where the architectural effect of clapboards is desired, an asbestos cement sheathing, resembling clapboard siding, may be applied to the frame. Half-timbering work employed with stucco may also be attached in the manner shown for interior wood trim.

Brick and stone facings are constructed as veneers over the steel frame. Stucco is applied to any standard

Fig. 50. Mac-Mar Steel Frame Houses Have Masonry Exteriors of Brick, Stone or Stucco
A group at Philadelphia, Pa.

type of stucco base which in turn is attached directly to the frame. The rigidity and freedom from distortion or warping of Mac-Mar Steel Framing assures superior results and freedom from cracking of stucco or masonry facings.

Insulation of exterior walls is effected either on the outside face or the inner face of the studs or both, as the designer may specify. The attachment of all basic types of insulating materials is indicated on the following pages.

Any combination of materials may be employed with Mac-Mar Steel Framing. The ground story, for example, may have a stone facing 8 in. deep, and the

Fig. 51. Stone and Stucco Were Used on This House in Detroit, Mich.
Clair Ditchy, Architect

upper stories, or some part thereof, may have a stucco finish. Provision for such changes in material is made in the frame itself with suitable overhangs to align the surfaces.

Continued on next page

(3) Application of Plaster and Stucco Bases and Insulating Boards

Attachment methods have been developed for the application of all types of wallboards, insulating boards, metal lath, wire fabric and other standard building materials to Mac-Mar Steel Framing.

(A) Wallboards and Insulating Boards—

Fibrous Wallboards—Applied to Mac-Mar Steel Framing by means of a special expanding nail (No. 201) illustrated in Fig. 52. The board is set against the frame and a workman from within punches a hole through the board opposite one of the perforations in the steel stud. The workman outside drives an expanding nail, to which has first been applied a washer or masonry anchor, through the perforation thus formed. The process of driving the nail expands the inner end until it fits tightly into the perforation in the steel stud. The harder the nail is driven, the tighter the grip. Special prong washers are used to clip adjacent boards where they join along a stud. Round washers are used elsewhere, except when a masonry anchor is desired, as shown in Fig. 52.

Corkboard—Usually 1½ in. thick, is attached to Mac-Mar Steel Framing using galvanized clip No. 231 as shown in Fig. 54. This clip is laid over the edge of each block of corkboard and hooked around the outer flange of the steel stud where it is held in place by a notch that falls into the stud perforations. The outer end of the clip has three prongs, one serving as a masonry anchor and the other two to hold the boards above and below.

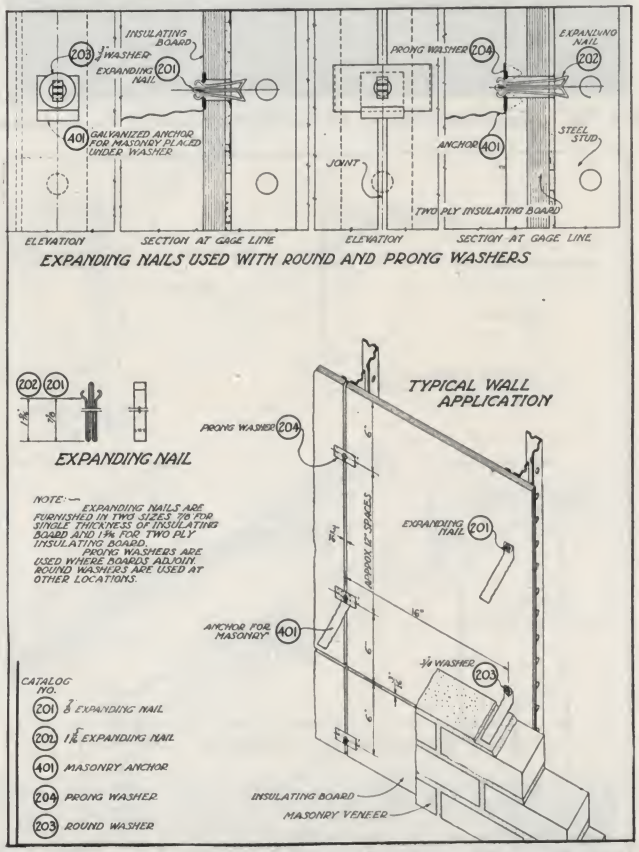


Fig. 52. Fibrous Wallboards and Insulating Boards Quickly Attached to Steel Framing with a Special Expanding Nail

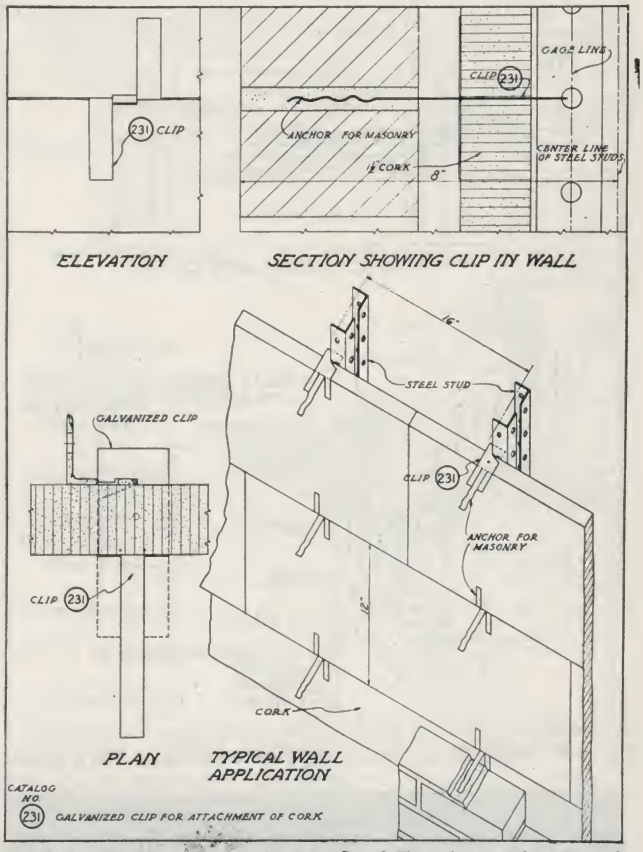


Fig. 54. Corkboard Applied to Steel Framing with a Simple Hook Clip Which Also Forms Masonry Anchor

Fig. 53. Steel Frame House at Pottstown, Pa.
Wallboards with masonry anchors ready for brickwork

Fig. 55. Corkboard Being Applied to Exterior of House at Pittsburgh, Pa.
For method see Fig. 54

Continued on next page

(B) Stucco and Plaster Bases—

Fibrous-backed wire fabrics, metal lath, gypsum wallboards or plaster boards may be used as stucco and plaster bases on Mac-Mar Steel Framing. Methods of attaching the fibrous-backed wire fabric are shown in Fig. 56, using attachment stay No. 241 where this type of material is employed on both sides of the stud, and wire clip No. 242 where on one side only. Attachment bar No. 605 is used for ceiling construction.

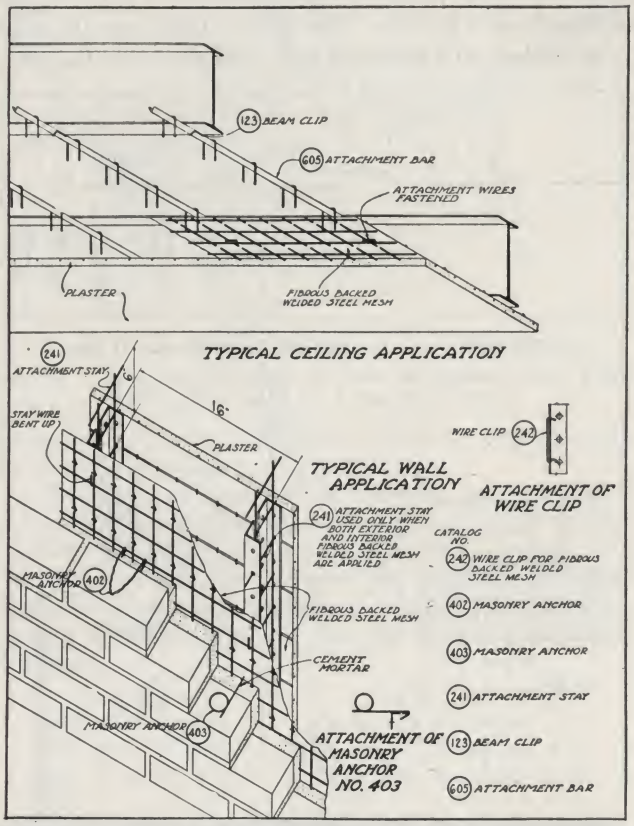


Fig. 56. Methods of Attaching Fibrous-backed Wire Fabrics

Fig. 57. Fibrous-backed Wire Fabric Used As Plaster Base

Metal lath is wired to the studs through the stud perforations as shown in Fig. 58.

Gypsum and other hard plaster boards are attached to the frame, using wire clip No. 101 as shown in Figs. 59 and 60. The illustration, Fig. 60, shows the use of wallboards on Mac-Mar Steel Studs for the construction of partitions in fireproof buildings.

Fig. 58. Metal Lath Wired to the Studs Through Perforations

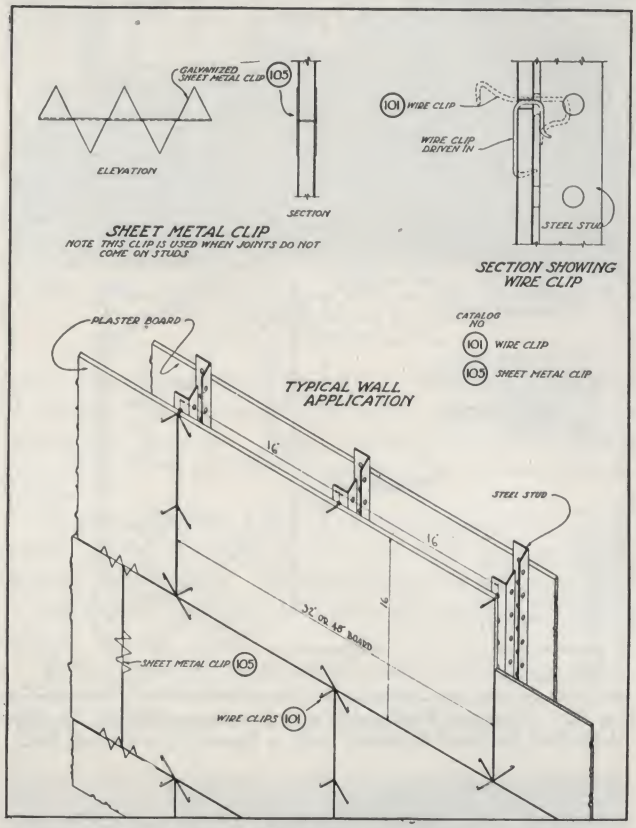


Fig. 59. A Special Wire Clip Is Used with Gypsum Wallboards

Fig. 60. Plaster Boards Used for Partition Work

Continued on next page

(4) Roofing and Roof Trim

The customary roof construction for Mac-Mar Steel Frame buildings is shown in Diagram A of Fig. 61. It consists of heavy wood planks nailed across the rafters to a 1¾x3¾-in. nailer strip bolted to the back of the rafter channel so that its upper edge is slightly above the upper flange of the channel.

This construction provides excellent insulating qualities and is rated as slow-burning construction, because no edges of the wood are exposed to flame. The 2-in. plank roof deck also provides a substantial nailing base for slate or tile which is not possible with ⅞-in. sheathing.

Pre-cast slabs of reinforced nailing concrete or gypsum may be used as shown in Diagram B of Fig. 61, using angle members as purlins between rafters.

Nailing concrete may also be cast in place on roofs of comparatively flat slopes, casting it upon reinforced expanded metal or fibrous-backed wire mesh as described for floor construction. See Diagram C, Fig. 61. A fourth type of construction employs a ribbed sheet metal deck with two layers of ½-in. thick insulating boards cemented to the deck with an asphalt mastic, as shown in Diagram D, Fig. 61.

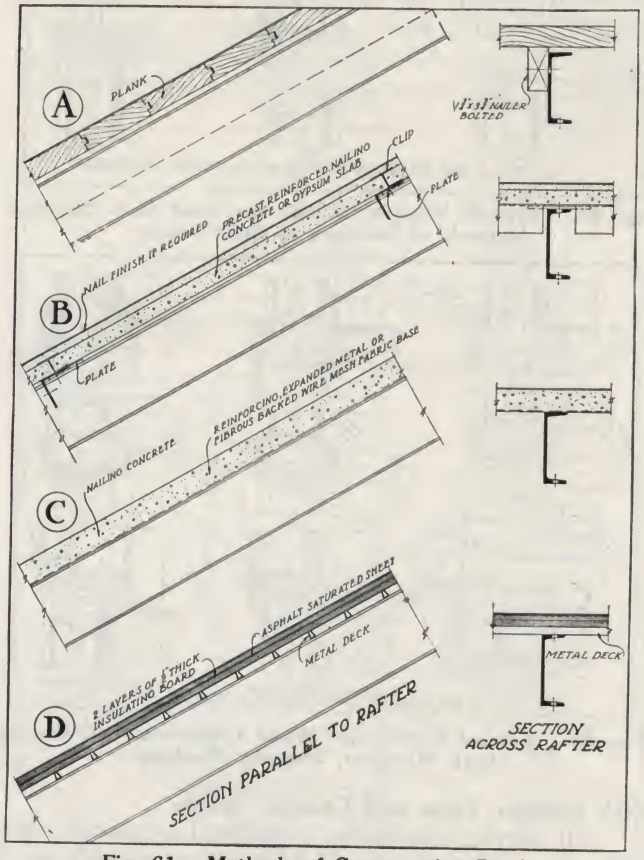


Fig. 61. Methods of Constructing Roofs

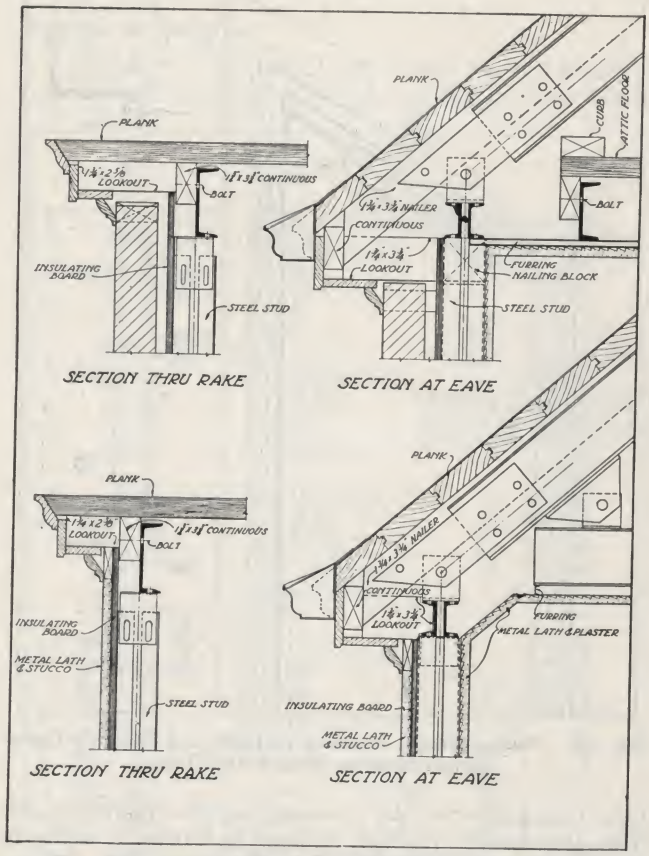


Fig. 63. Typical Roof Details Showing Blocking

Fig. 62. Roof Framing with Nailing Strips Ready for Planking
Brandon Smith & Harold Rief, Architects, Pittsburgh, Pa.

Fig. 64. Completed House (See Fig. 62)
Note various roof treatments successfully handled with steel framing

Roof trim is attached to the eaves and rakes by means of wood blocks and lookouts attached to the rafters, studs or plates. Typical details are shown in Fig. 63. Other details are available on request for built-in gutters, open rafter cornices, dormers, porches, and similar elements. Special details are developed to provide for any type of roof detail which the designer may wish to employ.

Continued on next page

(5) Doorways and Windows

The structural framing of door and window openings consist of Mac-Mar Steel Studs set with the channels facing toward the opening, as shown in Fig. 65. The attachment of door casings and trim is made to wood nailing blocks (No. 501) which are cut to fit within the stud channel where they are held in place by nails driven through the side perforations.

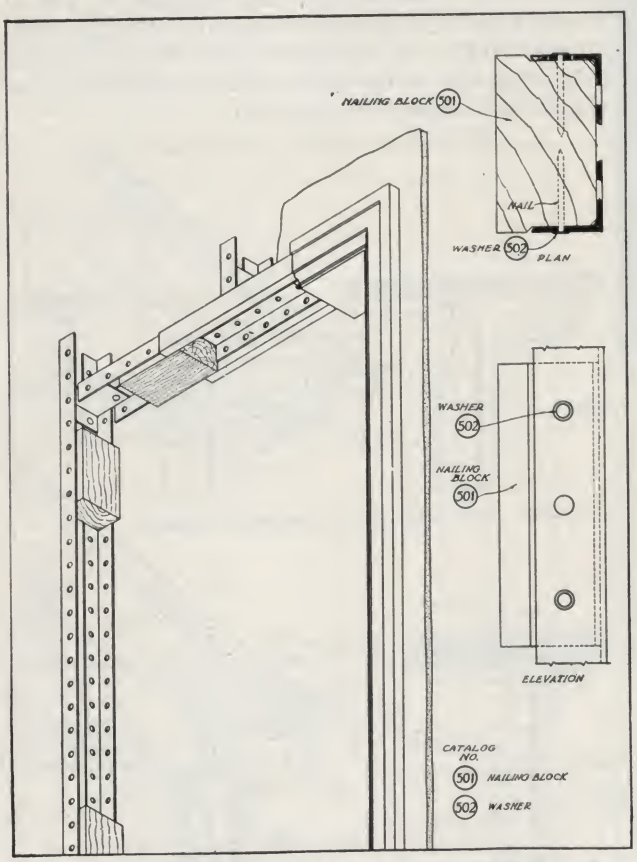


Fig. 65. Nailing Blocks Installed in Door and Window Openings to Receive Frame and Trim

These blocks are deeper than the studs, allowing for the side nailing of trim and the face nailing of frames as shown.

Wood and metal windows are installed in window openings, using similar blocking.

Typical details are shown in Figs. 66 and 67. Other details available on request.

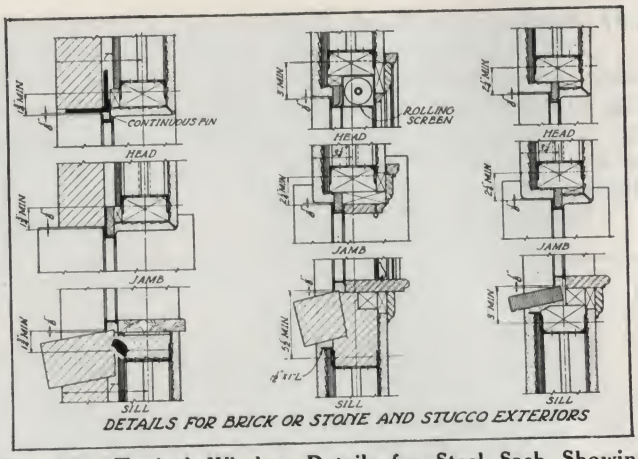


Fig. 66. Typical Window Details for Steel Sash Showing Methods of Blocking to Steel Frame

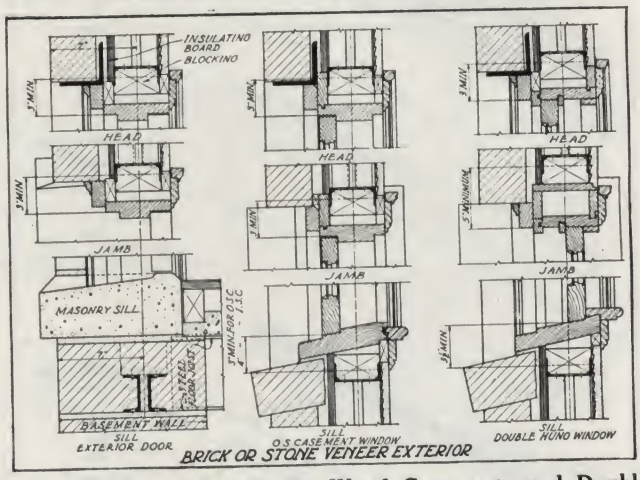


Fig. 67. Typical Details for Wood Casements and Double Hung Windows, Showing Blocking

(6) Interior Trim and Cabinet Work

All interior wood trim, including baseboards, chair rails, picture moulds, wood cornices, etc., is nailed in place in usual manner to wood grounds (No. 601) previously applied to the frame. These wood grounds are machine drilled and countersunk on 2-in. centers to correspond to standard spacing of studs or other members. Either expanding nail No. 201 or a key bolt, No. 221, is used for attachment of ground to studs, a simple process which is very rapid and economical. These details shown in Fig. 69; Fig. 70 gives details for other types.

Fig. 68. Wood Trim May Be Employed As Freely in Mac-Mar Steel Framing As in Wood Construction

HOW TO BUY MAC-MAR STEEL FRAMING

Mac-Mar Steel Framing is sold to builders, with or without erection, by more than one hundred twenty-five distributors of the Steel Frame House Company located in all of the principal centers of the United States. Write to the Steel Frame House Company, Pittsburgh, Pa., for the name and address of your nearest distributor or for direct quotations which will be submitted to you through the local representative. When seeking estimates or proposals, submit complete architectural plans of the building, including plans or diagrams showing all plumbing and heating layouts.

Estimates and quotations are cheerfully furnished without obligation.

Continued on next page

COST AND SERVICE

Cost of Mac-Mar Steel Framing

Because of the superior construction which Mac-Mar Steel Framing affords, including the use of masonry facings, fireproof concrete structural floors, metal lath and other fireproof plaster bases, the cost of a Mac-Mar Steel Frame building may range from 7% to 10% above the cost of other constructions but without these fireproof details of construction. It should be remembered that the cost of the frame itself adds only 2% or 3% to the cost of the building as compared with wood framing, and the advantages gained are obviously worth the difference. The cost of laying concrete floors or building masonry facings, and of using metal or wire lath as against non-fireproof materials may be readily figured by any experienced builder.

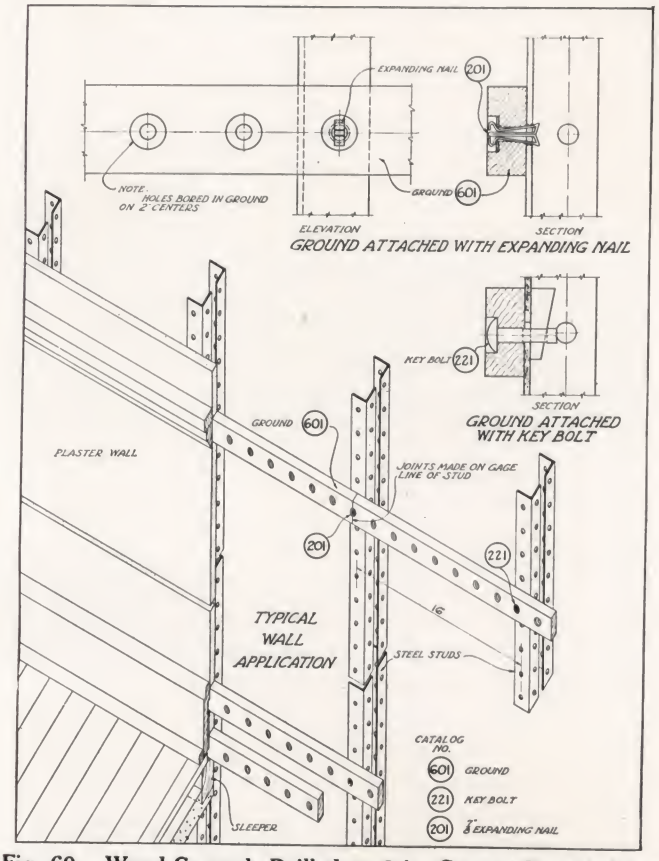


Fig. 69. Wood Grounds Drilled on 2-in. Centers Provided for the Rapid and Easy Attachment of All Types of Wood Trim

Estimating Costs

Any builder, employing Mac-Mar Steel Framing, should keep these considerations in mind when completing his estimates. The Steel Frame House Company, through its nearest representative, will give a fixed price bid for the structural framing with or without erection. The builder can estimate for himself the cost of concrete floor construction. All other details conform to standard building practices with wood framing. Foundations are identical, wall construction is normal, and the labor required to attach other building materials to the steel frame may be figured the same as for nailing to wood construction. This is due to the fact that the attachment devices and methods of construction developed by the Steel Frame House Company have been so simplified and are so rapid and easy that workmen quickly acquire the necessary facility to make these installations without added labor cost.

Service to Builders

The Steel Frame House Company will supply an experienced traveling supervisor to instruct the builder and his crew in the erection of Mac-Mar Steel Framing and in the application of various types of building materials. Where necessary this supervisor or a local representative will visit the job from time to time until the builder is thoroughly familiar with all details.

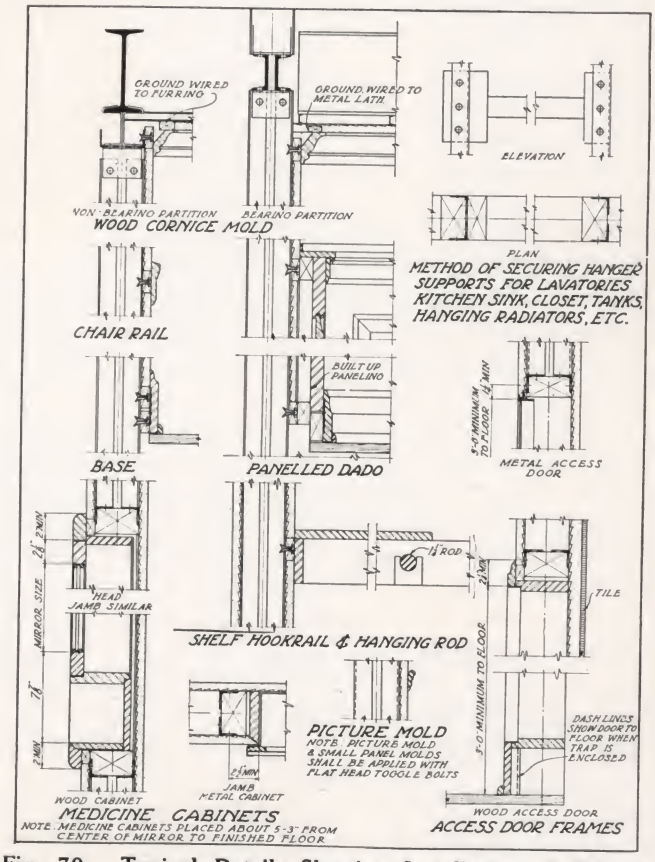


Fig. 70. Typical Details Showing Installation of Cabinet Work, Paneling, etc.

Special details are provided to meet unusual conditions

Literature and Data Sheets

The condensed instructions for building with Mac-Mar Steel Framing contained in these pages are fully amplified and developed in other publications available upon request. Write to the Steel Frame House Company for complete literature.

Remember that when you order a Mac-Mar Steel Frame, all engineering work is done by the Steel Frame House Company, which also supplies complete construction diagrams, framing details, schedules of materials and detailed instructions for assembling and finishing.

THE INVESTMENT VALUE
of
MAC-MAR STEEL FRAMING

STEEL has invaded the field of minor building construction, including modern homes, apartments, garages, shops, filling stations, schools, and hospitals, not for the sake of novelty, but wholly because steel has structural qualities possessed by no other material. The structural steel construction employed for skyscrapers and other great buildings has proved its worth through many decades of usage. The adaptation of light structural steel units to the construction of minor buildings brings to them the same qualities of strength, durability and rigidity, fire-safety and lightning protection which larger buildings possess.

MAC-MAR STEEL FRAMING

In addition, Mac-Mar Steel Framing eliminates the usual causes of plaster and stucco cracks. It is vermin-proof, free from distortion through shrinkage or warping and it possesses remarkable qualities of soundproofing and heating insulation when employed in the manner recommended by the manufacturer.

Higher Mortgages

It is noteworthy that one of the greatest lending companies in the United States has examined every type of steel framing for minor buildings and has given its full approval only to Mac-Mar Steel Framing. Upon the completion of this survey, its experts recommended a 10% higher loan appraisal for Mac-Mar Steel Frame buildings than would be granted to a similar building built with other construction.

Marketability

Mac-Mar Steel Frame homes may be remodeled without difficulty, for all members are so fabricated as to permit the attachment of additional structural elements at any point. Parts can be taken down if necessary and the frame re-arranged or re-built with practically the same ease as wood construction.

More than 160 Mac-Mar Steel Frame buildings were erected prior to January 1, 1930. Owners have lived in Mac-Mar Steel Frame houses long enough to test and prove their superior qualities.

The features they have reported as having the greatest appeal are these: Absolute freedom from plaster cracks and injury to decorations; entire confidence in their fire-safety; remarkable rigidity and soundproofness; unusual acoustical qualities improving the sound of musical instruments, radio and voices; low heating cost due to the extreme weather-tightness and insulating qualities of walls and roof; assurance of safety against lightning; and negligible maintenance and upkeep costs.

What other construction affords such sales features as Mac-Mar Steel Framing?

Protected Investments

Mac-Mar Steel Framing protects the owner's investment against depreciation, loss from fire or lightning and obsolescence which may result from the trend toward safer and more permanent construction.

Investment builders will find these features of exceptional value for the development of low-cost, fireproof apartment buildings, stores, shops, passenger vehicle parking garages, and other similar commercial and investment structures up to three stories in height which require floor loads not exceeding 100 lb. per sq. ft. Mac-Mar Steel Frame elements may be used with structural steel for the development of taller buildings.

Tax-payer buildings, erected with Mac-Mar Steel Framing, have a substantial salvage value, for when the masonry facing and plaster work are removed, the frame can be taken down and its parts used again.

Mac-Mar Steel Framing protects your investment. Use it for all your homes and other buildings where formerly you employed non-fireproof construction.

STEEL FRAME HOUSE COMPANY

A Subsidiary of McClintic-Marshall Corporation

Makers of

MAC-MAR STEEL FRAMING

Main Office
PITTSBURGH, PA.

Distributors in
All Principal Centers

TRUSCON STEEL COMPANY

Manufacturers of Standardized Buildings

YOUNGSTOWN, OHIO

Offices and Warehouses in Principal Cities—For List see Our Page on Steel Windows

Products

STANDARDIZED BUILDINGS and STRUCTURAL STEEL.

For other Truscon Products, see pages in this edition of Concrete Reinforcing Steel, Steel Joists, Steeldeck Roofs, Steel Doors, Steel Windows, Metal Laths and Accessories as listed in Manufacturers' Index.

PRODUCTS OF TRUSCON

General

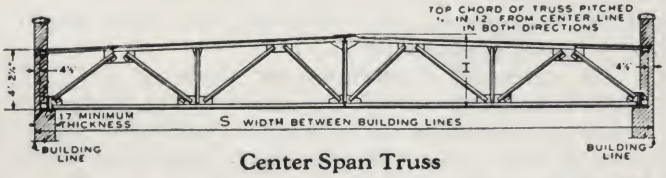
Architects will find Truscon Standardized Steel Buildings desirable for shops, warehouses, garages, service stations and numerous other industrial uses. They are furnished in all types and sizes and any desired arrangement of windows and doors. These buildings are permanent, having steel windows, steel doors and insulated Steeldeck roofs. Other types of wall construction and variations of types are available.

Service

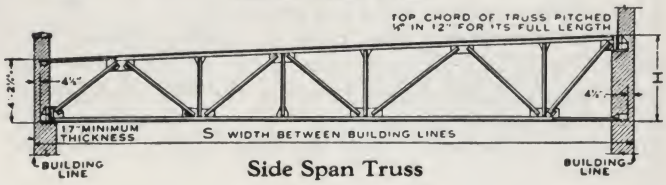
Truscon Engineers co-operate fully with architects in developing buildings which will satisfactorily meet requirements. Suggestions and quotations will be furnished without obligation.

Trusses

Truscon Structural Steel Trusses are designed and detailed to support standard roof loads in accordance with the best engineering practice and will satisfy requirements of all building codes. Trusses can be furnished for immediate delivery, eliminating all possibility of delay.



Center Span Truss



Side Span Truss

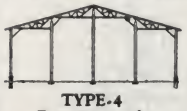
SERIES "A" Pitched Roof Types

TYPE-1
Clear Span

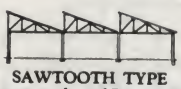
TYPE-2
Two Bays wide

TYPE-3
Three Bays wide

TYPE-3-M
Three Bays with Monitor.



TYPE-4
Four Bays wide

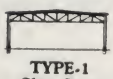


SAWTOOTH TYPE
any number of Bays wide

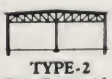
Type	Widths of buildings	
	Series "A" Pitched roof types	Series "B" Flat roof types
1 Clear span	8′, 12′, 16′, 20′, 24′, 28′	20′, 24′, 28′, 32′, 36′, 40′, 44′, 48′, 50′, 52′, 56′, 60′
2 Two bays	40′, 48′, 50′, 56′, 60′	40′, 48′, 56′, 60′, 64′, 80′, 100′, 120′
3 Three bays	56′, 60′, 64′, 68′, 72′, 76′, 80′, 84′, 88′, 96′, 98′, 106′, 108′, 116′	64′, 68′, 72′, 80′, 84′, 88′, 90′, 96′, 106′, 116′
3-M Three bays with monitor	60′, 64′, 68′, 72′, 76′, 80′, 84′, 88′, 90′, 96′, 100′, 106′, 108′, 116′	96′, 104′, 112′, 114′, 120′, 124′, 130′, 132′, 140′, 150′, 160′, 170′, 180′
4 and 4-M Four bays	86′, 100′, 112′	80′, 88′, 96′, 100′, 104′, 108′, 112′, 116′, 120′
Sawtooth	Any multiple of 28′-0″	

Lengths of all buildings: multiples of 2 ft.

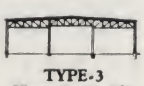
SERIES "B" Flat Roof Types



TYPE-1
Clear Span



TYPE-2
Two Bays wide



TYPE-3
Three Bays wide

TYPE-3-M
Three Bays with Monitor

TYPE-4
Four Bays wide

TYPE-4-M
Four Bays with Monitor

CENTER SPAN TRUSSES

Width between building lines "S"	Truss mark	Center height "H"
32′	C-32	4′ 10¼″
36′	C-36	4′ 11¼″
40′	C-40	5′ 0¼″
44′	C-44	5′ 1¼″
48′	C-48	5′ 2¼″
50′	C-50	5′ 2¾″
52′	C-52	5′ 3¼″
56′	C-56	5′ 4¼″
60′	C-60	5′ 5¼″

SIDE SPAN TRUSSES

Width between building lines "S"	Truss mark	Height at high end "H"
32′	S-32	5′ 6¼″
40′	S-40	5′ 10¼″
50′	S-50	6′ 3¼″
60′	S-60	6′ 8¼″

MAXIMUM SPACING OF TRUSCON TRUSSES (ALL SPANS) FOR VARIOUS TOTAL LOAD REQUIREMENTS

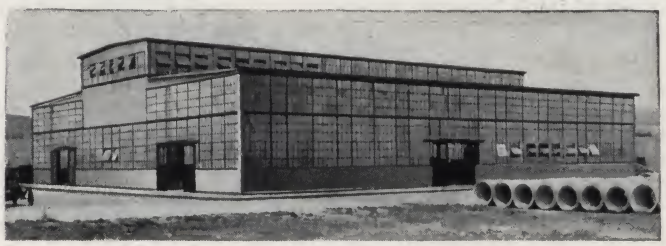
Maximum total safe load	Truss spacing
40 lbs. per sq. ft.	24′
45 lbs. per sq. ft.	22′
50 lbs. per sq. ft.	20′
55 lbs. per sq. ft.	18′
60 lbs. per sq. ft.	16′
70 lbs. per sq. ft.	14′
80 lbs. per sq. ft.	12′

Note: Maximum total safe loads given above are the required live loads plus the dead loads.

LINES OF PURLINS REQUIRED FOR THE DIFFERENT WIDTHS OF TRUSSES

Truss	Number of purlins	Truss	Number of purlins
C-32	6	C-56	10
C-36	6	C-60	10
C-40	6	S-32	6
C-44	6	S-40	7
C-48	8	S-50	9
C-50	8	S-60	11
C-52	8		

Note: The above table includes no purlins at the eave line. If these are required, increase the number of lines of purlins by two.



CREX PATENT COLUMN CO.

GENERAL OFFICE AND WORKS
2300-2310 South Springfield Avenue
CHICAGO, ILL.

TELEPHONE
LAWNDALE 2633, 2634, 2635

BRANCHES
MILWAUKEE, WIS., 951-53 Thirtieth Street
DECATUR, ILL., Box 299
LOUISVILLE, KY., 151 South 5th Street
TOLEDO, OHIO, Summit and Sandusky Streets
AKRON, OHIO, 407-8 Everett Building

Product

Manufacturers of CREX PATENT COLUMNS.

Construction

Crex Patent columns consist of an outer shell of steel filled with concrete, and only the best materials are employed in their manufacture.

Especial care is taken in filling these columns so that the concrete filling shall be perfectly solid and uniform throughout, thus obtaining the full strength of a solid concrete interior.

The caps and connections are made of steel, of sufficient strength to receive the superimposed loads.

CREX PATENT COLUMN CO. holds the original patent for an all-steel cap. The cap being entirely of steel, its strength can be reliably computed.

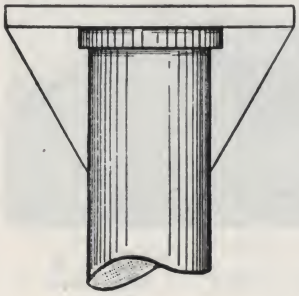
The connections are made in such a manner that only a steel plate separates the shaft of the lower column from the one above, securing the full strength of the column at the connection. Crex columns can be furnished in about one-fifth the time required for other columns.

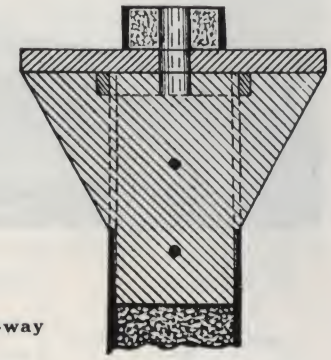
Adaptability

Crex Patent columns are used extensively in factories, apartment buildings, stores, etc.

Safe Loads

Tables of safe loads in thousands of pounds for Crex light weight and heavy weight Patent columns are shown below.





Crex Patent All-steel Two-way Brackets

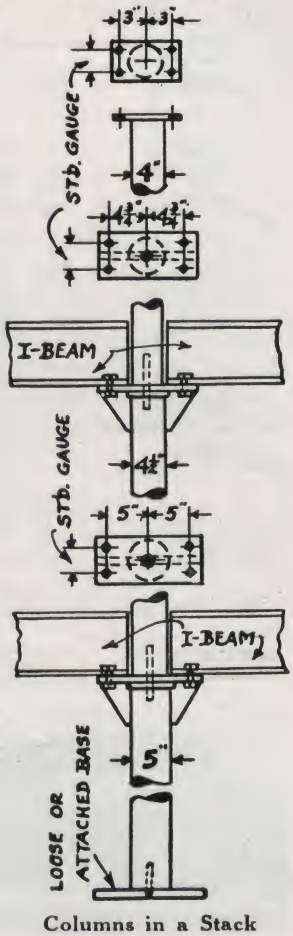
SAFE LOADS COMPILED BY THE PITTSBURGH TESTING LABORATORIES FROM ACTUAL TESTS MADE BY THEM OF CREX PATENT COLUMNS

Outside diam. pipe, in.	Radius of gyration, in.	Thickness of steel shell, in.	Area of steel shell, sq. in.	Wgt. of steel shell, per ft., lb.	Area of concrete, sq. in.	Weight of column per ft., lb.	Safe load in thousands of pounds for unbraced length of column, ft.								Maximum length of column
							6	8	10	12	14	16	18	20	
Light Weight Crex Columns															
3½	.875	.120	1.27	4.33	8.34	13.02	26.0	22.1	18.3						11′-8″
4	1.00	.134	1.63	5.53	10.94	16.9	35.6	31.2	26.8	22.4					13′-4″
Heavy Weight Crex Columns															
3½	.875	.216	2.23	7.58	7.39	15.27	37.8	32.2	26.5						11′-8″
4	1.00	.226	2.68	9.11	9.88	19.40	49.1	43.1	37.0	30.9					13′-4″
4½	1.125	.237	3.17	10.79	12.73	24.05	61.7	55.2	48.7	42.3	35.8				15′-0″
5	1.25	.247	3.69	12.54	15.95	29.15	75.6	68.6	61.7	54.8	47.8	40.9			16′-8″
5½	1.39	.258	4.30	14.62	20.00	35.45	92.2	84.8	77.4	70.0	62.6	55.2	47.7		18′-6″
6⅝	1.656	.280	5.58	18.97	28.89	49.07	128.4	120.0	111.7	103.4	95.0	86.7	78.3	70.0	22′-0″
7⅝	1.906	.301	6.92	23.54	38.74	63.89	167.3	158.0	148.8	139.6	130.5	121.4	112.1	102.8	25′-5″
8⅝	2.156	.322	8.40	28.55	50.02	80.65	211.1	201.1	191.0	180.9	170.8	160.8	150.7	140.6	27′-11″
9⅝	2.406	.342	9.97	33.91	62.79	99.31	259.2	248.2	237.3	226.4	215.4	204.5	193.5	182.6	31′-3″
10¾	2.687	.366	11.94	40.59	78.82	122.69	319.7	307.8	296.0	284.0	272.1	260.2	248.2	236.4	35′-10″
12¾	3.187	.375	14.58	49.56	113.10	167.36	421.7	408.7	396.0	382.8	369.8	356.9	343.9	330.7	42′-6″

Safe loads shown above are derived from the formula:

$$\text{Safe Load} = \left(\frac{Ac}{12} + As\right)\left(19200 - 72\frac{L}{R}\right)$$

Where Ac = Sectional area of concrete in sq. ins.
As = Sectional area of steel pipe in sq. ins.
L = Length of column in ins.
R = Radius of gyration of combined sections
$\frac{L}{R}$ is never to be greater than 160
Weight of concrete to be 150 lb. cu. ft.



Columns in a Stack

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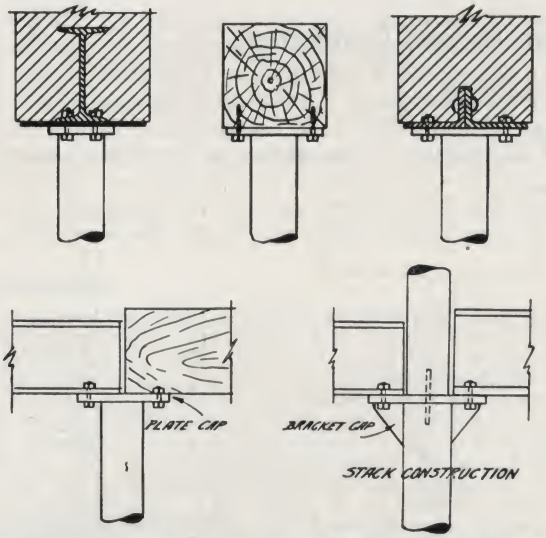
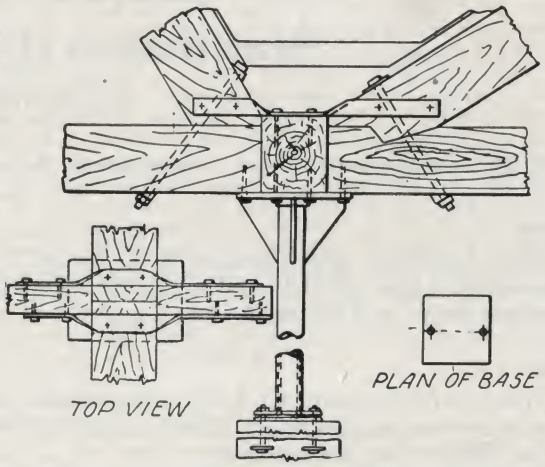


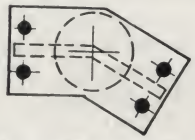
Various Types of Construction Where Crex Patent Columns Can Be Used as Supports



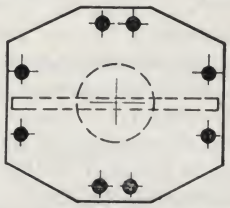
Details Showing Installation of Crex Columns in Type of Building Known as Sawtooth Construction

One-way Bracket Cap

Two-way Bracket Cap

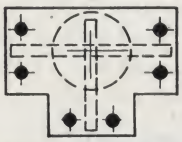


Angle Bracket Cap

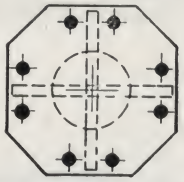


Two-way Bracketed Cap for Wood Trusses with Brackets Under the Trusses

Brackets may be had under the struts also

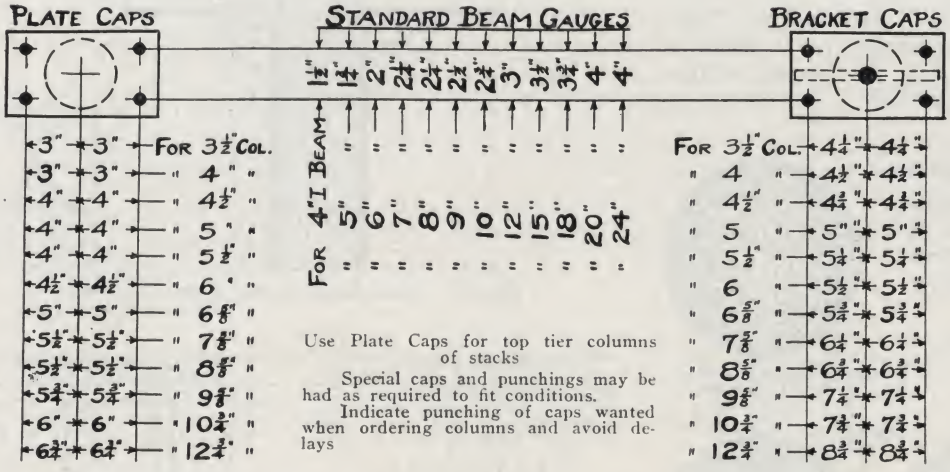


Three-way Bracket Cap



Four-way Bracket Cap

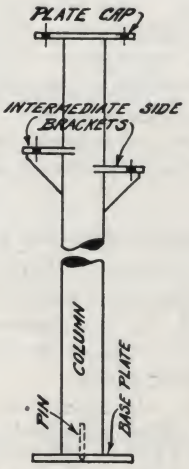
The above plans show different styles of caps and their respective names. All caps without brackets are called *plate caps*



Use Plate Caps for top tier columns of stacks

Special caps and punchings may be had as required to fit conditions.

Indicate punching of caps wanted when ordering columns and avoid delays



Column Provided with Intermediate Side Brackets

Approval

Crex Patent columns are approved by the building departments of all large cities.

Installations

Crex columns have been installed in thousands of buildings in various parts of the United States. This fact gives proof of the economy, reliability and fine appearance of Crex columns.

Prices, etc.

Quotations and any additional information furnished on request.

Catalogue

Will furnish on request catalogue showing different methods of design and uses of Crex Patented Columns in various classes of building construction.

ESTABLISHED 1897

LALLY COLUMN CO.

Manufacturers of Concrete Filled Columns

CAMBRIDGE, MASS.

FACTORIES

CHICAGO, ILL., 4001 Wentworth Avenue CAMBRIDGE, MASS., Erie and Albany Streets BROOKLYN, N. Y., 211-249 Lombardy Street

Products

LALLY COLUMNS with patented Steel Connections and Bracketed Caps securely fastened, making a rigid tie between beams and columns.

Patents

Various improvements on Lally columns are covered by numerous patents under different dates extending from 1898 to the present time.

Infringements will be prosecuted.

Manufacturing Process

Lally Columns are manufactured by the LALLY COLUMN CO., INC., of New York, the LALLY COLUMN CO., Cambridge, Mass., and the LALLY COLUMN CO. of Chicago, representing an annual production of hundreds of thousands of columns.

The column is a *shop-made* unit manufactured under the most thorough and careful supervision and inspection, and is shipped to the job ready for erection.

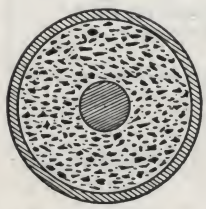
Standard tested mild steel pipes, 3½ to 12¾ inches outside diameter, are cut to the lengths required by plans and specifications, slotted to receive beam connections and splice plates, set up perpendicular on level bases and held in a vertical position by lateral supports. A machine-mixed stone concrete fill is deposited in the shell and, to insure dense concrete, shaft is agitated before initial set takes place by an electric hammer operated on exterior of pipe. The vibration compacts the concrete, liberates the confined air and eliminates all air holes and cavities in the aggregate. The resulting material is of considerably greater compressive strength than ordinary cast-in-the-field concrete. When seasoned, the column is lifted out of position, sandpapered on the exterior surface to remove all cement, and then painted.

Reinforcements for Lally Columns

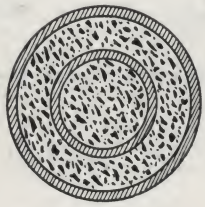
To meet various requirements, including the amount of load to be carried, Lally columns can be reinforced as shown in the accompanying illustrations.

In all cases the concrete is *compressed,* eliminating all air voids (Fig. 1).

Outer Shell Filled with Compressed Concrete



Single Steel Bar Reinforcement

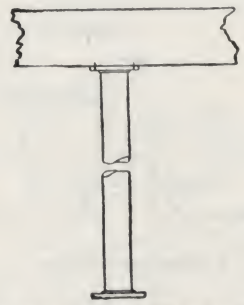


Pipe Reinforcement

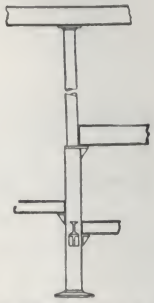
Four Angle Iron Reinforcement

Fig. 1. Sectional Views Showing Manner of Reinforcement of Lally Columns

Note: The angle iron reinforcement above makes a compact fireproof column; column is designed so that load is carried by the four angle irons and concrete within radius of same; outer shell and outer concrete act as fireproofing, making a column practically indestructible



Plain, with Ordinary Plate for Wood Beam Connection



With Beam Supports at Different Elevations

Fig. 2. Types of Lally Columns

Bracket and Beam Support

Where one column sets over the other, our latest construction of bracket and beam support is used, as shown in Fig. 3. This style of cap consists of crown plate and steel bracket inserted through slots in column shaft and firmly affixed thereto.

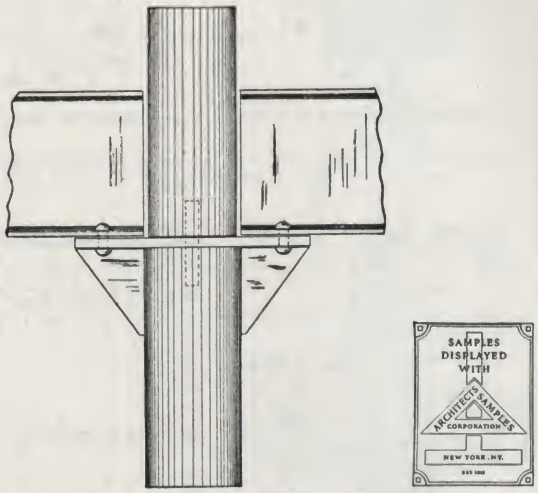


Fig. 3. Steel Bracket and Beam Support

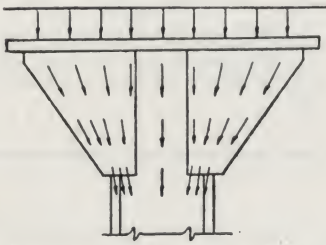


Fig. 4. Steel

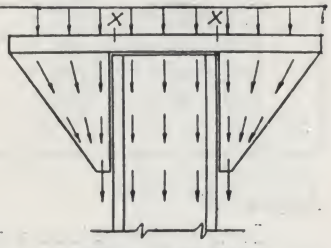


Fig. 5. Cast Iron

Bracket Caps

Fig. 4. Cross section of a typical Lally steel bracket cap showing diagrammatically with arrows how all the load on the cap plate is distributed to the column, eliminating the chance of failure due to improper distribution of the load

Fig. 5. Cross section of a typical loose cast iron cap showing by means of arrows that only part of the load is distributed directly to the column, thereby causing failure by shear at the points marked "x." Load between points "x—x" is the only load carried by the column

Continued on next page

Approvals

The Lally column is endorsed by engineers throughout the country, and approvals have been granted for its use by all the leading city building departments after extensive tests and investigations. Its adaptability to all forms of building construction, its economy in first cost and in floor space occupied, its speed of erection, as well as its strength, durability and practical performance, have been demonstrated by successful and uniformly satisfactory use under especially severe conditions.

Fire Resistance

The value of the Lally column in fire resisting construction has been frequently demonstrated both in actual fires and scientifically conducted fire tests. This type of column section, without additional exterior protection, has withstood the flames and high temperatures of some of the greatest fires; such as the Chelsea conflagration in April, 1908, the Salem fire in June, 1914, the Standard Oil fire at Greenpoint, N. Y., in September, 1919, and the fire in the Edison Phonograph Works at West Orange, N. J., in December, 1914. In this latter fire, large pieces of steel and cast iron melted in the same building in which concrete-filled pipe columns were used and there were evidences of exposed concrete having been fused. The defect produced on the concrete-filled steel pipe columns was a slight lateral bend which was generally less than 1 inch. A complete report on the fire in the Edison Phonograph Works was prepared under the joint auspices of the National Fire Protection Association and the National Board of Fire Underwriters and gives in detail the effects of fire on the various materials which entered into the construction.

In the Underwriters' Laboratories at Chicago, Ill., 1917-1919, two types of Lally columns were tested in a series of fire tests of structural steel, reinforced concrete, steel pipe and cast iron columns. The Lally columns were unprotected on the exterior surface. These columns were tested under Standard time-temperature fire curve conditions while supporting loads in excess of the recommended design loads. As a result of the tests, the comparative fire resisting ratings of Lally columns were determined as 25 minutes for the unreinforced, which was 11% overloaded during the test, and 45 minutes for the reinforced section, which was 3% overloaded during the test. Actual test runs were 36 minutes and 1 hour 11¾ minutes, respectively. Compared to these ratings, unprotected structural steel and round cast iron columns were granted tentative ratings of only 10 and 20 minutes, respectively. Lally column ratings would probably have been still further increased if the test loads had not exceeded the safe working values recommended.

Safe Loads

We call attention to a material change in the safe loads, as shown in the table below, increasing the accepted safe loads for Lally columns. Please bear in mind that when a project is designed for Lally columns according to this strength list *they* should be specified, and no other concrete filled column substituted unless the sizes are increased to a diameter that will be equal in carrying capacity to the genuine Lally columns.

References

The names and addresses of the principal purchasers and satisfied users of Lally columns will be furnished on request.

SAFE LOADS FOR LALLY CONCRETE FILLED COLUMNS IN THOUSANDS OF POUNDS

Limit of Length=40 Diameters ($l/r=120$) $P=(Ac+12\,As)\ (1600-24\,l/d)$

	Diam. of col., in.	Weight per ft., lb.	Area of steel, sq. in.	Area of concrete, sq. in.	Unbraced length of column in feet															*Max. length, ft.
					6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Light weight	3½	13	1.27	8.35	26.1	24.2	22.2	20.3	18.3	16.4	14.5									11.91
	4	17	1.63	10.94	35.6	33.4	31.2	29.0	26.8	24.6	22.4	20.2								13.71
Heavy weight	3½	15	2.23	7.39	37.9	35.1	32.3	29.4	26.7	24.0										11.64
	4	20	2.68	9.89	49.2	46.1	43.1	40.1	37.0	33.9	30.9	27.9								13.37
	4½	24	3.17	12.73	61.8	58.5	55.3	52.0	48.8	45.5	42.3	39.0	35.8	32.5						15.10
	5	29	3.69	15.95	75.6	72.0	68.6	65.2	61.7	58.2	54.7	51.3	47.8	44.3	40.9	37.4				16.83
	5½	36	4.30	20.01	92.1	88.3	84.6	80.8	77.1	73.3	69.6	65.8	62.1	58.3	54.6	50.8	47.1	43.3		18.78
	6⅝	49	5.58	28.89	128.3	124.2	120.0	115.8	111.7	107.5	103.4	99.2	95.0	90.9	86.7	82.6	78.4	74.2	70.1	22.45
	7⅝	64	6.92	38.74	166.0	161.4	156.9	152.3	147.8	143.2	138.6	134.1	129.7	125.0	120.5	115.9	111.4	106.8	102.3	25.92
	8⅝	81	8.40	50.03	211.1	206.1	201.1	196.1	191.0	186.0	181.0	175.9	170.9	165.9	160.8	155.8	150.8	145.8	140.7	29.38
	9⅝	100	9.97	62.79	259.2	253.8	248.3	242.8	237.4	231.9	226.5	221.0	215.6	210.1	204.6	199.2	193.7	188.3	182.8	32.84
	10¾	123	11.91	78.86	319.1	313.1	307.2	301.3	295.4	289.4	283.5	277.6	271.6	265.7	259.7	253.8	247.9	241.9	236.0	36.74
	12¾	169	14.58	113.10	421.9	415.4	408.8	402.3	395.8	389.2	382.8	376.2	369.7	363.2	356.7	350.1	343.6	337.1	330.6	43.77

*Radius of gyration equals ⅓ quantity in this column.

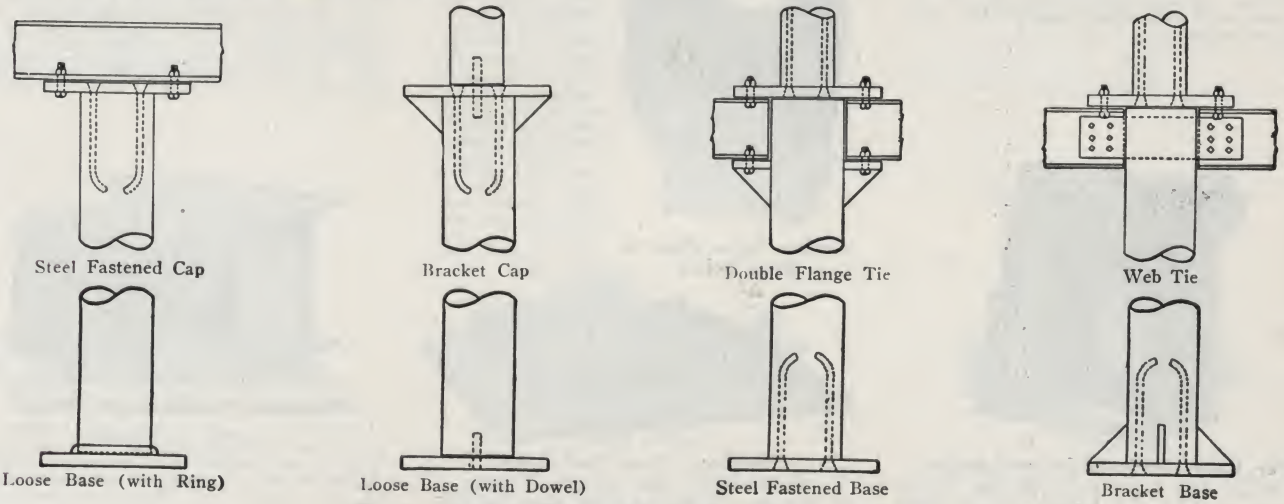


Fig. 6. Various Types of Lally Steel Caps and Bases

Specify Lally columns complete with steel caps and bases as manufactured by Lally Column Co.

THE DUPLEX HANGER CO.

East 53rd Street and Lakeside Avenue
CLEVELAND, OHIO

BRANCH OFFICES

NEW YORK, N. Y., 16 Warren Street
PHILADELPHIA, PA., 2216 W. Columbia Avenue
CHICAGO, ILL., 6310 Wentworth Avenue
NEW ORLEANS, LA., 1508 Masonic Temple Building
BOSTON, MASS., 141 Milk Street
PORTLAND, ORE., 271 Hawthorne Street

Products

"Duplex" Joist, Wall, Concrete Block and I-beam Hanger; "Duplex" Post Caps, Post Bases, Wall Plates and Wall Boxes, for warehouses, factories, heavy mill construction and all other wood constructed buildings.

Also T & B Road Torches.

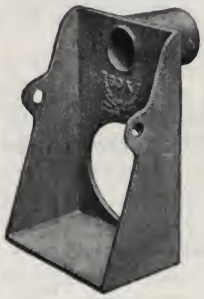
For Incinerators, see Duplex Incinerator Division in Manufacturers' Index.

When Specifying

"Duplex" hangers and post caps are designed with a large factor of safety to carry the timbers for which they are intended. If architects and engineers will, when using hangers and post caps, specify "Duplex," the proper hangers and post caps for the timbers will be furnished.

Specifications are to be included in carpentry specifications.

POST CAPS AND BASES



"Duplex" Hangers, Single Joist Hangers

Made of malleable iron and every hanger is thoroughly tested.

The best and most economical hangers for timber framing.

"Duplex" Joist Hangers reduce the shrinkage of joists to a minimum

"Duplex" Wall Box

"Duplex" Wall Hanger, Extra Heavy

"Underwriters' type." For heavy mill construction.

Steel wall hangers have no equal in carrying timbers clear of the wall. Distribute the load perfectly over the bearing surface of the masonry. Furnished for standard and extra heavy construction

R & L Joist Hanger

The best hangers for the heaviest type of mill construction. By using this type of hanger, the entire building is tied together laterally. No other method of construction does this. Made in two parts and can be adjusted to fit the various timbers for which they are intended

"Duplex" Steel Post Caps—Four-way Construction

"Duplex" Post Caps are made of mild, open hearth steel and consist of three pieces: a bearing bracket and two side plates bolted together with four heavy bolts. Engineers who have investigated and used this cap are unanimous in declaring it to be the best design for rigid construction. Tests have fully proven the great strength of this design and that it is not possible to break the cap when even more than six times the ultimate safe load of the timber is applied.

These caps are furnished for 1-way, 2-way, 3-way and 4-way construction and may be had for timbers larger than the post

"Duplex" Concrete Block Wall Joist Hanger

The best hanger for concrete block construction. It is made with a larger bearing plate than our ordinary wall hangers so as to distribute the load over a greater area of the concrete block. Very practical where it becomes necessary to frame joists into old brick walls or party walls. Avoids the cutting of a large hole

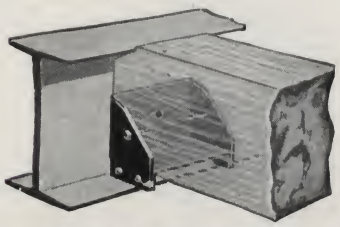
Girder Same Size as Post Below

For Very Heavy Mill Construction

Heavy duty joist hangers combine all the features of the R & L hangers, but are made in one piece, instead of pairs

"Duplex" Steel Post Bases

Are made of steel plates and angles to fit the post. More economical than cast iron plates



"Duplex" I-beam Shelf Hanger

I-beam box and I-beam shelf hangers are noted for being one of the most economical devices for framing wood joists to I-beams. All of the load is carried on the lower flange of the I-beam, this being the only correct method

THE IDEAL HANGER COMPANY

Manufacturers of Timber Fittings for Mill Type Buildings

1270 East 53rd Street
CLEVELAND, OHIO

Products

IDEAL JOIST HANGERS:

Wall Hangers, Wall Boxes and Metal Lumber Hangers.

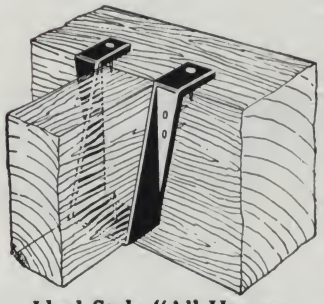
POST CAPS.

POST BASES.

Also Barn Framing Fittings.

Service

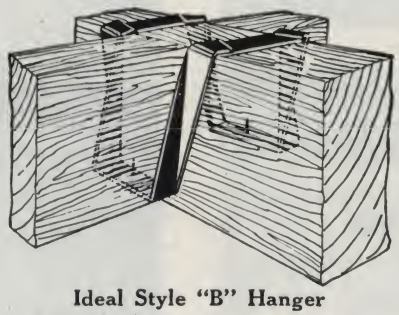
Ideal post caps, Ideal hangers and other Ideal products are made of the best material obtainable by competent workmen on modern machines. Prompt shipments are made from stock. Estimates and quotations cheerfully furnished and designs submitted by engineers who are specialists in timber construction.



Ideal Style "A" Hanger

A single hanger of the best grade open-hearth steel, formed cold to shape best adapted to framing timbers of every size. Fastens to timber with spike or lag screw.

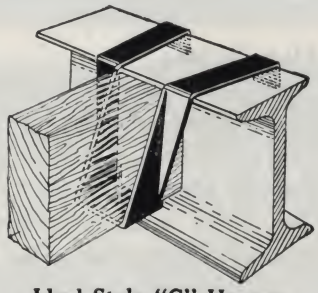
2x6-in. up to 12x16-in. hangers in stock



Ideal Style "B" Hanger

A double hanger for use where joists frame opposite each other on a wood girder or I-beam. Made of two single hangers with riveted strap connections, the strongest possible construction.

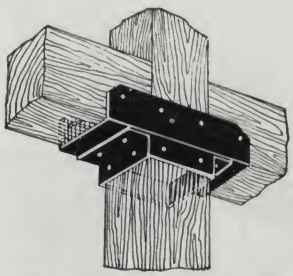
2x6-in. up to 12x16-in. hangers in stock



Ideal Style "C" Hanger

Where timbers are framed to I-beams, this hanger with the arms crossing the top of the girder provides safest and most economical construction. Also used with wood girders.

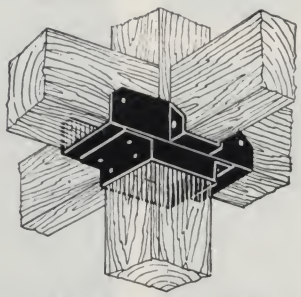
2x6-in. up to 12x16-in. hangers in stock



Ideal Steel Post Cap, No. 2

Easily installed—no framing necessary. Channel of open-hearth steel riveted to socket, provides rigid construction.

6x6-in. up to 16x16-in. post caps in stock

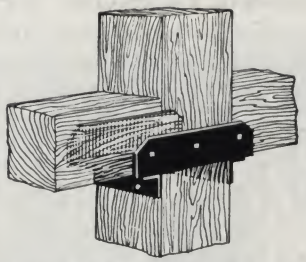


Ideal Steel Post Cap, No. 2

(Showing 3 and 4-way Construction)

Built with the same attention to engineering standards as other Ideal Framing Products.

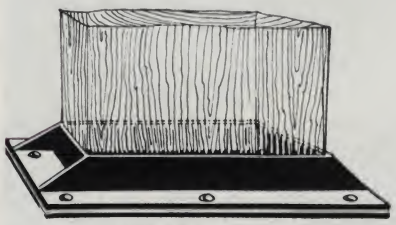
The brackets on the side of the cap are riveted thereon to carry the beams framing in at the side, and are placed so the girder and beams will be flush on top, unless otherwise noted



Ideal Steel Post Cap, No. 3

The strongest light weight post cap made. Meets every demand for framing posts and girders under moderate loads.

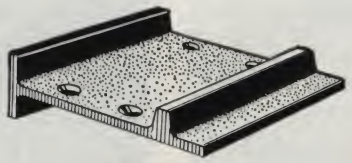
6x6-in. up to 12x16-in. post caps in stock



Ideal Post Bases

A heavy steel plate, with angles riveted thereon, furnishes the best possible socket for timber posts.

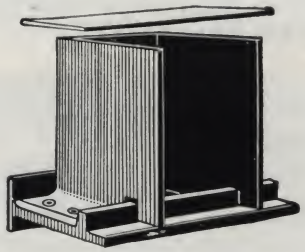
6x6-in. up to 16x16-in. in stock



Wall Plates

One-piece construction of malleable iron, far superior to cast iron. Note features of superiority in use.

Carried in stock in all sizes



Wall Box

To anchor beams in brick walls, and to protect them against dry rot. Malleable plate and steel box riveted thereto.

In stock in all sizes

JAMES MANUFACTURING COMPANY

Manufacturers of Equipment and Ventilation for the Cow, Horse, Hog and Hen Farmer

FORT ATKINSON, WIS. ELMIRA, N. Y. MINNEAPOLIS, MINN.

WESTON, ONTARIO, CANADA: JAMESWAY, LTD.

For Cow Barns

Stalls for dairy cow, fat stock. Pens for calves, cows, bulls. Paddocks for outside. Water cups, automatic. Carriers: manure, feed, hay. Trucks: feed, milk, ration. Wood blocks for floors. Ventilation systems.

For Horse Barns

Stalls, open, box. Water cups. Carriers: manure, feed, hay. Wood block for floors. Ventilation systems.

For Hog Houses

Ventilation systems. Heating systems. Pens, troughs, feeders, waterers. Wood blocks for floors.

For Poultry Houses

Ventilation systems. Heating systems. Feeders, waterers, nests and other metal equipment. Baby chick equipment. Brooder stoves. Mammoth incubators.

Farm Building Materials

Tile for silos, buildings. Wood and metal window sash. Insulation. Supporting steel columns. Drains: gutter and manger.

Co-operative Engineering Service

Architects are invited to avail themselves of our layout service in connection with farm building plans. Without obligation or charge, a competent farm building engineer will confer with architects and offer suggestions, etc., as to equipment, ventilation, sanitation or related problems.

For the Architect

"Better Barns"—a 60-page bound book for the architect's library, on the essentials of modern farm building construction.

"The Jamesway Book"—a 160-page bound book. Covers in detail all Jamesway Equipment for the cow, horse, hog and hen.

"The Jamesway Barn Ventilation Book"—describes the three parts of Jamesway Ventilation and shows typical installations.

"The Jamesway Poultry House Ventilation Book"—covers poultry house ventilation.

Helpful information on arrangement, ventilation, and construction of modern farm buildings may be had by architects through the personal services of a Jamesway Engineer on 24 hours' notice without charge.

ESTABLISHED 1867

THE LOUDEN MACHINERY COMPANY

Modern Barn Equipment and Ventilating Systems

168 Broadway

FAIRFIELD, IOWA

BRANCH OFFICES

ALBANY, N. Y., 1047-53 Broadway
BOSTON, MASS., 1106 Old South Building
CHICAGO, ILL., 565 W. Washington Boulevard
DETROIT, MICH., 4-126 General Motors Building
NEW YORK, N. Y., 1710 Grand Central Terminal
PHILADELPHIA, PA., 1505 Race Street
PITTSBURGH, PA., 2122 Grant Building
ST. PAUL, MINN., 2282-88 University Avenue
SAN FRANCISCO, CAL., 98 Folsom Street
TOLEDO, OHIO, 2294 Albion Street

CANADIAN FACTORY, GUELPH, ONTARIO

Products

Complete EQUIPMENT for COW BARNS, HORSE BARNS and HOG HOUSES, including:

- Steel Stanchions
- Steel Stalls
- Steel Pens
- Water Bowls
- Manger Divisions
- Manure Carriers
- Feed Carriers
- Feed Trucks
- Manger Drains
- Gutter Drains
- Bull Staff
- Swinging Cranes
- Cork Brick
- Horse Stable Equipment
- Hog House Equipment
- Roof Windows
- Cupolas
- Hay Unloading Tools
- Barn Door Hangers
- Garage Door Hangers

VENTILATING SYSTEMS:

For barns, hog and poultry houses, creameries, cheese factories, etc. Two types—automatic natural draft (gravity) and automatic electric (power) systems.

Service

Louden field men are readily available for consultation or preliminary work.

Suggestive plans will be furnished by our draftsmen without charge. They will work in conjunction with architects or assume entire responsibility for the preparation of complete plans and specifications.

Our 212-page general catalogue gives detailed specifications and information on Louden Equipment.

THE SAMUEL J. CRESWELL IRON WORKS

Twenty-third and Cherry Streets
PHILADELPHIA, PA.

Products

ARCHITECTURAL WROUGHT and CAST IRON WORK, and GENERAL FOUNDRY WORK, including Columns, Stairways (straight and spiral), Wheel Guards, Standards, Manhole Doors and Frames, Fenders, Roadway Drain Grates and Frames, Vault Plates and Frames, Ash Pit Doors and Frames, Cleanout Doors and Frames, Trench Covers and Frames, Cesspools, Drain Gutters, Pavement Doors, Gates and Grilles, Post Caps, Railings, etc.

Facilities

THE SAMUEL J. CRESWELL IRON WORKS is one of the largest and best equipped plants in the vicinity of Philadelphia for the production of the various kinds of architectural wrought and cast iron work mentioned above. Further, this company is prepared to submit estimates, or designs and estimates, for any ornamental work for large or small buildings, etc., on short notice.

General Foundry Work

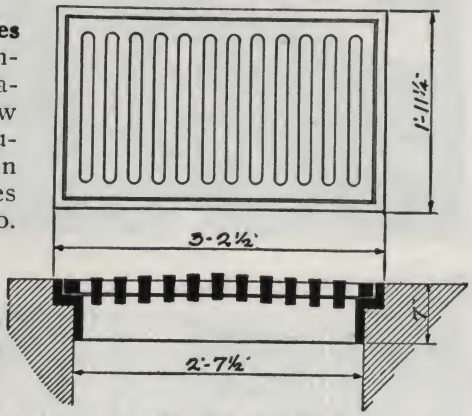
In addition to architectural work, a fully equipped foundry is prepared to produce special castings and do general foundry work, including cast iron ornamental or plain columns from stock designs (sent on request) or to architects' designs.

Stock Specialties

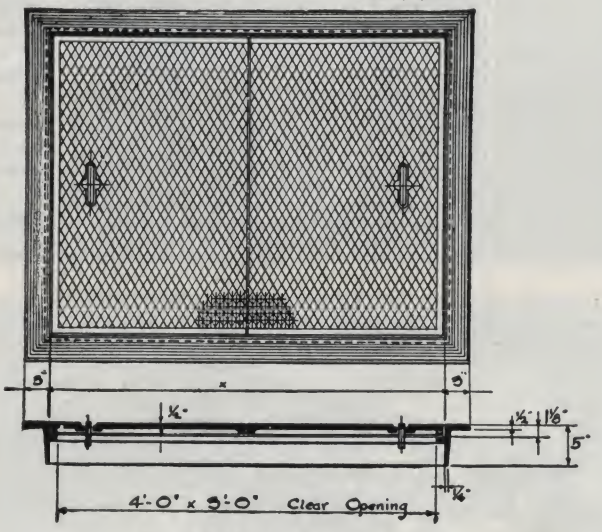
The accompanying illustrations show a few specialties regularly carried in stock. The prices quoted are f. o. b. Philadelphia.

Catalogue

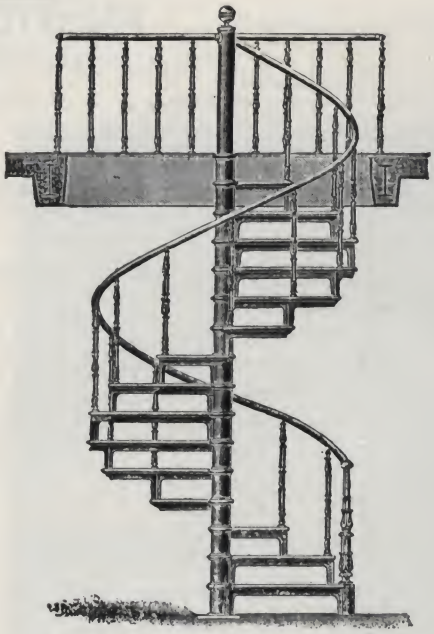
A catalogue illustrating the entire line, and discounts, will be sent on request.



No. 3 Sewer Inlet
Price, $22.00



No. 34 Manhole Cover
Price, $45.00. Extra heavy pattern, price, $54.00



Spiral Stairway
Following sizes stock pattern, 3'6", 4', 4'6", 5', 5'6" and 6' diameters. Any height

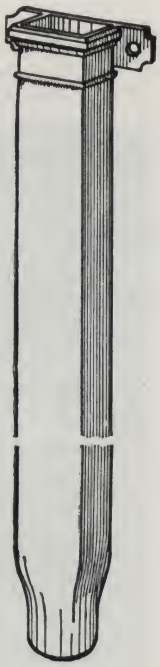
No. 15 Fender
9" projection
3' 5" high

Wall	Price
9"	$25.00
13"	25.50
18"	27.50
22"	30.00
24"	35.00

Can be made for walls to 36" thick.

Nos. 16 and 17 Corner Fenders

Design No.	Projection	Height	Price
16	9"	3' 5"	$10.00
17	9"	2' 8"	9.00
17A	14"	3' 0"	25.00
17B	8⅜"	2' 0"	9.00



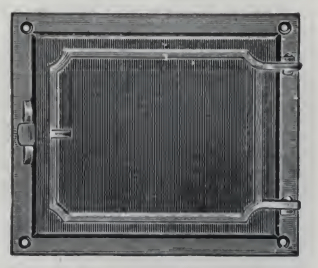
No. 4 Rain Conductor Shoes
3"x4"

Length	Price
5'0"	$10.00
4'0"	9.00
3'0"	7.00
2'0"	5.00
1'6"	4.00
1'0"	3.00

We have patterns for other sizes. Prices on application.

No. 9 Ash Dump for Fireplaces

Opening	Price
6" x 6"	$1.25
6" x 8"	1.50



No. 8 Cleanout Doors and Frames

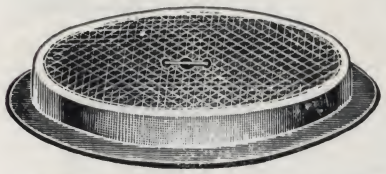
Width	Height	Price
20"	16"	$5.00
16"	24"	7.00
16"	12"	3.50
12"	12"	2.25
12"	10"	2.00
10"	8"	1.75
9"	7"	1.25
8"	6"	1.25
7"	5"	1.25

Continued on next page

No. 1 Manhole Door and Frame

Width	Height	Price	Width	Height	Price
36″	36″	$42.00	24″	30″	$17.00
33″	49″	42.00	24″	24″	15.50
24″	48″	28.00	20″	24″	14.00
24″	36″	19.00	18″	24″	12.00

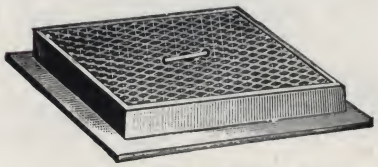
All manhole doors and frames have return flanges 4″ deep.



No. 3 Vault Plate and Frame; No. 4 Vault Grating and Frame

Size	Price	Size	Price
12″	$3.00	20″	$7.00
14″	4.00	24″	9.50
16″	5.00	30″	15.00
18″	6.00	34″	22.50

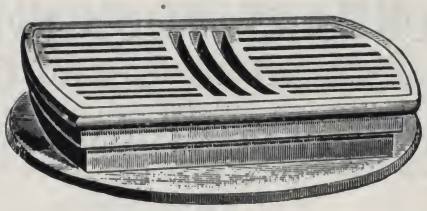
Depth of frame, 3″.



No. 7 Vault Plate and Frame; No. 8 Vault Grating and Frame

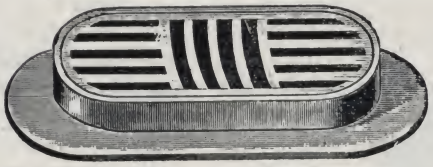
Size	Price	Size	Price
36″x36″	$32.50	7½″x7½″	$2.50
30″x30″	21.50	14″x24″	8.50
24″x24″	12.00	18″x24″	10.00
20″x20″	10.25	18″x30″	12.00
18″x18″	9.00	18″x36″	15.00
16″x16″	7.50	24″x30″	16.00
14″x14″	6.00	24″x36″	21.00
12″x12″	3.75	24″x42″	24.00
		24″x48″	30.00

Depth of frame, 3″.
All sizes can be made extra heavy at additional cost.



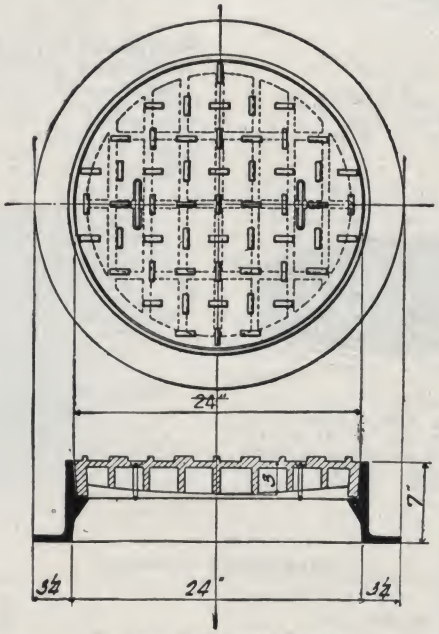
No. 10 Roadway Drain Grate and Frame

13¼″x24½″ grating.....$9.00
12 ″x18 ″ grating..... 8.00



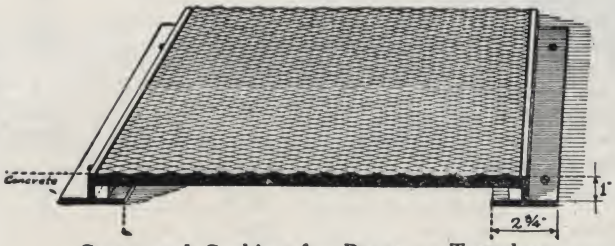
No. 11 Roadway Drain Grate and Frame

11 ″x22½″ grating.....$6.00
8¼″x17¼″ grating..... 4.00



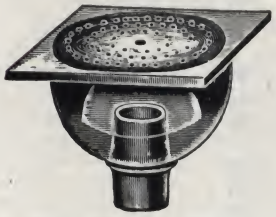
No. 19 Manhole Cover

Extra heavy for city use.....$15.30
With concrete or asphalt filled cover..... 22.00



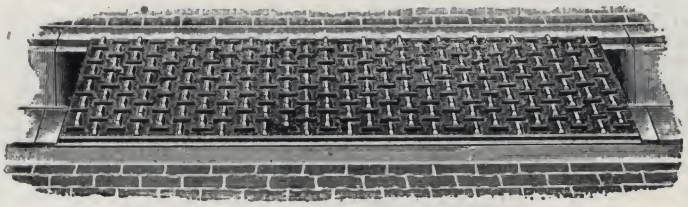
Cover and Curbing for Ducts or Trenches

Plates made to suit conditions. Curbing carried in stock. Prices on application.



No. 21 Bell Trap

12″x12″, 4″ outlet.
Price, painted.....$3.00

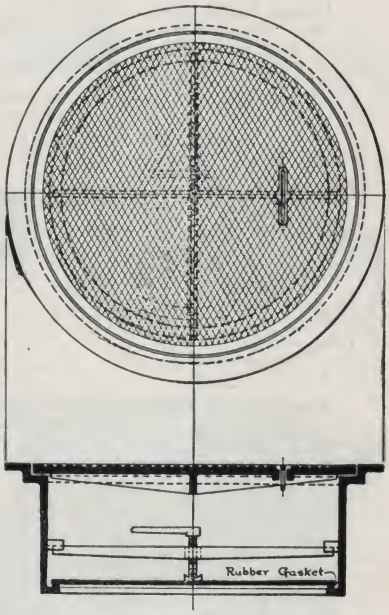


No. 28 Gutter Cover Plate

18″ wide, 1″ thick, $3.00 per lineal ft.
24″ wide, 1½″ thick, $6.00 per lineal ft.

No. 3 Manhole Door and Frame

Width	Height	Price	Width	Height	Price
24″	36″	$19.00	16″	24″	$12.00
24″	24″	15.50	18″	18″	10.50
18″	24″	12.00			

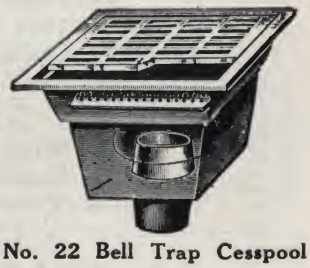


No. 23 Manhole Cover with Inside Lid

Lock bar with brass screw

Size	Price
36″	$60.00
30″	42.50
24″	29.00
20″	26.50
18″	21.50

Depth of frame, 9″.



No. 22 Bell Trap Cesspool

16″x16″, 4″ outlet.
Price $6.00
12″x12″, 4″ outlet.
Price 4.50

ESTABLISHED 1882

FLOCKHART FOUNDRY CO.

Engineers and Manufacturers of Standard Construction Castings

MAIN OFFICE
87 Polk Street, NEWARK, N. J.

Products

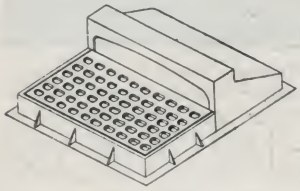
A complete line of CONSTRUCTION CASTINGS adapted for construction of highways, water works, storm and sanitary sewers, sewage disposal works, docks, gas and electric plants, etc.

Engineering Service

We maintain a specialized engineering service for the solution of particular problems. Service is rendered without charge to engineers.

Data Sheets

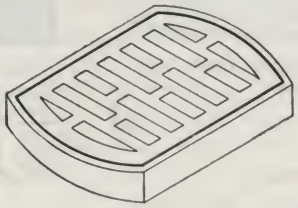
Data sheets are issued for all our products. These show all detail dimensions and other necessary information for ordering and installing. Write for them by number and description of product.



No. 25128

Large Curb Inlet

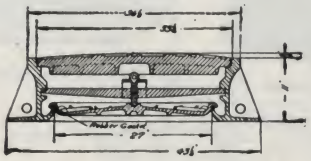
Strong design with heavily reinforced grating. Curb piece any height or radius. Grating, 48x22 in. Same type with grating 34½x 21 and 29½x49 in.



No. 25477

Frame and Grating for Park Use

Size, 25x18 in. Depth, 2 in.



No. 26287

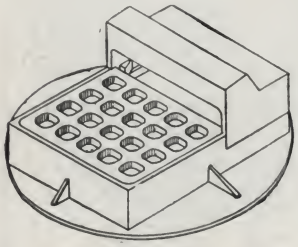
Waterproof Type of Manhole Frame and Cover

With rubber gasket and lock. Flange diameter, 46½ in. Minimum opening, 30 and 27 in. Also with high flange. Circular or square flange. Other openings 20½, 26½ and 38-in. diameter

No. 26560

Heavy Frame and Cover for Electrical Subways

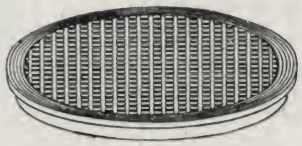
Flange diameter, 43 in. Minimum opening, 24 in. Depth, 10 in. Also 27 and 30-in. diameter openings



No. 25263

Small Curb Inlet

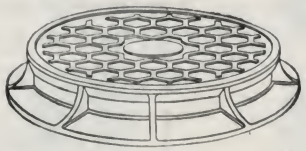
Curb piece any height or radius. Grating, 22¾x19¼ in. Plane or concave grating



No. 25054

Ring and Cover

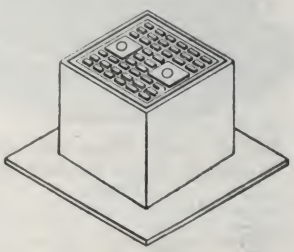
Diameter, 16, 18, 20, 22, 24, 30, 36 and 42 in. Made for light or heavy traffic. Adapted to concrete slab work



No. 25206

Heavy Manhole Frame and Cover

Flange diameter, 48⅜ in. Minimum opening, 36 in. Depth, 8 in. Also with minimum opening of 24, 30 and 42 in. The 36 and 42-in. sizes made with double concentric covers



No. 25403

Heavy Monument Box or Protection for Water or Gas Line Valves

Flange, 17 in. square. Minimum opening, 8⅝ in. Depth, 9 in. Also in light type

DATA SHEET NUMBERS

Classification	Max. opening, inches	Data sheet number
I Heavy frames and covers		
1. Circular—flange at bottom	48	134, 137
2. Circular—flange at top	48	133
3. Circular—sealed and locked	42	136, 162
4. Square	48	150, 153
5. Rectangular		151, 153
II Heavy frames and gratings		
1. Rectangular—plain surface	48x35	152
2. Rectangular—concave surface	28x48	144
III Light frames and covers		
1. Circular	48	138
2. Square	48	125
3. Rectangular		149
IV Light frames and gratings		170
V Curb inlets (catchbasin heads)		145
VI Catchbasin traps		146
VII Floor plates for light or heavy traffic, provided with angle seats; made also especially adapted for terrazzo and concrete fill		148
VIII Wheel guards, angles, etc., for building protection		182
IX Clean-out frames and doors		126
X Valves		
1. Flap		127
2. Lift		140
3. Shear		130
4. Slides		131
XI Mooring posts, bitts, chucks, cleats		171

ÆOLUS DICKINSON

INDUSTRIAL DIVISION PAUL DICKINSON, INCORPORATED

Scuppers, Exhaust Heads and Roof Drains

3324-3354 South Artesian Avenue

CHICAGO, ILL.

TELEPHONE
LAFAYETTE 1862, 1863

Products

DICKINSON CAST IRON SCUPPERS.
DICKINSON CAST IRON ROOF DRAINS
DICKINSON CAST IRON EXHAUST HEADS.

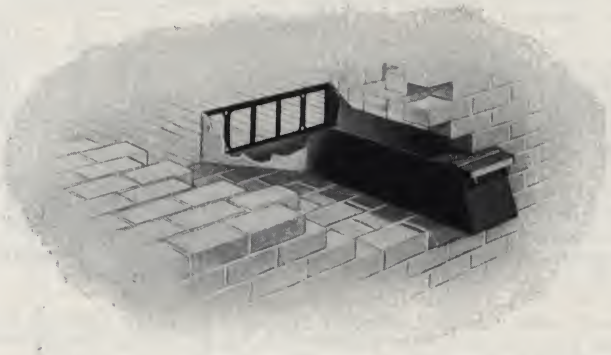
For "Æolus" Ventilators and Dickinson Floor Vents, Mushroom Type, see Manufacturers' Index.

Dickinson Cast Iron Scuppers

Reduce insurance rates 2% to 5% on contents of buildings to which applied.

They are constructed of light gray cast iron and are simple, effective, durable and easily installed.

The portion which protrudes beyond the wall is covered by a hinged flap which is held in place by a hinge pin of bronze to prevent corrosion and consequent sticking.



Cast Iron Scupper

Inside grating prevents clogging with papers, etc.
Outside grating prevents birds from building nests to block the purpose of the scupper

Size—Underwriters' requirements call for 15 sq. in. for each 1000 sq. ft. drained. Dickinson scuppers have a capacity of 16 sq. in. at the smallest point. The outside or smaller end is 4x4 in.

List Price—Dickinson scuppers may be had for the following thicknesses of wall:

9-in. wall	$3.30
13-in. wall	4.40
17-in. wall	5.50
22-in. wall	6.60
24-in. wall	7.70

Prices are f.o.b. Chicago.

Specifications—Furnish and install where shown on plans gray cast iron scuppers which are to have outlet of 4x4 in., as manufactured by ÆOLUS DICKINSON, 3324-3354 South Artesian Ave., Chicago, Ill. Inlet to have a protective grating and outside to have a flap hinged on a bronze pin. The bottom edge of the inside end shall be set at the level of the floor or slightly below it so that water will drain clear. Scuppers must have a pitch of from 2 to 2½ in. to the foot. Upon completion of the building and before being turned over to the owners, the contractor shall see that all scuppers are clear of all material, are clean and that the hinged flap moves freely and is in perfect working order.

Dickinson Cast Iron Roof Drains

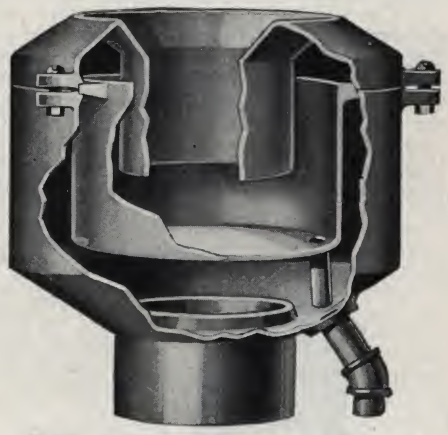
Constructed of light gray cast iron.
All sizes for threaded and cast iron pipe.

Cast Iron Roof Drain

Top: 12 in. square, 6 in. high.
Bottom section: 16½ in. square, 4 in. deep.
Roofing felt is brought over flange

Dickinson Cast Iron Exhaust Heads

Dickinson exhaust heads are the only make constructed entirely of cast iron. They are simple in design, yet none the less effective in operation. On entering the head the gradually expanding steam strikes the concave surface of an inner shell which quickly reverses its direction. Then the steam flows upward along the sides until it strikes the top, where it is again deflected and is permitted to exhaust into the outside air. Constantly impinged against these inner surfaces, the particles of oil and water are separated from the steam vapor leaving nothing but the dry vapor to escape.



Phantom View All-cast-iron Exhaust Head

DICKINSON EXHAUST HEAD

Pipe sizes, in.	Weight, lb.	Drain opening, in.	List price	Pipe sizes, in.	Weight, lb.	Drain opening, in.	List price
1 and 1½	15	¾	$20.00	8	174	1¼	$90.00
2 and 2½	21	1	25.00	10	241	2	125.00
3 and 3½	35	1	30.00	12	325	2½	150.00
4 and 4½	48	1	40.00	14	475	2½	200.00
5	100	1¼	50.00	16	650	3	250.00
6	120	1¼	60.00	18	900	3	300.00
7	154	1¼	75.00	20	1100	3½	360.00

Information

Further information, prices, etc., gladly supplied on request.

OLNEY J. DEAN & CO.

TELEPHONE
RANDOLPH 3600

Manufacturers of Scuppers and Concrete Inserts

137 South La Salle Street, CHICAGO, ILL.

BRANCH OFFICES

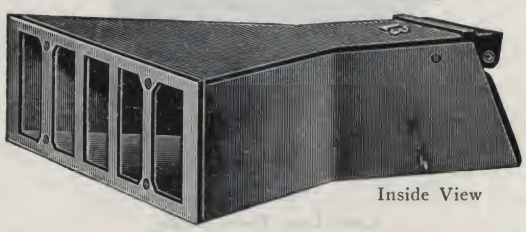
MILWAUKEE, WIS., 422 Jefferson Street

MINNEAPOLIS, MINN., 418 Corn Exchange Building

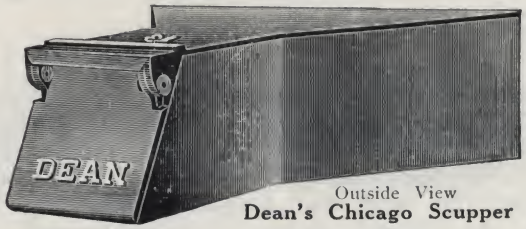
DEAN'S CHICAGO SCUPPERS

Advantages—Windproof and rainproof, designed to meet the requirements of the National Board of Fire Underwriters. Reduce insurance rates 3 to 5 per cent. Initial cost low in comparison to this annual saving. Reduce water losses and interruption to business in case of fire by draining the water directly to the outside of the building. Protect goods on the floor in case of breaks in water or sprinkler system. Protect wood floors from standing water.

Therefore use scuppers in every building.



Inside View



Outside View

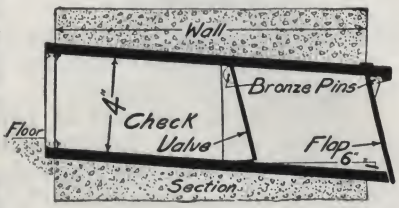
Dean's Chicago Scupper

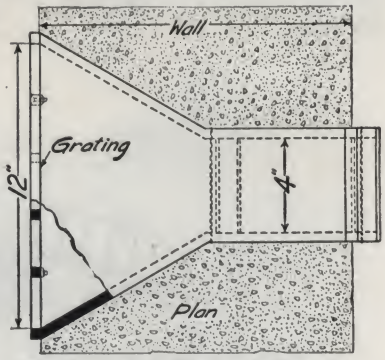
Construction—Our Chicago scupper has 48-sq. in. capacity at the inlet and 16-sq. in. capacity at the outlet.

The wide inlet increases the water pressure on the flap at the outlet. This flap is hung on bronze pins at such an angle that its weight holds it snug against the walls of the scupper making it windtight and watertight, but a very small flow of water from within will open it. A small shelf projecting from the outside of the scupper protects the hinges and valve from clogging with mortar, dirt or ice. The grating within prevents clogging from the inside of the building and allows a clear inspection of the interior of the scupper at all times.

Check Valve—While the careful fitting of the outer flap makes the Chicago scupper windproof, we can, if desired, insert an additional check valve in the box.

Installation—The National Fire Protection Association recommends under ordinary conditions, one scupper having an outlet area of 16 sq. in. to every 1000 sq. ft. of floor, or, in a building equipped with a sprinkler system, one to every 500 sq. ft. of floor. The Dean Chicago Type Scupper complies fully with this recommendation.



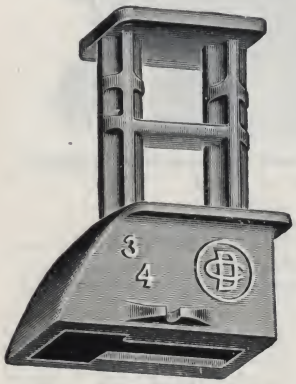


Section and Plan of Dean's Chicago Scupper

Specification—The mason contractor shall furnish and set one Dean Chicago Type Scupper in each bay of the exterior wall as shown on plans. The scuppers are to meet the recommendations of the National Board of Fire Underwriters, having well fitted and non-clogging outside flaps hung on bronze pins and removable inside gratings. They shall have inlets at least 12 in. wide and outlet areas of at least 16 sq. in. Care must be taken in setting the scuppers to see that the pitch is not less than 2 in. in 12 in., that the lower inside edges of scuppers are set 1 in. below finished floor line, and that scuppers are set true to wall lines and are not sprung or broken during construction work.

On completion of the job, flaps must be cleaned and left in perfect working order and all exposed parts of scuppers are to be cleaned and given a heavy coat of paint.

DEAN'S CONCRETE INSERTS—SLOTTED AND THREADED



Slotted or Adjustable

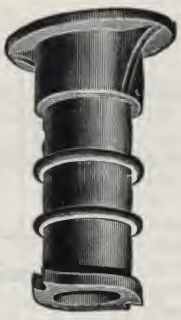
Uses—*Slotted Inserts*—The only substantial means of supporting machinery, shafting, overhead trolleys, and sprinkler systems on the floors, columns, walls or ceilings of concrete structures.

Threaded Inserts—Recommended for the suspension of piping and securing of trim, sash and doors where great loads will not be experienced and a perfect alignment is not required.

Special Inserts—We are equipped to make up continuous inserts or other special types at short notice. Our $\frac{5}{16}$-in. threaded insert is well adapted for use in installing insulating materials or metal lath.

Material—Dean Inserts are made of high grade malleable iron.

Installation—Inserts are fastened to the form of the slab, beam or column by driving nails through the notched lugs on either side. They are thus held securely in position while the concrete is poured. When the forms are removed, the slotted face of the insert is exposed flush with the concrete.



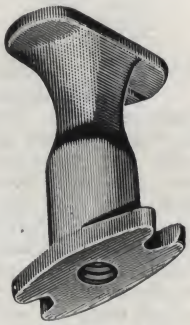
Threaded Insert

DEAN'S CONCRETE INSERTS

The following sizes are stocked in Chicago warehouse for immediate shipment

Size bolt, in.	Allowable load, lb.	Height out to out, in.	Shipping wt. per 100, lb.
Slotted or Adjustable Inserts			
$\frac{3}{8}$	800	2	30
$\frac{1}{2}$	1500	$2\frac{1}{2}$	47.5
$\frac{5}{8}$	2400	$3\frac{1}{2}$	84
$\frac{3}{4}$	3600	$4\frac{1}{4}$	130
$\frac{7}{8}$	5000	$4\frac{1}{4}$	190
Threaded Inserts			
$\frac{5}{8}$	1200	$3\frac{3}{8}$	75
$\frac{3}{4}$	1800	$3\frac{3}{8}$	75

We are also prepared to manufacture, on short notice, special inserts to fill unusual requirements.



$\frac{5}{16}$ **Threaded**

WATERTITE DRAIN & SCUPPER CO., INC.

Windproof Hooded Scuppers

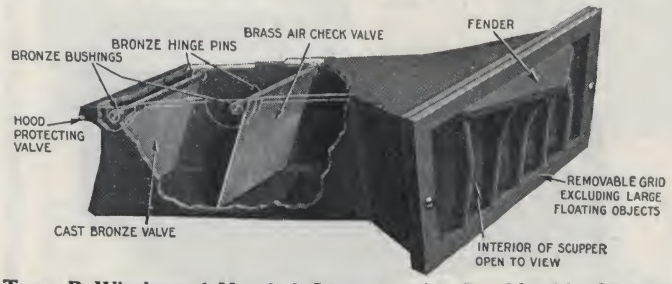
229 East 37th Street, NEW YORK, N. Y.

AGENTS IN MANY CITIES

Purpose of Scuppers

It is a well-known fact that water damage often exceeds the fire damage and also causes large losses through disruption of business. A small fire on an upper floor may cause enormous damage to goods, machinery, etc., by flooding the floors below. Scuppers allow this water to escape outside the building and save this enormous and unnecessary loss.

Underwriters recommend the use of scuppers (especially in sprinklered buildings) and the insurance rate for both owner and tenants is favorably affected by their use.



Type R Windproof Hooded Scupper with Double Air Check, Removable Grid and Fender

Underwriters' Approval Is Your Guarantee

Our scuppers have been tested, approved and listed as standard by the Chicago Laboratories of the National Board of Fire Underwriters. This secures their acceptance by all local exchanges and the maximum allowance in the rate.

The Factory Mutual Laboratories have also approved our scupper when provided with a large hood enclosing the valve on the three sides ("complete hood").

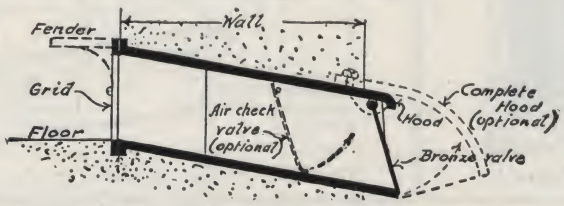
Construction of Type R Scupper

Windproof Valve—Box of cast iron, outlet 4x4 in., inlet 12 in. wide. To exclude cold air, a heavy cast bronze valve is hung in bronze bushings overlapping the outer end of the scupper.

The locating of the valve in this manner provides for its free action, which cannot be expected from a valve recessed in the scupper mouth subject to clogging by incrustations of dirt or sealing by ice or sleet. As the scupper is an emergency device it must be ready to function always, else it is useless.

The inner air check valve is not a necessity, as our outer valve is well fitted and effectively excludes cold air.

Hood—A small hood protects the valve from being clogged by mortar during construction, and from dirt and ice. If desired, we can furnish the "complete hood," enclosing the valve on three sides. This form is favored by New England Underwriters, as giving greater protection to the valve.



Section Through Type R Scupper

Grid—The grid protecting the inlet is removable, being secured by two brass setscrews.

Fender—The fender projecting 1½ in. into the room is designed to prevent storing goods against the inlet of the scupper. Fender can be omitted, if desired.

Pitch—Our scupper has a downward pitch of 2 in. to the foot, providing a good head of water to open the valve.

Discharge Capacity—Tests made by Underwriters' Laboratories developed that our scupper will discharge 60 gallons per minute under 1-in. head of water on the floor and 100 gallons per minute under 3-in. head.

Necessity of Bronze Fittings—As the scuppers may not be called into use until years after they have been installed it is necessary that the valve be of a material not subject to rust—our valve is of bronze hung in bronze bushings.

For Wood Floors on Cement

A special scupper is made for wood floors laid on sleepers bedded in the cement slab. The inlet is 7 in. high and the bottom of the scupper is set flush with the cement floor to take off any water that might seep through the wood floor.

Number Required

In sprinklered buildings, provide one scupper to every 500 sq. ft. of floor surface. In unsprinklered buildings one to every 1000 sq. ft. Scuppers are usually placed in the curtain walls below the windows.

Sizes and Prices

The scuppers are made for any thickness of wall and prices will be quoted on application. State thickness of wall and type of scupper required, also quantity.

Specification for Type R (Approved) Scuppers

Furnish and set in exterior walls, where indicated, cast iron scuppers with inlet not less than 12 in. wide, outlet to have an area of not less than 16 sq. in.; outlet to have a cast bronze gravity valve overlapping the end of the scupper (not recessed). Valve shall be hung in bronze or brass bushings. Above the inlet there shall be a cast iron fender extending 1½ in. into the room (can be omitted if floors are not for storage purposes). All iron parts shall have one coat protective paint (or be galvanized) before shipping. Scuppers shall have the approval of the National Board of Fire Underwriters and be included in their list of Approved Mechanical Devices. All as manufactured by the WATERTITE DRAIN & SCUPPER CO., INC., 229 East 37th Street, New York, N. Y.

Set the scuppers about 1 in. below the finished floor line. Grade a channel to it in the cement finish of the floor.

A Partial List of Recent Installations

Kelly Springfield Tire Co., Cumberland, Md.
American Can Co., Honolulu, T. H.
Studebaker Body Co., South Bend, Ind.
Stanley Works, New Britain, Conn.
James Butler Warehouse, Long Island City, N. Y.
Eastman Kodak Co., Rochester, N. Y.
U. S. Army Supply Base, Brooklyn, N. Y.
U. S. Army Supply Depot, New Orleans, La.
Winchester Repeating Arms Co., New Haven, Conn.
B. F. Goodrich Rubber Co., Akron, Ohio
R. H. Macy Co. Warehouse, New York, N. Y.
Illuminating Building, Cleveland, Ohio
Westinghouse Air Brake Co., Wilmerding, Pa.
American Thread Co., Dalton, Ga.
General Electric Building, Cincinnati, Ohio
Great Atlantic & Pacific Tea Co., Philadelphia, Pa.

WINDSHIELD SCUPPER COMPANY

Sole Manufacturers of Windshield Scuppers

16 Warren Street, NEW YORK, N. Y.

SALES REPRESENTATIVES

BOSTON, MASS., E. A. Simpson, 141 Milk Street
CHICAGO, ILL., Harrison-Weise Co., 228 No. La Salle Street
CLEVELAND, OHIO, Duplex Hanger Co., 1270 East 53rd Street
DETROIT, MICH., L. T. Ollesheimer, 374 Insurance Exchange Building
KANSAS CITY, MO., C. A. Brockett Cement Co., 2035 East 19th Street
LOS ANGELES, CAL., E. R. Kuns Co., Inc., 1221 West 11th Street
MILWAUKEE, WIS., Gross Hardware & Supply Co., 216 Third Street
PHILADELPHIA, PA., Kahn Products Co., 2216 West Columbia Avenue
PITTSBURGH, PA., Fort Pitt Hardware Co., 807 Liberty Avenue
ST. LOUIS, MO., F. A. Cammann Builders Service Co., 927 Century Building
SAN FRANCISCO, CAL., M. E. Hammond, Pacific Building

Sales Representatives in Other Important Cities Registered at Local Office of F. W. Dodge Corporation

Windshield Scuppers

Purpose—In the average fire, far more damage is caused by water. It is the purpose of Windshield Scuppers to reduce this to a minimum by providing a quick escape for excess water on floors. They have also proven invaluable in cases of accidental discharge of sprinklers and bursting pipes.

Underwriters' Approval—Windshield Scuppers have been tested and approved by the National Board of Fire Underwriters. Yearly re-examinations are made to assure the purchaser that no changes have been made without their sanction. This approval guarantees the full allowance in rates by all local insurance exchanges throughout the country. They also bear the approval of the Associated Factory Mutual Companies.

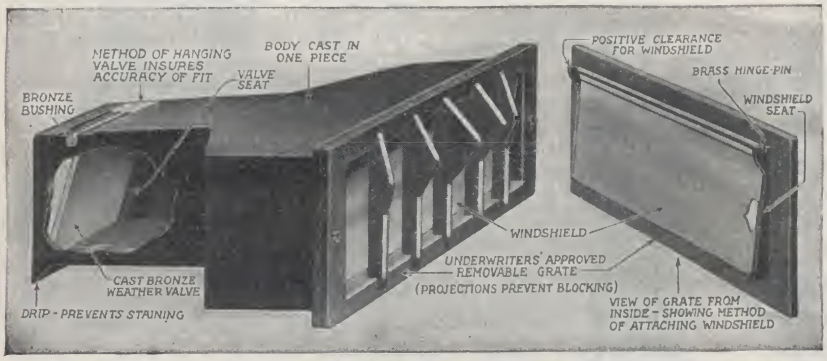
Exclusive Advantages of Windshield Scuppers—All Windshield Scuppers are cast in one piece, insuring proper setting in the same condition as when they leave the factory. Each is provided with a drip under the outlet to prevent staining face of building. All valves are provided with seats to permit a draftproof fit without binding.

Additional Features of Standard Heavy Type Windshield Scupper—This type costs more to manufacture, but possesses these additional advantages: 50% heavier and the Windshield is hung directly at the inlet, where it not only is readily subject to inspection, but can be renewed with ease during the life of the building. In case of fire in an adjacent building, the windshield acts as a fire retardant, as it is sufficiently spaced from the outer valve to act as a damper when the exterior valve has melted or fused without itself being exposed to the extreme heat.

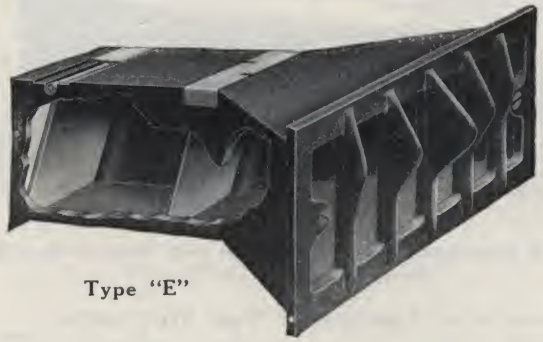
Specification for Standard Type

Provide and install, where shown in plans Standard Type (*SG, S, KG or K*) Windshield Scupper, of proper size for wall thickness shown. Body to be cast in one piece, ⅜ in. thick, with bronze exterior weather valve, hung with bronze hinge pins and bronze bushings. To have improved, detachable (*polished brass or galvanized iron*) windshield hung on brass hinge pin, attached to grate or frame at entrance so that it can be replaced (*and with Underwriters' Approved Projecting Grate to prevent blocking.*)

(Italics denote optional features, which should conform to type selected. See Specification Data in next column.)



Type "S-G" or "K-G" Windshield Scupper with Underwriters' Grate, Showing How Windshield Can Be Renewed
(Patented July 28, 1914 and March 27, 1928)



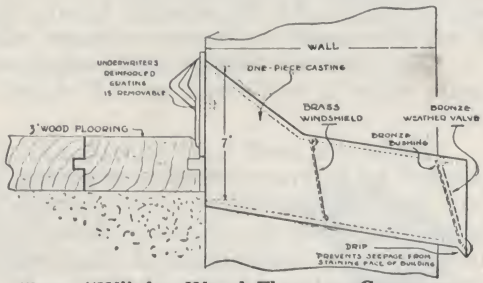
Type "E"

SPECIFICATION DATA

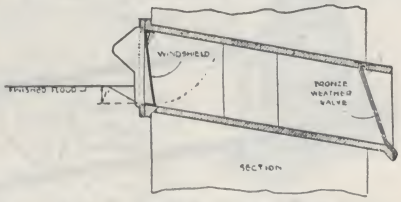
Symbol		Description
Standard Type, Heavy ⅜ in.		
"SG" "S"	With grate Without grate	Polished, lacquered brass windshield
"KG" "K"	With grate Without grate	Galvanized windshield
Special Type ¼ in.		
"E" "M"	With grate With grate	Double valve Single valve

Some Well Known Users

American Can Company
J. C. Penney Company
Standard Oil Company
Baltimore & Ohio R. R. Co.
Fisher Body Corp.
Real Silk Hosiery Co.
Cooper Dry Goods Co.
Westinghouse Electric & Mfg. Co.
International Shoe Co.
General Electric Co.
Studebaker Buildings
Victor Talking Machine Co.
Packard Motor Co.
Otis Elevator Co.
Liggett & Myers Tobacco Co.
Sears Roebuck & Co.
Canadian Rail & Harbor Terminal
Eli Lilly Company
Southern Bell Telephone & Telegraph Co.
R. H. Macy & Company
American Optical Co.
Delaware, Lackawanna & Western R. R. Co.
R. R. Donnelley & Sons
Montreal Rail & Water Terminal
New York Central R. R. Co.



Type "W" for Wood Floor on Concrete



Showing Standard Type in Wall

THE CANTON FOUNDRY & MACHINE CO.

Manufacturers of Building Specialties

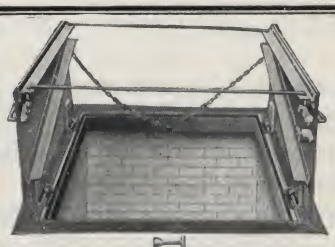
CANTON, OHIO

NEW YORK OFFICE: Carnegie Hall, 154 W. 57th Street—Telephone, Circle 2994
CHICAGO: F. G. Manuel, 1657 Monadnock Building, 53 W. Jackson Boulevard

Products

Sidewalk Doors; Coalhole Covers; Sidewalk Ventilators; Area Gratings; Illuminating Iron Sidewalk Plates; Sidewalk Gutter Boxes; Conductor Connections; Conductor Boots; Ash Pit Doors; Stack Doors; Coal Chutes (Foundation); Coal Doors; Wheel Guards; Valve Covers; Drain Covers; Water Meter Covers; Lamphole Covers; Catchbasin Covers; Manhole Covers; Street Drain Boxes; Street Castings.

For our page on Automobile Turntables, see Manufacturers' Index.

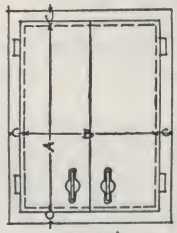


All our Sidewalk Doors are Flush and comply with city laws.

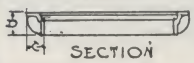
OPEN WITH STAY ROD AND CHAIN

Furnished in sizes shown by the three tables on this page

CLOSED



PLAN

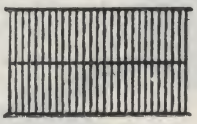


SECTION

A	B	C	D	A	B	C	D
In	In	In	In	In	In	In	In
30	42	4½	4	48	60	4½	4
30	48	4½	4	48	66	4½	4
30	54	4½	4	48	72	4½	4
33	58	4½	4	50	38	4½	4
33	72	4½	4	52	45	4½	4
36	36	4½	4	52	52	4½	4
36	44	4½	4	52	60	4½	4
36	48	4½	4	52	72	4½	4
36	60	4½	4	54	36	4½	4
36	72	4½	4	54	48	4½	4
40	48	4½	4	56	26	4½	4
40	54	4½	4	60	36	4½	4
40	60	4½	4	60	48	4½	4
40	72	4½	4	60	76	4½	4
42	30	4½	4	64	52	4½	4
43	41	4½	4	65	39	4½	4
44	36	4½	4	66	38	4½	4
44	44	4½	4	66	48	4½	4
44	48	4½	4	66	54	4½	4
44	60	4½	4	70	52	4½	4
44	72	4½	4	72	44	4½	4
48	30	4½	4	72	48	4½	4
48	36	4½	4	72	52	4½	4
48	48	4½	4	72	60	4½	4
48	54	4½	4	76	42	4½	4

FLUSH SIDEWALK-DOOR-DOUBLE-LEAF

CAST IRON

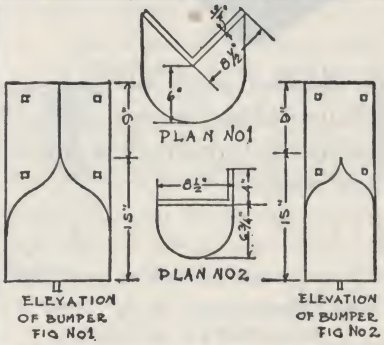


WROUGHT IRON

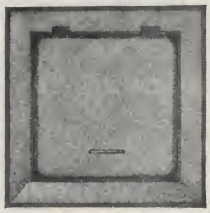
Cast iron area gratings Furnished 12, 14, 16, 18 & 20 ins wide. All 40 ins long

Wrought iron gratings to order in various rectangular shapes and sizes

AREA-GRATING



CAST IRON WHEEL GUARDS



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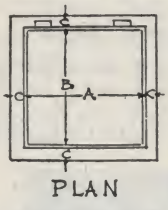
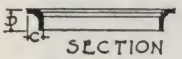
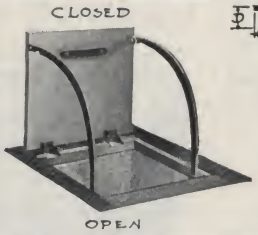


PLAN



SECTION



OPEN

A	B	C	D
In	In	In	In
20	18	4½	4
24	18	4½	4
24	24	4½	4
30	24	4½	4
30	30	4½	4
36	30	4½	4

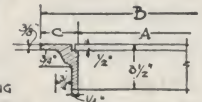
FLUSH SIDEWALK DOOR SINGLE LEAF

SOLID CHECKERED COVER

COAL HOLE RING

VENTILATED COVER

ILLUMINATED COVER & RING



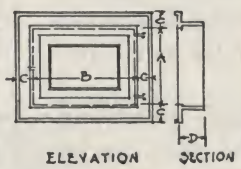
SECTION THROUGH RING

SIZES							
A	14	16	18	20	24	30	36
D	20	22	24	26	30	36	42
C	3	3	3	3	3	3	3

COAL HOLE COVERS & RINGS

DIMENSIONS

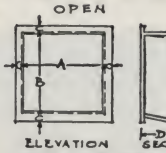
A	B	C	D
6	8	2	2½
8	10	2	2½
10	12	2	2½
12	14	2	2½
14	16	2	2½
16	18	2	2½
18	20	2	2½
20	24	2	2½



ELEVATION SECTION

ASH PIT DOORS

OPEN CLOSED



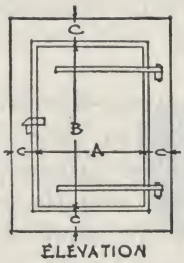
ELEVATION SECTION

Self locking substantial and durable.

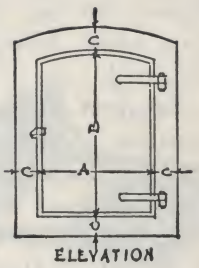
No	A	B	C	D
1	16	16	2½	8
2	24	20	2½	8

SELF LOCKING BURGLAR-PROOF COAL DOOR

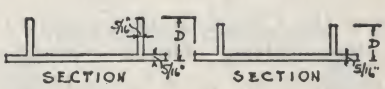
SQUARE TOP



ELEVATION



ELEVATION



SECTION SECTION

TABLE OF SIZES SQUARE TOP			
A	B	C	D
18	24	2½	4
24	30	3	4

TABLE OF SIZES ARCH TOP			
A	B	C	D
24	30	3½	3

STACK DOORS

AMERICAN BAR LOCK CO., INC.

Manufacturers of "New Bar Lock" Sidewalk Lights

3630 Thirty-eighth Street
LONG ISLAND CITY, N. Y.

BRANCH OFFICES OR REPRESENTATIVES IN ALL LARGE CITIES

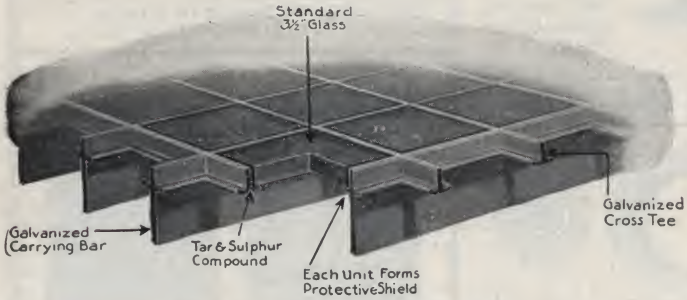
Products

"New Bar Lock" Sidewalk Lights, Sidewalk Ventilating Slabs, Sidewalk Doors, of all descriptions.

For "Bar Lock Alglas Skylight, see Manufacturers' Index.

Construction of "New Bar Lock" Sidewalk Lights

The "New Bar Lock" Sidewalk Light is constructed of specially made bars and tees locked together which form a protective shield around each individual



"New Bar Lock" Sidewalk Lights

unit, thereby eliminating broken glass. It has been designed for use where permanence, freedom from broken glass, leakage and maintenance charges are appreciated.

Greatest Glass Area—Special Features—By the elimination of concrete, we have also been enabled to space the glasses on closer centers. This increases the lighting efficiency 100% over the average of previous constructions. The entire frame is hot dipped galvanized. Standard 3½-inch square, ¾-inch thick glass is used, conforming with Simplified Practice Recommendation of the United States Government.

Ventilating Units—Special square ventilating units which are interchangeable with the glass can be furnished on request.

Specifications for "New Bar Lock" Sidewalk Lights

Sidewalk lights shown on plan shall be "New Bar Lock" factory finished type as manufactured by the American Bar Lock Company, Inc. They shall be furnished ready to set under the manufacturer's direction.

Glass shall be 3½-inch square, ¾-inch thick pressed Fresnel lens, Lazalite quality, polariscope tested, to conform with United States Government Standard Simplified Practice recommendation.

Galvanized supporting bars and tees are to be spaced on 3⅞-inch centers to give minimum of 80 per cent glass area.

Galvanized bars and tees to be locked together so that they form a protective shield around each glass. The space between the shield and the glass to be glazed with tar and sulphur compound to form an elastic, watertight, weatherproof expansion cushion.

Where desired, "New Bar Lock" Sidewalk Light construction can be furnished and installed under the direction of our own mechanics.

"Bar Lock" Sidewalk Doors

"Bar Lock" Flush Sidewalk Doors are made in both the diamond checker plate pattern and illuminated top with glass inserts.

"New Bar Lock" Flush Sidewalk Doors

These doors can be installed easily by any contractor. Prices for installation of any of our products by our own workmen, together with construction details, will be gladly furnished on request.

Price

Factory finished sections glazed complete are $2.00 per square foot, f.o.b. Long Island City, N. Y.

AMERICAN 3 WAY-LUXFER PRISM CO.

Daylight Engineers

1301-1305 South 55th Court
CICERO, ILL.
(Suburb of Chicago)

55 West 42nd Street
NEW YORK, N. Y.

For our Skylights, Transoms, Ventilators, and Obscuring Glass, see Manufacturers' Index

3-Way Armored Sidewalk Lights (Glass Guaranteed for 5 Years)

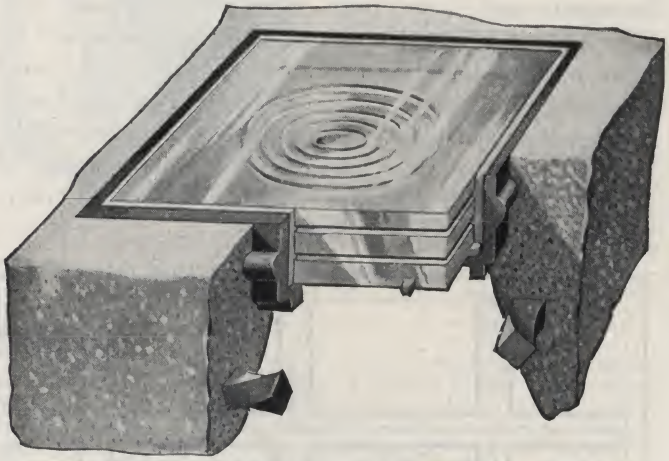
Daylight in basements and vaults is more important today than ever. Sunlight and daylight make for health and efficient operations.

3-Way Armored Sidewalk Lights accomplish this in more of a permanent way than any other light medium we know of.

Abundance of daylight. Lasting qualities in construction. And practically no maintenance cost.

Why

Concrete—Of special hard aggregate granite mixture—cured under ideal conditions—mixed and finished by skilled and trained mechanics.



Cut-away View of 3-Way Armored Glass, Showing Shield Embedded in Concrete

Glass—Is armored by a heavy cast iron shield. Hot galvanized treated. Glass is sealed under special heat treatment with pure tar and sulphur compound in this shield, thus overcoming the detriments to glass from expansion pressure.

Glass is Flintex-Lazalite quality free from internal stresses, each piece having passed polariscope test. Is made from special mixture for this purpose only.

Instant Replacement of Glass—Should it become necessary to replace a glass unit, replacement can be made in a moment's time by any help about the building. No special skill required. This means sidewalk lights can be kept in perpetual good condition at practically no maintenance cost.

5-year glass guarantee.

Watertight—Compounds which we use for waterproofing are prepared specially for this purpose and are of the highest grade and quality for additional insurance against any leakage.

3-Way Armored Sidewalk Lights

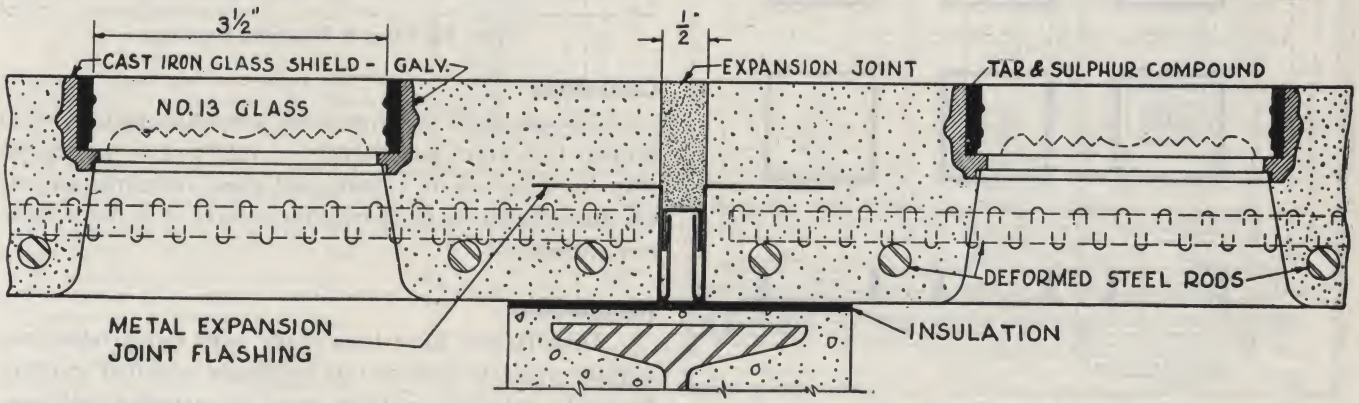
Specifications—Sidewalk Lights as shown on plans shall be of 3-Way Armored Glass Construction, Flintex-Lazalite Glass units sealed in galvanized cast iron shields, embedded in reinforced concrete construction.

Glass shall be No. 13A (3½-in. square Fresnel lens in 4-in. galvanized cast iron shields spaced 5-in. centers), or No. 12 (2¾-in. round sunburst lens in 3-in. galvanized cast iron shields spaced 4¼-in. centers). Glass for replacement to be supplied free of charge f.o.b. factory for period of 5 years.

(Can be furnished in factory finished slabs) or (Installed complete by manufacturer).

Sidewalk Doors

3-Way Type "C" Watertight Sidewalk Door. Channel frame, tapped for drain connection, heavy bronze hinges, flush top, quality door. Hand lift or equipped for elevator lift.



Section 3-Way Armored Glass Sidewalk Lights Showing Waterproof Intermediate Joint

NATIONAL VAULT LIGHT CO.

Concrete Sidewalk and Floor Lights and Natural Daylight Roofing

OFFICE AND WORKS
537 Jackson Avenue
(BRONX) NEW YORK, N. Y.

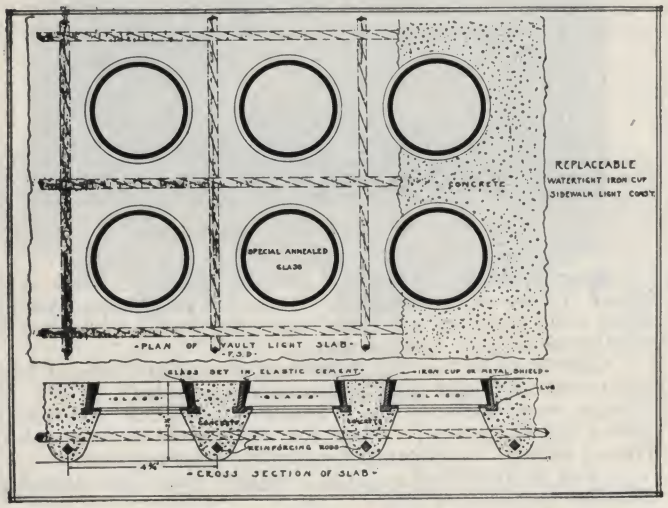
Products

CONCRETE SIDEWALK LIGHTS.
CONCRETE FLOOR LIGHTS.
NATURAL DAYLIGHT ROOFING.
VAULT LIGHT DOORS.

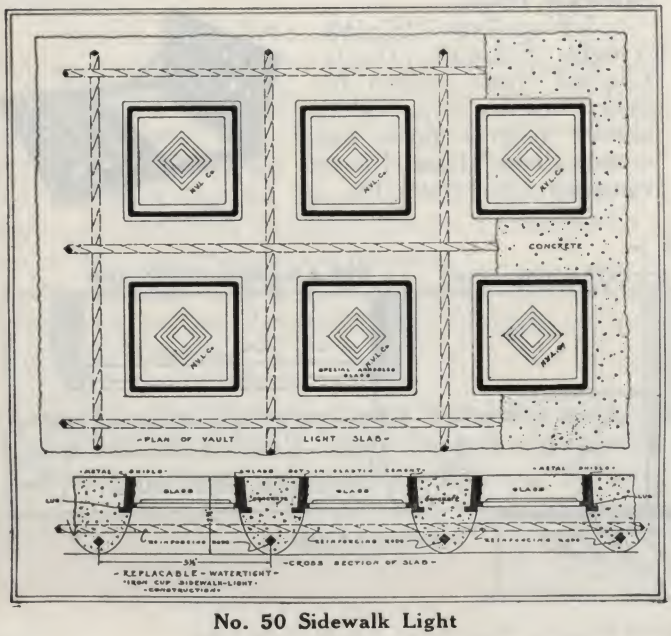
Ready to set slabs, using any type of glass made in factory, and shipped where required.

No. 14 and No. 50 Sidewalk Light Construction

Our concrete glass construction is a standard manufacture. No. 14 consists of a 3-in. round glass and No. 50 of a 3½-in. square glass. Both types are designed for heavy duty, being set in a special constructed shield which is dipped in hot galvanizing. Glasses are set with tar and sulphur composition to prevent them from cracking during expansion and contraction. Reinforced with twisted steel bars laid longitudinally and transversely. Replacements can be made without employment of a skilled mechanic. Expansion joints are formed where necessary and properly calked.



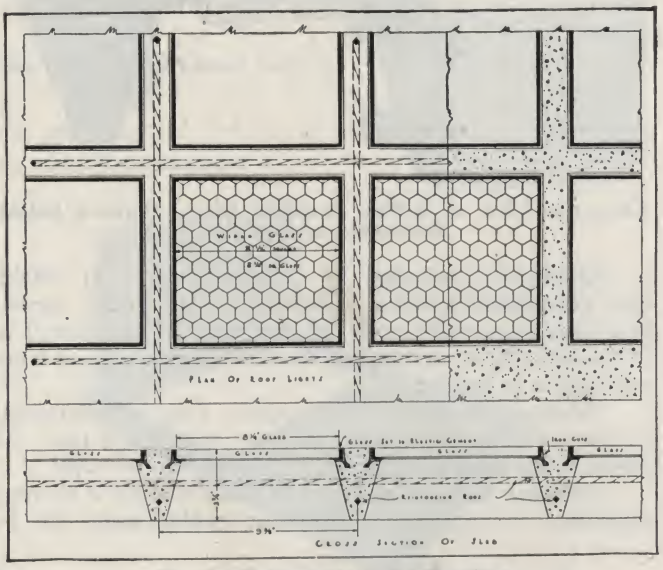
No. 14 Sidewalk Light



No. 50 Sidewalk Light

No. 75 Natural Daylight Roofing

Standard manufacture, consisting of wire glass 8¼ in. square and ½ in. thick, is set in a specially constructed shield dipped in hot galvanizing. Glass are set with tar and sulphur composition to prevent them cracking during expansion and contraction. Reinforced with twisted steel bars laid longitudinally and transversely. Replacements can be made without employment of skilled mechanic. Expansion joints are formed where necessary and properly calked.



No. 75 Natural Daylight Roofing

Guarantee

All our work is covered by a written guarantee to remain free from any defects of material or workmanship for a period of 1 year, and glass for replacements are furnished free of charge for period of 5 years f.o.b. our warehouse.

Installations

Installations have been made with our products on various projects such as loft buildings, comfort stations, hospitals, subways, restaurants and apartment buildings.

BENNETT FIREPLACE CORPORATION

Manufacturers of Bonded Fireplace Heating and Ventilating Units

NORWICH, N. Y.

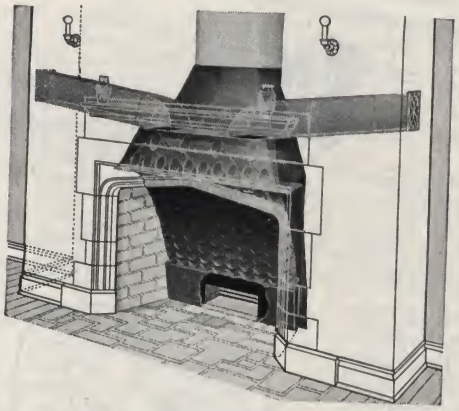
Bennett Bonded Fireplace Construction

For wood or coal burning fireplaces is applicable to any fireplace without restrictions in architectural design or material used, and provides the only possible and satisfactory method of building a fireplace which is *guaranteed under bond* not to smoke, and to deliver and circulate heated fresh air in volumes equal to from four to six times the heat obtained from the common fireplace.

BENNETT BONDED FIREPLACE

Guaranty Bond

A guaranty bond, underwritten by the National Surety Company of New York, insuring the fireplace investment for smokeless operation and heating efficiency, is issued to cover any fireplace built according to our specifications *(governing internal construction only)*, copies of which are sent upon request. In case of failure, it provides not only for refund of the purchase price, but also for proper cost of removal and return of the unit.

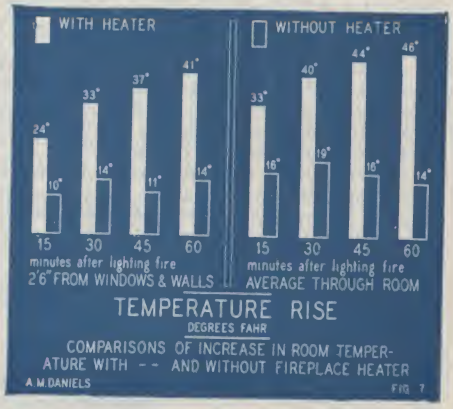


Phantom View of Typical Bennett Bonded Fireplace

well, furnishing *distributed heat* unobtainable from only the radiant heat of the common fireplace.

Thoroughly patented features concentrate up to 60 sq. ft. of heat absorbing area in the hottest part of the fire, making possible the thorough heating and use of *fresh outdoor air* which, contrary to hot air furnace practice, is of decided advantage for fireplace heating.

Air from the room is constantly being consumed in large volumes by the fire and carried away up the chimney flue. With the common fireplace replacement air is drawn in around windows and doors, causing cold drafts. With the Bennett Unit, replacement air is *drawn* through the heating tubes, warm, as they offer the line of least resistance. Hence fully twice the volume of air is delivered in contrast to merely recirculating, where flow depends entirely upon the sluggish rise of warm air. (See chart on laboratory test.)



Send for Report of Tests by Author of the U. S. Government Bulletin on Fireplaces

Appearance

The architectural beauty of a room focuses in the fireplace and mantel. Knowing this, the designers of the unit kept all heating surfaces and mechanical parts hidden. Up the back wall, covering the heating tubes, run simple, unobtrusive grilles, wholly in keeping with fireplace character. Sidewalls are of fire brick, or other material to secure the effect desired.

Adroit placing of the registers can make them carry out the decorative detail, particularly as they are available, on special order, in brass, wrought iron, tile, etc., in many designs and shapes.

Sizes

Four sizes of the unit make possible the construction of fireplaces with any width of opening between 26 and 52 in.

Fireplaces Already Built

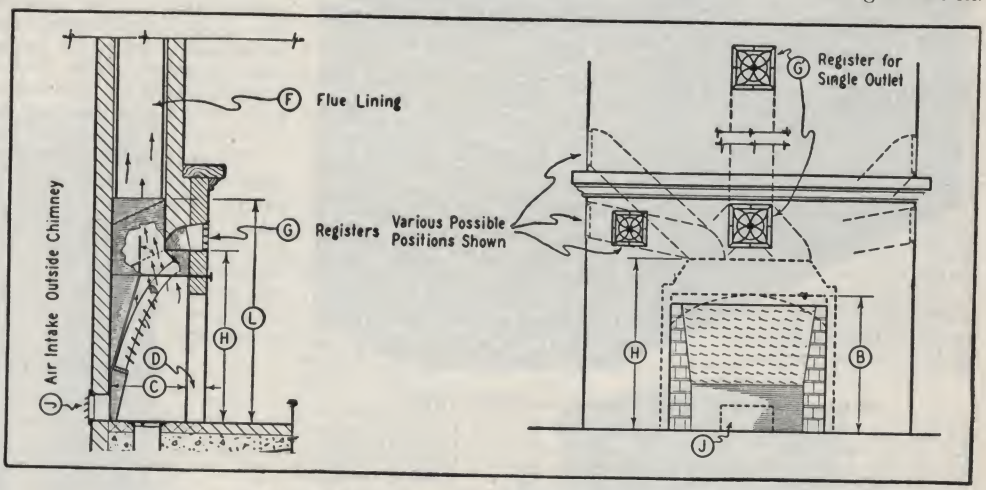
They can be equipped with a similar unit, the Bennett Fireplace Heater, without alteration. This model heats effectively but does not correct—or aggravate—a smoking condition.

Description and Operation

The Bennett Unit consists of a form, designed by fireplace specialists, for correct laying of the out-of-sight masonry. Complete with combustion chamber, down-draft shelf, flue damper and back wall, it greatly simplifies fireplace construction and *saves half its cost* in labor and materials.

It is made of heavy rust-resistant materials to outlive the chimney, and the patented, flexible construction provides for heat expansion.

Built into the unit are a series of heating tubes, running snugly up the back wall of the fireplace, with spaces between to permit the unobstructed escape of smoke from the fire. Fresh outdoor air enters these tubes at the bottom, is heated as it flows up through them, and floods into the room through registers. This heated air circulates not only throughout the room but to adjoining rooms as



MEASUREMENTS FOR VARIOUS SIZES, INCHES

	30*	36	42	48		30*	36	42	48
B	32	32	32	36	G	5x8	8x8	8x8	8x10
C	18	18	21	24	H	40	40	42	45
D	as specified				J	12x6	12x6	16x6	16x6
F	8x12	12x12	12x12	12x18	L	48	52	57	60

*Take column heading nearest to width of fireplace opening desired.

COLONIAL FIREPLACE COMPANY

TELEPHONE
LAWNDALE 0140

4644 West Roosevelt Road
CHICAGO, ILL.

Products and Services

The IMPROVED COLONIAL DAMPER for Fireplaces; the COLONIAL ADJUSTABLE CAST IRON SMOKE CHAMBER; the VICTOR UNIT for Electric Heating Fireplaces.

Also Period-wood Mantels; complete Fireplace Furnishings, such as Fenders, Grates, Andirons, Fire Sets, Trimmings; Special Brass and Wrought Iron Work for fireplaces, hand made Chimney Tops.

Colonial Damper

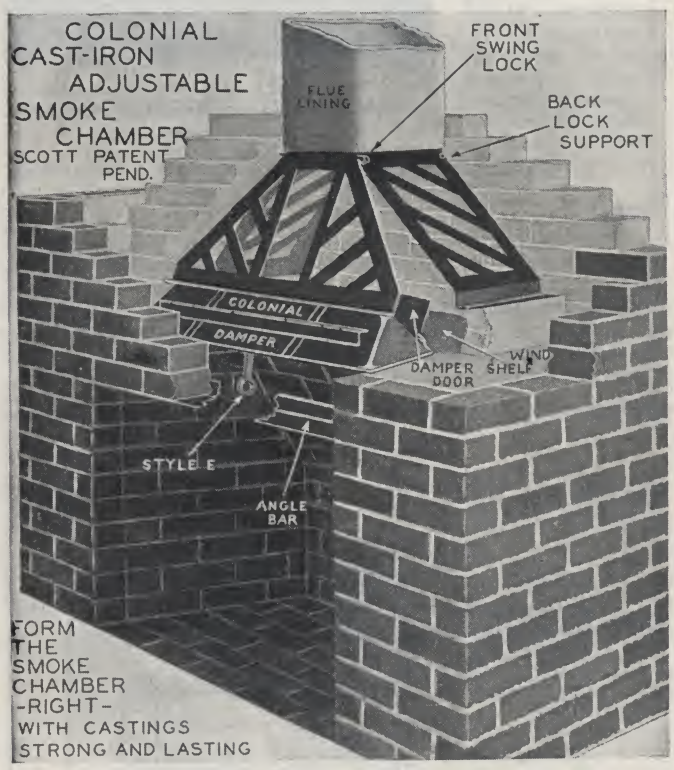
Colonial Damper and Smoke Chamber Form

Correct in Design—The throat and smoke chamber, vital parts of a successful fireplace, are formed quickly and correctly with the Colonial Damper and the Colonial Smoke Chamber Form.

Study the illustration carefully. Notice that the cast iron smoke chamber is adjustable, interlocking, rigid, strong—suitable for every type of fireplace. Forming the slanted inside front from damper throat to flue lining is an exclusive feature of the Colonial Smoke Chamber.

Saves Time and Material—It can be set in two minutes. Saves half its cost in labor, and assures a properly formed, smooth interior of the smoke chamber so necessary for the proper functioning of a fireplace.

Perfect Draft Control with the Colonial Damper—Compels correct formation of the fireplace throat. Standard in most specifications because for a generation "Colonial" construction parts have matched the beauty of architects' designs with perfection in operation—a sure means of avoiding the mistakes of workmen that may ruin a fireplace.



SIZES OF CAST-IRON SMOKE CHAMBER FORM

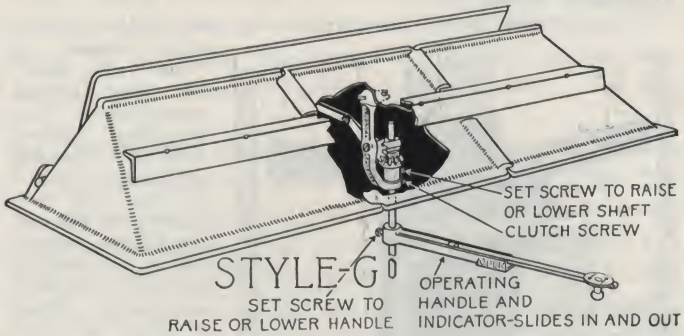
No. 130	for openings 30 to 34 in. wide with No. 1 or 1-A Colonial Damper
No. 236	for openings 36 to 40 in. wide with No. 2 or 2-A Colonial Damper
No. 342	for openings 41 to 45 in. wide with No. 3 or 3-A Colonial Damper
No. 448	for openings 46 to 50 in. wide with No. 4 or 5 Colonial Damper

Style G Colonial Damper may be set 1, 2, 3 or more courses of brick above the fireplace opening—the only damper with which this is possible. The best fireplace design requires the damper set high to secure proper draft and avoid smoking.

Takes Up Heat Expansion—Built in sections of best iron castings reinforced with steel angle bar so as to sustain great weight and intense heat. We believe this is the only damper made to take up heat expansion and prevent cracking the face of the fireplace.

Meets the Requirements of Any Design—Colonial Dampers are available in Styles A, E and G, as illustrated below. The various styles of operation perfectly adapt the Colonial Damper to fireplace designs of any type round, square or arched openings in marble, stone, tile, wood or any other material.

The whole success of the operation of the fireplace depends upon the correct control of the draft. This is assured perfectly by specifying and using the Colonial Damper which compels correct formation of the fireplace throat—the vital part.

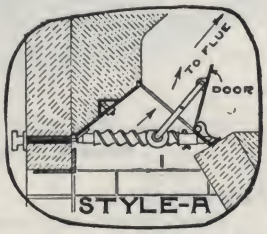


New Style G Operating Device—For genuine fireplaces the Colonial Damper is unsurpassed. The Style G lever arm operating device perfectly regulates the opening of the throat.

Permits the Colonial Damper to be set one, two, three or more courses above the opening, or even higher with the longer shaft.

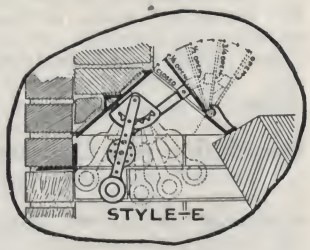
The operating handle slides forward and moves right or left to open or close and when the draft is adjusted, slides back again under the opening out of sight. The Colonial Damper backs up the beauty of your design with the assurance of successful operation.

Fireplace Blue Print Details—An informative blue print, "How to Avoid Mistakes in Fireplace Construction," showing best and latest practices of design, sent free on request. Also complete catalogue free when requested on business stationery.



Regular Style of Colonial Head Throat and Damper

Key to control draft comes through face of fireplace on left-hand side



Style E

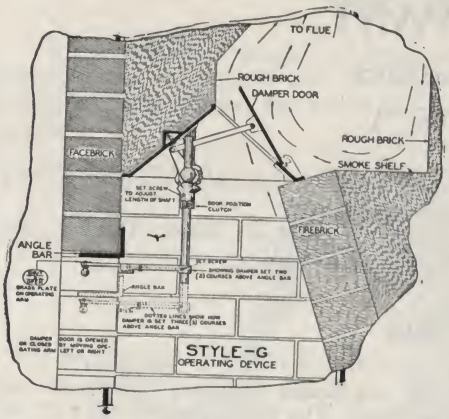
Control lever comes down in center of fireplace, easily operated with poker. Lever arm may be lengthened if damper is set two or three courses above opening

COLONIAL DAMPER, STYLES A, E AND G

No.	Code word	Width of fireplace opening, in.	Proper size of flue, in.	Weight, crated singly, lb.
00	Count	20 to 23	8x8	30
0	Duke	24 to 28	8x8	35
1	Prince	29 to 32	8x12	40
1-A	Valet	33 to 35	8x12	43
2	Regent	36 to 38	8x12	48
2-A	Butler	39 to 41	8x16	51
3	Queen	42 to 44	8x16	53
3-A	Page	45 to 47	12x12	57
4	King	48 to 51	12x12	63
5	Rex	52 to 57	13x16	68
6	Czar	58 to 64	12x16	75
7	Earl	66 to 72	16x16	90

Style A regularly furnished on above code words.
Style E furnished upon adding "universal" to code word.
Style G furnished upon adding "swing" to code word.

Continued on next page



Sectional View, Style-G

Showing method of operation and adjustments. With this device the Colonial head may be set anywhere in throat as high up as desired

Avoids Smoking—A fireplace that does not draw properly will not burn cheerfully. Colonial Damper controls the draft perfectly in checking the fire low or opening the throat wide for a roaring blaze.

Special Service to Architects and Builders—Through the experience of a quarter of a century we have successfully encountered the difficulty of all types of fireplace construction as well as many unusual conditions. We will gladly put this knowledge and experience at your command. For many years a growing number of leading architects have written us freely regarding their fireplace problems.

Colonial Victor Electric Heating Fireplace

A complete fireplace in one unit: wood mantel, newmarble facing, electric grate—choice of either coal fire or log fire. There are six different mantel designs in the Victor Electric Fireplace.

No Flues Necessary—This perfect combination of beauty and utility permits you to plan a fireplace for every room. It adds cheer and decoration to the dining room, bedroom or library. In apartments, schools, hospitals, theaters, etc., specify the New Improved Victor Unit without consideration of flues.

A Complete Fireplace Mantel, Facing and Grate—The Victor Unit, for fireplaces without flues, sets against the wall like a piece of furniture. Includes mantel, facing, grate, "Glo-Bar" Electric Heating Unit, lamps, flicker fans, or realistic smoldering logs that seem to crackle and blaze, so natural as almost to defy detection. Connects to base outlet.

While the genuine fireplace is supreme in the hearts of home owners, it is realized that a wood or coal burning fireplace is often impractical or that an additional fireplace is needed for decorative effect. Architects are turning to the New Improved Victor Fireplace Unit which has the full decorative value of a genuine fireplace plus abundant, healthful heat.

Heats and Ventilates Scientifically—Heating is direct and indirect—by the furnace principle. Directly from concealed "Glo-Bar" element; indirectly by air, drawn through the intake grilles, heated, and then discharged from beneath the hood. This keeps the air in constant and healthful circulation.

Low Operating Cost—The Victor, equipped with 1000-watt "Glo-Bar" 110-220 volt, uses no more electricity than two electric irons. Operated on a three-point switch. The first snap of the switch gives the effect of a glowing wood fire; the second snap of the switch brings on the heat; the third snap turns off both light and heat.

The Beaufort

With coal fire. A type of French mantel with rococo effects in the ornamentation.
Length of shelf: 60 in. Width of shelf: 13¾ in.
Width of body: 54¾ in. Height: 49 in.
Finishes: primed white, walnut or mahogany

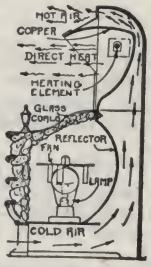
The Plymouth

A typical eighteenth century design.
Length of shelf: 62 in. Width of shelf: 14½ in.
Width of body: 53 in. Height: 52 in.
Finishes: primed white, walnut or mahogany

Glo-Hot—An Electric Heating Grate

This electric heating fireplace grate sets in any fireplace opening. Looks like live coal fire and really heats. Gives off no odor. Does not devitalize the air. Clean, odorless, safe, healthful. Requires no flues.

The Glo-Hot fills an otherwise empty fireplace opening thereby beautifying the fireplace design. It also provides a practical auxiliary heating unit for chilly mornings or cool days of spring and autumn. It adds a glowing warmth to the hearth in winter.



Cross Section

Dimensions of Glo-Hot: width, 24 in.; height, 23½ in.; depth, 12 in. Capacity, 500, 1000, 1500 and 2000 watts.

500-watt capacity, 110 or 220 volts. Plugs in ordinary house wiring circuit. 1000-watt, 110 or 220-volt installation requires No. 12 wire on separate circuit from meter.

The Log Fire—With Electric Heat

A fireplace grate that provides realistic log fire with heat from concealed "Glo-Bar" Unit. Similar in heating principle to the Victor Electric Heating Fireplace and to the Glo-Hot grate, clean, odorless heat as from crackling hardwood logs.

Dimensions: Height, 22 in.; length, 32 in.; depth, 12 in. Capacity, 1000 watts, 110 or 220 volts.

THE H. W. COVERT COMPANY

Manufacturers of Fireplace Specialties
229 East 37th Street, NEW YORK, N. Y.

Products
COVERT PATENT FIREPLACE DAMPERS and SMOKE CHAMBERS.
Also Cleanout Doors, Ash Dumps, Franklin Fireplaces, Coalhole Covers, Trap Pit Covers, etc.

COVERT FIREPLACE DAMPERS TRADE-MARK

For our page on Floor Drains, see Manufacturers' Index.

HINTS ON FIREPLACE CONSTRUCTION

The three vital points in fireplace construction are damper, smoke chamber and flue. If these are designed and installed in proper proportion to the size of the fireplace opening, the result will be satisfactory.

Covert Dampers are made in three different types, the Old Style Poker or Chain Control, the "Improved" Ratchet Control and the Rotary or Face Control. All are good, substantial in construction and adapted to various styles and types of fireplaces. They are shown in detail on the following pages.

Height and Depth of Fireplace

If the fireplace is too deep, the sides will cut off considerable heat radiation, and if too shallow, the smoke is likely to find its way out into the room. For the fireplace of conventional design the following measurements are recommended:

Width of opening, in.	Height of opening, in.	Depth of opening, in.
24	24	16
30	28	18
36	28	18
42	30	20
48	32	20
54	34	24
60	36	24

Frequently the above measurements must be varied to suit unusual conditions and the following rules should be kept in mind.

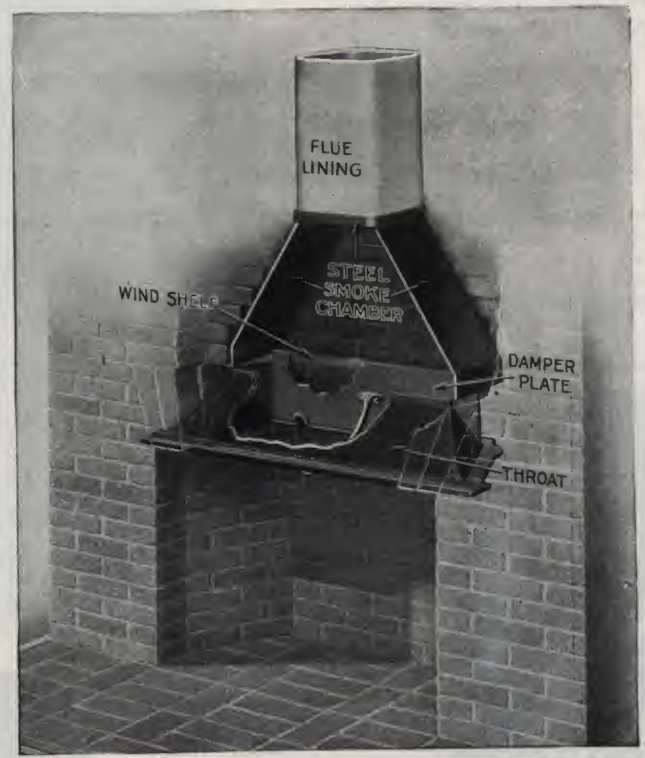
If the height is greater than the width of the opening, the flue area should not be less than one-tenth of the fireplace opening.

Roughly figured, the depth should be two-thirds of the height in fireplaces up to 42 in. in height. Fireplaces over 42 in. high should have a depth of approximately one-half the height.

Splayed sides make the back of the fireplace narrower than the front, and give the fireplace the shape of a reflector, thereby throwing out into the room a maximum of heat. This splay should be about 4½ in. to the foot at each side.

Curving the back of a fireplace should be avoided, as this is likely to throw the smoke out into the room. It is safer to build three courses of brick straight up and then start to slope the back forward on a straight line at an angle that will bring it up under the entire rear flange of the casting.

The soffit, or thickness of the arch, should be kept to 4 in.



Installation Showing "Improved" Damper and Steel Smoke Chamber

Throat and Damper

The iron throat relieves the mason of the formation of the most critical part of the fireplace, and its front flange acts as a support for the arch brick and masonry above, no additional angle iron lintel being necessary.

The damper plate allows the flue to be shut off when not in use, or to cut down the opening when the draft is too great.

Smoke Chamber

Next to the throat, the smoke chamber is the most important part of the fireplace. The funnel shaped sides of the smoke chamber act as a nozzle, giving the smoke a force up the flue. If the sides of the smoke chamber are rough corbelled steps or if the flue is not centered over the fireplace opening, this force up the flue will be greatly diminished.

By the use of the Covert Steel Smoke Chamber, the proper shape, capacity and smooth sides of the smoke chamber are obtained. The saving of the mason's time almost pays for the smoke chamber. This form also induces the building of a wind shelf of adequate size, which prevents smoke being blown into the room by down-drafts.

Flue

A common fault in fireplace construction is that of using too small a flue. In order to make the fireplace draw properly the cross section area of the flue should be about one-twelfth the area of the fireplace opening. As mentioned previously, the proportion should be one to ten if the height is greater than the width of opening.

The draft of a flue decreasing as the height of the chimney decreases, it is advisable to use a one to ten proportion if the height from the hearth to the top of the chimney is less than 20 ft.

In figuring the area of a square or oblong flue, it should be remembered that the outside measurements are usually given. Thus an 8½x13-in. flue has an inside measurement of 7x11½x 80½ sq. in.

For convenience we give inside areas of standard size flues:

8½x 8½	in.,	52	sq. in.
8½x13	in.,	80½	sq. in.
13 x13	in.,	127	sq. in.
13 x18	in.,	183	sq. in.
18 x18	in.,	250	sq. in.
20 x20	in.,	297	sq. in.
20 x24	in.,	357	sq. in.
8 in.	round,	50	sq. in.
9 in.	round,	63	sq. in.
10 in.	round,	78	sq. in.
12 in.	round,	112	sq. in.
15 in.	round,	176	sq. in.
18 in.	round,	255	sq. in.
20 in.	round,	314	sq. in.

To obtain a clean, efficient flue it is very essential that each length of fire clay lining be carefully lined up with the adjoining lengths, and that the mortar squeezing out of the joint be wiped away from the inside of the flue. Necessary offsets in flues should not be more than 30 degrees from the vertical.

It is good practice to carry the lining 3 or 4 in. above the chimney top, surrounding the protruding flue lining with mortar and smoothing off at an incline toward to top of the flue.

Service to Architects

We are always pleased to have architects, owners or builders consult with us regarding details of construction of fireplaces and are glad to give them, without charge, the benefit of our long experience.

Our booklet of fireplace construction will be sent on application.

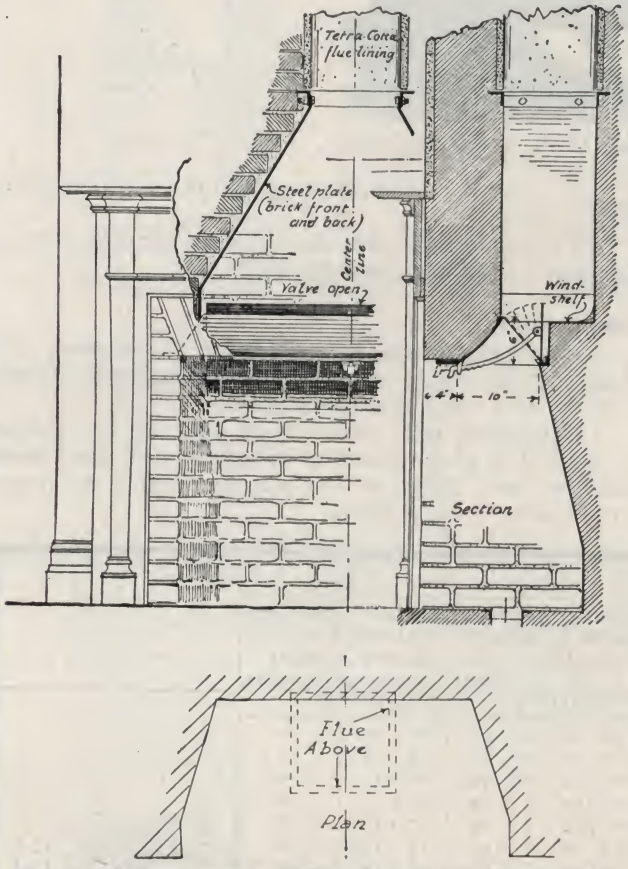
Continued on next page

COVERT IMPROVED THROAT AND DAMPER

This damper is simple in design and substantial in construction. There are but three parts—the cast iron frame or throat piece, the valve plate and the operating ratchet.

In the installation of the damper the strong frame is used as a lintel to support the masonry arch, assisting in the quick completion of the job.

To remove the valve plate it is only necessary to withdraw the cotter pin connecting the ratchet to the plate—no fussing with complicated mechanism. During construction the plate should be removed to prevent clogging by mortar droppings.

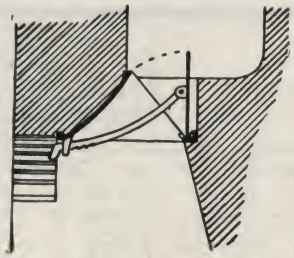


Details of Construction of Fireplace 20 In. Deep with Covert Series E Improved Damper and Steel Smoke Chamber

Improved Damper Series D and E

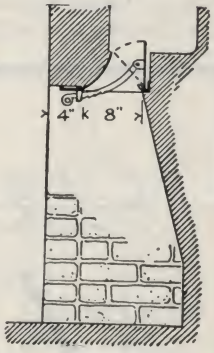
Series D is 8 in. deep (inside measure) and is for fireplaces 18 in. deep or under. Series E is 10 in. deep (inside measure) and is for fireplaces 20 in. deep or under.

For fireplaces deeper than 20 in. we recommend our deeper "Old Style" Dampers shown on the following page

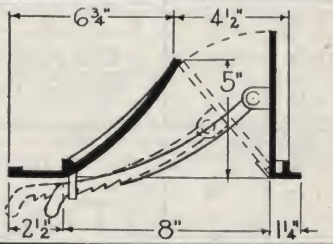


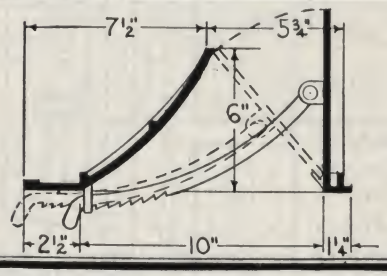
Damper with Front Flange Omitted for Use in Fireplace Having Curved Arch

These are made to order without extra charge

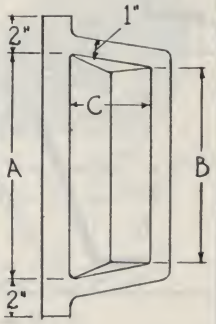


Series D (8-in. Damper) (Built Into Fireplace 18 Ins. Deep





Damper Number.	Front Width Of Fireplace Opening In Inches.	Base Throat Including Flange A	Open'g Of Not In- B	Open'g Of Not In- C	Shipping Weight In Pounds	Proper Flue Lining Exterior Dimensions	Equivalent Round Flue Inside Diameter
IMPROVED DAMPER SERIES "D"							
424	24	24	18	8	23	8½ X 8½	8
430	30	30	24	8	31	8½ X 13	10
432	32	32	26	8	32	8½ X 13	10
436	36	36	30	8	34	8½ X 13	10
442	42	42	36	8	38	13 X 13	12
448	48	48	42	8	47	13 X 13	12
454	54	54	48	8	54	13 X 18	15
460	60	60	54	8	60	13 X 18	15
IMPROVED DAMPER SERIES "E"							
524	24	24	18	10	33	8½ X 8½	8
530	30	30	24	10	40	8½ X 13	10
532	32	32	26	10	46	8½ X 13	10
536	36	36	30	10	52	8½ X 13	10
542	42	42	36	10	60	13 X 13	12
548	48	48	42	10	67	13 X 13	12
554	54	54	48	10	75	13 X 18	15
560	60	60	54	10	87	13 X 18	15



KEY PLAN OF SERIES D & E

Important: The above flue sizes apply only to fireplaces having ordinary height. To determine proper flues for high fireplaces refer to out instructions on preceding page

Smoke chamber for 8½x13-in. flue is reversible and will properly connect, whether the shorter or longer dimension runs parallel with the breast. For 13x18-in. flue it is necessary for us to know which dimension runs parallel with the breast

Continued on next page

Covert Old Style Throat and Damper

Poker or Chain Operated

"Old-Style" Damper Series A, B, C and F

This Old Style Covert Dome Damper is preferred by some architects and builders on account of its high dome, heavy construction, and because it has stood the test of years of successful use.

The Old Style Damper has a valve swiveled in the center and is operated with a poker by means of a handle fixed to the valve plate—or by chains if desired. The valve may be fixed in three positions, namely: full open, half open, and closed—except Series F, which has only the full open or closed position.

It is made in four different series having different cross sections, making it adaptable to almost any condition that may arise in fireplace construction.

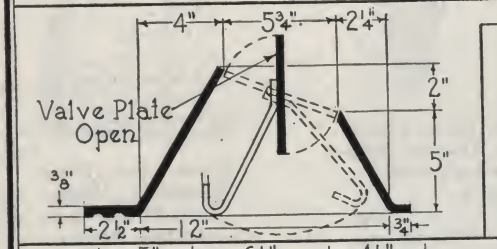
The Series B is the deepest damper and is made up to 7 ft. long.

The steel smoke chamber is used with the Old Style Damper the same as with the Improved.

Specification

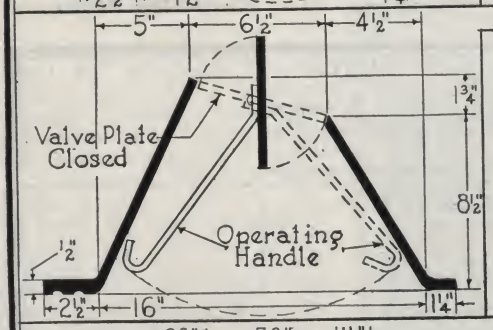
Every fireplace to have a Covert [Improved] [Old Style] [Old Style, chain control] [Rotary] Damper with Covert Steel Smoke Chamber.

Contractor will confer with The H. W. Covert Company as to the selection of damper and steel smoke chamber best suited to the conditions and the proper installation of these items.



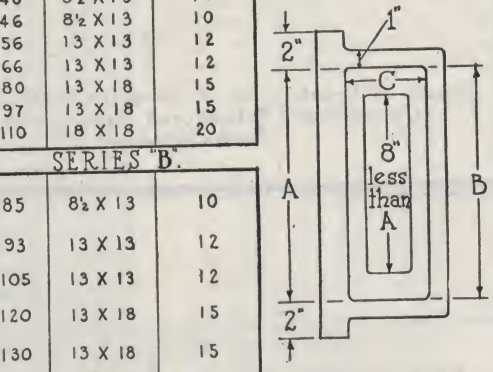
OLD STYLE DAMPER SERIES "A".

Damper Number.	Front Width Of Fireplace Opening In Inches.	Base Throat Including A	Open's Of Not In-cluding Flange B	Open's Of Not In-cluding Flange C	Shipping Weight In Pounds.	Proper Flue Lining Exterior Dimensions	Equivalent Round Flue Inside Diameter.
224	24	24	24	12	26	8½ X 8½	8
230	30	30	30	12	36	8½ X 13	10
232	32	32	32	12	40	8½ X 13	10
236	36	36	36	12	46	8½ X 13	10
242	42	42	42	12	56	13 X 13	12
248	48	48	48	12	66	13 X 13	12
254	54	54	54	12	80	13 X 18	15
260	60	60	60	12	97	13 X 18	15
272	72	72	72	12	110	18 X 18	20

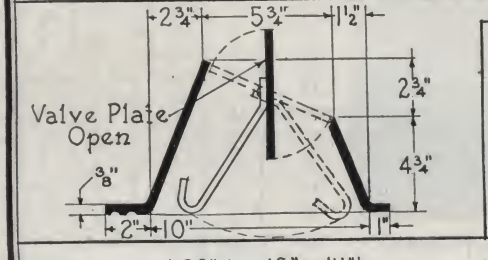


OLD STYLE DAMPER. SERIES "B".

36½	36	36	36	16	85	8½ X 13	10
42½	42	42	42	16	93	13 X 13	12
48½	48	48	48	16	105	13 X 13	12
54½	54	54	54	16	120	13 X 18	15
60½	60	60	60	16	130	13 X 18	15
72½	72	72	72	16	176	18 X 18	20
84½	84	84	84	16	210	20 X 24	22

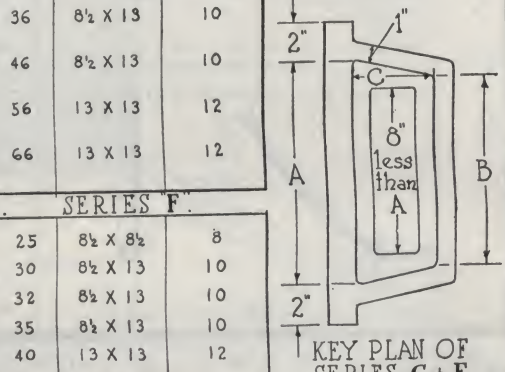


KEY PLAN OF SERIES A & B

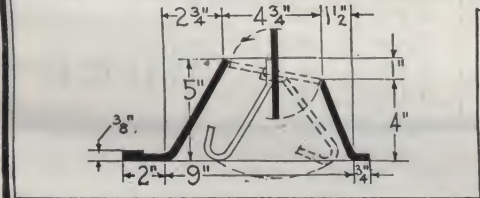


OLD STYLE DAMPER. SERIES "C".

30	30	30	24	10	36	8½ X 13	10
36	36	36	30	10	46	8½ X 13	10
42	42	42	36	10	56	13 X 13	12
48	48	48	42	10	66	13 X 13	12



KEY PLAN OF SERIES C & F

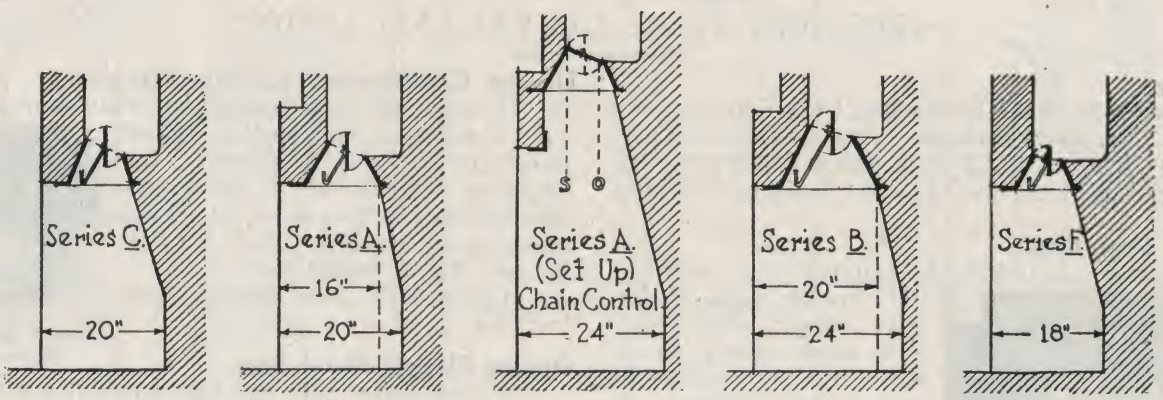


OLD STYLE DAMPER. SERIES "F".

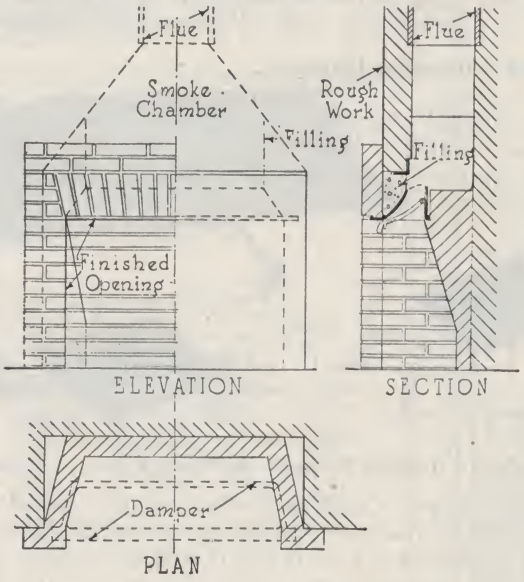
724	24	24	18	9	25	8½ X 8½	8
730	30	30	24	9	30	8½ X 13	10
732	32	32	26	9	32	8½ X 13	10
736	36	36	30	9	35	8½ X 13	10
742	42	42	36	9	40	13 X 13	12
748	48	48	42	9	48	13 X 13	12

Continued on next page

Sections Showing How Old Style Dampers Are Used



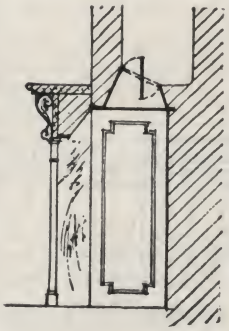
Below is a suggested method of building the finished fireplace after the rough construction is done.



Build the rough opening with square jambs, allowing a space for the finished lining. Omit the damper in rough construction and keep rough arch about 8 in. higher than finished opening. When the finished facing and lining are built, rest the damper on the finished jambs. Steel smoke chamber cannot be used in this case and smoke chamber must be carefully formed in the rough construction. If straight back is desired use deeper Old Style Damper.

Low French mantels present rather difficult problems. The best treatment is to set the damper as far forward as possible in the rough work and raised a few inches above the finished opening to avoid a broad level soffit.

This suggestion applies to any mantel having considerable projection beyond the line of the chimney breast.

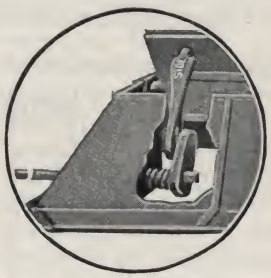


Rotary Dampér—Face or Side Control

This damper is operated by a polished brass lever handle either from the face or the side of the fireplace. Avoiding the usual worm gear we use a simple lever movement that cannot become clogged with soot or put out of use by rust.

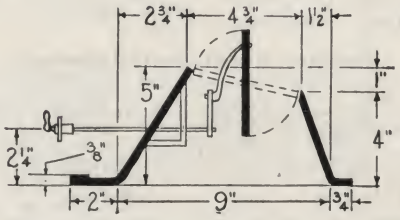
A shaft 24 in. in length is provided with each rotary damper so that it may be connected to operate through the side of the fireplace if front operation is not desired.

Front Control



Side Control

THROAT AND DAMPER						FLUE	
Damper Number	Front Width Of Fireplace Opening In Inches	Base Throat Including Flange A	Open'g Of Not In- B	Shippn'g Weight C	Shippn'g Weight In Pounds	Proper Flue Lining Exterior Dimensions	Equivalent Round Flue Inside Diameter
FACE OR SIDE CONTROL DAMPER							
624	24	24	18	9	25	8½ X 8½	8
630	30	30	24	9	30	8½ X 13	10
632	32	32	26	9	32	8½ X 13	10
636	36	36	30	9	35	8½ X 13	10
642	42	42	36	9	40	13 X 13	12
648	48	48	42	9	48	13 X 13	12



ESTABLISHED 1895

THE DONLEY BROTHERS CO.

INCORPORATED 1911

Building Specialties

13932 Miles Avenue, CLEVELAND, OHIO

Products

DONLEY PACKAGE RECEIVERS; COAL CHUTES; ASH DUMPS; FIREPLACE DAMPERS; ASH PIT DOORS; FIRE BASKETS; ANDIRONS; METER BOXES; GARBAGE RECEIVERS; MAIL RECEIVERS and other Building Specialties.

Donley Coal Chute

Replaces old-fashioned, battered coal windows. All Donley Coal Chutes have copper steel bodies with chain release on the locks of the doors. All hinges and frames are made of malleable iron or copper bearing steel. All locks are of malleable iron for protection against rust or breakage, and operate automatically. Chain lock-release attachments are galvanized. The doors on all Donley Chutes are tight-fitting and substantial.

Donley Coal Chute, No. 48

Description	Wall opening, in.	Straight body for 9-in. wall	Slanted bottom body for 13-in. wall	Slanted bottom body for 17-in. wall
Solid steel door	24x17	No. 19	.....	.....
Solid steel door	24x17	No. 29	No. 213*	.....
Glass door, one light	24x17	No. 39	No. 313*	.....
Glass door, three lights	24x17	No. 48		
			Straight body	
Solid door	32x22	.....	No. 613	No. 617*
Glass door, one light	32x22	.....	No. 713	No. 717*

*Hopper optional. Hopper weights, small, 11 lb.; large, 19 lb.

Grade Line Coal Chute—For low set and terraced residences. Also frequently used for stores. This improved chute has provision for drainage. Drain has a strainer and can be connected with sewer. Constructed with malleable iron frame and hinges, brass hinge pin, checkered steel door and reinforced body.

Donley Package Receiver

A steel receptacle built into the outer wall for delivery of milk and groceries. Insulated outer door with inner door ventilated by four louvers to protect contents against freezing and over-heating. Outer door locks automatically when closed. Released automatically on opening inner door. Installation details accompany receivers.

Approved by Good Housekeeping Institute.

Donley Package Receiver

Size: Outside height, 11½ in.; width, 14⅛ in.; wall depth, 9 and 6 in.

PACKAGE RECEIVER DIMENSIONS

Number	Body Width, in.	Body Height, in.	Overall fr't to back, in.	Inside frame, in.	Facing inside door, with hinge
1	14⅛	11½	9	16¾x14½	On left
2	14⅛	11½	9	16¾x14½	On right
3	14⅛	11½	6	16¾x14½	Reversible

Note: Return of flange on inside frame ¾ in. Nos. 1 and 2 have automatic lock; No. 3 no automatic lock.

Donley Underground Garbage Receiver

Prevents nuisances arising from ordinary garbage can. Consists of outer shell and inner receptacle that can be removed for emptying. Service lid of parkerized steel operated by foot lever, which fits snugly, excluding flies. Made in 6, 10, 14, and 21-gal. capacities.

Approved by Good Housekeeping Institute.

Donley Garbage Receiver

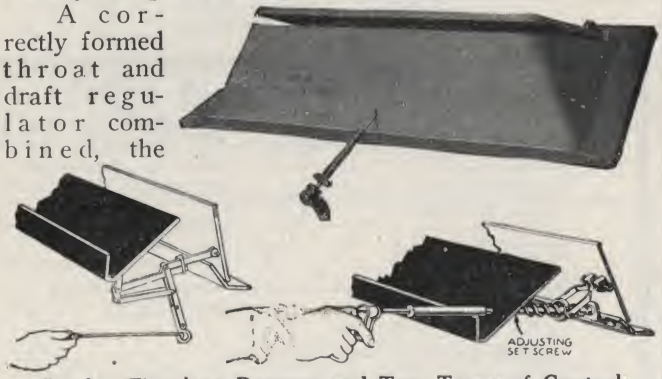
Donley Electric Meter Box

A steel cabinet built into basement wall where service wire enters. Supplied with 3-pole, 60-amp., 250-volt safety switch operated from basement. Meter read through glass pane from outside.

Large inner and outer doors. Height, 13½ in.; width, 16½ in.; wall depth, 10⅝ in.; shipping weight, 45 lb.

Donley Fireplace Damper

A correctly formed throat and draft regulator combined, the Donley damper simplifies correct fireplace construction and promotes clean, economical fires through proper draft regulation. Two types of control, as shown. *See following page for correct damper size and table dimensions.* For intermediate size openings use next largest damper.



Donley Fireplace Damper and Two Types of Control

Dampers crated separately. Instructions for building fireplaces and installing dampers attached to crate.

Donley Fire Basket

Meets demand for beautiful, substantial fire basket co-ordinated to wall angle that radiates most heat, as shown in plans on following page. Basket has removable ends.

Made in 24, 28, 30, 34 and 40-in. sizes with respective shipping weights of 58, 64, 66, 73 and 86 lb.

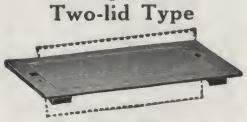
Depth of each, 15 in.

Donley Fire Basket

Donley Ash Dumps

Are cast iron trap doors to fit in hearth above the ash pit. The two-lid type (No. 57) is 5x7 in. Two sizes of single lid type. No. 58 is 5x8 in. No. 70 is 7x10 in.

Two-lid Type



One-lid Type

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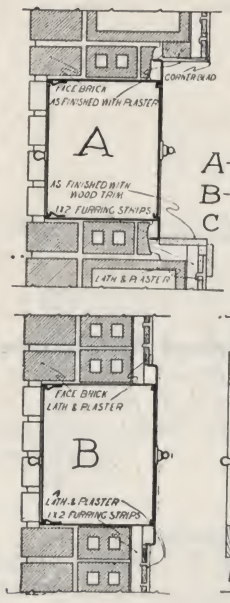


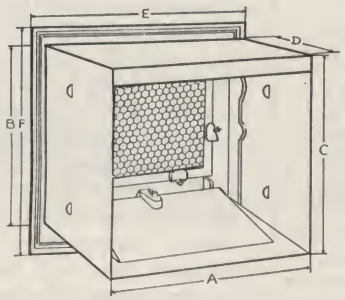
DONLEY PACKAGE RECEIVER *INSTALLED*

A-In 13" Brick Wall

B-In 9" Brick Wall

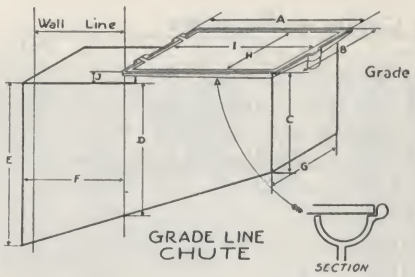
C In Frame Wall

The Donley Coal Chute



DIMENSIONS OF DONLEY STANDARD COAL CHUTE IN INCHES

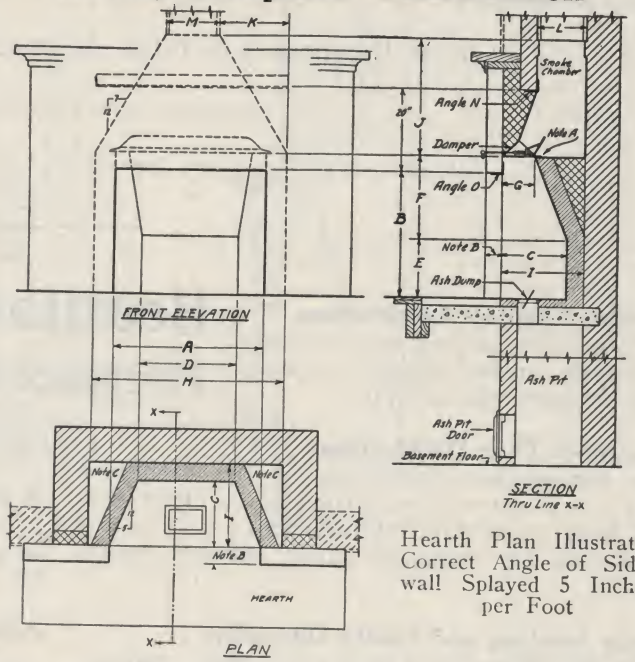
Chute No.	A	B	C	D	E	F
19, 29, 39 and 48	22	16	16	9	25	19
213 and 313	22	16	18 1/2	12	25	19
613 and 713	30 1/2	21	21	12	34 1/2	24 1/2
617 and 717	30 1/2	21	24 1/2	17	34 1/2	24 1/2



DIMENSIONS OF DONLEY GRADE LINE COAL CHUTE IN INCHES

No.	A	B	C	D	E	F	G	H	I	J
1	21	26 1/4	14 1/2	19 1/2	24 1/2	14 1/4	24 1/2	25 1/4	20	2 1/2
2	27	32 1/4	17 3/4	24 3/4	30 1/2	16 1/4	30 1/2	31 1/4	26	2 1/2

Donley Fireplace Construction



Hearth Plan Illustrates Correct Angle of Side-wall Splayed 5 Inches per Foot

Notes: A—The back flange of the damper must be protected from intense heat by being fully supported and shielded by the back wall masonry.

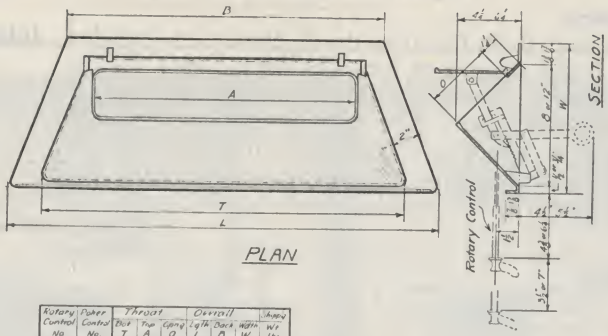
B—The drawing indicates thickness of brick fireplace front as 4 in. No dimensions can be given for this because of various materials used such as marble, stone, tile, etc., all of which have varying thicknesses.

C—These hollow spaces should be filled to form solid backing. If desirable to include a furnace flue in either space, outside dimensions should be increased.

The illustration shows a rotary control damper installed.

DIMENSIONS														EQUIPMENT								
Finished Fireplace Opening							Rough Brickwork							Accessories						Furnishings		
Width	Height	Depth	Back	Vertical Back Wall	Sloped Back Wall	Throat	width	depth	Smoke chamber	Slope of smoke chamber	Std. Rectangular Flue Lining outside dimension	Std. Round Flue Lining inside diameter		Damper Rotary Control	Damper Poker Control	Ash Dump	Ash Pit Door	Angle N 4'3" x 8"	Angle O 4'3" x 8"	Fire Basket	Fire Screen	Andirons
A	B	C	D	E	F	G	H	I	J	K	L	M	ϕ									
In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In. × In.		In.					Length In.	Length In.	No.	No.	No.
24	28	16	11	14	18	8	37	20	24	14	8½ x 8½		10	324	224	58	10x12	36	30	—		
28	28	16	15	14	18	8	42	20	25	14½	8½ x 13		10	330	230	58	10x12	42	36	24		
30	30	16	17	14	20	8	42	20	25	14½	8½ x 13		12	330	230	58	10x12	42	36	28		
34	30	16	21	14	20	8	46	20	28	16½	8½ x 13		12	336	236	70	10x12	48	42	30		
36	30	16	23	14	20	8	46	20	28	16½	13 x 13		12	336	236	70	10x12	48	42	34		
40	30	16	27	14	20	8	50	20	32	18½	13 x 13		15	342	242	70	10x12	48	42	34		
42	30	16	29	14	20	8	54	20	35	20½	13 x 13		15	342	242	70	10x12	54	48	34		
48	33	18	33	14	23	8	59	22	40	23	13 x 13		15	348	248	70	10x12	60	54	40		
54	36	20	37	14	26	12	67	24	42	24½	13 x 18		18	354	254	70	12x13	66	60	40		
60	39	22	42	14	29	12	71	26	45	26½	18 x 18		18	360	260	70	12x15	66	66	—		
72	40	22	54	14	30	12	83	26	56	32½	18 x 18		18	372	272	70	12x15	80	80	—		

The Donley Damper



Rotary Control No.	Poker Control No.	Throat Dist. T	Throat Dim. A	Throat Opng. O	Damper Detail Lgth. L	Damper Detail Back D	Damper Detail Width W	Approx. Wt. lbs.
224	324	24	17⅞	4½	28½	21	9¾	54
230	330	30	23⅛	4½	34½	27	9¾	54
236	336	36	29⅛	4½	40⅝	33	9¾	60
242	342	42	35⅛	4½	46½	39	9¾	37
248	348	48	41⅛	4½	52⅝	45	9¾	54
254	354	54	46½	7	58½	46	14¾	96
260	360	60	49½	7	64½	53	14¾	110
272	372	72	60½	7	76½	64	14¾	150
*284	*384	*84	71½	7	88½	79	14¾	165
*296	*396	*96	83½	7	100½	89	14¾	185

*Two Valve Plates

NOTE
Where 2 Dimensions are given in Detail the smaller applies to Dampers 248-348 and under, the larger to Dampers 354-354 and over.
Both Operating Devices are indicated in order to show dimensions. See other illustrations for details of their operation

HEATILATOR COMPANY

East Brighton and Glen Avenues, SYRACUSE, N. Y.

Distributors are Leading Building Supply Dealers

Warehouses at Twenty-five Convenient Points in United States and Canada

Heatilator Fireplace Unit

Standardizes Fireplace Construction

The Heatilator serves as a correctly designed form around which a perfect operating fireplace can be built.

Provides More Than Double Heat

The furnace-like construction of the Heatilator furnishes a new source of circulated heat. Often provides all heat required in mild climates.

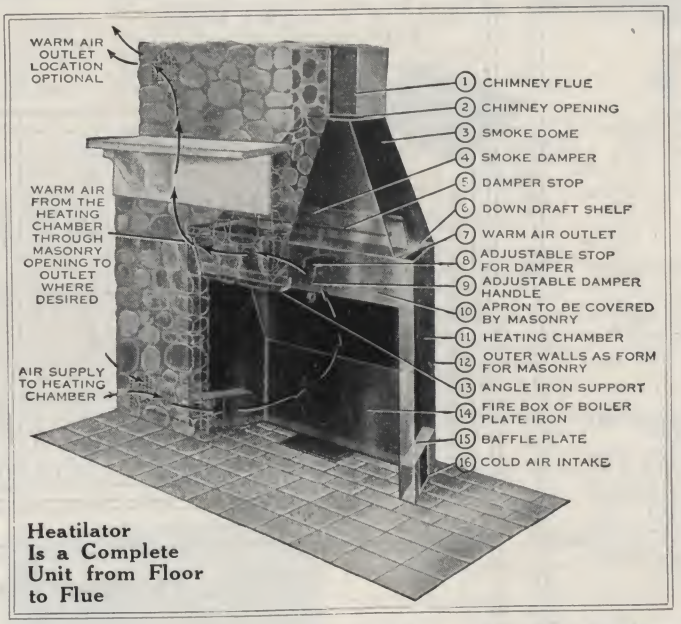
Ideal also for mountain cabins, summer camps, etc.

Eliminates Smoking and Faulty Operation

Correctly proportioned down-draft shelf, damper, throat and smoke dome correct the common cause of smoky fireplaces.

The Heatilator Fireplace Unit is designed to improve the construction, operation and efficiency of the fireplace. It tends to popularize the fireplace—adding comfortable warmth to the cheerfulness of the open fire.

Cold air enters the double-walled firebox of the Heatilator through decorative grille openings at floor level or from cold air boxes beneath the floor. It is then circulated around the fire—heated—and returned to the room through other openings higher in the masonry.



Heatilator Is a Complete Unit from Floor to Flue

Adapted to any Style of Architecture

Brick, stone, tile or other kinds of masonry may be used as desired.

Opening grilles blend inconspicuously into design or in some designs may be entirely concealed.

A Simplified Method of Construction

The mason cannot go wrong in building a Heatilator Fireplace. He simply lays up the masonry around the Unit.

Adds Very Little to Completed Cost

The saving of labor and replacement of materials reduces the cost of the Heatilator Fireplace to but slightly more than the ordinary type.

Every Heatilator installation is guaranteed to operate successfully and to provide more than double heat. You can assure your clients of complete satisfaction.

Heatilator Fireplace Units are distributed by the building supply trade. Many dealers carry them in stock and will be glad to show you how they operate and how they assure a fireplace that is usable as well as ornamental. If desired, your dealer will have a Heatilator shipped to you, subject to your inspection and approval on arrival.

Specifications

The inner shell forming the firebox is of $\frac{3}{16}$-in. copperoid boiler plate iron for sizes up to 39-H, $\frac{3}{8}$-in. for larger sizes. Down-draft shelf and smoke damper are of same material. The outside and dome walls which serve as forms for permanent masonry are of 14 gauge copperoid iron. All seams are electrically welded. Damper is operated by simple poker control.

No.	Finished width, in.	Opening height, in.	Fuel capacity	Weight, lb.	Price
18-H	17	18	up to 15 in.	175	$29.00
24-H	23	24	up to 18 in.	200	39.00
28-H	27	25	up to 20 in.	235	49.00
34-H	33	26	up to 28 in.	285	58.00
39-H	37	27½	up to 30 in.	340	68.00
44-H	42	30¼	up to 33 in.	465	78.00
50-H	48	33	up to 39 in.	580	96.00
62-H	60	35¼	up to 48 in.	780	116.00

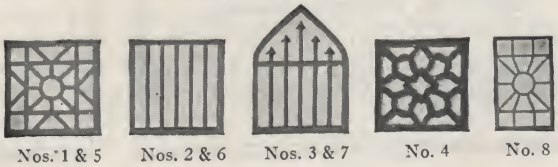
Details of special 74-H Unit on request.

Intake and Outlet Grilles or Registers

First three patterns are oxidized cast iron. Pattern No. 4 is hand-moulded clay tile.

Grilles 1, 2, 3 and 4 are 8x8 in.—$1.50 each—for use with Heatilators up to and including 44-H. Grilles 5, 6 and 7 are 10x10 in.—$2.00 each—for use with all larger sizes. No. 8 grilles 5x8 in. for use with Nos. 18-H and 24-H—$1.00 each.

Angle iron support for straight opening or arched iron support for arch opening furnished if desired.



Nos. 1 & 5 | Nos. 2 & 6 | Nos. 3 & 7 | No. 4 | No. 8

Continued on next page

DETAIL OF TWO TYPICAL HEATILATOR FIREPLACES

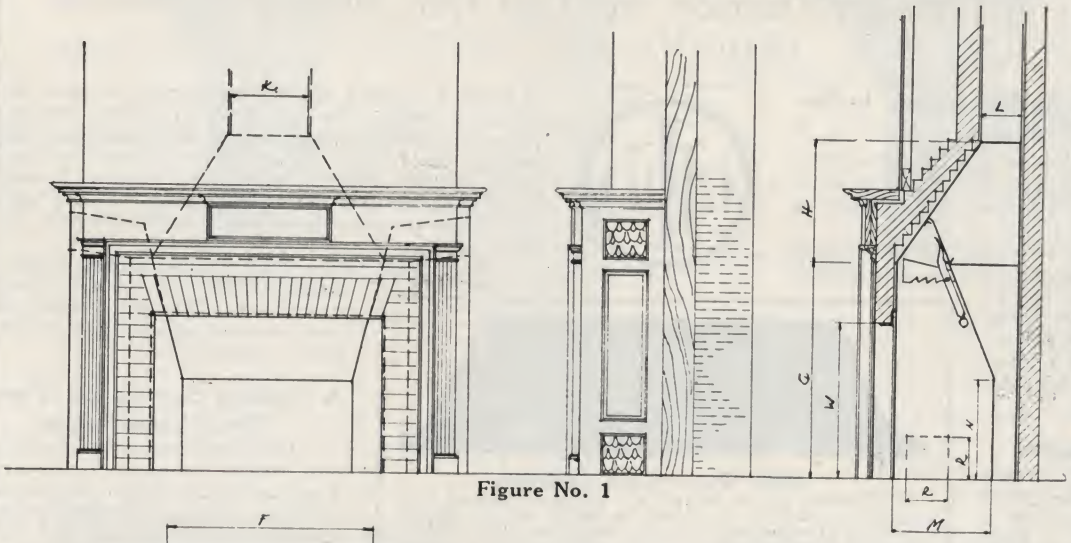
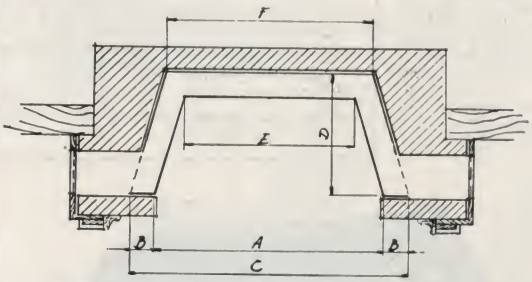


Figure No. 1

Location of Grilles

The location of the Heatilator cold air intake and warm air outlet grilles may be varied according to space available and the design of the mantel. They may be placed either in the sides or front of the fireplace, with the outlet grilles above or below the mantel shelf as desired. Or the warm air can be conducted through the walls to adjacent or upper rooms.

Figure No. 1 shows the location of all grilles in the sides of the fireplace.



HEATILATOR DIMENSIONS IN INCHES

Model	A	B	C	D	E	F	G	H	K	L	M	N	R	W
18-H	18	3	24	15	15	20	24	12	8	8	12	12	6	18
24-H	24	3	30	18	16	20	31	16	8	8	15	13	8	24
28-H	28	3	34	18	20	24	32	20	12	8	15	14	8	25
34-H	34½	3	40½	20	27	32	33½	20	12	8	17	15	8	26
39-H	39	4	47	22	30	36	36	24	16	8	18	16½	8	27½
44-H	44	5	54	24	33	40	42	24	16	8	19	18	8	30¼
50-H	50	6	62	26	37	45	44	30	16	12	20	20	10	33
62-H	62	8	78	2[illegible]	44	55	48	36	16	12	22	22	10	35¾

Our Engineering Department will be glad to assist you with your Heatilator Fireplace designs at any time without obligation.

Where specially designed grilles are desired, send us sketches for detailed information and prices.

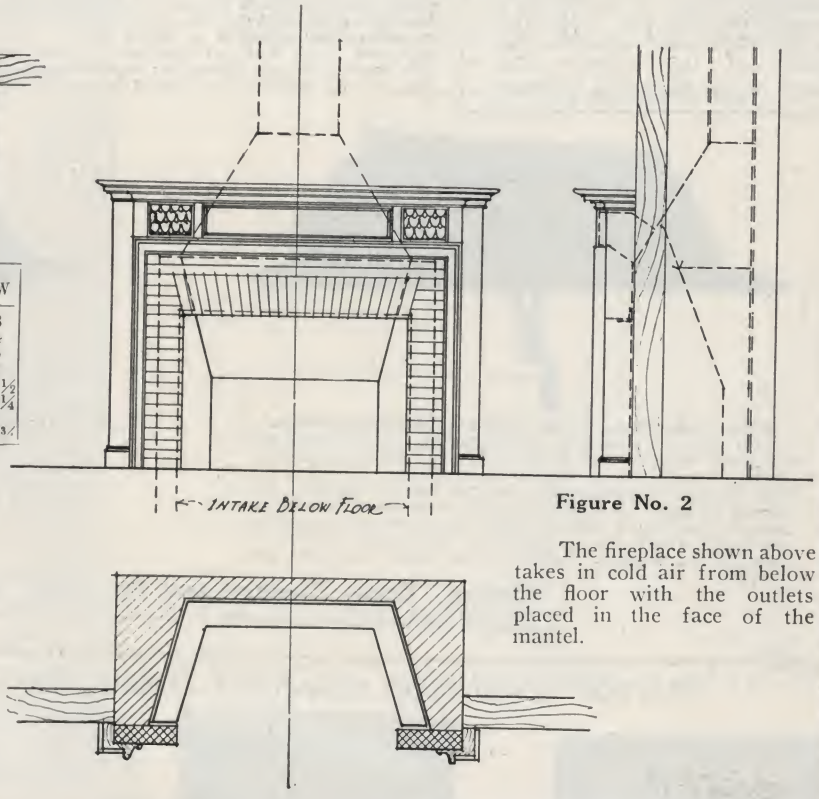


Figure No. 2

The fireplace shown above takes in cold air from below the floor with the outlets placed in the face of the mantel.

Three Attractive Heatilator Fireplaces Showing Various Grille Locations

INDIANA FOUNDRY COMPANY

Manufacturers of Fireplace Dampers and Cast Iron Builders' Specialties

INDIANA, PA.

50 Years' Manufacturing Experience Is Behind "Sutton" Products

Back of the "Sutton" line of cast iron specialties for builders stands more than fifty years of continuous service and experience—the architect's guarantee of stability.

"Sutton" products are all made from the highest quality of gray iron castings, assuring the longest possible life. They are correct in design and carefully manufactured and may be specified with the assurance that they are the highest quality possible in materials and workmanship.

"Sutton" Dome Dampers

The "Sutton" Dome Damper is the type of damper you would choose if you were building a home of your own. It is truly a quality product. It is correct in design; the castings are full weight, clean and smooth; the domes are full height. The flanges on the front and sides are of ample width, and of sufficient strength to carry one course of brick. The high dome provides a smooth, properly formed metal throat for the fireplace. Being made of cast iron throughout, there are no sheet steel parts to rust through in a short length of time. Accurate control of the draft is insured by the positive action of the shutter, which will remain in the exact position in which it is placed.

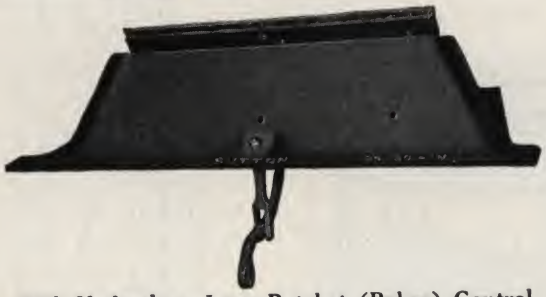
Made with worm gear, short ratchet (poker control), and long ratchet (poker control) as illustrated below to meet any desired condition of fireplace construction.

With Worm Gear Control

With this type of control, the shutter is operated by a highly polished cast brass handle, which extends through the front of the mantel, turning either to the right or left to close or open the shutter. The brass handle is plainly marked, showing which way to turn. If preferred, the entire control can be located in the center of the damper, instead of in the right hand side, as shown above. The worm and gear will never bind, as both are of open construction, with ample clearance allowed for expansion and contraction; they are self cleaning, and cannot become fouled with soot

A Special Service on Fireplace Construction

The construction of fireplaces is a specialized part of masonry work and every detail should be carefully planned if satisfactory operation is to be assured. We have for many years co-operated with architects and builders in planning their installations and this special service is always available on request.



With Underslung Long Ratchet (Poker) Control

If a ratchet control type is preferred, we recommend the "Sutton" Damper with long ratchet control, as illustrated. Damper can then be set higher in the fireplace, which is the best fireplace construction. On this type of damper, the shutter is opened or closed by moving the lever forward or back, by inserting a poker through the opening in the end of the lever. The lever does not at any time extend beyond the front of the fireplace. Control of the draft is positive and accurate

With Underslung Short Ratchet (Poker) Control

In cases where the face of the mantel is tile or marble, or where the owner does not wish to have the handle rod through the front of the fireplace, it is advisable to install a "Sutton" Damper with ratchet control. The shutter is controlled by inserting a poker through the opening in the end of the ratchet lever, either pulling forward or pushing backward to open or close the shutter. The control is positive. The lever does not at any time extend beyond the front of the fireplace

"Sutton" Dome Dampers and the Three Types of Control

See recommendations for best fireplace construction on following page

"SUTTON" CAST IRON CLEANOUT DOORS AND AUTOMATIC ASH DUMPS

These are made of cast iron throughout—clean, smooth and full weight. Openings in frames are full size as listed under each type. Doors are carefully fitted and nicely painted. New Style cleanout door frames are equipped with mortar lugs.

New Style

Old Style

No.	Exact opening, in.	Weight lb.
30	5x 7	4¼
300	8x 8	7
31	8x10	7½
32	10x12	11
325	12x12	13
33	12x16	15½
34	14x20	28½
35	18x24	47
36	24x24	57½

No.	Exact opening, in.	Weight, lb.
00	8 x 8	13¼
0	5 x 6⅞	6⅛
1	6⅝x 8¾	9½
2	9½x11⅛	14
3	10¼x13⅜	19¼
4	11½x14⅜	25
5	13½x17¼	44
6	14¾x17¾	54
7	17¼x23½	85

Cast Iron Cleanout Doors

Tilting Type Ash Dump

Will close automatically after the ashes are dumped

No.	Frame, in.	Opening, in.	Weight, lb.
1	7 x 8¾	4⅝x 6⅜	2½
2	7 x10	5 x 8	3½
3	7¼x11¾	5½x10	5¼
5	9 x12	6¾x 9⅝	5⅜

Automatic Ash Dump No. 4

A sufficient weight of ashes, falling from above, causes tilting doors to open automatically, dropping ashes through to ash pit.

Frame, 6½x8½ in., opening, 5⅛x7¼ in., weight, 5 lb.

Continued on next page

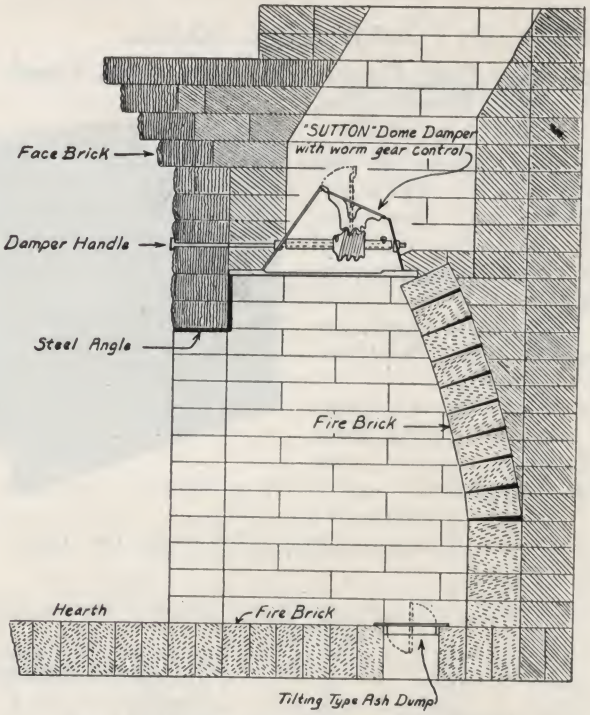


Fig. 1. Damper with Worm Gear Control

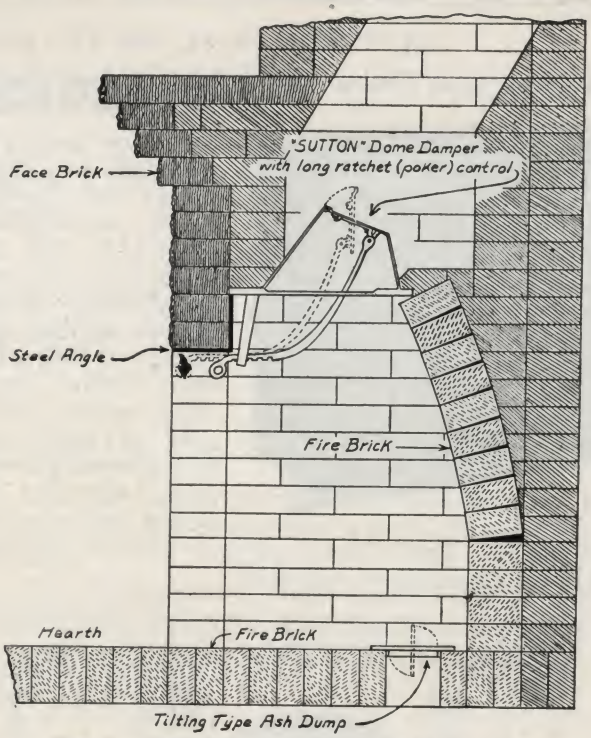


Fig. 2. Damper with Long Ratchet Control

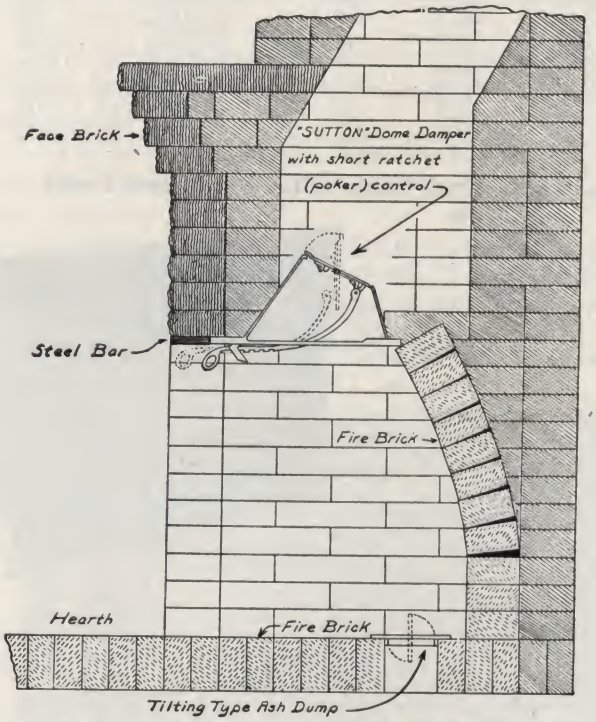


Fig. 3. Damper with Short Ratchet Control

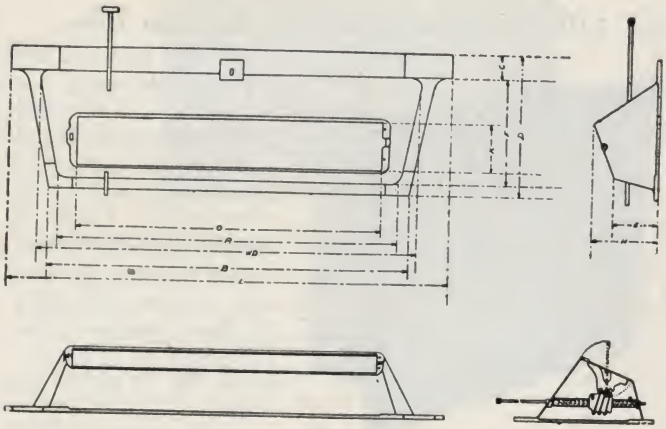


Fig. 4

SPECIFICATIONS OF "SUTTON" DOME DAMPERS (FIG. 4)

No.	L, width of frame at front	*WD, width of dome at front	D, depth of frame	F, depth of dome	H, height of dome at front	B	R	O	C	K	E	Proper flue lining, exterior dimensions	Equivalent round flue, inside dimensions
124-W	30″	24″	13⅛″	10″	6¼″	21⅞″	20″	16⅞″	2¼″	4¾″	4¼″	8½″x8½″	8″
128-W	34″	28″	13⅛″	10″	6¼″	25¾″	24″	20¾″	2¼″	4¾″	4¼″	8½″x13″	10″
130-W	36″	30″	13⅛″	10″	6¼″	27¾″	26″	22¾″	2¼″	4¾″	4¼″	8½″x13″	10″
132-W	38″	32″	13⅛″	10″	6¼″	29¾″	28″	24⅝″	2¼″	4¾″	4¼″	8½″x13″	10″
134-W	40″	34″	13⅛″	10″	6¼″	31¾″	30″	26⅝″	2¼″	4¾″	4¼″	8½″x13″	10″
136-W	42″	36″	13⅛″	10″	6¼″	33¾″	32″	28⅝″	2¼″	4¾″	4¼″	13″x13″	12″
139-W	45″	39″	13⅛″	10″	6¼″	36¾″	35″	31½″	2¼″	4¾″	4¼″	13″x13″	12″
142-W	48″	42″	13⅛″	10″	6¼″	39½″	38″	34½″	2¼″	4¾″	4¼″	13″x13″	12″
146-W	52″	46″	13⅛″	10″	6¼″	43¼″	41½″	38½″	2¼″	4¾″	4¼″	13″x13″	12″
148-W	54″	48″	13⅛″	10″	6¼″	45¼″	43⅜″	40¼″	2¼″	4¾″	4¼″	13″x13″	12″
154-W	60″	54″	13⅛″	10″	6¼″	52⅜″	50″	47⅛″	2¼″	4¾″	4¼″	13″x18″	15″
160-W	66″	60″	13⅛″	10″	6¼″	58½″	56″	53⅛″	2¼″	4¾″	4¼″	13″x18″	15″
166-W	72″	66″	13⅛″	10″	6¼″	64½″	62″	59″	2¼″	4¾″	4¼″	18″x18″	18″
172-W	78″	72″	13⅛″	10″	6¼″	70½″	68″	65″	2¼″	4¾″	4¼″	18″x18″	18″

*When selecting a damper of the proper size for use in a fireplace, refer to column "WD," and select the damper which has the WD dimension nearest to the width of the fireplace opening. For instance, if the width of the fireplace opening is 36 in., select a No. 136 W damper. However, if the width of the fireplace opening falls between any two WD dimensions shown above, select the damper with the WD dimension *next larger* than the width of the fireplace opening—for instance, for a fireplace opening which measures 40 in. wide, select a No. 142 W damper.

Continued on next page

CAST IRON COAL CHUTES FOR BUILDING IN FOUNDATION WALLS

Cast Iron Coal Chutes with Solid Cast Iron Doors, Nos. 1P to 13P

These coal chutes are made in a wide variety of depths, which makes them adaptable for any thickness of wall. Being made of cast iron throughout, they have much longer life than chutes made either entirely, or in part, of sheet steel. The castings are clean, smooth, full weight and are carefully fitted. Each chute is equipped with an automatic latch on the inside of the door.

No.	Door, in.	Depth into wall, in.	Opening, in.	Weight, lb.
1P	16x16	8	15½x15½	66
2P	16x16	10	15½x15½	75
3P	16x16	12	15½x15½	90
4P	16x16	14	15½x15½	103
5P	16x16	16	15½x15½	116
6P	18x18	8	17¼x17¼	75
7P	18x18	9	17¼x17¼	82
8P	18x18	10	17¼x17¼	91
9P	18x18	12	17¼x17¼	108
10P	18x18	14	17¼x17¼	113
11P	18x18	16	17¼x17¼	133
12P	18x18	18	17½x17½	154
13P	18x24	15½	17¼x23½	183

Cast Iron Coal Chutes with Wire Glass Panels in the Doors, Nos. 101G to 113G

Coal chutes of the above type, when installed, serve the double purpose of coal chutes and basement windows.

The glass panels are made of heavy wire glass, ⅜ in. thick.

With the exception of the glass panels, these chutes are made of cast iron throughout.

Each chute is equipped with an automatic latch on the inside of the door.

No.	Door, in.	Depth into wall, in.	Opening, in.	Weight, lb.
101G	16x16	8	15½x15½	70
102G	16x16	10	15½x15½	79
103G	16x16	12	15½x15½	94
104G	16x16	14	15½x15½	107
105G	16x16	16	15½x15½	120
106G	18x18	8	17¼x17¼	82
107G	18x18	9	17¼x17¼	99
108G	18x18	10	17¼x17¼	108
109G	18x18	12	17¼x17¼	116
110G	18x18	14	17¼x17¼	121
111G	18x18	16	17¼x17¼	142
112G	18x18	18	17½x17½	161
113G	18x24	15½	17¼x23½	191

No. 14P Coal Chute with Solid Cast Iron Door

This coal chute has been designed for use in tile or concrete foundation walls but is equally well adapted for stone or solid concrete walls. Chute is exactly equal in height to that of two standard 8-in. blocks, plus the width of mortar joint. The blocks will lie perfectly flat on top of the chute.

The door swings up on three hinges instead of two, the usual construction in this type of chute, and locks automatically in an open position.

The use of the extra hinge plus the scientific design of the door itself (the angle iron principle) practically eliminates all danger of breakage, even if the door is accidentally dropped against the frame of the chute.

Chute is made throughout of cast iron which has much longer life than sheet steel. Once installed it will never have to be replaced.

Each chute is carefully fitted and painted before shipment.

Opening in chute is of ample width to receive wagon chute.

SPECIFICATION DATA

Exact size of opening	16 x21½	in.
Door	16⅞x22½	in.
Frame over all (at front of chute)	20⅝x26	in.
Depth of chute, into wall	8 in.	
Frame at back of chute (opening into cellar)	17 x22⅝	in.
Weight	91 lbs.	

No. 114G Coal Chute with Wire Glass Panel in Door

The No. 114G Sutton Coal Chute is same throughout as the No. 14P Chute, except that the door, instead of being solid, has a wire glass panel in it made of heavy wire glass, 9x14½x⅜ in. This chute, when installed, serves also as basement window. The glass panel is puttied in place and held securely by two galvanized steel bars, firmly fastened to the cast iron door proper by four bolts cast in the door.

This chute is exactly correct in size for tile or concrete block foundation walls and is equally well adapted for stone or solid concrete. The door swings up and locks in position while the chute is in use; on closing, it locks automatically, and can then be opened only from inside. The design of the door together with the use of the extra hinge, practically eliminates all danger of breakage. Opening is of ample width to receive wagon chute.

A cast iron chute has much longer life than one made either entirely, or in part, of sheet steel. A cast iron chute, once installed, should never need to be replaced.

SPECIFICATION DATA

Exact size of opening	16 x21½	in.
Door	16⅞x22½	in.
Frame over all (at front of chute)	20⅝x26	in.
Depth of chute, into wall	8 in.	
Frame at back of chute (opening into cellar)	17 x22⅝	in.
Weight	92 lbs.	

EDWIN JACKSON, INC.

Manufacturers and Importers of Mantels, Franklin Stoves and Fireplace Furnishings

50 Beekman Street; also Lexington Avenue and 65th Street
NEW YORK, N. Y.

Products

JAXON DAMPERS; FRANKLIN STOVES; ANDIRONS BUILT-IN and UNDERGROUND GARBAGE RECEIVERS.

Also Fireplace Screens and Ashtraps.

For Marble and Wood Mantels and Ventilating Grates, see Manufacturers' Index.

Franklin Stoves

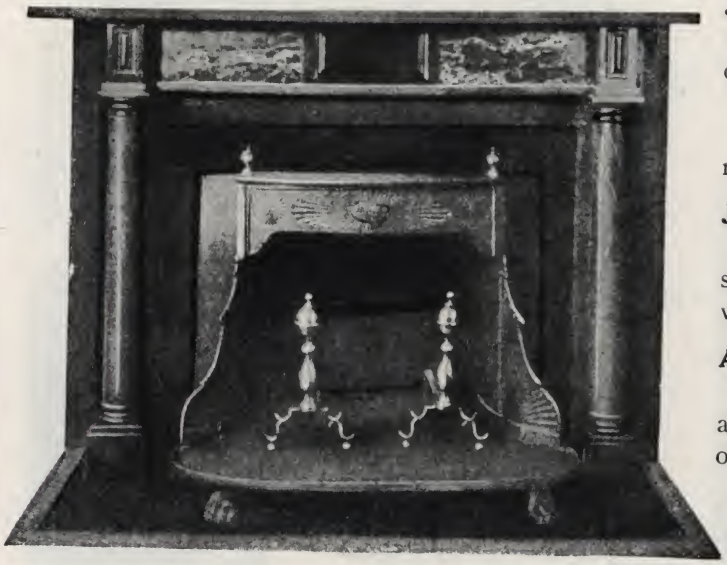
Our collection of Colonial Franklins is probably the largest in the world. We have several originals and many reproductions.

These stoves can be used in a fireplace, with or without the iron hearth plate, resulting in better draft and greater heat.

Also they can be used where there is no fireplace, but where there is a good flue, for bedrooms and summer cottages.

These are all copies of Colonial patterns and are intended for use in a fireplace or to be connected with a flue where there is no fireplace.

The Franklin gives more heat and better draft than the usual open fire.



Andirons

We import English, French and Italian andirons, both modern and genuine antiques. We also manufacture grates, fenders, spark screens, and everything used in connection with fireplaces.

Iron Firebacks

Interest and durability are secured when the back of the fireplace is protected by a heavy, ornamental iron fireback.

We import several patterns, such as "Royal Arms" (illustrated), size 22 in. wide and 22 in. high.

We also make stock and special designs in any desired sizes.

Jackson Ventilating Grates

Jackson Ventilating Grates are made for heating one room or for heating a room above or in the back.

They are economical and durable.

Can be used successfully in any fireplace, old or new, that has a good draft.

Jaxon Dampers

Jaxon Fireplace Dampers are made in stock, also special sizes to fit all fireplaces, and are of three styles, viz.: throat, rotary and push.

Andirons, Firetools and Spark Screens

These can be had in all periods of decoration, in all sizes, and in all metals. Imported antiques, Colonial or modern.

Jaxon Built-in Garbage Receivers

Jaxon Built-in Garbage Receivers for apartments or private residences are arranged with a shelf on the door so that the can is swung forward conveniently for use.

Catalogues

Our catalogues describing in detail all our products will be gladly sent.

KEWANEE MANUFACTURING COMPANY

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NATIONALLY DISTRIBUTED THROUGH DEALERS IN BUILDING MATERIAL

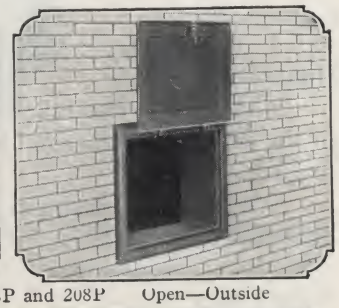
Products

KEWANEE COPPER STEEL BASEMENT COAL CHUTES of Window, Store and Grade Line Types.

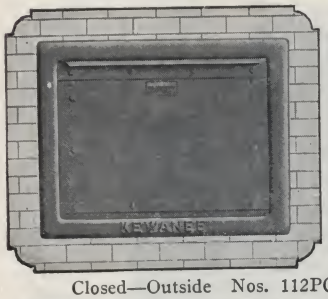
Also Fireplace Dampers, Ash Dumps, Clean-out Doors, Package Receivers, Built-in Mail Chutes, Garbage Receivers, and other Building Products.

For Kewanee Copper Steel Basement Windows, see Manufacturers' Index.

Closed—Outside

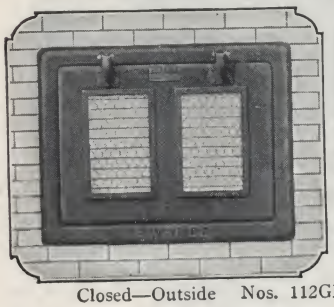


Nos. 108P and 208P Open—Outside



Closed—Outside

Nos. 112PC and 212PC Open—Outside

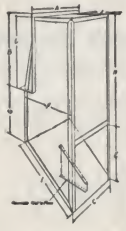


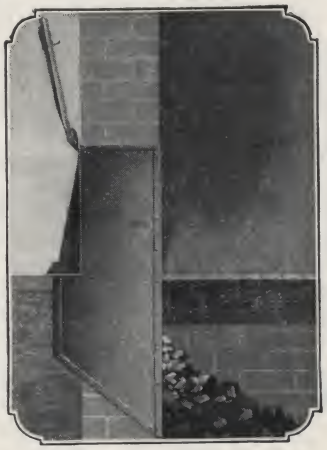
Closed—Outside

Nos. 112GI and 212GI Open—Outside

Kewanee Store Coal Chutes

These chutes are for buildings where the first floor is not high enough to use the common window chute. The body conducts the coal downward within the wall for discharge into the basement. A foot at bottom supports the chute in upright position while wall is built around it.





SPECIFICATIONS

No.	Hopper	Dimensions in inches									
		A	B	C	D	E	F	G	H	I	J
31-P	None	26	22	24	21	17	16½	18	29	18	12
31-PI	Independent	26	22	24	21	17	16½	18	29	18	12
32-P	None	34½	26	31½	24	17	16½	18	34	18	12
32-PI	Independent	34½	26	31½	24	17	16½	18	34	18	12

Advantages

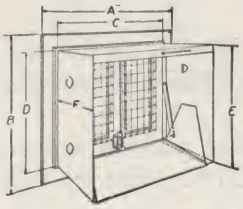
Kewanee Coal Chutes facilitate the delivery of coal to the basement and increase the value of the property. They withstand the hard knocks which shatter ordinary construction, protect the building from damage and defacement and are convenient to use. The saving in repair bills alone quickly pays for a Kewanee Coal Chute. All parts are of Keystone copper steel, a special alloy which is rust-resistant and tougher than ordinary steel. Every Kewanee Chute is guaranteed against breakage and warranted to give satisfactory service.

Kewanee Window Coal Chutes

Kewanee Window Chutes are the type most commonly used, being designed for buildings with foundation walls extending sufficiently above the grade line. The three typical styles of Kewanee Window Chutes are illustrated at the left.

The frames of Kewanee Window Chutes are pressed out of one piece of heavy copper steel. Flat bottom bodies 8 in. deep, or sloping bottom bodies 12 in. deep are regularly furnished, but sloping bottom bodies 18 in. or more deep, can be supplied on special orders. Chutes are furnished with either the Style P ("Plain") door or Style G ("Glass") door, the latter admitting daylight to the coal bin. The ¼-in. glass panels are protected by heavy wire guards. All top-hung doors have slotted hinges which hold the door upright when opened.

In Style PC Chutes ("Plain" door, "Combination" hopper) the door is hinged at the bottom, and in combination with wings, forms a convenient and substantial hopper. The wall-protecting shield automatically raises and lowers with the opening and closing of door. In the Style GI Chute illustrated ("Glass" door, "Independent" hopper) the hopper is independent of the door. By means of posts just within the frame, an independent hopper can be readily attached to any of the Style "P" or Style "G" Chutes listed. The automatic and positive latch can be readily operated with cord or chain from any place in the building.



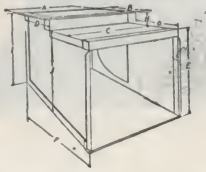
SPECIFICATIONS

No.	Size known as	Door	Hopper	Dimensions in inches					
				A	B	C	D	E	F
108-P	24x17	Plain	None	26	20½	21½	16	16	8
112-P	24x17	Plain	None	26	20½	21½	16	18½	12*
112-PC	24x17	Plain	Comb.	26	20½	21½	16	18½	12*
208-P	33x22	Plain	None	33	25	28½	20½	20½	8
212-P	33x22	Plain	None	33	25	28½	20½	23	12†
212-PC	33x22	Plain	Comb.	33	25	28½	20½	23	12†
108-G	24x17	Glass	None	26	20½	21½	16	16	8
112-G	24x17	Glass	None	26	20½	21½	16	18½	12*
112-GI	24x17	Glass	Ind.	26	20½	21½	16	18½	12*
208-G	33x22	Glass	None	33	25	28½	20½	20½	8
212-G	33x22	Glass	None	33	25	28½	20½	23	12†
212-GI	33x22	Glass	Ind.	33	25	28½	20½	23	12†

*Also furnished with body 18 in. deep (19½ in. high at back).
†Also furnished with body 18 in. deep (24 in. high at back).

Kewanee Grade Line Coal Chute

Kewanee Grade Line Chutes are another type designed for buildings with low first-floor levels, and are ruggedly built throughout to withstand hard usage. The door closes down over a lip around the opening which prevents rain and snow from entering.



SPECIFICATIONS

No.	Hopper	Dimensions in inches									
		A	B	C	D	E	F	G	H	I	J
21		28½	22	25½	19	25	37½	18	3	16	18½
22		34½	28	31½	25	31	43½	18	3	19	24

PEERLESS MANUFACTURING CO., INC.

Fireplace Dampers and Builders' Specialties

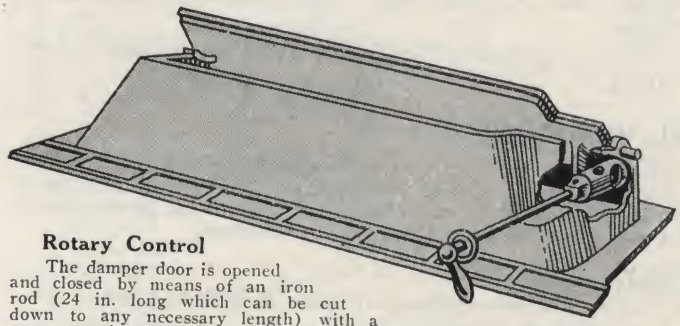
LOUISVILLE, KY.

Products

DOME (Fireplace) DAMPERS; COAL WINDOWS; ASH PIT DOORS; ASH TRAPS.

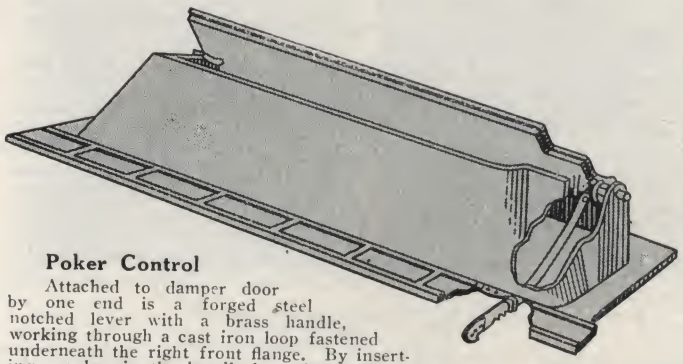
Also Fireplace Furniture (Andirons, Grate Baskets, Screens, Fire Sets, etc.), Hot Plates, Radiant Gas Heaters, In-the-Ground Garbage Receivers and other Builders' Specialties.

Peerless B Damper with Three Styles of Controls



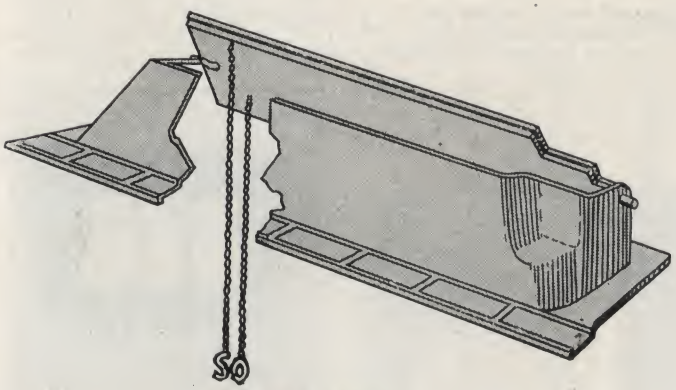
Rotary Control

The damper door is opened and closed by means of an iron rod (24 in. long which can be cut down to any necessary length) with a worm attachment; this rod extends through the mantel facing and is fitted with a brass handle—the only visible part of the operating mechanism



Poker Control

Attached to damper door by one end is a forged steel notched lever with a brass handle, working through a cast iron loop fastened underneath the right front flange. By inserting a poker in the handle loop the door can be easily adjusted



Chain Control

Door is opened and closed by means of two chains. One chain marked O is used for opening the door. To close the door the chain marked S is pulled

Peerless Dome Dampers—A Fireplace Necessity

The most important part of fireplace construction is the throat. A Peerless Dome Damper, scientifically designed, provides the correct throat opening.

Peerless Dome Damper Features

(1) The paneled front flange is made sufficiently strong to support the fire place arch without the use of angle iron or lintel.

(2) Time and labor saved; eliminates necessity of building up brick throat.

(3) The Peerless Dome assures correct throat shape and size.

(4) Damper leaf is removable, permitting access to the flue for cleaning.

(5) Operating mechanism is such that it may be adjusted either before or after the damper is installed.

(6) Well made of high grade cast iron.

There is only one Peerless Dome Damper model, the B. It can be furnished with any one of three controls—rotary, poker or chain—and these three controls are interchangeable.

Blue prints and literature of any of our products sent on request.

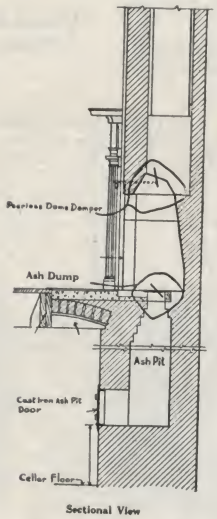
Rust Proof Coating

All fixtures (except coal chutes) are treated with a rust proof coating in battleship gray.

DIMENSIONS OF PEERLESS DOME DAMPERS

No.	For finished fireplace opening, in.	Over-all length, in.	Over-all depth, in.	Crated weight, lb. each
B-24	24	28	13¾	37
B-28	28	32	13¾	39
B-30	30	34	13¾	43
B-33	33	37	13¾	46
B-36	36	40	13¾	48
B-42	42	46	13¾	54
B-48	48	52	13¾	64
B-54	54	59	15¼	91
B-60	60	64	16¼	107
*B-68	68	72	19	204

*Chain control only.



Cross Section of Peerless Installation

Coal Window

Ash Dump

Ash Pit Door

THE MAJESTIC COMPANY

Manufacturers of Breakproof Coal Windows and Building Specialties

HUNTINGTON, IND.

DISTRIBUTED THROUGH 9000 HARDWARE, BUILDING SUPPLY AND LUMBER DEALERS

MAJESTIC BUILDING PRODUCTS

Coal Windows.
Grade Line Coal Chutes.
Store Coal Chutes.
Milk and Package Receivers.
Built-in and Apartment Garbage Receivers.
Underground Garbage Receivers.
Fireplace Dampers.
Fireplace Ash Dumps.
Ash Pit Doors.
Flue Clean-out Doors.
Flue Thimbles.
Portable Incinerators.
Access Units.
Radiator Cabinets and Covers.
Air Conditioning Heating Systems.

Also Manhole Doors, Cellar Wall Grates, Cistern Rings and Covers, and Cast Iron Porch Column Bases.

For Majestic Garage Doors, see Manufacturers' Index.

MAJESTIC COAL WINDOWS

This popular, sturdy window has won universal preference because of the protection it gives to the entire opening and side-wall when coal is being deposited in the bin. It gives the greatest protection to the building *above* the window where it is most needed—thus it saves its initial cost many times over and enhances property value by its permanence, sightliness and convenience.

Built for permanent service—will withstand the most severe conditions of usage.

Backed by over 20 years' experience in building quality coal chutes.

Construction

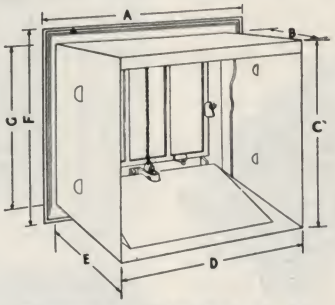
Guaranteed Breakproof Doors—The doors of Majestic coal windows are made of heavy pressed steel, electro-galvanized to resist rust. When raised, the door holds itself open automatically, protecting the building above the opening.

Breakproof Frames—Frames are made of certified malleable iron. They set true in the masonry—no installation difficulties. Frame and door fit snugly, making the window weathertight.

Breakproof Hinges—Hinges are made of certified malleable iron, making breakage at this point a practical impossibility. Hinges are flat with support on each side of the hinge pin.

Neat and inconspicuous, eliminating the necessity of cutting the water table to provide hinge clearance.

Reinforced Bodies—Bodies and hoppers are made of Keystone copper steel and heavily reinforced at points of strain. Angle iron reinforcement allows masonry to be laid directly on the body without the use of a lintel.



Dimension Diagram of All Styles of Majestic Coal Windows

Burglarproof Automatic Locks—Unfailing burglarproof and troubleproof. Doors are unlatched (from inside only) by a chain which may be extended to any part of the house. Lock drops shut automatically when door is closed.

Styles

Majestic coal windows are made in solid steel and in glass panel styles as follows:

No. M101 (Steel Door Style)—Equipped with sloping bottom body and chain to gravity catch.

Style B has a copper steel hopper for coal delivery with bags or wheelbarrow. Style D is without hopper.

No. M203 is the same as No. M101 but larger in size.

No. M500 (Steel Door Style)—Differs only from No. M101 in that it has a 9-in. straight bottom body, without hopper or chain.

No. M520 is the same as No. M500 but larger in size.

No. M10 (Glass Panel Style)—Used when daylight is desired in the coal bin or basement. Has three lights of ¼-in. plate glass set in a ½-in. angle iron frame with two pressed steel dividing strips to give still more strength. Rubber packing is used instead of putty. The door is heavy, electro-galvanized steel, the glass being protected by a steel shield when open. Otherwise No. M10 is the same as No. M101.

Style A has a hopper.

Style C is without hopper.

No. M20 is the same as No. M10 but is large in size.

No. M600 (Glass Panel Style)—Differs only from No. M10 in that it has a 9-in. straight bottom body, without hopper or chain.

No. M620 is the same as No. M600 but larger in size.

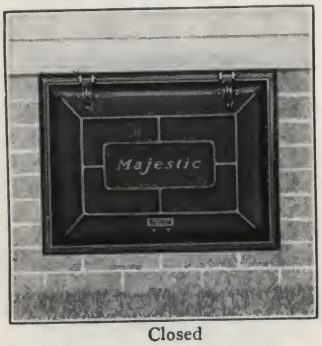
STYLES AND SIZES OF MAJESTIC COAL WINDOWS

Steel door styles		Glass panel styles		Rough wall opening, in.		
No.	Style	No.	Style	Wide	High	Deep
M101	*B §D	M10	*A §C	23	17	12
M203	*B §D	M20	*A §C	32	22	17
M500	**	M600	**	23	17	9
M520	**	M620	**	32	22	12

*Furnished with hopper. §Furnished without hopper.
**Has straight bottom body—no hopper furnished.

Dimensions in inches

No.	A	B	C	D	E	F	G
M101	24⅛	12	18¼	21¾	12½	18⅛	15½
M203	33	17	24¾	29½	17½	23½	20½
M500	24⅛	9	15½	21¾	9	18⅛	15½
M520	33	12	20½	29½	12	23½	20½
M 10	24⅛	12	18¼	21¾	12½	18⅛	15½
M 20	33	17	24¾	29½	17½	23½	20½
M600	24⅛	9	15½	21¾	9	18⅛	15½
M620	33	12	20½	29½	12	23½	20½



Closed

Majestic Coal Window Nos. M101 and M203

Closed

Majestic Coal Windows Nos. M10 and M20

Continued on next page

MAJESTIC COAL CHUTES

Grade Line Chute

The Majestic grade line coal chute is designed for buildings having little or no foundation above ground, as in low set or terraced homes, apartments, stores and office buildings.

Door swings upward and, when raised, forms part of the hopper and becomes a shield which protects the building when coal is delivered. When closed, the door locks automatically and is burglarproof.

Breakproof construction throughout. Frame, door and hinges are of certified malleable iron, with solid brass pins; body of keystone copper steel, reinforced with angle iron. The door fits snugly over the top of the frame when closed. This feature, with the waterproofing ridge around the inside edge of the frame, gives an absolutely watertight job.

Strong and durable—will outlast any building in which it is installed.

Prices on special bodies on request.

Store Chute

The Majestic store coal chute is designed particularly for store and office buildings, where the first floor is on a line with the sidewalk or alley.

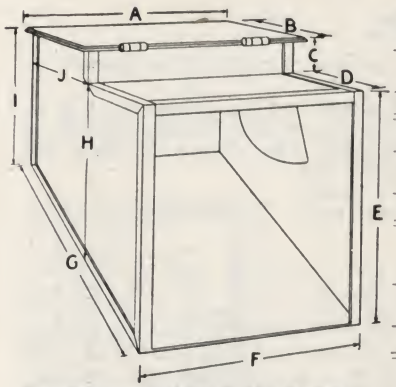
It does away with the dangerous sidewalk coalhole and the necessity of putting up a bond for the protection of pedestrians.

Frame and hinges are certified malleable iron; doors of heavy gauge pressed steel, electro-galvanized to resist rust.

Two sizes, with or without hoppers. Style "B" with hopper. Style "D" without hopper.

On special order, the Majestic store chute can be supplied with a duplex body so that coal can be deposited either under the sidewalk or in the basement as desired.

Prices on special bodies on request.



Dimension Diagram of Majestic Grade Line Coal Chutes

SIZES OF MAJESTIC GRADE LINE CHUTES

No.	Door opening, in.	Rough wall opening (inches)
M16	23¼x18¼	25 x 25
M18	29x24	31 x 31

DIMENSIONS IN INCHES

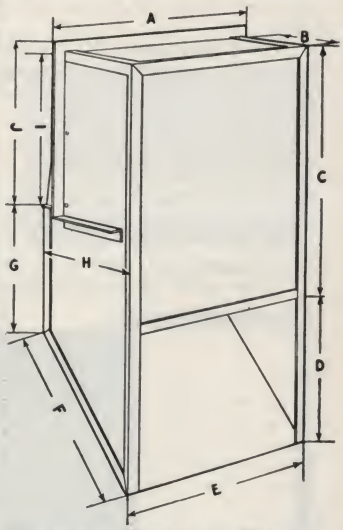
No.	A	B	C	D	E	F	G	H	I	J
M16	26	21	4	15½	24½	24¼	36½	19	16¾	19¼
M18	31¾	27	4	17	31	31	45	24	19½	25¼

SIZES OF MAJESTIC STORE CHUTES

No.	Door opening, in.	Rough wall opening (inches)	
		Above grade	Below grade
M12	21x15	23x16¾	23x25
M15	29x19¼	31x21½	31x24½

DIMENSIONS IN INCHES

No.	A	B	C	D	E	F	G	H	I	J
M12	25	11½	26⅜	15¼	23	19½	13	15½	17	18
M15	33½	11½	30	16	30⅞	19½	13	15½	21¼	22½



Dimension Diagram of Majestic Store Coal Chutes

Closed

Open

Majestic Grade Line Coal Chute

Closed

Open

Majestic Store Coal Chute

MAJESTIC MILK AND PACKAGE RECEIVER

Designed to hold 6 or more quart bottles of milk, depending on the thickness of the building wall in which it is installed. It consists of two cast iron frames and doors, connected by a steel body, adjustable to the thickness of the wall in which it is placed. Castings and steel body are coated with *bitumastic solution,* the enduring protection against rust.

The burglarproof gravity latch on the outside door can be unlocked only from inside. The kitchen side door is provided with a refrigerator type latch and handle and can not be opened from outside. Doors can be reversed at time of installation — either door can be installed inside or outside to open either to right or left by simply changing the gravity latch from one door to the other.

How Operated—A chain attached to gravity latch runs through two cast iron eyes to inside frame, where a cast iron ball is suspended. When empty bottles are placed in receiver, ball is pulled down; its weight, and friction of the chain holds the latch on outside door unlocked. Inside door is then closed and locked by the refrigerator latch.

When the outside door is opened, the chain is drawn outward and held by the friction. This leaves the gravity latch in locking position, and when the door is closed, it locks automatically.

Sizes—Made in three depths of adjustable bodies, adapting them to walls of any thickness.

No. 1 body adjustable to walls from 5 to 8 in. thick; No. 2, from 8 to 14 in. No. 3 from 14 in. to 22 in. Bodies of special depths furnished at additional cost.

Outside dimensions of package receiver frames, 16¼ in. wide, 14 in. high; wall opening required, 14 in. wide, 12 in. high.

Inside View

Section Through Wall

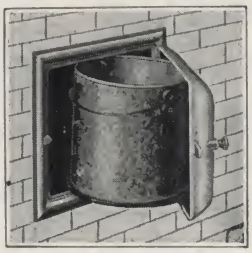
Outside View

Majestic Milk and Package Receiver

Continued on next page

MAJESTIC GARBAGE RECEIVERS

3A and 5A Apartment Receiver—Consists of a heavy cast iron frame and door, a galvanized iron body which recesses in wall, and a galvanized iron garbage pail which sets on a cast iron shelf fastened to the door. When door is opened, can is ready to receive garbage. Receiver is vented through wall by cast iron ventilator furnished with each receiver.



No. 3A and 5A Apartment

4A and 7A Apartment Receiver—Same as 3A and 5A except that can does not swing out on door shelf.

Underground Receiver—Provides concealed, odorless, flyproof, waterproof and convenient disposal of garbage. Receiver shell made of Keystone Copper Steel Ring, lid and foot lever of cast semi-steel. Entire unit rustproofed to prevent deterioration. Comes complete with either a heavy Majestic can or extra heavy corrugated can.

The receiver shell is buried in ground (in any convenient location) to upper band. When foot pressure is released, lid snaps tightly shut, preventing escape of odors. Can is easily lifted out when full.

Top castings and outer shell guaranteed against breakage, or rusting out for ten years.

MAJESTIC APARTMENT AND BUILT-IN GARBAGE RECEIVERS

No.	*Can capacity, gal.	Wall openings, in.			Size over all, in.	
		Wide	High	Deep	Wide	High
3A (Apartment)	3	14½	12	10	16½	14
4A (Apartment)	4	14½	12	10	16½	14
5A (Apartment)	5	14½	16½	10	16⅝	19¼
7A (Apartment)	7	14½	16½	10	16⅝	19¼

*One galvanized iron garbage can furnished with each receiver.

MAJESTIC ACCESS UNITS—UNIVERSAL TYPE

These units provide immediate access to concealed piping, wiring, etc., and eliminate the necessity of tearing out a finished wall. Their universal type of construction provides for both hinged and loose panel type in one unit.

The novel hinge arrangement permits complete removal of door by simply removing one screw which holds the lower hinge pin in place. By filling space between frame and door, the entire surface of unit may be painted or plastered over.

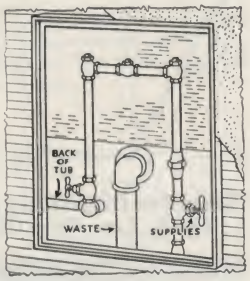
The frames are of 18 gauge and the doors of 1⅛ in. Stretcher Leveled Steel. The corners are strongly reinforced and the door locks firmly in place. The surface of frame and door panel is installed flush with plastering. The door, when closed, fits against Angle Sills, thereby making unit dustproof.

Typical Installation

PRICE LIST FOR ACCESS UNITS

No.	Panel size, in.	Wall opening, in.	Weight, lb.	Price each
100	8 x10	8½x10½	4	$3.50
200	13 5/16x16	13¾x16½	6	4.50
300	13 5/16x24	13¾x24½	10	6.50
400	19 5/16x24	19¾x24½	14	7.50
500	19 5/16x30	19¾x30½	18	8.50

Prices slightly higher west of Denver.



MAJESTIC PORTABLE INCINERATORS

Description—Provides modern, sanitary and easy disposal of wet and dry garbage, rubbish and refuse. It is designed to meet the demand for an efficient incinerator of high quality at reasonable cost.

Construction—The legs, base, grate frame, grate top, inner lining of combustion chamber and lid are made of cast semi-steel.

The inner shell of 16 gauge Keystone Copper Steel and the outer shell of 22 gauge Keystone Copper Steel are separated by a ½ in. air space. The double shell holds the heat within, keeps the outside cool and protects the finish.

The finish is durable Alcoa Aluminum and is heat resisting and attractive in appearance. The draw type grate is so placed in the incinerator that withdrawal of the grate leaves a 12x12 in. opening into ash pan through which any incombustible material may pass without obstruction. The 11 in. wide x 16 in. long semicircular openings in the top permits easy charging of large packages of refuse.

The smoke outlet with 8 in. diameter pipe connection to the flue provides ample capacity to carry away all smoke and fumes and positively prevents the leakage of these gases.

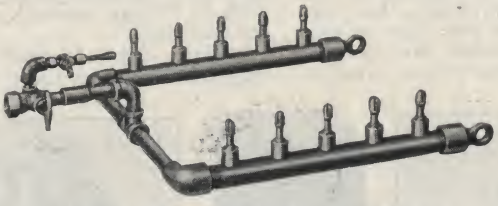
The Majestic HI-LO gas burner is equipped with a series of patented self-mixing tips. These are installed so as to be protected from falling solids and so designed that even drenching with water will not extinguish them. Burners are supplied for any kind of gas. No. 55 for artificial gas. No. 65 for natural gas. No. 62 for mixed gas. No. 72 for bottled gas.

Installation—Is simple. Place the incinerator in basement, connect the smoke outlet to available chimney, and attach the gas line. It is then ready for service.

Operation—Refuse is accumulated in the incinerator during a period of several days and when the combustion chamber is almost full, the burner is lighted. This is done by lighting the pilot and turning on the burner cock. After burner is lighted, the pilot may be turned off.

Optional—A Time-O-Stat gas control which may be set to shut off the gas at any predetermined time is furnished as extra equipment.

The Majestic Portable Incinerator



Majestic HI-LO Patented Gas Burner

SIZES AND PRICES—MAJESTIC BASEMENT INCINERATORS

No.	Capacity, bu.	Height, over all, in.	Diam., in.	Size of flue, in.	Gas input per hr., ft.	Service connection, in.	Shipping wt., lb.	List price	Code
1	3	36	24	8	50	½	270	$49.50	Burn

Prices on Time-O-Stat gas control on application.
Prices slightly higher west of Denver.

Shells Removed to Show Construction

Continued on next page

MAJESTIC BUILT-IN MAIL BOX

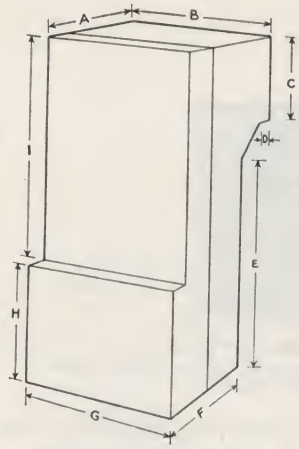


Diagram of Mail Box

Description—This mail box is a product of unusual convenience, of pleasing appearance and built for lifelong service. It is designed to receive the largest magazines and newspapers, and will hold the mail delivery of several days.

The throat is sloping and there is no ledge to catch mail dropped through the slot.

The outside plate combines a covered mail slot, a name or address panel and a bell button.

Construction—The telescoping body is of heavy gauge steel and made rust-resisting inside and outside.

The inside door and frame are of cast aluminum with American Walnut finish. The door is equipped with a neat glass knob.

The outside plate is of solid bronze with antique finish and raised decorative panels. Mail slot has hinged cover.

The name or address panel is of heavy ground glass and is illuminated from the inside.

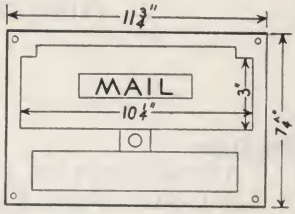


Diagram of Plate

View of Plate

SIZES AND PRICES—BUILT-IN MAIL BOX

Model	A in.	B in.	C in.	D in.	E in.	F in.	G in.	H in.	I in.
"F" for frame or stucco	6½ to 9½	11	5¾	1⅝	12¼	7¼ to 10¼	11¼	7¾	13¾
"B" for brick or stone	8¾ or 12¼ to 14¼	11	5¾	1⅝	12¼	9½ or 13 to 15	11¼	7¾	13¾

List price Model "F" or "B," $18.00. Slightly higher west of Denver.

MAJESTIC FIREPLACE DAMPERS

The Majestic damper is scientifically designed, simple in construction, easy to operate and gives perfect draft control. The Majestic throat is theoretically and practically correct, due to the built-in lintel, which assures the correct height of damper throat above finished opening—also correct position of damper. Installed in any reasonably well built fireplace, it insures absolute satisfaction. Smoking in the room is eliminated by the Majestic damper.

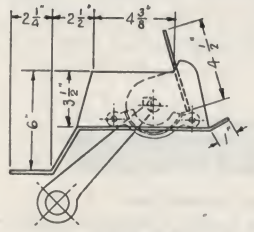
The lintel integral with the frame of the damper establishes the correct distance from the top of opening of fireplace to the top of throat, the most important dimension of the whole fireplace. It also makes it necessary to place the damper forward in the fireplace, thus leaving room for a smoke shelf behind.

Ease of operation is accomplished by the *trouble-proof friction principle for opening and closing the door or valve.* The operating lever is out of sight and easily moved forward or backward with a poker, and it stays in position until again adjusted. The throat opening is subject to the most minute adjustment, and there are no knobs or handles to protrude through the face of the fireplace.

The Majestic Type X, however, is supplied for those who prefer the face or knob control.

The valve is hinged at the back, which permits heat to be thrown out into the room, draws the smoke off from the nearest possible distance from the face of the fireplace, and aids the smoke shelf in turning the down-draft back up the chimney.

With the Majestic throat and damper any mason can build a perfect fireplace by following the drawings and instructions furnished with each damper.

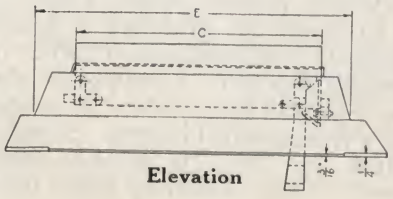


Detail of Damper Operation

SIZES AND DIMENSIONS OF MAJESTIC FIREPLACE DAMPERS

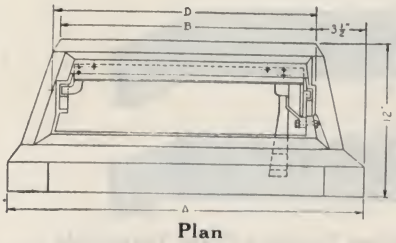
Damper No.	26	30	34	38	42	46	50	54	60
A ... in.	30½	34½	38½	42½	46½	50½	54½	58½	64½
B ... in.	23¾	27¾	31¾	35¾	39¾	43¾	47¾	51¾	60½
C ... in.	21½	25½	29½	33½	37½	41½	45½	49½	55½
D ... in.	24	28	32	36	40	44	48	52	58
E ... in.	26	30	34	38	42	46	50	54	60
Finished opening:									
Width, in.	26	28 30	32 34	36 38	40 42	44 46	48 50	52 54	58 60
Height, in.	28	29 30	30 30	31 31	31 31	32 32	32 32	32 32	32 32
Firebox depth, in.	16	16 17	17 18	18 19	19 20	20 21	21 22	22 23	23 24
Flue size, in.	8x8	8x12			12x12		12x16	12x18	12x18

Majestic Cast Iron Ash Pit Door
Sizes 12x15 and 15x15 in.

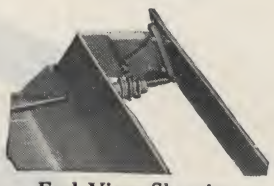


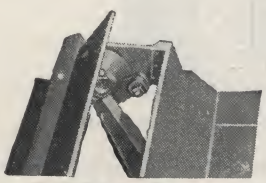
Elevation

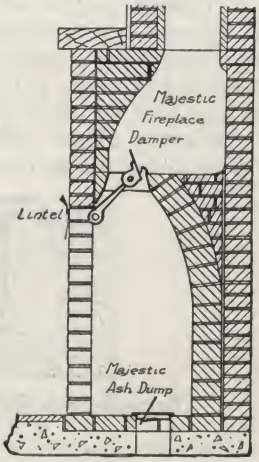
Majestic Fireplace Damper as Installed in Fireplace



Plan


End View Showing Type "X" Control


End View Showing Friction Type of Control



Fireplace Section Showing Application of Damper

FLOOR ACCESSORIES CO., INC.

Ankortite Floor Joiners, and Standard Brass Thresholds

GENERAL OFFICE
KANSAS CITY, MO.
AGENTS IN PRINCIPAL CITIES

Products

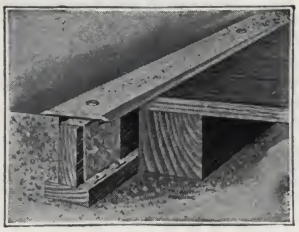
ANKORTITE FLOOR JOINERS.
STANDARD BRASS THRESHOLDS.

For our pages on Ankortite Floor Clips, Buck Anchors, Shelf Angle Fixtures, Hanger Fixtures, Recessed Floor Bars and Tackless Carpet Strips, see Manufacturers' Index.

Ankortite Floor Joiner

The Ankortite Floor Joiner is an attractive and economical joiner for abutting floors that assures permanent security of the threshold plate by providing a tightening space to take up the looseness as floors shrink or wear.

It consists of a threshold plate attached to an assembled base. The threshold plate is fastened with machined screws into the base assemblies, which are spaced approximately 9 in. apart along the joiner, depending upon the length of the joiner. The treated



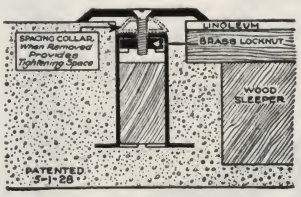
Ankortite Joiner with Arched Plate

The arched plate, $\frac{1}{16}$ in. high, permits doors to swing free over the floor without an open space underneath when doors are closed

wood strip is used only to hold the anchor assemblies in place during installation of the joiner and serves no purpose thereafter. All of the other parts, being of non-corrosive material, become a part of the permanent floor construction. Each assembly contains a brass lock nut into which the screws fasten. Between the assembly and threshold plate are temporary spacing collars which are removed after the joiner is anchored and provide a space for tightening the threshold plates as floors shrink or wear, thereby assuring a tight floor connection throughout the life of the building.

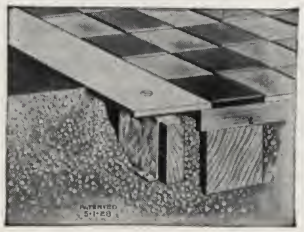
Threshold plates are furnished in brass, architectural bronze or chromium alloy white metal, either arched or flat, in standard widths of 2¼ in. and 3 in. However, any plain, grooved or interlocking threshold plate may also be used with this assembly.

Ankortite Floor Joiners may be installed in remodeling old buildings as well as in new construction.



Cross Section Detail of Ankortite Joiner

The accompanying cross-section in detail shows the construction of the joiner—the brass lock nut into which the screws fasten; the temporary spacing collars which are removed after the joiner is set, thereby assuring



Ankortite Joiner with Flat Plate

Ankortite Floor Joiners with flat plate maintain a smooth level surface for abutting floors

the tightening space; and the provision made for the screw travel.

Prices—Prices per lineal foot, for either arched or flat plate, specified lengths, completely assembled and ready to install:

2¼ in. brass or bronze, polished	$1.50
3 in. brass or bronze, polished	2.00
2¼ in. white metal polished	1.00
3 in. white metal polished	1.50

Typical Specifications—*Floor Joint Covers*—Wherever, throughout the work, floors of different materials adjoin, such as wood floors with concrete, terrazzo, marble, tile, linoleum, etc., install Ankortite [arched] [flat] Floor Joiners as made by the FLOOR ACCESSORIES CO., INC., Kansas City, Missouri. Set and attach the joiners in accordance with manufacturer's directions. Joiners shall be of—(state whether brass, bronze or white metal).

Thresholds—At outside entrance doors install where shown on plans, brass threshold plates (state here width and whether plain or grooved design) anchored with the Ankortite Floor Joiner Assembly as manufactured by the FLOOR ACCESSORIES CO., INC., Kansas City, Missouri.

Ankortite Floor Joiner Assembled

Ankortite Floor Joiners are made to the lengths specified, completely assembled and ready to be placed

Standard Brass Thresholds

Made by the extrusion process, which is not only the highest quality of brass but produces a smooth, perfectly formed product, free from pits or other defects and taking a beautiful polish. Furnished in plain and grooved in 4-in., 5-in. and 6-in. widths, in random lengths, 9 to 12 ft., or cut to specified lengths. Standard drilling 12-in. centers for No. 10 screws. These thresholds may be used with the Ankortite Floor Joiner Assembly.

Plain and Grooved Standard Brass Thresholds

SKYLIGHTS AND TRANSPARENT ROOFINC ROOF VENTILATORS

Abt, Louis, & Co. B1776–1777
Æolus Dickinson Industrial Div. Paul Dickinson, Inc. B1826–1827
Allen Corp. B1832
American Bar Lock Co., Inc. B1768
American-Larson Ventilating Co. B1828–1829
American Sheet Metal Works B1855
American Skylight Co. B1778–1781
American 3 Way-Luxfer Prism Co. B1766–1767
Arex Co.—
Louvers B1856
Ventilators B1830–1831
Blaski Mfg. Co. B1782–1783
Bruner, P. M., Granitoid Co. B1769
Burt Mfg. Co. B1833–1835
DeHart Sheet Metal Works B1784
Drouvé, G., Co. B1785–1793
Flynn, T. J., Metal Works B1794
General Sheet Metal Works B1795–1799
Globe Ventilator Co. B1836
Grauer, Albert, & Co. B1770–1771
Hirschman, W. F., Co., Inc. B1838–1841
Howie Co., Inc. B1802
Iona Ventilator Co., Inc. B1837
Kernchen Co. B1842–1843
Kuhnla, August, Inc. B1800–1801
Merchant & Evans Co. B1844
National Ventilating Co. B1804–1805
Nonpareil Skylight Co. B1803
Overly, W. F., & Sons B1806–1807
Pennsylvania Wire Glass Co. B1808–1810
Penn Ventilating Co. B1845
Richards, Glendon A., Co. B1812–1813
Richards, J. Merrill B1772
Richards & Kelly Mfg. Co. B1773
Riesner, Benjamin B1858–1859
Robertson, H. H. Co.—
Skylights B1814–1819
Ventilators B1846–1847
Royal Ventilator Co. B1848
Saint Paul Corrugating Co. B1811
Structural Glass Corp. B1774–1775
Superior Skylight Co., Inc. B1820–1821
Swartwout Co. B1849
Uno Ventilator Co. B1850
Vallas, Lionel—
Skylights B1822
Ventilators B1852
Van Noorden, E., Co.—
Skylights B1823
Ventilators and Bucks B1853
Vent-O-Lite Co. B1824
Victor Vent Co. B1857
V-W Ventilator Co. B1851
Western Rotary Ventilator Co., Inc. B1854
Western Wire & Iron Works, Inc. B1825

AMERICAN 3 WAY-LUXFER PRISM CO.

Daylight Engineers

1301-1305 South 55th Court
CICERO, ILL.
(Suburb of Chicago)

55 West 42nd Street
NEW YORK, N. Y.

For our Sidewalk and Vault Lights, Transoms, Ventilators, and Obscuring Glass, see Manufacturers' Index

3-Way Transparent Roofing (Glass Guaranteed for 5 Years)

Construction—A roof light construction that is unsurpassed. Gives abundance of light, is fireproof, burglarproof, weatherproof (see details following page). Easily cleaned. Can be walked upon with safety. Designed and constructed for permanence and to eliminate maintenance costs.

A roof light that harmonizes with the architectural lines of the modern structure.

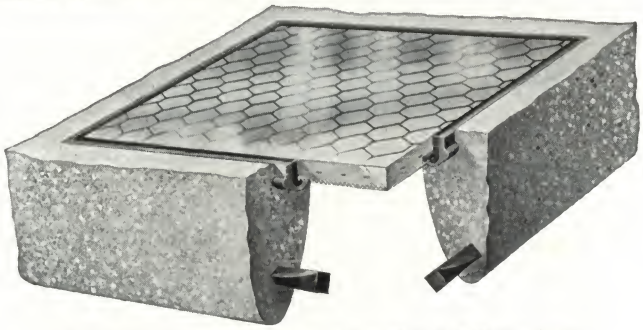
Glass is 8¼ in. square, standard ½-in. wired glass units, 9⅝-in. centers, sealed under special heat treatment with tar and sulphur into heavy cast iron hot galvanized treated shields, protecting the glass from expansion pressure and at the same time permitting easy and instant replacement without skilled help at any time it should be necessary.

Construction has a thickness of 3⅜ in. Weight approximately 30 lb. per sq. ft. (See details following page.)

Can be furnished in factory finished slabs.

We recommend installation at building with our own mechanics.

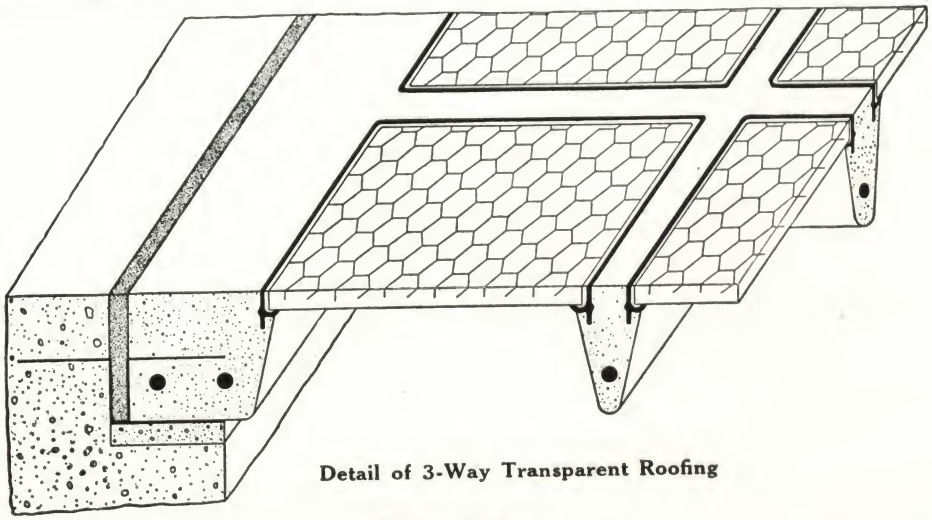
Specifications—Roof Lights where shown to be 3-Way Transparent Roofing Construction, 8¼-in. wire glass units of standard ½-in. wired glass, sealed in cast iron galvanized shields 9⅝-in. centers. Reinforced concrete construction; flashed as shown on plans (set up on curbs as shown on plans); installed complete by manufacturer.



Construction of 3-Way Armored Glass Skylight

Glass for Replacement—To be supplied free of charge f.o.b. factory for a period of 5 years.

Use 3-Way Caulking Compound for filler in all joints.



Detail of 3-Way Transparent Roofing

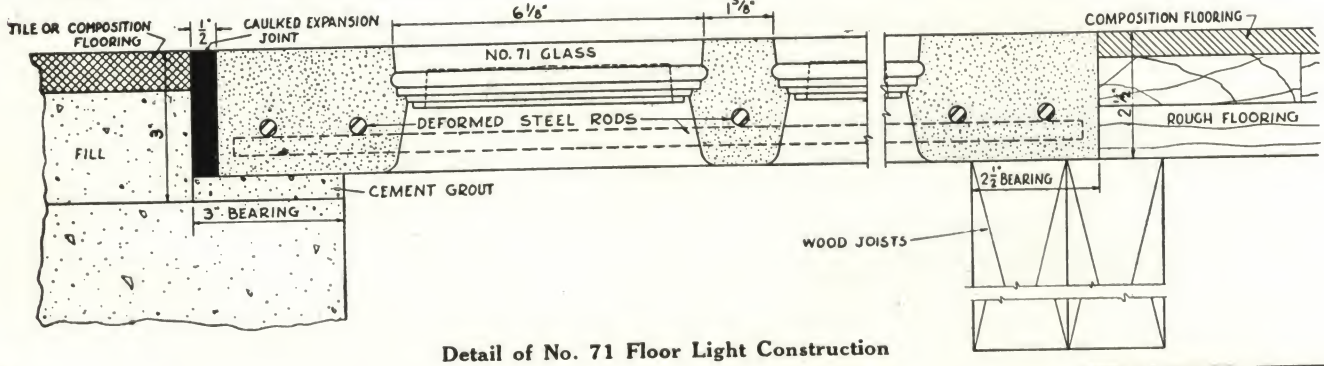
Floor Lights

To light corridors, first floors, and the like, can be furnished and finished in color to match.

Glass either 4-in. square Fresnel design, 4¾-in. centers, or 6⅛-in. square, set 7½-in. centers.

Thickness of construction 2½ in.

Weight, approximately, 25 lb. per sq. ft.

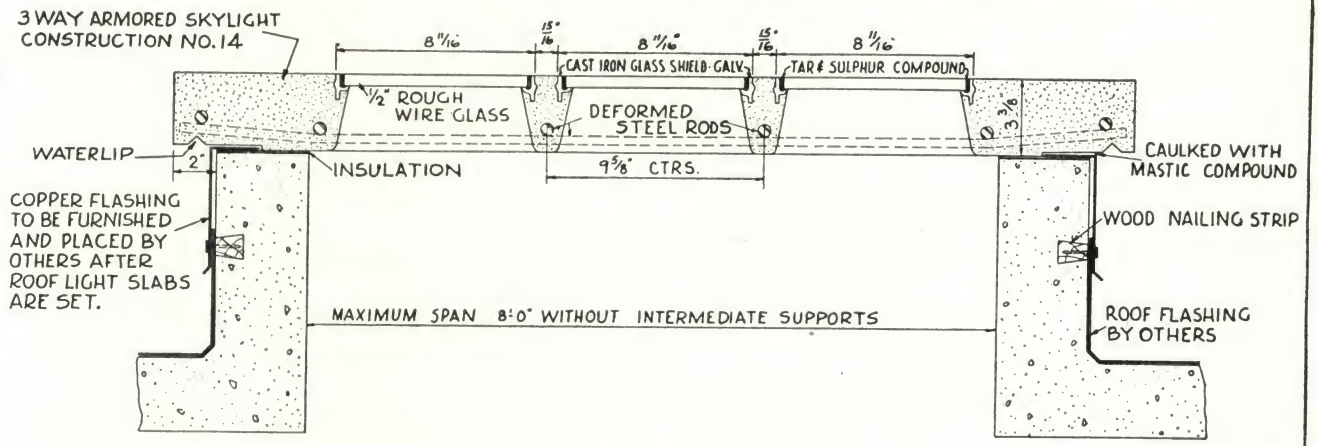


Detail of No. 71 Floor Light Construction

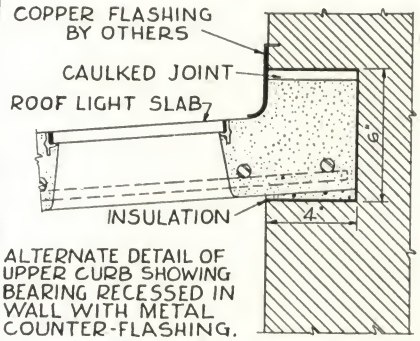
Continued on next page

STANDARD DETAILS OF WATERPROOFING AND INSTALLATION METHODS FOR 3 WAY-LUXFER ARMORED GLASS CONSTRUCTION NO. 14 REINFORCED CONCRETE SKYLIGHTS-ROOF LIGHTS

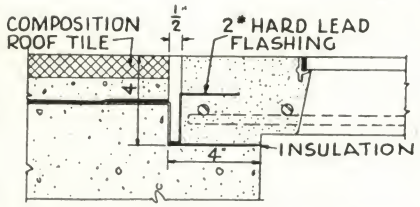
WEIGHT OF DAYLIGHT ROOFING - 30 LBS. PER SQ. FT.



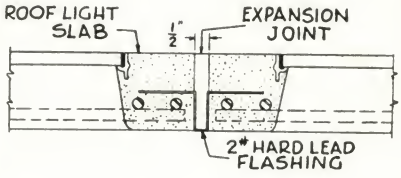
TYPICAL SECTION SHOWING BEARING ON CONCRETE CURBS WITH FLASHING AND COUNTER-FLASHING BY OTHERS



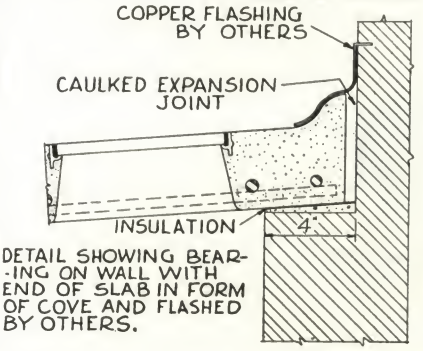
ALTERNATE DETAIL OF UPPER CURB SHOWING BEARING RECESSED IN WALL WITH METAL COUNTER-FLASHING.



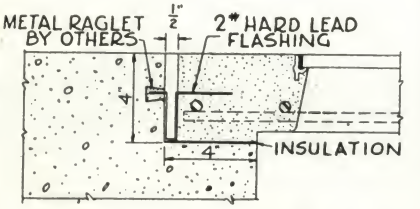
DETAIL SHOWING HARD LEAD FLASHING SET FIRST AND THEN WATER-PROOF-ING MEMBRANE MOPPED ON OVER HARD-LEAD FLASHING.



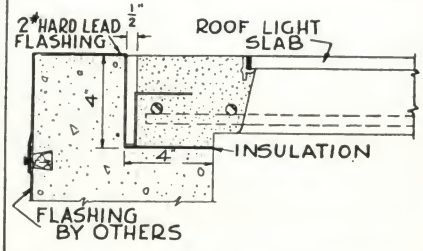
DETAIL THRU EXPANSION JOINT SHOWING HARD LEAD FLASHING AT JOINT BETWEEN TWO ROOF LIGHT SLABS.



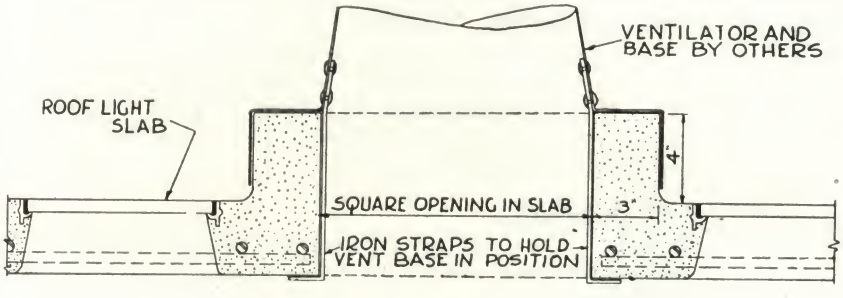
DETAIL SHOWING BEAR-ING ON WALL WITH END OF SLAB IN FORM OF COVE AND FLASHED BY OTHERS.



DETAIL SHOWING HARD LEAD FLASH-ING SECURED BY METAL RAGLET FURNISHED AND INSERTED BY OTHERS



DETAIL SHOW METHOD OF FLASHING ROOF LIGHT SLABS WHERE SLABS DO NOT EXTEND OVER TOP OF CURB.



DETAIL SHOWING CURB BUILT-UP IN ROOF LIGHT SLABS FOR VENTILATOR BASES.

3-WAY Daylight Roofing

AMERICAN 3 WAY-LUXFER PRISM CO.

CHICAGO CICERO, ILL. NEW YORK

AMERICAN BAR LOCK CO., INC.

Manufacturers of "Bar Lock Alglas" Skylight for Skylight and Roof Light Construction

3630 Thirty-eighth Street
LONG ISLAND CITY, N. Y.

BRANCH OFFICES OR REPRESENTATIVES IN ALL LARGE CITIES

Products

"Bar Lock Alglas" Skylight, for skylight and roof light.

For "New Bar Lock" Sidewalk Lights, see Manufacturers' Index.

Advantages of the "Bar Lock Alglas" Skylight

Through the untiring efforts of our Engineering Department, perfect skylighting is now obtained by eliminating all concrete between glasses, and by increasing daylight efficiency to at least 90% glass area. The specially constructed bars and tees of this "Bar Lock Alglas" Skylight are so locked together that they form a protective shield around each individual glass. This makes the skylight as strong and durable as the walls of the building.

This "Alglas" Skylight can be walked on. It is wear, burglar, fire and water proof. It remains unaffected by the elements and gives an unobstructed vision.

Its initial cost competes with that of any first class skylight construction. There is, however, no maintenance expense.

Construction of "Bar Lock Alglas" Skylight

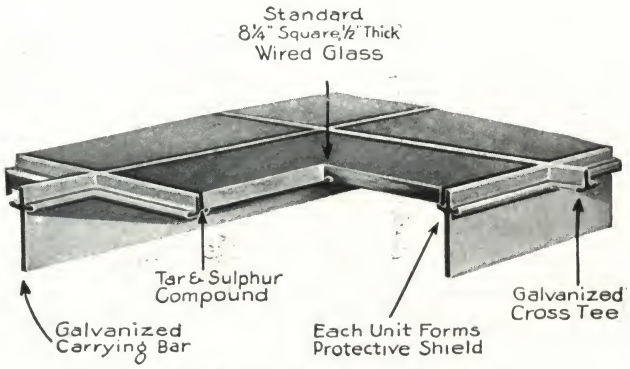
The entire frame is hot dipped galvanized. Each section forms a protective shield around each unit of glass for its full depth and thereby provides a perfect expansion cushion for the glass. There are no concrete ribs to crack, spaul and cause leakage. The sections are spaced so as to give at least 90% glass area—an achievement never before attained in the industry.

The ½-inch thick ribbed wire glass is of the replaceable type. Should a glass ever become broken through accident or abuse, it can be easily reset by unskilled labor without liability of leakage.

Expansion joints at intervals and over every beam and support are caulked with special Bar Lock Compound to relieve pressure and provide for free expansion and contraction.

Spans up to 8 feet in the clear without intermediate support, will carry over 125 pounds per square foot, approximately. They weigh 10 pounds per square foot and thereby effect a tremendous saving in handling, shipping and structural expense.

Full construction details furnished on request.



The "Bar Lock Alglas" Skylight

Specifications for "Bar Lock Alglas" Skylights

Skylights shown on plan shall be "Bar Lock Alglas" factory finished type as manufactured by the American Bar Lock Company, Inc. They shall be furnished ready to set under the manufacturers' directions.

Glass shall be ½-inch thick ribbed wired, 8¼ inches square, and of the finest quality, to conform with United States Government Standard Simplified Practice.

Galvanized supporting bars and tees are to be spaced on 8⅝-inch centers to give a minimum 90% glass area.

Galvanized bars and tees to be locked together so that they form a protective shield around each glass. The space between the shield and the glass to be glazed with tar and sulphur compound to form an elastic watertight, weatherproof expansion cushion.

Where desired, "Bar Lock Alglas" Skylights can be furnished and installed under the direction of our own mechanics.

Installation

The "Alglas" Skylight is easily installed by any contractor. Prices for installation by our own workmen, however, will be gladly forwarded on request.

Price

Factory finished sections glazed complete are $1.90 per square foot f.o.b. Long Island City, N. Y.

P. M. BRUNER GRANITOID CO.

ESTABLISHED 1878

Sidewalk Lights, Floor Lights, Skylights

425-426 Frisco Building

ST. LOUIS, MO.

Bruner Construction

Bruner sidewalk lights, floor lights and skylights conform to recommendations adopted by United States Department of Commerce, Division of Simplified Practice, as per bulletin No. 49.

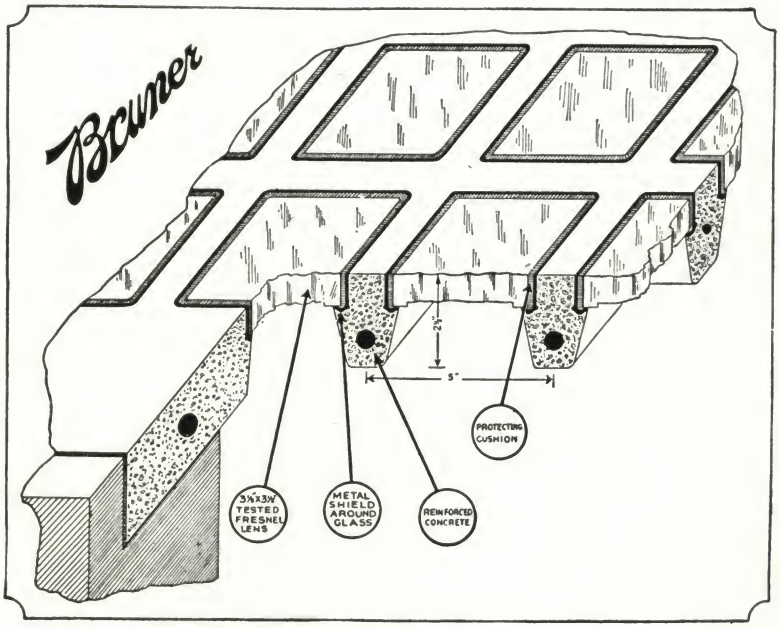
Standard Sidewalk Light Construction

In this construction there can be no leakage and no breakage of glass from structural or expansion stresses. Glass broken from accident or abuse can easily be repaired without disfiguring the construction in any way.

Specifications—The sidewalk lights shown on plan shall be of two-way reinforced concrete rib construction as shown in P. M. Bruner Granitoid Co.'s Standard Sidewalk Light Bulletin, capable of carrying safe live load of 300 lb. per sq. ft. The glass to be 3½ in. square by ¾ in. thick at supporting edge, set in 4-in. square metal shields with elastic compound. The lenses shall be set 5 in. on center. The ribs shall be 2½ in. deep.

Bearing furnished for this construction should be 3 in. wide by 2¾ in. deep.

The entire construction to be guaranteed waterproof and free of defects for a period of one year. Replacement glass to be furnished free f.o.b. factory for 5 years.



Standard Sidewalk Light Construction

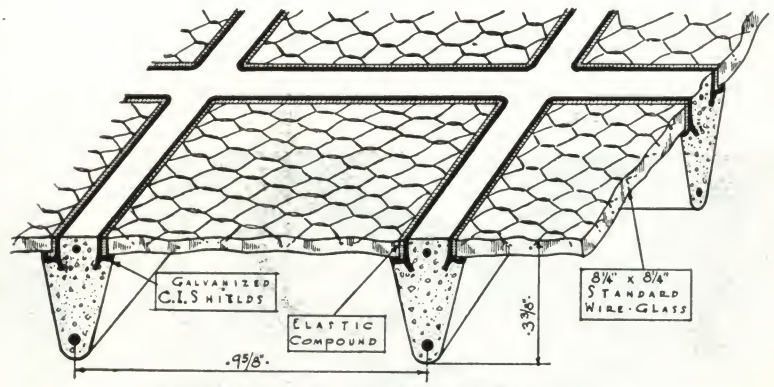
Bruner Skylight Construction (Trade Name, "Transparent Roofing")

We recommend that concrete curbs be formed as part of the reinforced concrete roof. Bruner reinforced concrete skylights being laid over these curbs and projecting beyond with drip formed on under side (as shown), a permanently mechanical watertight job is assured.

Where required, however, this skylight construction can be made flush with roof by setting same in rabbet formed in reinforced concrete and calking with our special waterproof compound.

Specifications—The skylights shown on plan shall be of two-way reinforced concrete rib construction as shown in P. M. Bruner Granitoid Co.'s Skylight Bulletin. Glass to be ribbed wire 8¼ in. square, set in metal shields with elastic compound. Ribs shall be 3⅜ in. deep, set 9⅝ in. on centers both ways. The entire construction is to be guaranteed for one year, and replacement glass is to be furnished free of charge for a period of five years.

(Plans should show detail of bearing furnished.)



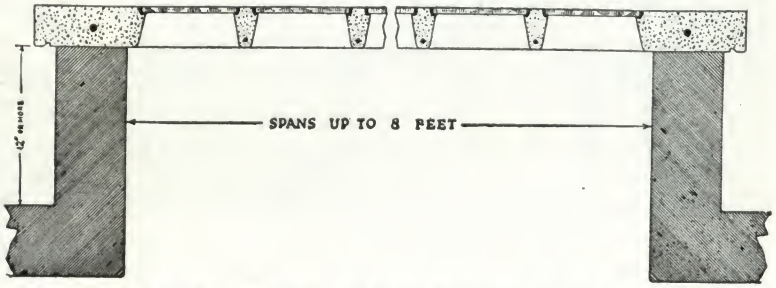
Detail Bruner System Skylight Construction

Spans up to 8 ft. can be made without intermediate beams. Standard construction ribs are on 9⅝-in. centers. Standard wire glass is 8¼x8¼ in. The metal shield and protecting cushion construction is similar to that in the Bruner sidewalk lights

Broad Flexible Service

Bruner sidewalk lights, floor lights and skylights can be constructed in place, or made in panels at our factory and shipped anywhere.

We are at all times ready to give information, make details, or quote prices on our construction.



Bruner Reinforced Concrete Skylights Mounted on and Projecting Beyond Concrete Curbs

ESTABLISHED 1905

ALBERT GRAUER & COMPANY

Sidewalk Lights, Skylights, Floor Lights, Marquise Lights

1408-1424 Seventeenth Street
DETROIT, MICH.

REPRESENTATIVES

ATLANTA, GA., S. R. Hewitt, 608 Walton Building
BUFFALO, N. Y., Edwin G. Day & Co., Erie County Bank Building
CANTON, OHIO, O. J. Weigand, 201 Broad Avenue, N. W.
CHARLESTON, W. VA., Fireproof Products Co., 216 Professional Building
CHARLOTTE, N. C., Soule-Hoffman Co., Inc., 1906 South Boulevard
CINCINNATI, OHIO, Al. Levinson Company, 607 American Druggists Building
CLEVELAND, OHIO, R. P. Keelor, 1268 Hathaway Avenue
COLUMBUS, OHIO, The B. M. Freeman Co., 42 East Gay Street
DALLAS, TEX., Southwestern Flooring & Sales Co., 1300 Young Street
DAYTON, OHIO, The John G. Pool Co., 494 Ludlow Arcade
FORT WAYNE, IND., Arc-Con Specialties Co., 226 E. Columbia Street
GRAND RAPIDS, MICH., Chas. Vandervelde, 757 Hawthorne Street, N. E.
HUNTINGTON, W. VA., E. L. Warnick, P. O. Box 1581
HUNTSVILLE, ALA., Aiken & Kendall, Tennessee Valley Bank Building
JACKSON, MISS., Nachary Builders Supply Co., 410 Millsaps Building
KANSAS CITY, MO., Builders' Material Supply Co., 815 National Fidelity Building
KNOXVILLE, TENN., Chas. M. Allen Co., 712 So. Gay Street
LIMA, OHIO, Lugabill Fuel & Building Material Co., Bryce Avenue and Metcalf Street
LOUISVILLE, KY., Equipment & Supply Co., 420 Baxter Avenue
MOBILE, ALA., Nachary Builders Supply Co., 111 No. Royal Street
NEW ORLEANS, LA., Nachary Builders Supply Co., 318 Carondelet Street
OMAHA, NEB., Kraus & Trustin, 511 Baum Building
PHILADELPHIA, PA., R. C. Kratz, 830 Perry Building
PITTSBURGH, PA., Pittsburgh Building Specialties Co., 1106 Jones Law Building
RICHMOND, VA., Lee O. Miller & Co., 209 Builders Exchange
ST. PETERSBURG, FLA., E. L. March, 303 Third Avenue, No.
TOLEDO, OHIO, Treuhaft Brothers, 1014 Sylvania Street
WASHINGTON, D. C., Lally-Rohlader Co., Inc., 1756 M Street, N. W.
YORK, PA., C. H. Strayer, 50 W. Philadelphia Street

Products

Grauer Skylights, Floor Lights, Sidewalk Lights, Graustic Floors, Red Asphalt Floors

Grauer Reinforced Concrete Sidewalk Lights, Skylights, Floor Lights, and Marquise Lights; for all classes of buildings, sidewalks, roofs, tunnels, subways, train sheds, canopies, etc., installed in place or shipped in slabs ready to set.

Also manufacturers of Diamond Plate Top and Illuminating Sidewalk Doors, Coalhole Covers and Rings, Sidewalk Ventilators, Bullseye Glasses of every size for repairing sidewalk lights and skylights of any style or manufacture. Also Caulking Compounds and Joint Fillers.

For Grauer-Watkins Red Asphalt Floor, Style-Tile Floors and Borders and Graustic Floor, see Manufacturers' Index.

Advanced Design

Grauer Daylighting installations for all purposes are built on a scientifically correct design which makes them positively proof against any conditions of weather or use. Only accident or excessive abuse can break them.

Skylights Over Restaurant, Nolan School, Detroit, Mich.

Grauer Shield Protected Lights conform to Simplified Practice Recommendations No. 49 as adopted by manufacturers through cooperation with the United States Department of Commerce.

With Grauer daylighting equipment you can give buildings the great convenience and profitable investment of daylighting throughout with assured permanent durability. When breakage does occur, due to accident, new glasses are easily installed by unskilled labor at a trifling cost, and without showing the repair.

Fully Guaranteed

Grauer Shield Protected Sidewalk Lights are unconditionally guaranteed for one year, to be rustproof, leakproof, and free from defect. Replacement glasses will be supplied free f.o.b. factory for five years.

Sidewalk Lights

The diagrams on following page, illustrate the construction of Grauer Shield Protected Sidewalk Lights. This construction carries a load of 300 lbs. per sq. ft. and can be built to carry 1000 lbs.

Glass—The best quality of glass (Grauer No. 20) is used, and guaranteed to be properly annealed, each glass having passed polariscope test.

Economy—The saving in electric current alone will pay for Grauer Shield Protected Sidewalk Lights in a short time,

Skylight Over Swimming Pool, Ferris School, Highland Park, Mich.

Continued on next page

usually in one and a half years, the time depending on current rate. The added efficiency of employees or tenants using the basement, their health, comfort, and pleasant working conditions, pay many-fold for the daylight provided. Where basement spaces are daylighted, and used as salesrooms, the increased revenue frequently pays for the entire cost of construction in *less* than one year.

Ready-to-set-Sidewalk Slabs—Completely built slabs can be supplied on order, to fit specified spaces, when for any reason it is not desired to have our own skilled workmen install daylighting construction.

Specifications—The sidewalk lights shown on plans shall be constructed with carrying members of reinforced concrete. The glass shall be Grauer No. 20, set in rustproofed metal shields with an elastic compound. The design to permit glass replacement with unskilled labor. All glass is to be polariscope tested and guaranteed free of internal strains. The construction shall be capable of carrying a uniformly distributed live load of 300 lb. per sq. ft. without injury.

The entire construction is to be guaranteed waterproof and free of defects for a period of one year. Replacement glass to be furnished free, f.o.b. factory for five years.

Floor Lights

Floor lights permit the daylight to do double duty. Light thus admitted to a lower floor, even though diffused through one story, comes from above and is more efficient than light from side windows.

The construction is similar to that of Grauer Sidewalk Lights. The glass is, however, set directly in concrete as the extra expense of shields is unnecessary in interior installations.

Grauer Floor Lights maintain more weight than an ordinary floor will hold. They are permanently watertight, proof against rust and fire.

The concrete carrying ribs are 3½ in. in depth and on 6-in. centers both ways. The two styles of glasses are 4¾ in. square by ¾ in. thick. No. 89 is plain flat; No. 88 is diffusing and ornamental.

Specifications—The floor lights shown on plans shall be constructed of reinforced concrete and glass according to the Grauer System; installed complete in place by the manufacturer's own workmen. The glass shall be diffusing glass No. 88 [plain glass No. 89] 4¾ in. square, guaranteed free of strain by polariscope test. Spans up to 8 ft. are to be made without intermediate beams, with a guaranteed safe live load of 250 lb. per sq. ft., with a factor of safety of 4.

The floor lights are not to be installed until after the surrounding floors have been laid complete. The floor light manufacturer is to provide an elastic, waterproof expansion joint of approved materials on the four sides of each opening.

The construction and glass is to be guaranteed for a period of one year, and any defects appearing within this period are to be promptly corrected to the satisfaction of and without cost to the owner.

Skylights

Grauer Skylights with wire glass set in metal shields supported by a reinforced concrete grill, represent the greatest advance in skylight construction in years. Glass is protected from pressure, both structural and expansion. These skylights defy all weather conditions and are unconditionally guaranteed. If broken by abuse (the only way they can be broken) replacement is easy by unskilled labor.

Grauer Skylights may be walked on. They give large light area; are permanently watertight and proof against rust, fire and burglars. The upkeep expense is negligible.

Specifications—The skylights shown on plans shall have structural members of reinforced concrete, supporting permanent metal shields in which glass is set. Metal shields are to be rustproofed. Glass to be ribbed wire 8¼ in. square, ½ in. thick, set in an elastic, watertight compound. Spans are to be made without intermediate beams up to 9 ft. clear. The entire construction is to be guaranteed for a period of one year and replacement glass is to be furnished free of charge for a period of five years.

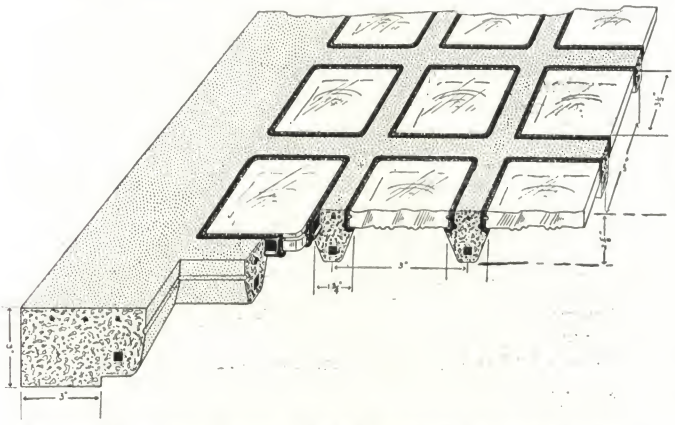
Marquise Lights

The Grauer Skylight construction is admirably suited for use in marquises, and is now being generally utilized for this purpose. Architects, builders and building owners who have had trouble with the constant breaking of the ordinary ¼-in. wire glass formerly used in marquise work, have come to realize the economy and satisfaction of permanently meeting this problem in the first construction. The Grauer System is a most durable product adaptable to work of this character.

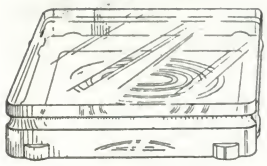
National Service

This organization is equipped to install Grauer Shield Protected Daylight constructions in any building anywhere. Skilled crews are placed in charge of each installation. Our experience of 25 years in the design and construction of daylighting equipment, assures scientifically correct installation and permanent satisfaction.

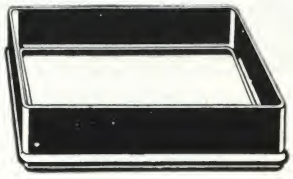
We shall be glad to offer suggestions and make sketches to solve unusual daylighting requirements promptly and cheerfully.



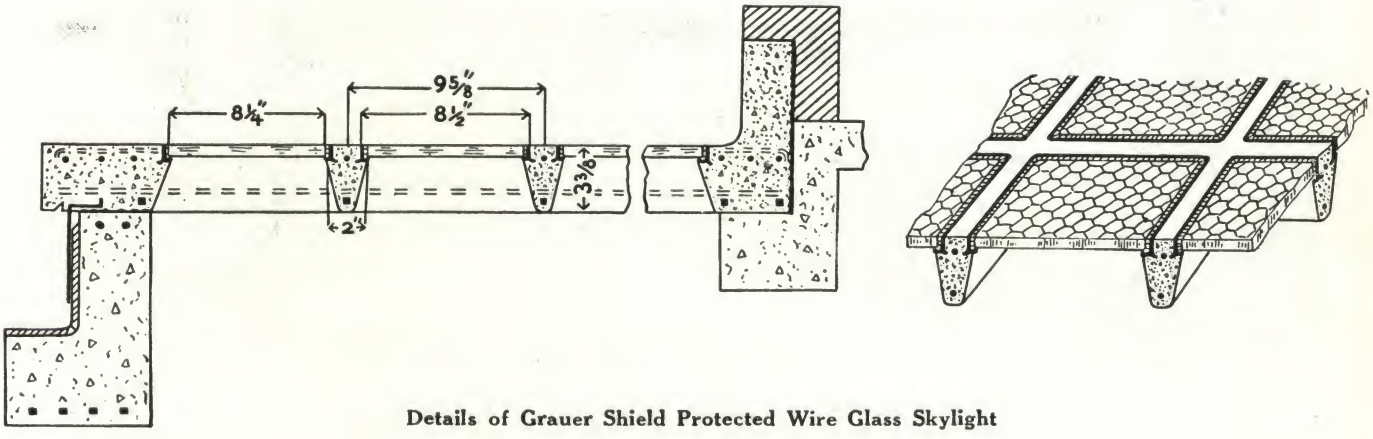
Section Through Grauer Shield Protected Sidewalk Light Construction



Diffusing Glass No. 20
3½x3½ in.



Protecting Shield



Details of Grauer Shield Protected Wire Glass Skylight

J. MERRILL RICHARDS

Manufacturers of "Unity" Transparent Roofing Skylights, Glass Roofs and Floors

119-122 West First Street, BOSTON MASS.

Products

RICHARDS' "UNITY" SKYLIGHTS, GLASS ROOFS and FLOORS.

Also Standardized Sidewalk Lights.

For Magnalite Obscuring-Diffusing Glass, see Glass (Obscuring and Diffusing) in Products Index.

Unity Skylights

8¼-in. square commercial ½-in. thick wire glass set into hot-dip galvanized cast iron shields with elastic material and supported by a fireproofed reinforced concrete grid.

Advantages of "Unity" Skylights

A permanent skylight. Shields protect the glass from all strains so that, regardless of climate, glass will not break, except by accident. Can be installed on pitch or practically flat so as not to be visible on skyline. Spans up to 8 ft. without intermediate supports.

Administration Building, Department of Agriculture, Washington, D. C.

RANKIN & KELLOGG, Architects
JAMES A. WETMORE, Supervising Architect

Specifications

Richards' "Unity" Skylight using 8¼-in. square, ½-in. thick wire glass set into hot-dip galvanized cast iron shields with waterproof elastic compound.

Guarantee

This contractor shall furnish written *guarantee* to maintain the construction against faulty materials and workmanship and any leakage caused by such for a period of one year.

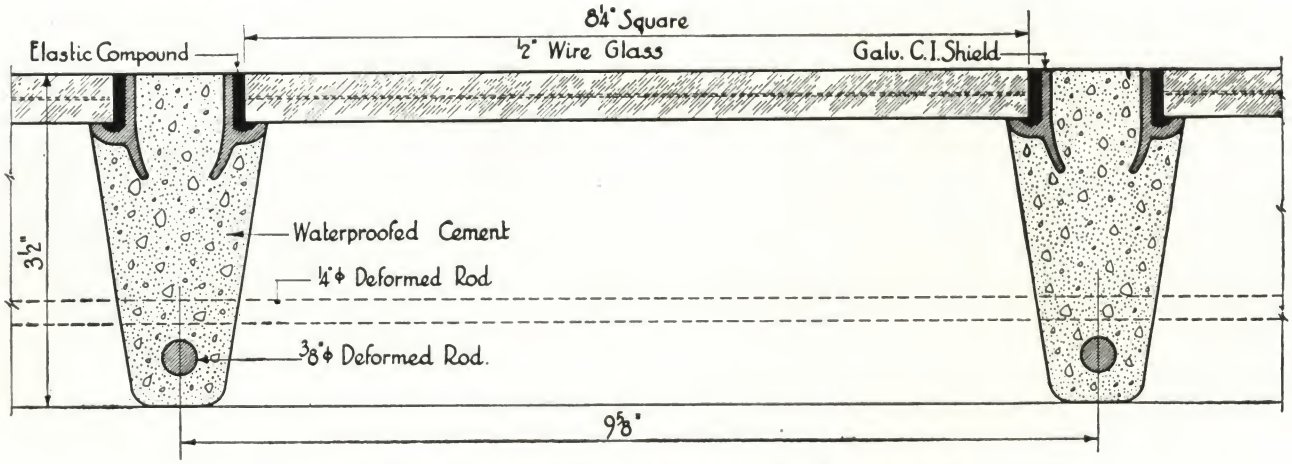
Glass for replacement shall be furnished owner, free of cost f.o.b. factory, over a period of five years for units broken by any cause outside of fire.

List of Installations

BUILDING AND LOCATION	ARCHITECTS
Banks	
Boston Safe Deposit & Trust Co.	Coolidge, Shepley, Bullfinch & Abbott
*Federal Reserve Bank, Boston, Mass.	R. Clipston Sturgis
*Louisville Trust Co., Louisville, Ky.	James J. Gaffney
*Central Trust Co., Cambridge, Mass.	Monks & Johnson
*Union & New Haven Trust Co., New Haven, Conn.	Cross & Cross
Hadley Falls Trust Co., Holyoke, Mass.	McKim, Mead & White
Office Buildings	
*John Hancock Mutual Life Insurance Building, Boston, Mass.	Parker, Thomas & Rice; F. A. Waldron, Engineer
*Administration Building, Dept. of Agriculture, Washington, D. C.	Rankin & Kellogg; Jas. A. Wetmore
*Decatur-Hopkins Building, Boston, Mass.	Monks & Johnson
Lawrence Building, Boston, Mass.	Coolidge, Shepley, Bullfinch & Abbott
*Provident Mutual Life Insurance Building, Philadelphia, Pa.	Cram & Ferguson
Schools and Halls	
*Harvard Indoor Athletic Building, Cambridge, Mass.	Coolidge, Shepley, Bullfinch & Abbott
*Latin School, Boston, Mass.	McLaughlin & Burr
*Faneuil Hall, Boston, Mass.	Cram & Ferguson
*East Boston High School, Boston, Mass.	John M. Gray Co.
Harvard Business School, Cambridge, Mass.	McKim, Mead & White
*Continuation School, Boston, Mass.	J. J. Driscoll

(Over 50,000 sq. ft. in New England schools.)

*Skylight installations.



½ FULL SIZE SECTION TRANSPARENT ROOFING.

RICHARDS & KELLY MANUFACTURING CO.

Manufacturers of Prismatic Lights

309-311 West Twenty-third Street

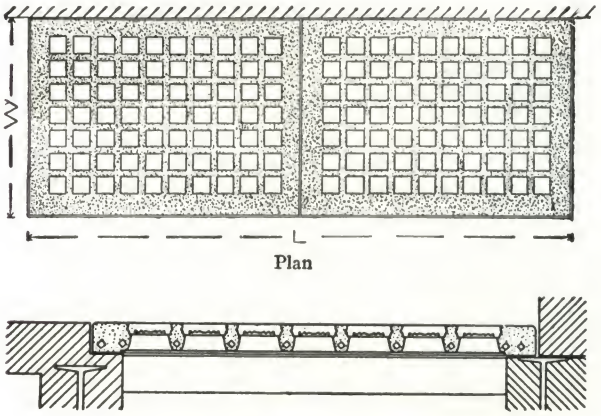
CHICAGO, ILL.

Products

REINFORCED CONCRETE SIDEWALK LIGHTS.
REINFORCED CONCRETE FLOOR LIGHTS.
REINFORCED CONCRETE ROOF LIGHTS.
CAST IRON SIDEWALK LIGHT REPAIRS and REPLACEMENTS.
SIDEWALK DOORS.
COALHOLE COVERS.

Reinforced Concrete Sidewalk, Floor and Roof Lights

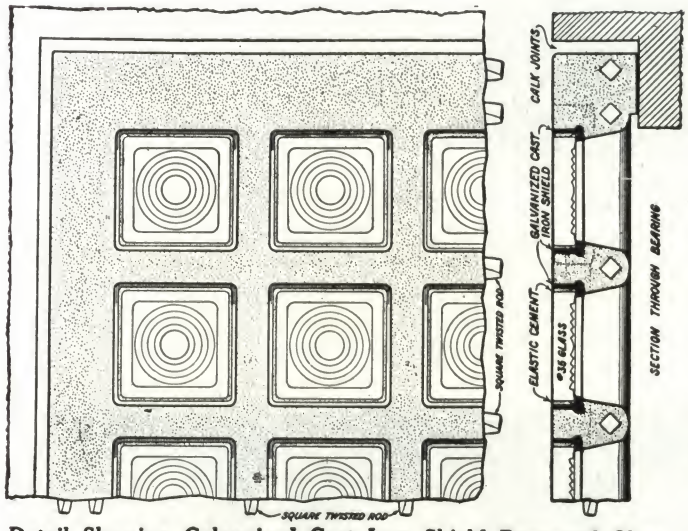
Manufactured in accordance with simplified practice recommendations adopted at Washington, D. C., November 18, 1925, by Sidewalk, Floor and Roof Light manufacturers, distributers and users, acting in conjunction with the Division of Simplified Practice.



Plan

Cross Section

Details Construction of Reinforced Concrete Sidewalk Lights



Detail Showing Galvanized Cast Iron Shield Protected Glass

Glass

For Sidewalk Lights—3½x3½ in. in *galvanized cast iron shields;* 3-in. diameter in *galvanized cast iron shields.*

For Floor Lights—3½x3½ in. in *galvanized cast iron shields;* 4x4 in. and 6⅛x6⅛ in. without shields.

For Roof Lights—8¼x8¼ in. wire glass set in *galvanized cast iron shields.*

Guarantee—We will furnish free of charge f.o.b. our factory any glass broken in our *galvanized cast iron shield* types of construction for a period of five years from date of installation, unless breakage is caused by fire or misuse.

Cast Iron Sidewalk Lights

We have discontinued furnishing cast iron sidewalk lights for new installations, but have patterns and glass for repairs and replacements.

Glass—For concrete setting 2½ and 3 in. in diameters, 3 in. square, 2½x3½ in.

For sulphur setting 1⅝ in. in diameter.

Sidewalk Doors

Manufactured in flush or raised types with checkered steel plate door leaves.

Illuminating doors made in either flush or raised type with 3 in. square glass set in checkered steel plate door leaves.

All doors are fitted with brass hinges, device to hold doors while open, slide bolt to lock from below and anchors to build into concrete. Door leaves can be fitted with striker plates if doors are operated with arch on car platform.

Flush type door frames made either of one piece iron castings or welded steel channel frames with gutter tapped for ¾ in. pipe to carry off water which seeps through joints between doors and frames.

Flush Type Checkered Steel Sidewalk Door

Coalhole Covers and Frames

Sidewalk Type Stock Sizes—16, 18, 20, 24 and 30 in., with or without glass. Special sizes 26, 28 and 36 in.

Driveway Type Stock Sizes—20, 24 and 30-in. diameter; 20x20, 24x24 and 30x30 in.

Quotations and Details

Furnished promptly upon request, prices on sidewalk, floor or roof lights, given either f.o.b. cars or installed at building.

STRUCTURAL GLASS CORPORATION

101 Park Avenue
NEW YORK, N. Y.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Permanent Exhibit at Architects Samples Corporation, 101 Park Avenue, New York

Products

"STRUCTURAL" WINDOWS, WALLS and PARTITIONS.

"STRUCTURAL" SIDEWALK LIGHTS, FLOOR and ROOF LIGHTS.

"STRUCTURAL" VACUUM GLASS INSULATION.

Service

We will supply, at your request, full construction data for our standard "Structural" installations. Our Engineers will co-operate with you on *special* arrangements or uses of "Structural" units.

"Structural" Units

Description—All "Structural" units are glass. They are manufactured for "Structural" installations in the United States by Siemens Glass Works, Ltd., Dresden, Germany.

"Structural" units are presented in a wide range of types, designs and sizes. They include prisms, tile, hollow block, vacuum block and solid brick of Siemens quality glass.

"Structural" units are laid up in Portland cement, according to our time-tested systems of construction, by skilled, union mechanics.

Advantages—"Structural" units take the place of light-obstructing materials and make it entirely practicable to "build with daylight." They constitute a permanent, weatherproof and fireproof part of the structure and are a pleasing element of its design.

"Structural" units of the vacuum type insulate against sound, heat and cold. Glass insulation is efficient and sanitary. It is economical, because windows, walls or partitions of "Structural" vacuum block need nothing further to complete them.

"Structural" units of wire glass furnish the protection against fire or breakage which is called for under special conditions. Hollow block and prisms of wire glass are "Structural" specialties.

Uses—To provide daylight is the primary purpose of "Structural" units. In practically every class of building they offer a sensible and straightforward solution for many of the problems of lighting which confront the architect, industrial architect and engineer.

As insulation, they occupy a field exclusively their own. They reduce the heat loss of large glass areas and simplify temperature control and mechanical ventilation wherever they are employed.

For display or advertising effects, "Structural" units may be illuminated to add to their interest.

8000 Sq. Ft. of Railroad Station Promenade, Lighting Offices Below

Windows

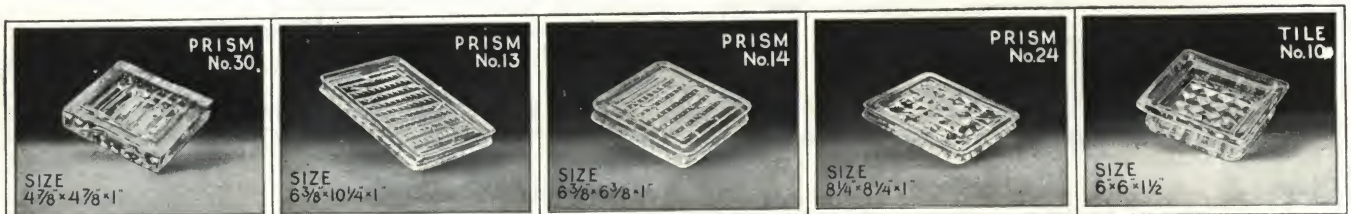
"Structural" windows of standard type are built up of 6x6-in. "Structural" Tile units, or Prisms of wire or plain glass may be used. No. 25 "Structural" Tile is employed when the reinforced Portland cement ribs are to be concealed on both the outer and inner face of the window.

When, as is generally the case, the ribs may be exposed flush with glass on the outer face of window, No. 10 "Structural" Tile is used. The Tile is prismatic, with considerable lighting and decorative value. Weight per square foot, including ribs, is approximately 17 lbs.

"Structural" windows, of the *vacuum* type, light and insulate at the same time. They are built up of No. 300 "Structural" Vacuum Block of hexagon design, measuring 5½x7¾ in. Since the units are of unequal dimension, they may be used either vertically or horizontally to secure the required window size.

No frames or sills are necessary with "Structural" windows, which are built solidly into the masonry jambs, head and sill in suitable raglets. Each ventilating unit is framed in bronze and interlocks when closed with the stationary bronze frame on which it pivots. Hardware is of cast bronze.

The design of "Structural" units permits easy replacement when broken. To simplify erection, "Structural" windows are precast at our factory in sections not exceeding 25 sq. ft., which are arranged for speedy assembling.



For Sidewalks and Heavy Loading	For Floor and Roof Lights Prism No. 13 used also for windows and walks	For Windows, Walls and Partitions

Continued on next page

Walls and Partitions

The conditions to be met govern the selection of "Structural" unit for the construction of a "Structural" wall or partition. We recommend

For Light Section Walls—1½, 2 and 2½ In. Thick, Respectively—"Structural" Tile No. 10 (ribs concealed one side). "Structural" Tile No. 25 (ribs concealed both sides). "Structural" Prism No. 13 (for wire glass, Prism No. 13 W).

For Hollow Walls—3¼ In. Thick—"Structural" Hollow Block No. 100 (for wire glass Hollow Block No. 100 W).

For Solid Glass Walls—2½ In. Thick—"Structural" Solid Brick, No. 400.

For Vacuum Glass Insulation—"Structural" Vacuum Block No. 200 (for plain effect). "Structural" Vacuum Block No. 300 (for ornamental effect). Carried also in hammered (obscure) surface.

It should be noted that, within reasonable limitations, "Structural" walls are classed as windows and are therefore not controlled by the thickness required for masonry walls.

In This Building Prism No. 13 Was Used for Roof Light and Small Windows

Sidewalk Lights

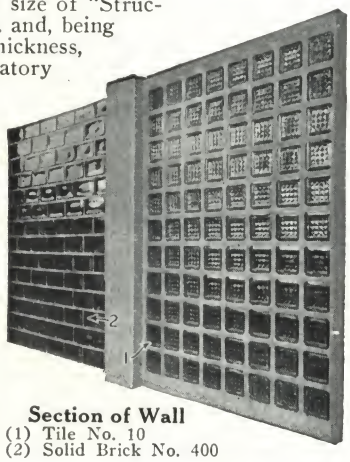
For "Structural" sidewalk light installations, or elsewhere requiring maximum strength, "Structural" Prism No. 30 is used. The prisms are set in rustproof metal shields with an elastic compound and are carried by reinforced concrete members of approved construction. All work is guaranteed watertight and free from defects for a period of one year.

"Structural" sidewalk installations give a larger daylight area of nearly 80%. This is due to the unusual size of "Structural" prism No. 30, which measures 4⅞x4⅞ in. and, being of Siemens hard pressed glass, a full 1 in. in thickness, answers every structural requirement. By laboratory test and under usage in important installations, our prisms have demonstrated their superior quality.

Floor and Roof Lights

"Structural" floor and roof light installations finish flush with surrounding surfaces. Consequently they fulfill the various functions of floor or roof and at the same time bring the benefits of daylight to the floors below. All glass is clear white, of prism design (wire when necessary) assuring appearance and lighting efficiency.

For floor lights, "Structural" Prism No. 14, size 6⅜x6⅜ in., is used exclusively. Metal shields are not provided for interior work but in other respects the construction is similar to that for "Structural" sidewalk installations.



Section of Wall
(1) Tile No. 10
(2) Solid Brick No. 400

For roof lights, three sizes of "Structural" prisms are available, allowing the architect considerable freedom of design. They are as follows:

"Structural" Prism No. 13—Size 6⅜x10¼x1 in. (in wire glass, prism No. 13 W).

"Structural" Prism No. 14—Size 6⅜x6⅜x1 in.

"Structural" Prism No. 24—Size 8¼x8¼x1 in.

The set-back requirements of many of our cities have greatly increased the opportunities for effective roof lighting. "Structural" roof lights make it possible to take full advantage of them.

Tests

For many generations, Siemens glass has been a standard of efficiency.

Extensive tests covering every characteristic of Siemens glass show extreme values which fully warrant its use in "Structural" installations.

Results of these tests and of the recent highly successful fire and water test conducted by the Testing Bureau of Columbia University, will be supplied upon request.

Vacuum Glass Insulation

"Structural" vacuum units, by laboratory test, reach a 90% vacuum. As insulation, they possess the value of the familiar vacuum bottle at its best.

Vacuum glass insulation for building construction is a "Structural" innovation in this country. It is both *glass insulation* and *insulated glass,* with all the benefits of each.

Some of the advantages it offers are summarized below.

No condensation problems.
Negligible heat loss.
Improved temperature control.
Exclusion of sound or heat.
No darkened areas.
Impervious and sanitary.
Fully structural.
Economical in first cost.

Glass—The use of glass as a *structural* material is not new or experimental. Numerous buildings in Europe, during the past ten years, have been constructed wholly or partly of glass.

"Structural" units offer new opportunities to the architect which are completely realized in "Structural" installations.

Condensed Specification

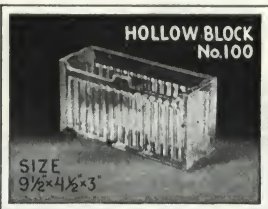
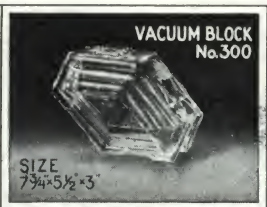
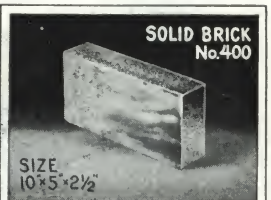
Where indicated on architect's drawings the [window] [walls] [partitions] [sidewalk lights] [floor lights] [roof lights] shall be constructed of "Structural" glass units which shall be furnished and installed by STRUCTURAL GLASS CORPORATION, New York, N. Y.

"Structural" unit—(specify type and number) shall be used for—(specify use).

All work shall be guaranteed watertight and free from defects for a period of one year from date of acceptance by the architect.

Further Information

We will gladly furnish shop details and complete specifications for "Structural" installations. All inquiries regarding our products and special designs, requests for quotations, estimates, etc., will receive our prompt attention.

				
For Windows, Walls and Partitions	**For Walls and Partitions**	**For Walls and Partitions**	**For Windows, Walls and Partitions**	**For Walls and Partitions**

LOUIS ABT & COMPANY

Manufacturers of the Abt Double Ventilating Skylight

2651-2653 Roosevelt Road
CHICAGO, ILL.

Product

The ABT DOUBLE VENTILATING SKYLIGHT, Manually Chain Operated, or Electric Power with or without Automatic Thermostatic Control.

Adaptation

An essential in the design of garages, foundries, factories, laundries, etc., in the elimination of smoke, steam and gases in conjunction with natural controlled air change necessary for efficient working conditions.

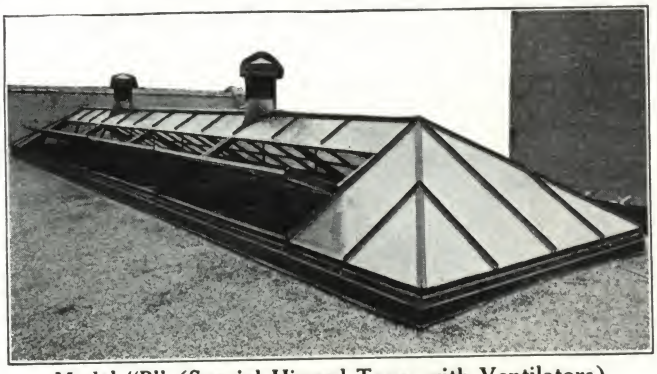
Description

The Abt Double Ventilating Skylights provide both *intake* and *exhaust* opening for complete, *controlled* natural ventilation readily adapted to specific industrial and building requirements. An analysis of the patented construction discloses the highest type of efficiency value possible—capable of practically twice the ventilation or open area provided by other skylights of the same size.

Structurally the design assures the utmost in permanent strength and rigidity without excessive weight. Due to the design of the axle balanced ventilating sash, continuous runs of 100 ft. or more are operated with the least possible effort. The construction of the weathering members at the operating units is watertight under all conditions.

Designs and Sizes

The construction is adapted to any design such as gable end, hip, gambrel roof or sawtooth. Made in standard widths 6, 8, 10, 12 and 14 ft. and from 8 ft. to any required length. Special widths at additional cost.



Model "B" (Special Hipped Type, with Ventilators)
This illustration shows a special type of Model "B."
The regular Model "B" type is made with gable ends, as shown below in Models "C" and "D."

Types

Model B—Has a glass ridge. Made with either gable end (where the ventilating sash may run the full length if desired) or hipped (where the ventilating sash may run the length of the ridge).

Model C—Has a metal ridge with gable end. The ventilating sash sections alternate with fixed skylight sections.

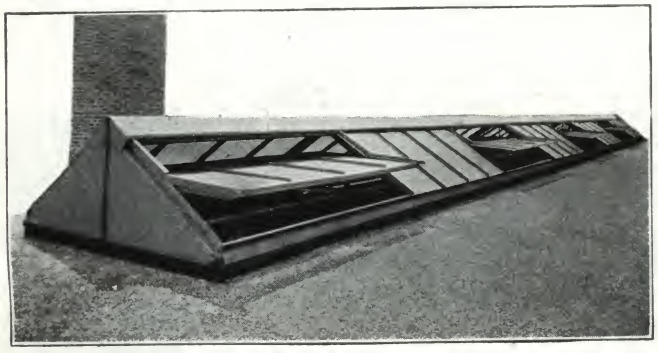
Model D—Gable end gambrel roof type with the ridge slope glazed. Made with alternate panels of ventilating sash and fixed glass or with ventilating sash running the full length.

Operators

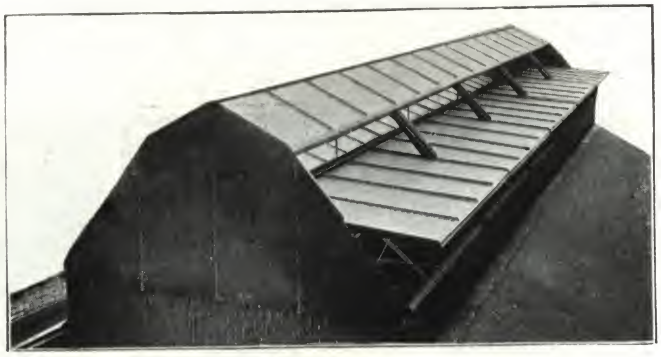
Manual Operation—Chain operated wheel or rod operated gear direct connected to a pipe shaft operating racks and pinions. Continuous runs of 100 ft. or more of ventilating sash are operated from a single power unit with the greatest ease and speed—runs are completely opened or closed in less than a minute.

Electric Power—Motor driven through friction drive direct connected to pipe shaft operating racks and pinions with minimum current consumption. ¼ hp. motor for 100 ft. Completely equipped with special remote control panel—ventilating sash may be started and stopped at will from any position. Opposite sides of skylight may be operated simultaneously or independently. Automatically stops at full open and full closed without strain on operating device.

Automatic Thermostatic Control with Electric Power—Is entirely automatic but can be controlled to suit conditions from remote control panel as above described. Arranged to operate one or both sides of skylight and to stop and start at will.



Model "C"

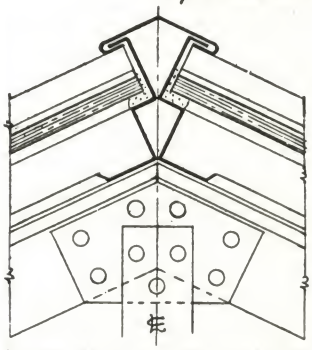


Model "D"

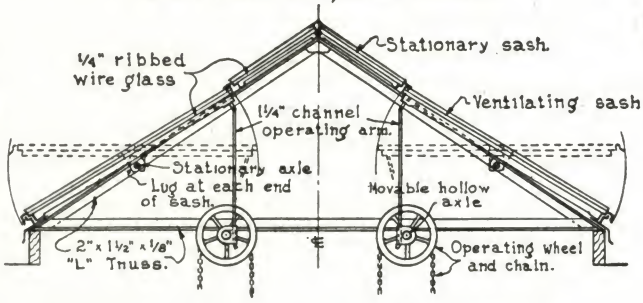
Continued on next page

~ Operated by Hand, Electric or Thermostatic Control ~

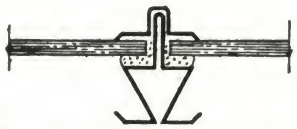
¼ H.P. Motor to operate 100 feet.



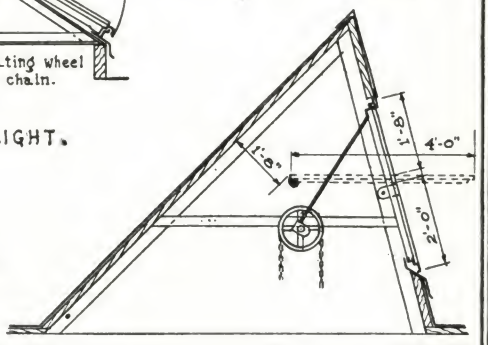
RIDGE SECTION OF MODEL "D"
SCALE. 3" = 1'-0".



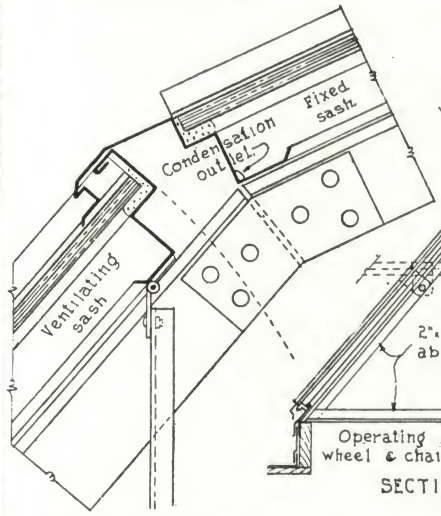
SECTION THROUGH MODEL "B" SKYLIGHT.
SCALE 3/8" = 1'-0".



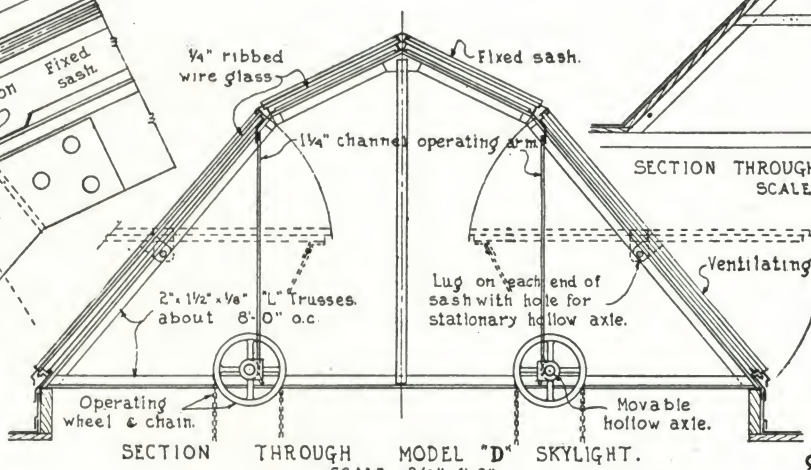
SECTION THROUGH BAR.
SCALE. 3" = 1'-0".
NOTE:- Used on all models.



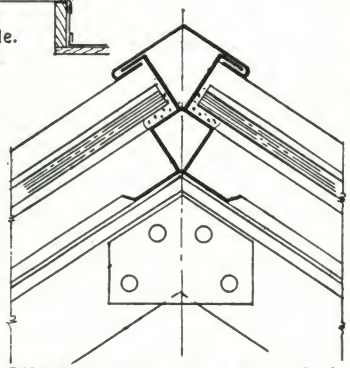
SECTION THROUGH SAW-TOOTH SKYLIGHT.
SCALE. ¼" = 1'-0".



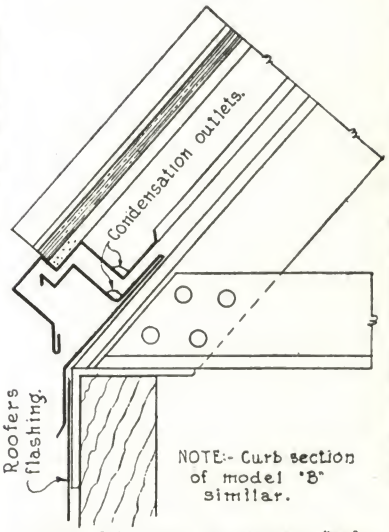
SECTION AT HEAD OF VENTILATING SASH OF MODEL "D".
SCALE 3" = 1'-0".



SECTION THROUGH MODEL "D" SKYLIGHT.
SCALE 3/8" = 1'-0".

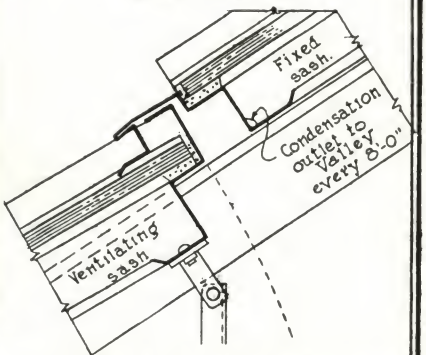


RIDGE SECTION OF MODEL "B"
SCALE 3" = 1'-0"



CURB SECTION OF MODEL "D"
SCALE 3" = 1'-0"

MODEL "D" SKYLIGHT ASSURES MAXIMUM LIGHT AND VENTILATION.



SECTION AT HEAD OF VENTILATING SASH OF MODEL "B"
SCALE 3" = 1'-0"

LOUIS ABT & COMPANY.	DETAILS OF ABT DOUBLE VENTILATING SKYLIGHTS MODEL "B" MODEL "D" & SAWTOOTH.	DRAWING NO. 1 SCALE:- ¼" 3/8" & 3" = 1'-0".

AMERICAN SKYLIGHT COMPANY

American Ventilating Skylights and "Steelead" Skylights

2617-2625 Fletcher Street
CHICAGO, ILL.

152 West 42nd Street
NEW YORK, N. Y.

BRANCH OFFICES IN ALL PRINCIPAL CITIES

West of the Rocky Mountains, "Steelead" Skylights are Manufactured and Installed by NORTHWEST LEAD COMPANY, SEATTLE, WASH.

AMERICAN VENTILATING SKYLIGHTS

Type "F" American Ridge Ventilating Skylights

This advanced construction meets every demand of the architect. It gives a full measure of daylight and provides perfectly controlled ventilation as well.

Because of this double value, these skylights are ideal installations for public garages, laundries, shops, foundries, gymnasiums, schools, public auditoriums, etc.

Type "F" ventilating skylights have movable or ventilating sash at the ridge with fixed sections below. Either or both sides of the ventilating units may be opened. The ventilating units are built from 4 to 28 ft. in length and 30 in. wide. The width of the ventilating unit is fixed and does not vary with the width of the skylight. Only one operator is required for every 28 ft. of type "F" ventilation.

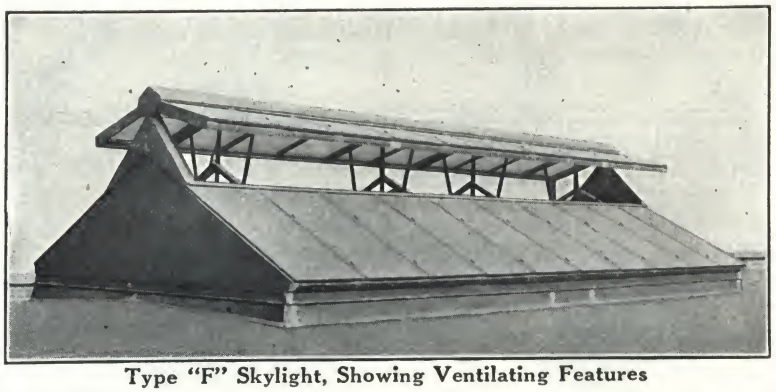
The operator may be equipped with detachable pole with crank handle or an endless chain, as preferred, or it can be fitted with electric drive if desired, so that by simply pressing an ordinary light switch in the wall, the skylight will open. A ¼ hp. motor will easily operate one ventilating section.

Type "F" skylights are glazed with ¼-in. wire glass, ribbed or rough and are made of No. 18 galvanized copper bearing metal. They are carried in stock in standard sizes 4, 6, 8, 10 and 12 ft. wide, these dimensions being out to out of curbs, length as desired. They can be made up to practically any width and many installations have been made of skylights as wide as 30 ft. Type "F" skylights can also be made of copper, aluminum, or leadclad metal, at slight additional cost.

Competent erection crews maintained in the larger cities insure prompt service and careful supervision of installations anywhere in the United States.

Type "F" skylights are shipped to the job partially assembled so that very little additional labor will complete the erection. All units are bolted together; no soldering is necessary and complete erection instructions and layout drawings are provided when the skylights are to be erected by local sheet metal men or contractors.

The detail below clearly illustrates the method of operation. The steel trusses are always provided as part of the skylight. The design of the truss varies with the width of the skylight; they are always spaced not greater than 6 ft. on centers. A curb flashing is provided which extends down 4 in. below top of curb.

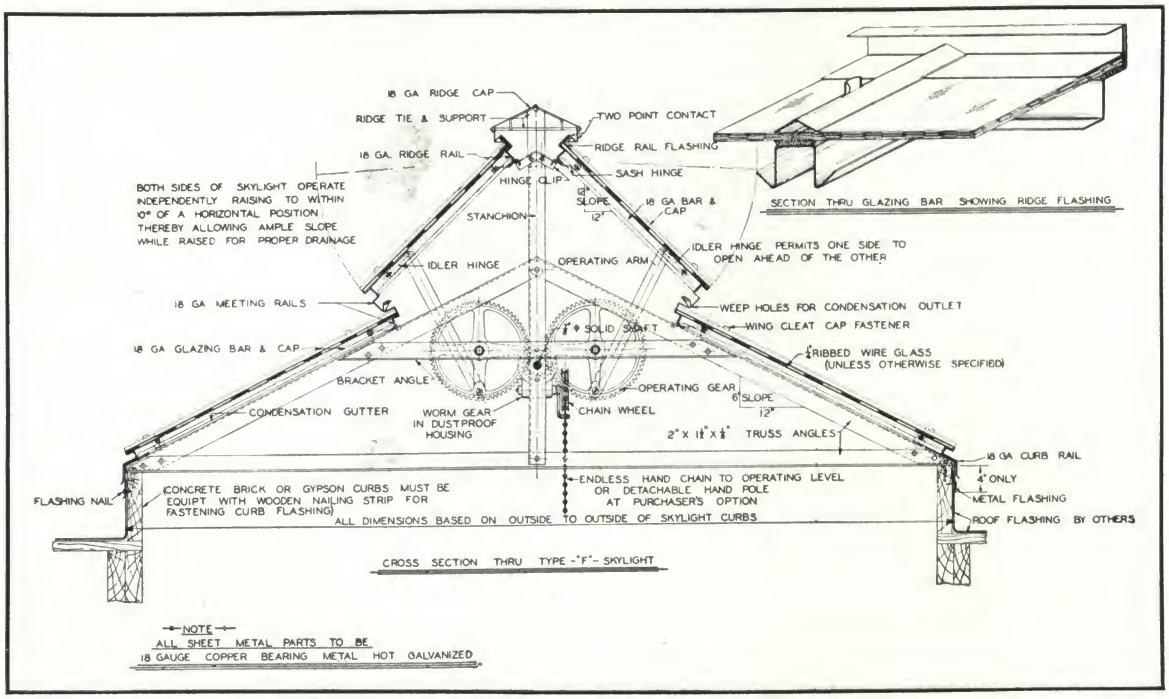


Type "F" Skylight, Showing Ventilating Features

Specifications—Skylights shown on plans shall be Type "F" Ridge Ventilating, as made by the AMERICAN SKYLIGHT COMPANY, Chicago, Illinois. They shall be composed of stationary and hinged sections, the length of hinged sections to be as indicated on plans.

All sheet metal parts to be formed of No. 18 gauge galvanized copper bearing rust resisting metal, pressed into shape and fitted together without the use of solder. The sash shall be supported on steel trusses not more than 6 ft. on centers. The skylights shall be glazed with ¼-in. ribbed or rough wire glass, set in putty. The skylights shall be operated by means of a detachable pole with crank handle [endless chain].

All metal parts shall have one shop coat of special prepared paint.



Details of Type "F" Skylight Showing All Important Features of Construction

Continued on next page

Type "J" Skylight

Fills the need for maximum ventilation without sacrificing daylight. Provides great exhaust capacity with perfect control and maximum light area.

Complete sash can be raised from ridge to curb. Either or both sides may be raised at will. By opening side away from the wind, air will be drawn out of building; opening side towards the wind will force fresh air into building. Both sides open will ventilate building. If both sides are closed it is absolutely weathertight.

Standard width sizes are carried in stock at all times so that prompt shipments can be made. Skylights 4, 6, 8, 10 and 12 ft. wide are standard, these dimensions being out to out of curbs.

Type J Construction—*Sash*—The sash is made of 18 gauge galvanized copper bearing, rust resisting metal. Glazing bar is shaped to provide deep condensation gutters. Upper and lower rails make weathertight connections. Sash is hinged at the top and may be raised to a position 10 degrees below horizontal, allowing ample slope for drainage.

Trusses—Trusses are spaced not greater than 6 ft. apart. They are made of 2x1 ½x⅛-in. steel angles with riveted connections. Center member of truss supports ridge.

Ridge—Ridge is constructed of 18 gauge galvanized copper bearing, rust resisting metal. Extends the full length of skylight, overlapping gable ends. Ridge is securely bolted to the center member of each truss.

The Gable Ends—Gable ends are made of 18 gauge galvanized copper bearing, rust resisting metal. They are well reinforced by steel angles.

Curb Flashing—Flashing extends 4 in. below top of curb. It is made of 24 gauge galvanized copper bearing, rust resisting metal.

Manual Operators—Operators are controlled by a pole with crank handle or an endless chain as preferred. Where impractical to operate skylight from a point directly beneath, simple connections can be supplied at slight additional cost for remote control.

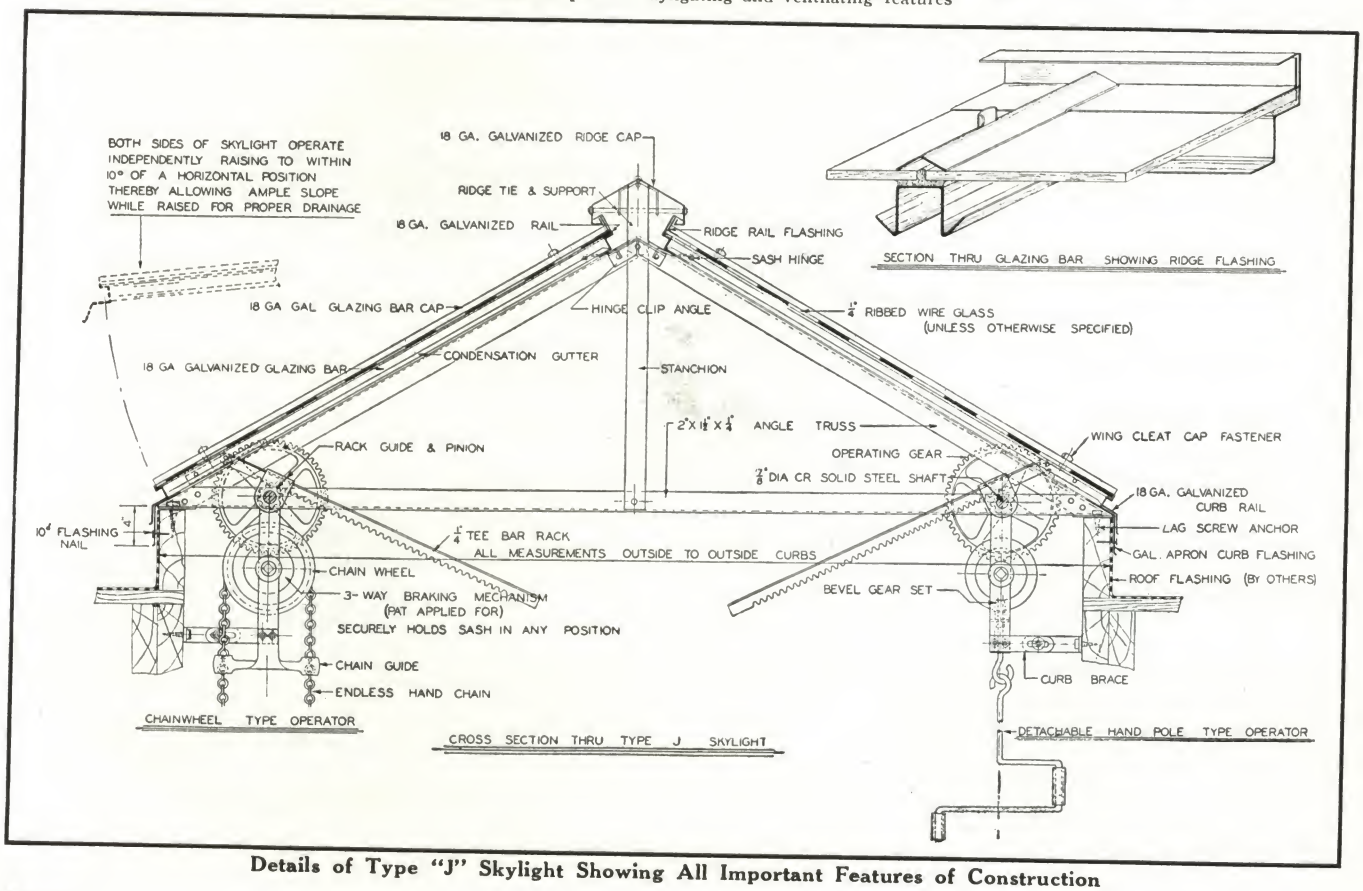
Motor Operators—Motor driven units can be used equipped with limit switches.

Glass—¼-in ribbed or rough wire glass supplied with all orders. Best grade linseed oil putty is furnished. After glass is set, flashing caps are secured to glazing bars to protect putty.

Paint—All metal parts are given one coat of special prepared paint at the factory.

Specifications—*Full Vent Type "J"*—Skylights shown on plans shall be of the type known as Full Ventilating, as made by the American Skylight Company. They shall be composed of sections on each side that are hinged at the ridge and raised from the curb. These shall be operated by a hand chain mechanism or detachable pole with crank handle from below; each side separately. They shall be made of No. 18 gauge galvanized copper bearing metal painted on shop coat of special prepared paint. Glazing shall be ¼-in. (ribbed or rough) wired glass.

End View of Type "J" Skylight, 8 Ft. Wide, on a Public Garage
Illustrates the perfect daylighting and ventilating features



Details of Type "J" Skylight Showing All Important Features of Construction

Continued on next page

"STEELEAD" SKYLIGHTS

West of the Rocky Mountains these skylights are manufactured and installed by
NORTHWEST LEAD COMPANY, *Seattle, Washington*

"Steelead" Skylight Features

Put through every possible trial by engineers and architects—tested by time in hundreds of installations—"Steelead" has proven itself to be above all the perfect skylight. It is adapted to all types of construction, in all kinds of locations.

"Steelead" Skylights can be built in any style—lean-to, single pitch, hip, gable, or sawtooth. Any style ventilator can be installed with "Steelead" as well or better than with most sheet metal constructions. Whatever the type of installation, there is a "Steelead" construction to meet it.

Strength—The 1½-in. steel T-bar core in the standard "Steelead" bar is sufficient structurally for a 7-ft. clear span. This permits the construction of double pitch skylights up to 12 ft. in span (out to out of curbs) without the use of purlins.

A heavier "Steelead" bar is carried in stock with a steel T-bar core 2x2x¼ in.—3.56 lb. The 2-in. "Steelead" bar is sufficient structurally for a 9-ft. clear span. This permits the construction of double pitch skylights up to 16 ft. out to out of curbs, without the use of purlins using the 2-in. "Steelead" bar.

Permanence—The lead sheath is everlasting. Will not rust, rot or corrode. Needs no paint, packing, or putty.

For railroad use in depots, train sheds, freight houses, with their great assault of smoke, gases and vibration; for factories with the attacks of fumes, steam and vibration; for institutions where upkeep is an item and permanence a need; for public buildings where dependability is paramount—"Steelead" has proven itself without an equal. And its cost is no greater than copper sheet metal constructions.

"Steelead" Bar—The patented "Steelead" bar is the basis of the "Steelead" skylight, and the secret of its superiority. This combines the strength of steel with the permanence of lead.

On a standard 1½x1½x$\frac{3}{16}$-in. steel T-bar is moulded a seamless sheath of pure lead, our special patented design for skylight construction. After being cut to the proper length, both ends of the bar are sealed with lead.

An ideal glass rest is provided by forming a heavy ridge at the heel of the bar. The glass actually rests on a thin knife edge of lead, formed on top of the ridge. Due to the thin edge and the ductility of lead, this knife edge under the weight of the glass, conforms to any unevenness in the glass, prevents undue strain at any point and makes an absolutely tight joint.

There is also formed between the glass rest and the stem of the bar a drip gutter that catches any possible leakage.

Condensation gutters are provided and are opened with a wood tool just before the glass is set.

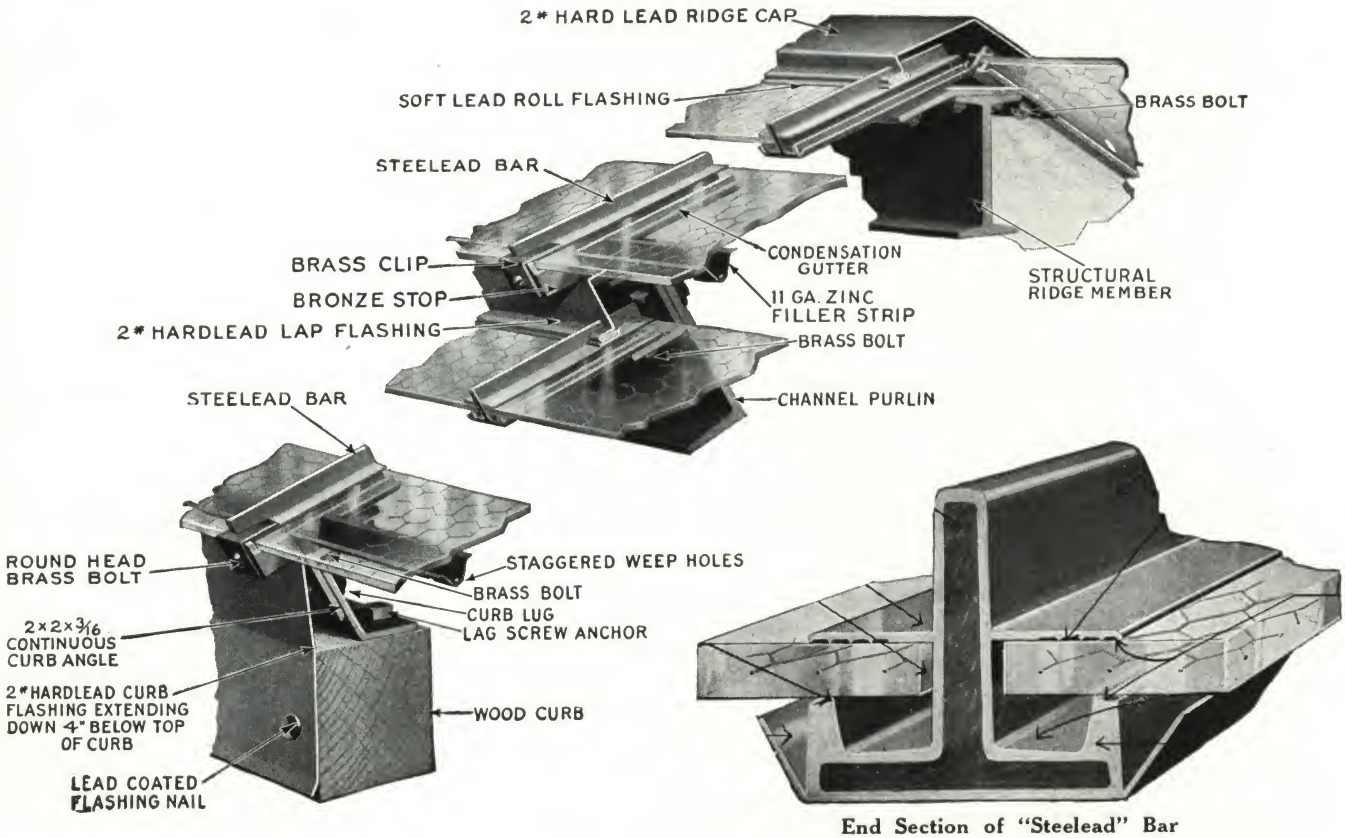
On the web of the "Steelead" bar are moulded, integral with the lead sheath, lead glazing wings. After the glass is placed on the lead seat, the glazing wing is pressed down on top of the glass. The undersides of these glazing wings are longitudinally ribbed so that when pressed onto the glass they conform to the unevenness and make a series of air seals that are dusttight, watertight and windtight. These wings will withstand severe air pressure from below, yet they can easily be raised to replace a broken glass.

Thus the glass rests on lead and is held in place by lead without using putty or packing. It is tight, yet free to expand and contract—an ideal condition for skylight glass.

"Steelead" Design—Where the skylights are not considered as part of the structural design of the building, necessary structural trusses for the skylights are designed and constructed at our factory. Where the skylight supports are considered as part of the structural steel supporting the building, "Steelead" can readily be adapted to meet these conditions.

Where two or more runs of glass are required along the slope of a skylight the upper run is lapped over the lower run, a method much better than the butt joint construction for the reason that any condensation is carried out at the lower end of each run and does not need to travel underneath the skylight until it reaches the curb. Some sheet metal authorities advise against using sheet metal puttyless constructions with hipped skylights, because of difficulty in making a weathertight job. We have experienced no difficulty in producing a perfectly weathertight, hipped "Steelead" Skylight; in fact, the majority of our installations have been of this construction.

In a "Steelead" Skylight only glass and lead are exposed to the elements, with the exception of a cast bronze bar stop, which holds the lower end of each "Steelead" bar. Therefore, "Steelead" Skylights should last as long as the building.



End Section of "Steelead" Bar

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Specifications

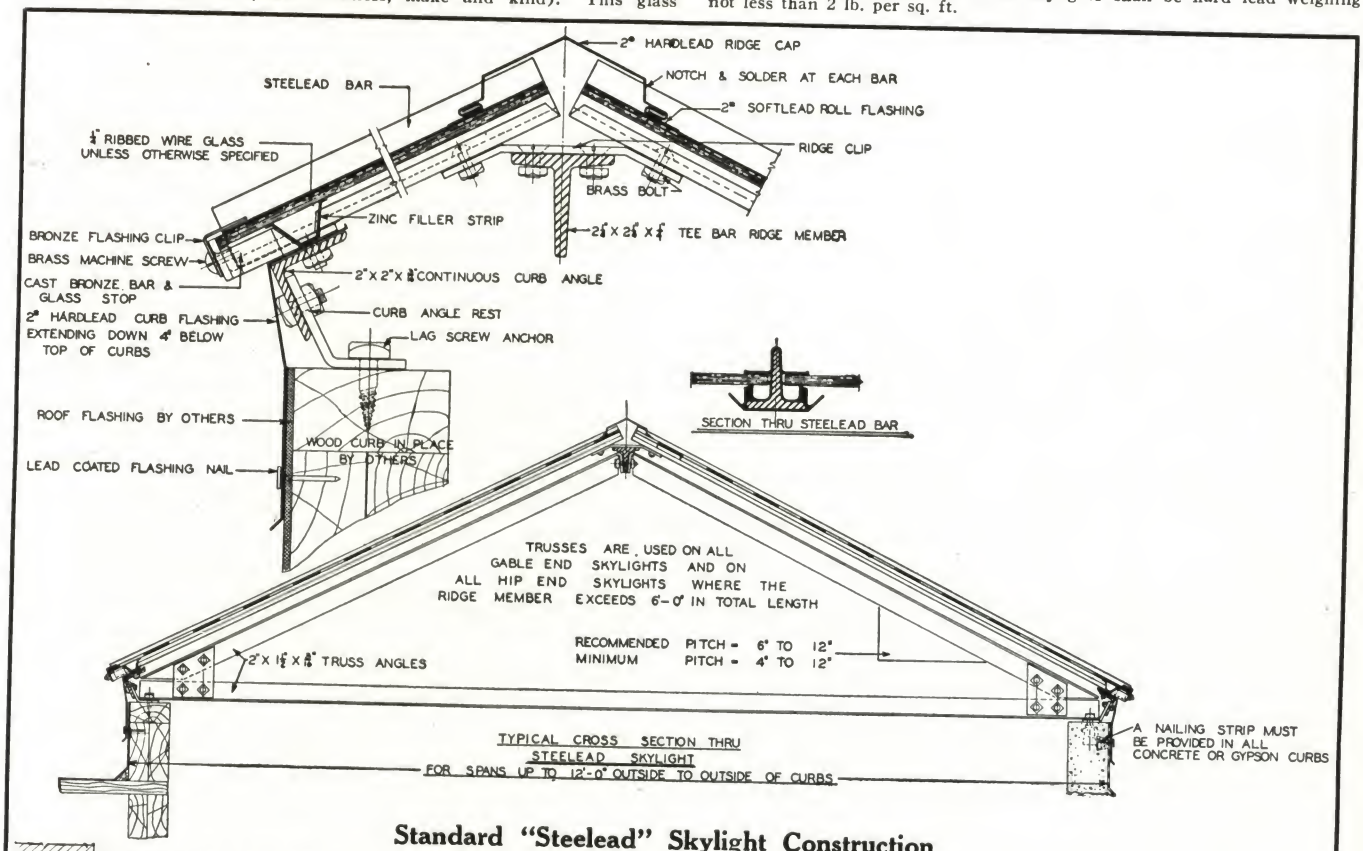
All skylights shown on the plans shall be constructed of "Steelead," as manufactured by the AMERICAN SKYLIGHT COMPANY, and in accordance with detailed drawings submitted by them and approved by the architects, engineers, or purchasers.

Glass supporting Steelead bars shall have a maximum deflection of not more than 1/30 in. per lineal foot of span, under normal loadings. The steel bar shall be hermetically sealed in a seamless lead sheath, fully capable of resisting attacks by fumes, gases, etc.

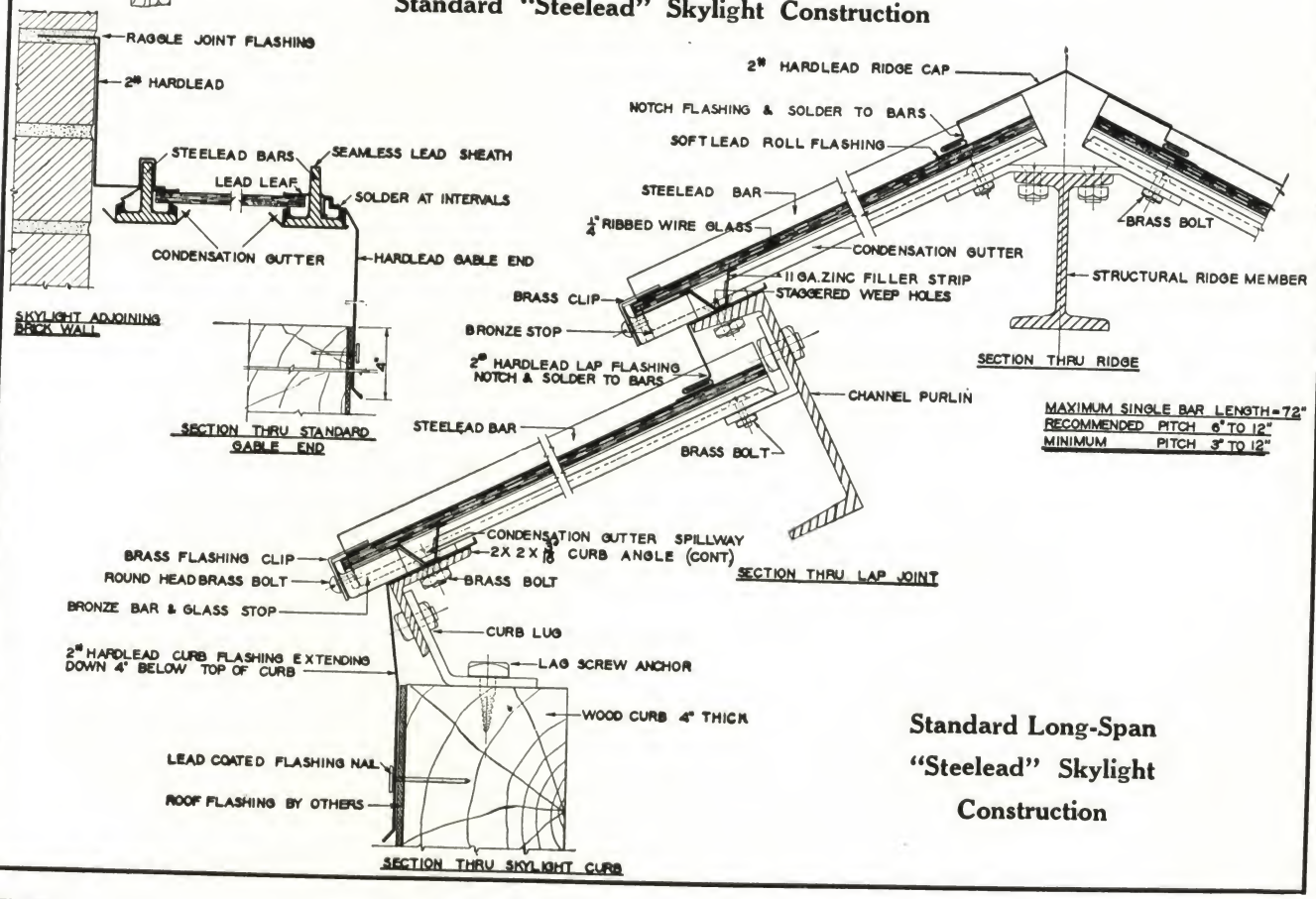
The glass shall be (state thickness, make and kind). This glass shall have a bearing on a lead cushion, and be left free to expand, without coming into contact with bolts or other rigid substances. The glass shall be held securely in place by the lead wings on the bar, making a weathertight joint without the use of putty or packing. Ample provision shall be made for carrying away all condensation which may be delivered from the underside of the glass.

Skylight work shall be free of leaks and glass shall be left clean and without cracks.

All flashings pertaining to the skylights shall be hard lead weighing not less than 2 lb. per sq. ft.



Standard "Steelead" Skylight Construction



Standard Long-Span "Steelead" Skylight Construction

BLASKI MANUFACTURING CO.

Exclusive Skylight Manufacturers

4132-4138 Belmont Avenue, CHICAGO, ILL.

BRANCHES IN PRINCIPAL CITIES

Products

BLASKI LEAKPROOF *Puttyless* VENTILATING SKYLIGHTS.
BLASKI LEAKPROOF *Putty* VENTILATING SKYLIGHTS.

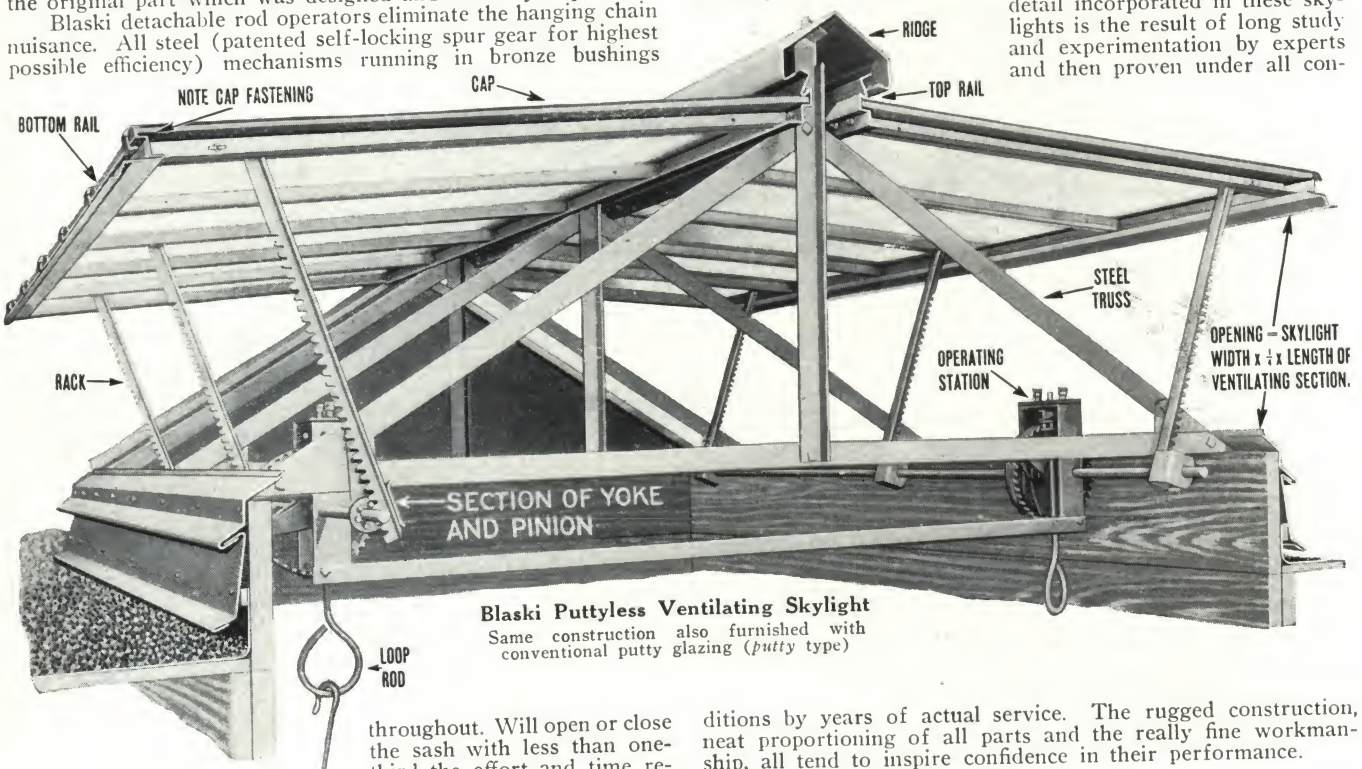
Special Features

Blaski skylights are entirely self-supported by steel trusses, and do not require any special preparatory construction except the curbs. They are built completely of *No. 18 gauge* galvanized *copper bearing* iron, machine fabricated throughout. All parts are bolted, riveted, or interlocked. An absolutely *solderless* construction which will last a lifetime.

The quality of the die and machine made parts is of a uniform high standard; every piece being an exact duplicate of the original part which was designed and made by experts.

Blaski detachable rod operators eliminate the hanging chain nuisance. All steel (patented self-locking spur gear for highest possible efficiency) mechanisms running in bronze bushings throughout. Will open or close the sash with less than one-third the effort and time required to manipulate other devices.

In the *puttyless* type a perfect puttyless glazing system provides for quick and easy removal of all glass for cleaning and painting of the skylights. This feature saves considerable time and money and insures a better job of painting.



Blaski Puttyless Ventilating Skylight
Same construction also furnished with conventional putty glazing (*putty* type)

Types

Both the *puttyless* and *putty* constructions are made in three standard types, "B," "C," and "D" as illustrated on the following page.

Standard widths for Type "B" are 4, 6, 8, 10 and 12 ft.
Standard widths for Type "C" are 13 ft. 4 in., 15 ft. 4 in., 17 ft. 4 in., and 19 ft. 4 in.
Standard heights for Type "D" are 4 ft. 4 in., 5 ft. 6 in., 6 ft. 8 in.

These standard widths and heights are carried in stock in any lengths, ready for erection.

Selecting Sizes for Economy

Specify Type "B" skylights whenever possible. Type "B" skylights (full open from the curbs) provide twice as much ventilation as Type "C" skylights (upper half open) of the same area. 8-ft., 10-ft. and 12-ft. widths (Type "B") are the most economical. Avoid short lengths. For example, one skylight 10 ft. x 54 ft. (540 sq. ft.) costs the same as three 10-ft. x 16-ft. skylights (480 sq. ft.). More than 12% more skylight area is obtained for the same money by specifying the long skylight rather than three smaller ones.

Really Good Skylights

Types "B," "C" and "D" skylights we believe are the outstanding examples of really good skylight construction. Every detail incorporated in these skylights is the result of long study and experimentation by experts and then proven under all conditions by years of actual service. The rugged construction, neat proportioning of all parts and the really fine workmanship, all tend to inspire confidence in their performance.

Blaski Skylights for All Uses

Types "B" and "C" skylights, in their variety of sizes and possible lengths of ventilating sections, can be placed at strategic points so as to light and ventilate the entire building chiefly through the roof. The increased efficiency and saving of electric light soon pays for the installation. The general trend when Blaski skylights have been tried is increased use, and many architects literally flood the building with Blaski skylights and ventilation. We also receive a large number of orders direct from owners who add to the quantity of Blaski skylights originally installed to cover additional requirements.

Prices, Inquiries, etc.

Requests for quotations should designate whether *puttyless* or *putty* type is wanted, as there is a difference in cost. State number of skylights, their sizes, and length of each skylight to be ventilated.

Quick Delivery

An average of over 100,000 sq. ft. of skylights are stocked for immediate shipment. The actual installation requires only a few simple assembling operations, which any handy man can quickly accomplish with only ordinary tools. This advantage is particularly desirable when skylights are ordered to be erected by mechanics already on the job.

Continued on next page

Installation Crews and Factory Branches

Our erection crews are thoroughly experienced, and are available for service in any part of the country.

Factory branches, located in principal cities carry complete stocks and replicas of our factory service equipment, and provide service equal to that of the parent organization. Your inquiry will be referred at once to the nearest branch.

Construction Details

Fabrication—Complete fabrication of all parts direct from raw materials is done in plants owned by the BLASKI MANUFACTURING CO., under the strictest supervision and inspection. This, we believe, is the strongest guarantee of quality in any specification.

Supporting Structure—All steel trusses built from angles from 2x1½x⅛ in. to 2½x2x¼ in. depending on size of skylight, but never spaced more than 67 in. apart.

Glass Bearing Members and Closures—These parts are all die and machine fabricated from 18 gauge galvanized copper-bearing iron. The galvanized coating is not injured, as is very likely with handwork. Assembly of the various parts is by bolting, lug and slot interlocking, or riveting, but never soldering. Thus each joint is of a predetermined strength.

Glass and Puttyless Glazing—The ¼-in. thick ribbed wire glass set in Blaski moulded glazing cushions is perfectly protected against expansion, contraction and flexure of skylight or glass. The cushions take up all twist and shock—as we frequently demonstrate by lifting one corner of an open sash without breakage of glass.

Putty Glazing—In the *Putty* type, we employ the conventional method of glazing, using a high grade glazing cement.

Operating Mechanism—All-steel rack and pinion type with all setscrews of permanent self-seating type. Shafting journaled in brass bushings which prevent rusting in. Operation by light detachable handle with friction clutch that positively prevents accidental or willful injury to operating mechanism. This operating mechanism requires only one-third the manual power as compared to the cast iron worm gear type, and does away with the ordinary troublesome chain nuisance.

Hardware and Miscellaneous—Like the operating mechanism, all hardware is pressed steel and designed especially for the purpose required. A flexible 24 gauge galvanized iron weatherstrip is used between the curb and lower rails. This is the only place where metal lighter than 18 gauge is used.

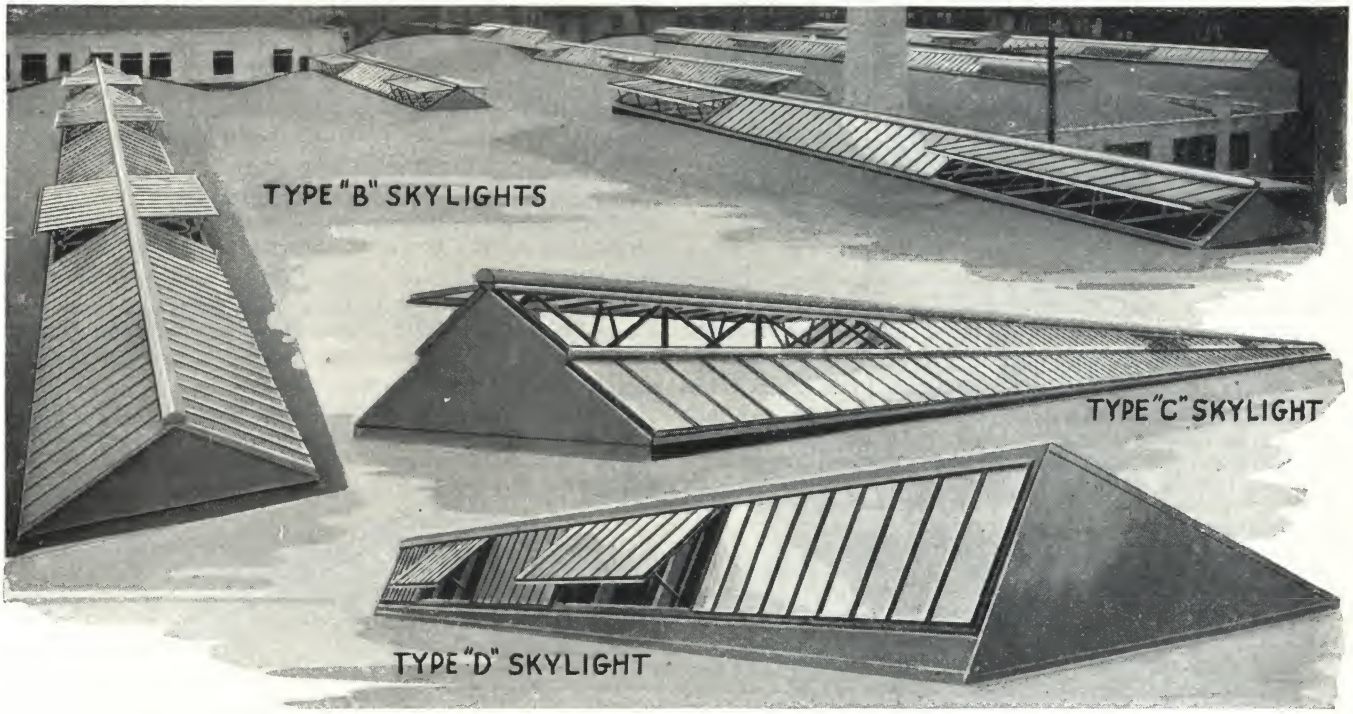
Painting—Trusses receive a shop coat of red mineral paint before assembly. Operators and mechanism receive one shop coat of black paint. Galvanized iron parts are not painted unless painting is specified.

Flashings—Our composition flashing 9 in. wide is regularly furnished with all skylights. Other kinds of flashing can be installed on special order or can be included in the specifications of other contractors.

Special Metals—For general use the metals specified above will prove satisfactory, as the careful fabrication and high quality of metals give the skylight an expected life of from 50 to 75 years. For abnormal conditions skylights of a variety of metals can be made to stand up under any kind of requirements.

Recommended Architects' Specifications

Skylights to be of the (state whether *Puttyless* or *Putty*) ventilating type as manufactured by the BLASKI MANUFACTURING CO., 4132-4138 Belmont Avenue, Chicago, Ill. The size of skylights and lengths of ventilating sections to be in accordance with sizes shown in plans.



General Information

Curbs and Flashings—Curbs for Types "B" and "C" skylights should be ½ in. less in width than the standard widths of Types "B" and "C" skylights. For example, an 8 ft. 0 in. wide Type "B" skylight requires a curb width of 7 ft. 11½ in. Measurements in both cases are outside measure. Measures for opening in sawtooth framing are from head to sill and inside between ends. Variation of ¼ in. over or under is the maximum allowance for all skylight curbs or openings. 2x8-in. or 2x10-in. wood curbs are sufficient. When concrete curbs are used a 2-in. wood block is required all round the top for fastening our construction. Blaski standard operating devices clear 4-in. thick curbs, but can be arranged to clear 6-in. thick curbs when desired.

A strip of special 3-ply asphalt composition flashing which extends down 9 in. from tops of curbs is furnished with all Blaski skylights. The roofing can easily be joined to this and no other flashing is required. Our 24 gauge galvanized iron weatherstrip extends down 2 in. from top of curbs over the 3-ply flashing.

Skylight Sizes and Lighting Efficiency—A general statement can be made, that about 15% to 25% of the floor area should be the area of skylights, and this percentage can vary with the nature of the work performed in the building. Large skylights in preference to smaller sizes are recommended. As an example: a room 40x80 ft. 20% lighted requires a 10x64-ft. skylight. The same amount of money spent for, say four smaller skylights, would probably buy only 10% to 15% of the floor area in skylights on account of the greater cost of small skylights, extra curb framing, etc.

Length of Ventilating Sections—The maximum lengths of ventilating sections for 4, 6, 8, 10, and 12-ft. wide skylights are 40, 35, 30, 25, and 20 ft., respectively; for 13 ft. 4 in., 15 ft. 4 in., 17 ft. 4 in., and 19 ft. 4 in. are 30, 30, 25 and 25 ft., respectively.

Any combination of ventilating and stationary sections is possible, but all skylights are recommended to be full ventilating, especially when the length of skylight is less than the possible length of ventilating section.

DeHART SHEET METAL WORKS

119-121 North Third Street, CHICKASHA, OKLAHOMA

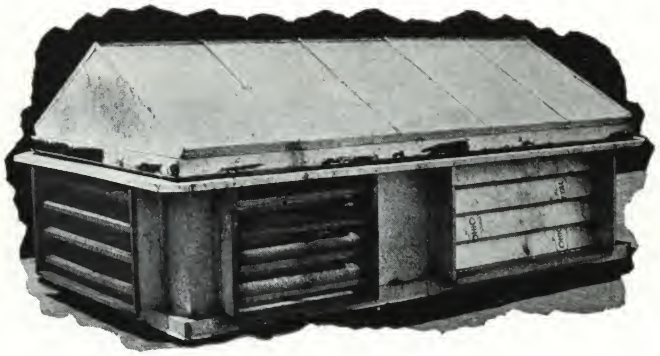
DeHart Air Cooling, Lighting and Ventilating Skylight

The DeHart Skylight affords a vacuum expelling ventilation of the foul, heated air near the ceiling and draws in a continuous refreshing flow of pure air through the building.

DeHart Skylights give as many square feet of ventilation in the base as there are in the well-hole opening in the roof. All this without noise or operation cost—just the natural way to do it.

Advantages and Costs

Although this product is a new patented article, it is not priced accordingly. It furnishes ventilation at a minimum cost. Its cost per square foot of discharge area is exceedingly small and in addition Natural Light is afforded. "First cost is all"—no operating cost. Always ready to serve. Easily and instantly installed and operated.



Description

Louver Operation—The operating louvers, when open, stand at a slanting position as shown in the drawings. When closed the louvers interlock with each other, thereby making the skylight absolutely tight with no chance of leakage.

Levers operating the louvers are made of angle iron and round rod, finished aluminum bronze. In order to open, a chain or pole with hook set to the ring and rod attached to levers will bring the louvers into open position easily and quickly, with lower lever passing center and automatically holding them open.

To close, pull the lever past center, with a release. This closes the louvers instantly. There is a round coil spring set at tension to hold the louvers rigid at all times, either open or closed, preventing any rattle or noise because of the freedom with which they operate.

The ring in louver lever can be extended with a rod to the ceiling line, thus making it easy to control with hook.

Screens—On the outside of the louver housing galvanized screen is provided so that flies or insects may not enter.

An operating shade may be installed in top curb above the louvers so that any type of merchandise may be displayed beneath the skylight without fading from the bright hot rays of the sun.

Materials of Construction — This product is made completely of cop-r-loy, the nationally known galvanized steel, or copper, which makes a long-lived product. Glazed with ¼-in. wire glass.

Sizes, Capacities and Factory Prices

Table of capacities under average condition of temperature and wind velocity of five miles per hour.

Sizes of outside curb, ft.	Cu. ft. per min.	List price, f.o.b. factory
4x 6	1000	$ 71.35
4x 8	1400	80.00
5x 7	1550	87.50
5x 8	1800	100.00
6x 6	1600	90.00
6x 8	2150	120.00
6x10	2750	150.00
6x12	3250	180.00
8x10	3750	200.00
8x12	4500	240.00

For screens on sizes up to 6x8 ft. add $5.00 and for all larger sizes add $7.50 to the above price.
Other sizes quoted on request.

Installation

No more preparation is necessary for our ventilating skylights than for the regular skylight. These come assembled in three sections, base complete ready to set on curb, skylight frame ready to set on base, the glass ready to set in frame. Can ship with or without glass.

Service

Sketches and information gladly furnished Architects and Builders without cost or obligation.

Facilities

Our plant is equipped throughout with modern power equipment including shears, presses, electrical spot welding machines and all necessary equipment to turn out an unlimited quantity of this product. Located on three leading railroads, Rock Island, Frisco and Santa Fe.

Information Required for Estimates

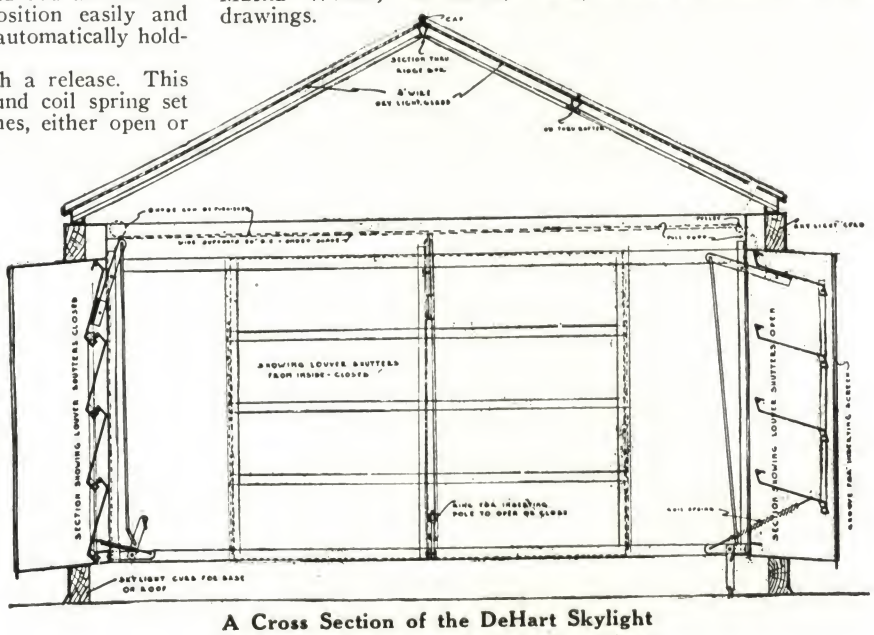
Give outside measurements of curb on roof. State if curtain and screens are to be used.

Guarantee

We guarantee this product to operate freely and easily with a long life and absolutely no leak if installed according to our instructions.

Specifications

Furnish and install DeHart Air Cooling, Lighting and Ventilating Skylights as manufactured by DeHart Sheet Metal Works, Chickasha, Okla., where indicated on the drawings.



A Cross Section of the DeHart Skylight
Note louvers in both open and closed positions

THE G. DROUVÉ COMPANY

Manufacturers of Puttyless Skylights and Sash Operators

TELEPHONE
NOBLE 1950
CABLE
Western Union Code

(Post Office Address)
BRIDGEPORT, CONN.

FACTORY
FAIRFIELD

REPRESENTATIVES
PITTSBURGH, PA., E. K. Geyser, 921 Fulton Building
NASHVILLE, TENN., George W. Ruth Co., 41 Arcade
GREENVILLE, S. C., J. MACRABB
ATLANTA, GA., Applewhite & Lawler Co.

Products

"ANTI-PLUVIUS" PUTTYLESS SKYLIGHT, trade-marked and patented.

"ANTI-PLUVIUS" (NON-CORROSIVE) PUTTYLESS SKYLIGHT, patented.

"DROU-VE-LITE" GLASS STRUCTURE, trade-marked and patented.

"DROU-VE-LITE" (NON-CORROSIVE) GLASS STRUCTURE, patented.

DROUVÉ CONTINUOUS RIDGE VENTILATOR, patents pending.

DROUVÉ VENTILATING TURRET SASH CONSTRUCTION, patents pending.

WORM and GEAR SASH OPERATOR, Torsion Type.

Also manufacturers of "Drou-Ve-Lite" Sawtooth Continuous Ventilating Skylight and the "Drouvé" Double Gutter Ventilators.

A MODERN SKYLIGHT SERVICE FOR EVERY NEED

Manufacturing and Shipping Facilities—Our plant is a modern one-story factory building containing 40,000 sq. ft. of floor space completely equipped with the most modern sheet metal working machinery known to the trade.

This entire plant, one of the largest of its kind in the country, is devoted exclusively to the manufacture of "Anti-Pluvius" Puttyless Skylights, Drou-Ve-Lite Glass Structures, Drou-Ve-Lite Sawtooth Continuous Ventilating Skylights and various types of sash operating devices.

With a siding of the New York, New Haven and Hartford Railroad at our plant we are enabled to make prompt shipments to any part of the country.

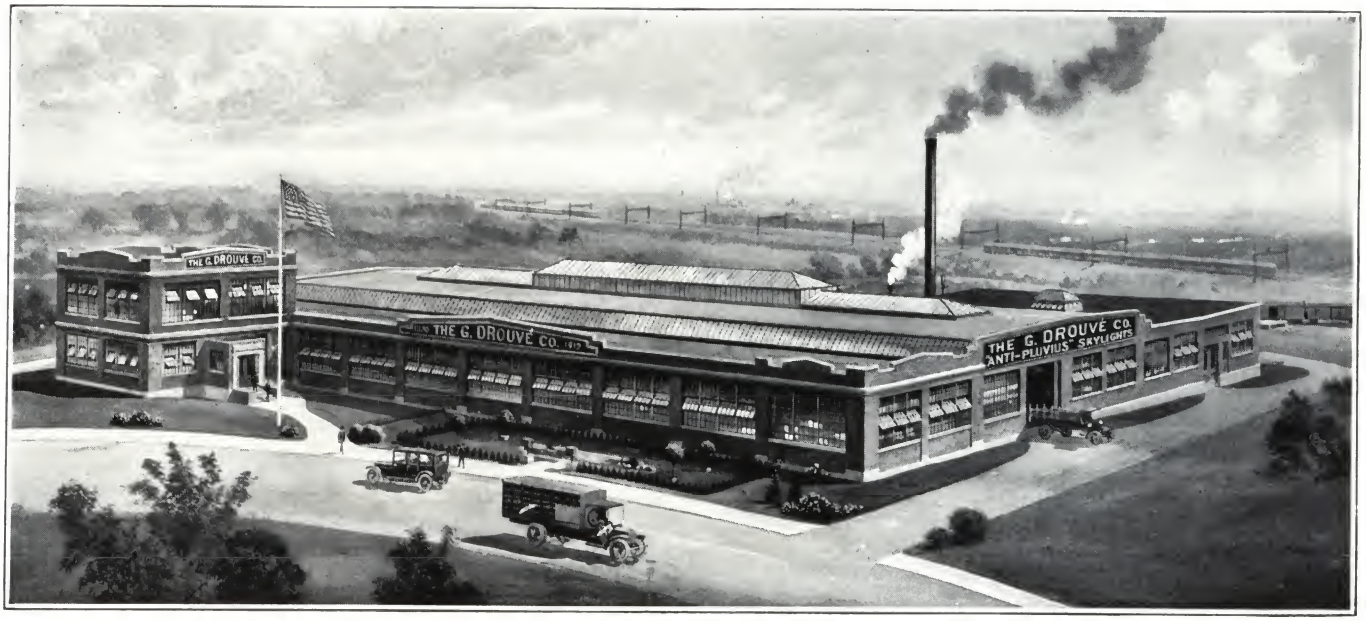
Planning and Consulting Service—An experience of over 40 years in solving skylight problems enables us to offer you practical solutions for your most intricate problems of skylight construction. Our engineering staff is ready to co-operate with you by means of a personal call or by preparing suggestions for use with the architectural drawings, without obligation to you.

Early consultation on skylights often saves on the cost of the building. Frequently it is possible to save considerably by the omission of part of the steel framing of a roof with the use of the Drou-Ve-Lite structural type of skylight which is designed especially for long spans and does not require structural reinforcing. At other times, for ordinary conditions, the "Anti-Pluvius" offers a better solution. Sometimes both are used on the same job depending on conditions. For these reasons we are always glad to go over the work under consideration and offer advice as to the type best suited to the work, without charge or obligation on the part of the architect.

Erecting Service—No matter how good a skylight is, if it is not carefully and properly put together there is always the chance that it will leak. This makes the owner dissatisfied with the work of the architect, the builder and the skylight manufacturer.

In order to insure proper and careful erection we maintain a force thoroughly skilled in erecting our skylights. They can be sent to any part of the country as required from our main office or nearest representative.

If required we will ship skylights for erection by the local sheet metal contractor.



Forty Thousand Square Feet of Floor Space Devoted Exclusively to the Manufacture of All Products Listed Above

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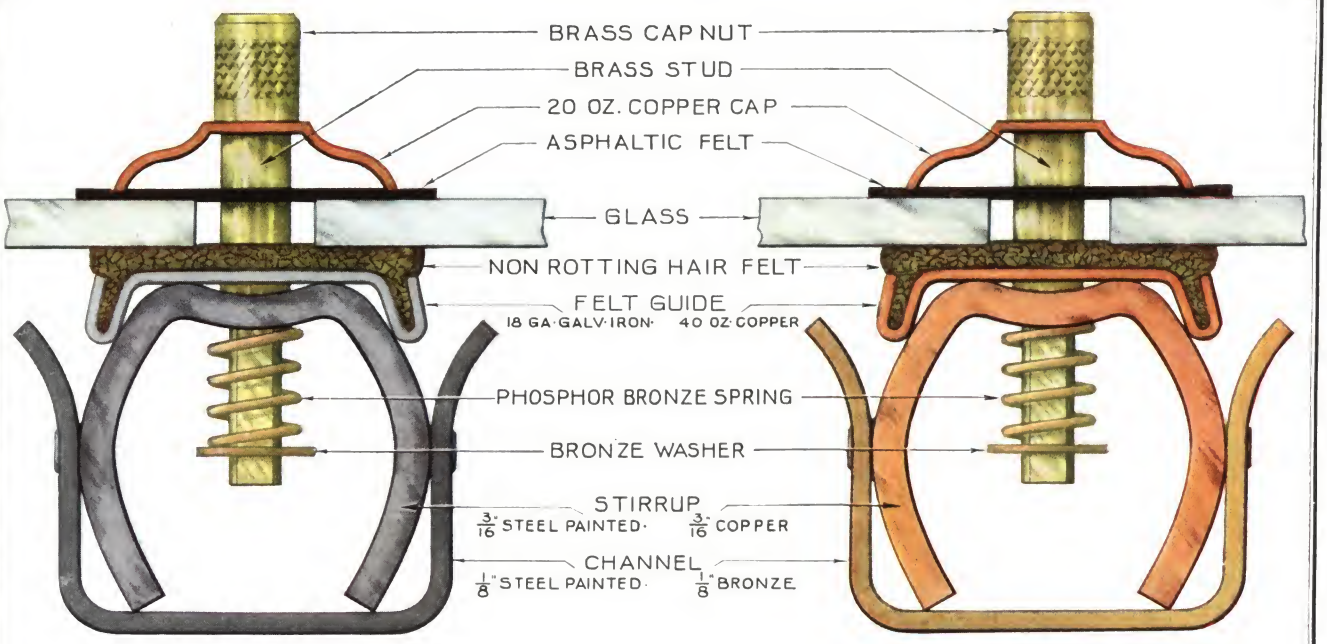
ANTI-PLUVIUS

PUTTYLESS SKYLIGHT



Type A

The above full size illustration shows our regular "Anti-Pluvius" puttyless skylight, Type A construction which was originally placed on the market by us some 40 years ago. Only minor changes, as the result of experience, have been made in this skylight since its original inception. Years of practical experience with this type of puttyless skylight construction under all kinds of ordinary atmospheric conditions has proved that they will give satisfactory service.

The basic principle in this construction is the elimination of condensation forming on the underside of its main supporting bars (channels) so prevalent in a wrongly constructed skylight. This is accomplished by our patented method of isolating the glass and the glass rest from the main supporting bars, permitting of a free circulation of air between the main supporting bars and the glass.

In this construction, it is to be noted that we utilize the main supporting bars as condensation gutters as well as to give ample support for the skylight structure. This gives an exceptionally large condensation gutter due to the depth of the channels without cutting down excessively on the glass area which, in skylights, is always desired in the maximum, the over-all width of the channels at their widest point being only 2½ in.

This skylight, Type A construction, is furnished, so far as materials are concerned, exactly as illustrated above.

More detailed information and specifications for this skylight can be found on pages 3 and 4 following.

Type B

The full size illustration shows our "Anti-Pluvius" *non-corrosive* puttyless skylight, Type B construction. This skylight in design and construction is identical with Type A, the difference being only in the materials used. These are of non-corrosive materials throughout (not a protective process).

This construction is guaranteed absolutely against any form of deterioration for an indefinite length of time The cost of this construction is surprisingly low considering the fact that it gives a skylight entirely free from any maintenance expense.

This skylight is ideal for use on powerhouses, chemical plants, railroad shops, foundries and buildings near salt water, as it will stand up under the atmospheric conditions existing in such buildings.

This skylight was originally placed on the market by us for use particularly under unusual atmospheric conditions, such as will be found in the types of buildings named above where they have various atmospheric conditions disastrous to steel. However, it has been a surprise, even to ourselves, the large number of specifications calling for this *non-corrosive* construction for use in libraries, bank buildings, museums, etc., for the reason that this construction is decidedly in keeping with the high grade materials usually incorporated in these types of buildings.

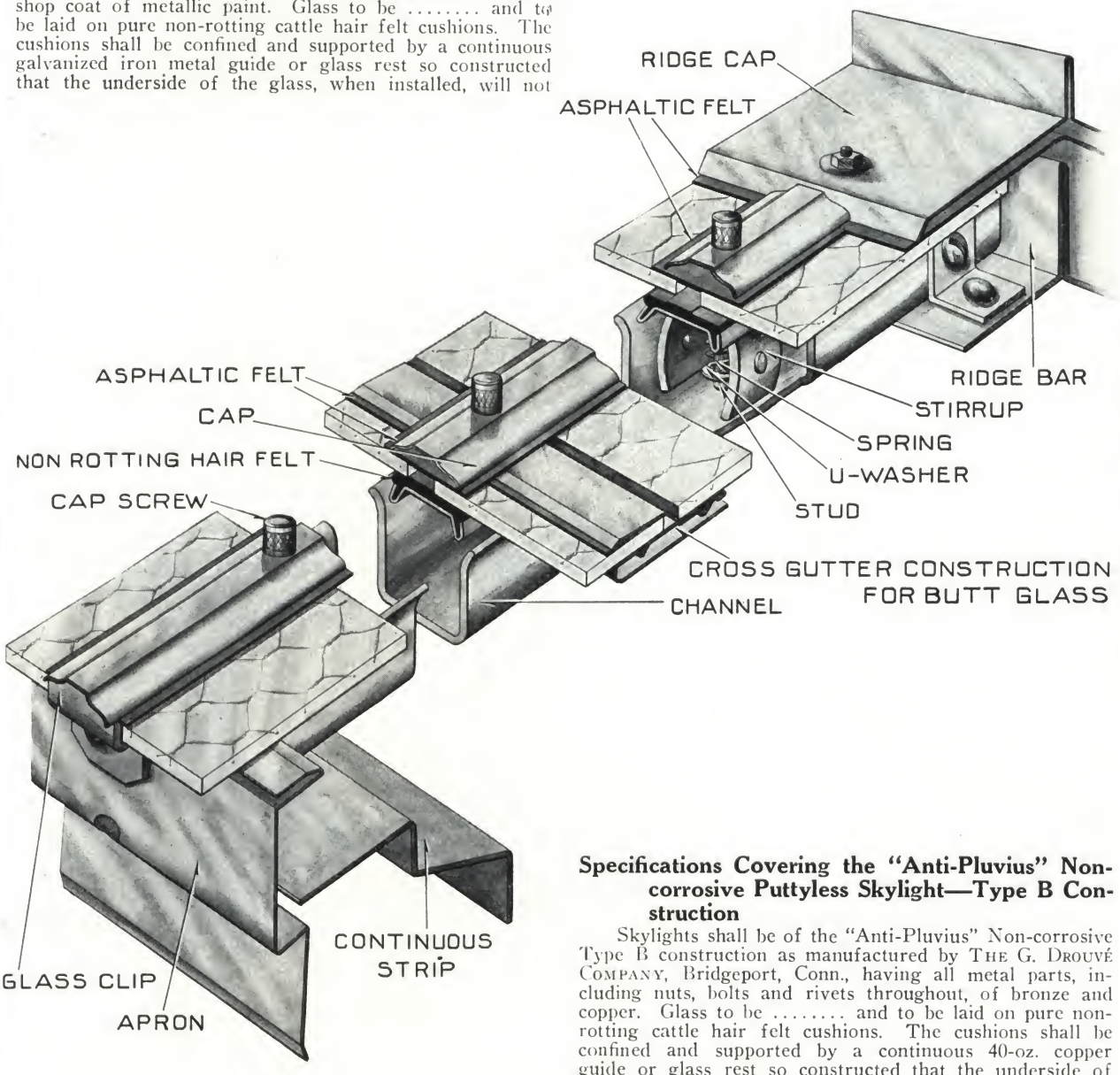
This skylight, Type B construction, is furnished, so far as materials are concerned, exactly as illustrated above. More detailed information and specifications for this skylight can be found on pages 3 and 4 following.

Continued on next page

ANTI-PLUVIUS
PUTTYLESS SKYLIGHT

Specifications Covering the Regular "Anti-Pluvius" Puttyless Skylight—Type A Construction

Skylights shall be of the "Anti-Pluvius" Type A construction as manufactured by THE G. DROUVÉ COMPANY, Bridgeport, Conn., having all metal parts which are exposed to the weather of copper. Skylight ribs or main supporting channels to be U-shaped of carbon steel, painted one good shop coat of metallic paint. Glass to be ..... and to be laid on pure non-rotting cattle hair felt cushions. The cushions shall be confined and supported by a continuous galvanized iron metal guide or glass rest so constructed that the underside of the glass, when installed, will not come in contact with any material other than the felt. The glass rest shall be raised above the channels a sufficient distance so that there will be a free circulation of air between the glass and the channels. Skylight studs and caps to be so constructed as to allow for expansion, contraction and vibration by the use of phosphor bronze springs.



Specifications Covering the "Anti-Pluvius" Non-corrosive Puttyless Skylight—Type B Construction

Skylights shall be of the "Anti-Pluvius" Non-corrosive Type B construction as manufactured by THE G. DROUVÉ COMPANY, Bridgeport, Conn., having all metal parts, including nuts, bolts and rivets throughout, of bronze and copper. Glass to be ..... and to be laid on pure non-rotting cattle hair felt cushions. The cushions shall be confined and supported by a continuous 40-oz. copper guide or glass rest so constructed that the underside of the glass, when installed, will not come in contact with any materials other than the felt. The glass rest shall be raised above the channels a sufficient distance so that there will be a free circulation of air between the glass and the channels. Skylight studs and caps to be so constructed as to allow for expansion, contraction and vibration by the use of phosphor bronze springs.

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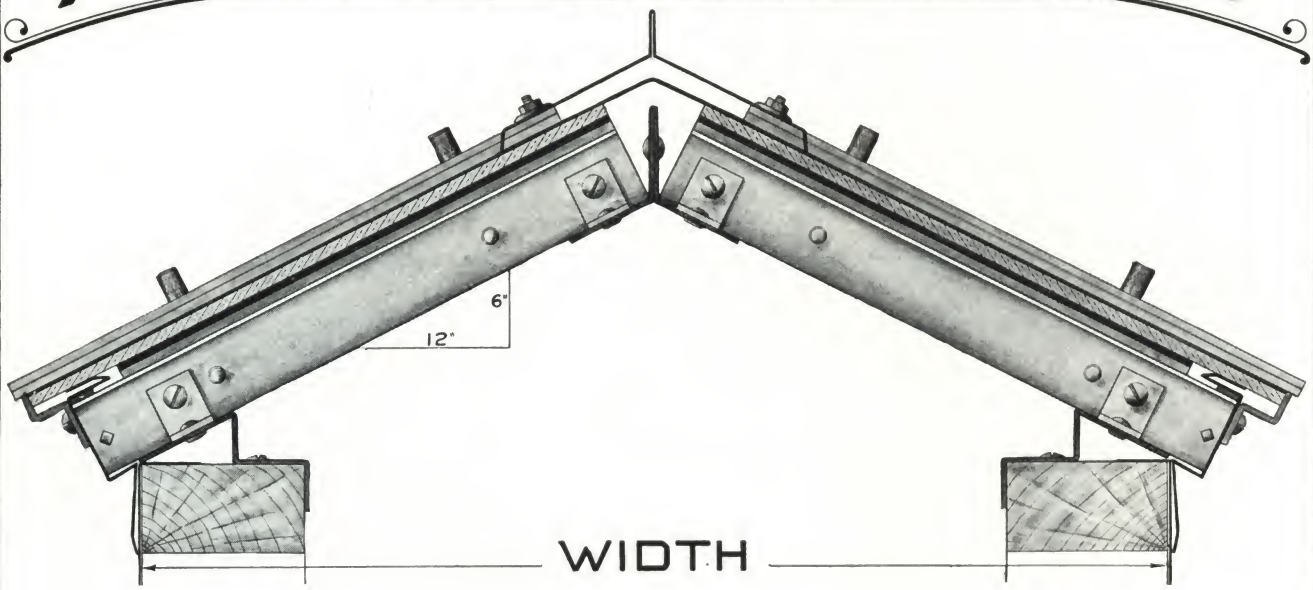
ANTI-PLUVIUS

PUTTYLESS SKYLIGHT



The above illustration shows a section through our "Anti-Pluvius" puttyless skylight, either Type A or Type B construction. This particular illustration shows the skylight self-supporting; that is, without any structural steel trusses and purlins.

When using our Type A construction, which has steel channels, the width dimension for self-supporting type must not exceed 15 ft. which will give a span or channel length from ridge to eave of approximately 8 ft. 6 in.—the maximum this channel will carry without deflection.

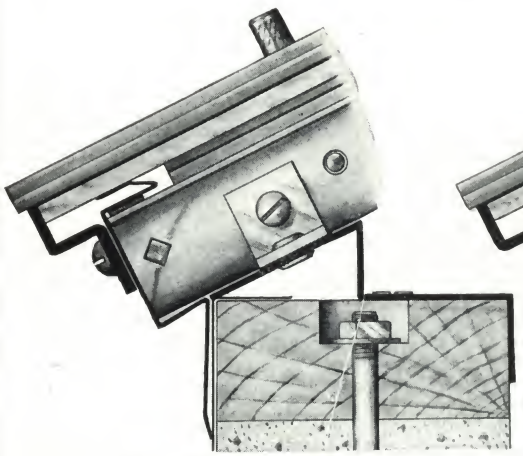
When using our Type B construction, which has bronze channels, the width dimension for self-supporting type must not exceed 13 ft., which will give a span or channel length from ridge to eave of approximately 7 ft. 6 in.—the maximum this channel will carry without deflection.

For widths greater than those mentioned above, structural steel supporting frames furnished by others are necessary.

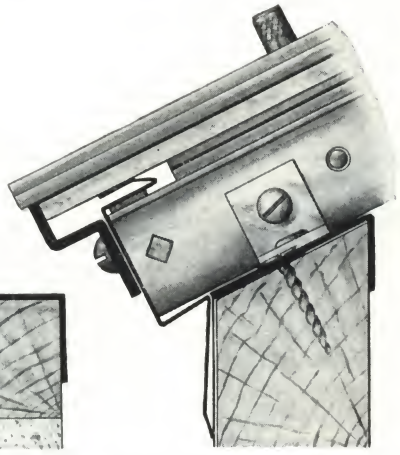
Regarding the length of skylights, they can be of any length you may desire as our construction is not in any way affected by this.

Our "Anti-Pluvius" puttyless skylight possesses many advantages:

(1) Strength to suit the most exacting requirements.
(2) Positive watertightness.
(3) No sweating of main supporting bars (channels).
(4) Easily adaptable to all types of roof construction.
(5) Admits maximum daylight and casts minimum shadows.
(6) Frames are flexible, and ample allowances are made for expansion and contraction, vibration and wind pressures.



FLAT TOP CURB



BEVEL TOP CURB

STRUCTURAL STEEL CURB

The illustrations above show three different types of most generally used skylight curbs.

Concrete curbs should have wood plate on top, anchored to the curb as shown. Concrete curbs should not be less than 6 in. in thickness.

Wood curbs can be furnished either with bevel top as shown or flat top and should not be less than 4 in. in thickness.

Structural steel curbs, made either from angles as shown or channels, should have a top leg or flange of not less than 3 in.

It is understood that the curbs are not a part of the skylight manufacturer's contract. These are always furnished by others. Also, the flashing of these curbs is not a part of the skylight contract but should be done by the roofing or sheet metal contractor.

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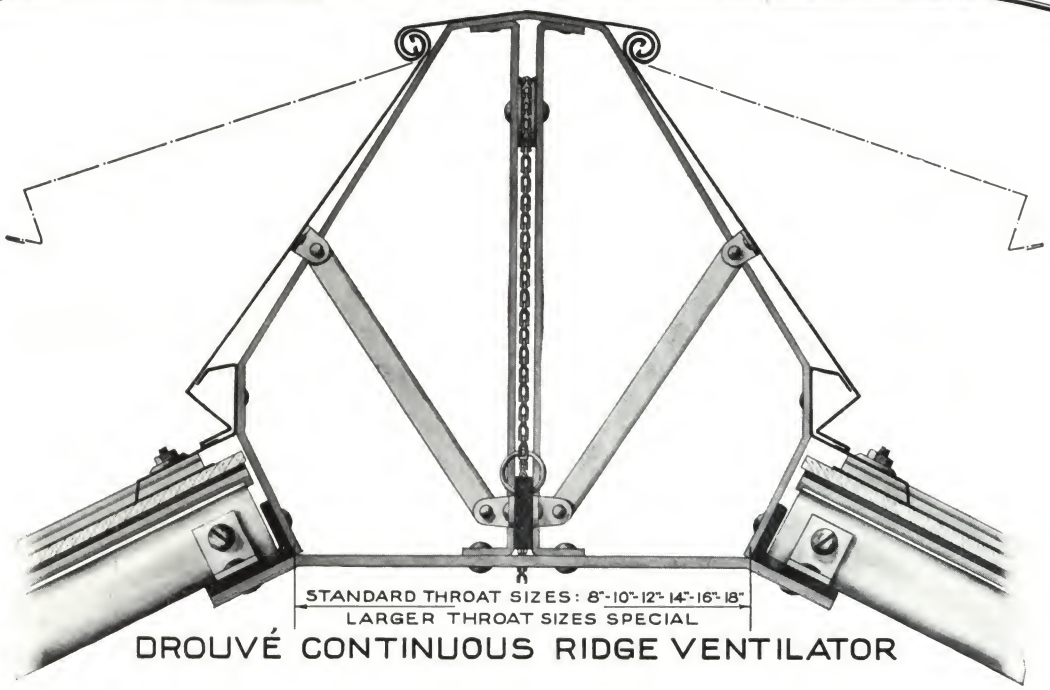
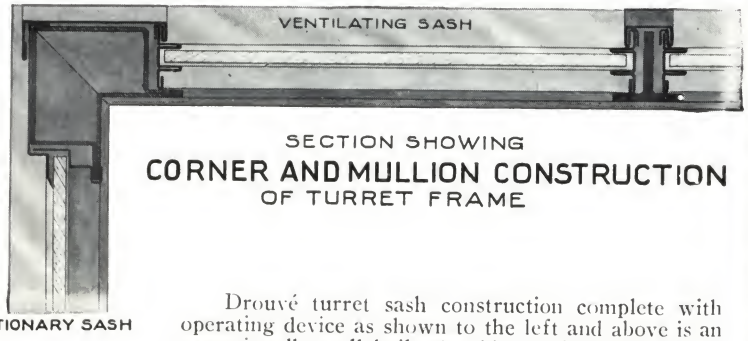
RIDGE VENTILATOR AND TURRET CONSTRUCTION

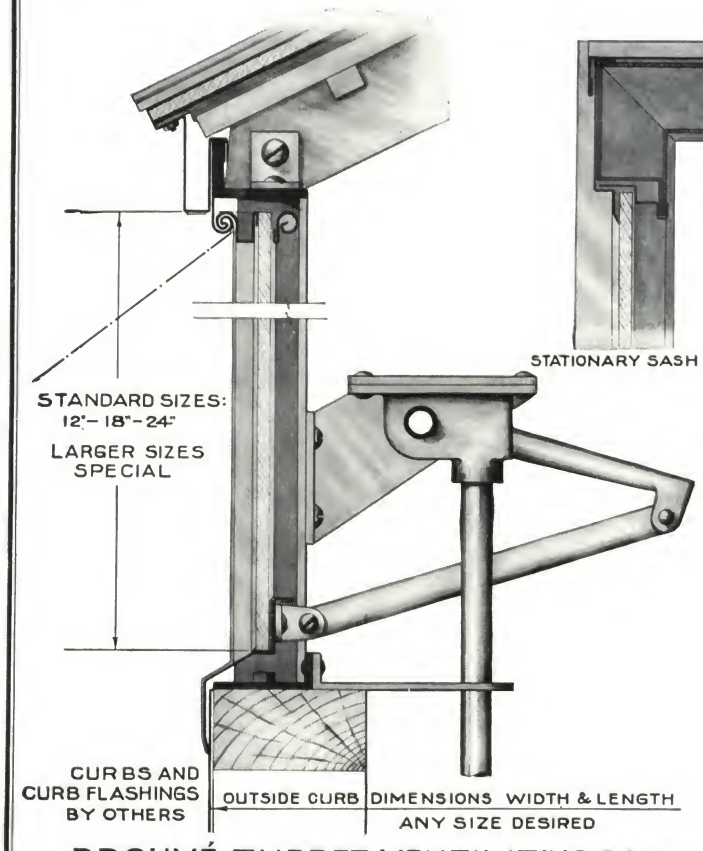


DROUVÉ CONTINUOUS RIDGE VENTILATOR

The above illustration shows a type of ridge ventilator construction that positively will not leak. This particular type can be opened and closed as desired. Operating mechanism for opening and closing is an exceptionally simple device that will work satisfactorily without trouble at all times. Rolled edges of the roof section and opening section interlocking in each other gives a continuous hinge and prevents any leakage whatever at this point.



SECTION SHOWING
CORNER AND MULLION CONSTRUCTION
OF TURRET FRAME



DROUVÉ TURRET VENTILATING SASH CONSTRUCTION

Drouvé turret sash construction complete with operating device as shown to the left and above is an exceptionally well built, durable ventilating medium. Turret sash construction is usually furnished with ventilating sash on the two long sides and stationary sash on the ends. It is also to be remembered that in using the turret sash construction under skylights you are obtaining considerably more light, as glass is used in turrets as well as skylight. The turret frame is made up entirely of structural tees and angles and special steel corner members. These members are all properly painted and exposed to the interior of the building only. All metal in these turrets exposed to the weather is of copper. Suitable operating device for the opening and closing of the turret sash is a part of this construction.

Note: It is not intended in the illustrations of ridge ventilator and turret sash to convey the impression that they are, necessarily, used together as a complete ventilating unit. They are two distinctly separate methods of ventilation. It is sometimes desired to use the ridge ventilator method or to use the turret sash method. It is not necessary to use the two together, although, in cases where maximum ventilation is desired, the combustion of the two makes a perfect ventilating medium.

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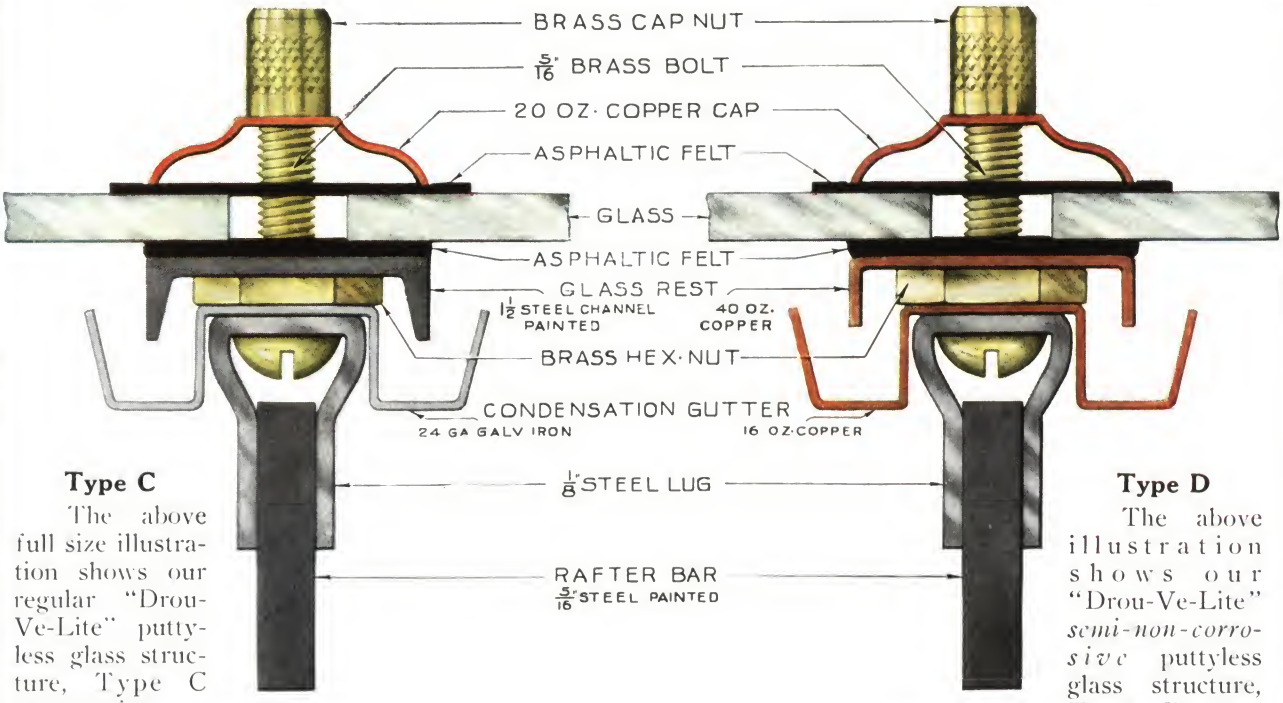
DROU-VE-LITE
GLASS STRUCTURE



Type C

The above full size illustration shows our regular "Drou-Ve-Lite" puttyless glass structure, Type C construction, a very satisfactory heavy duty skylight. It was originally placed on the market by us as a result of a very decided tendency on the part of architects to eliminate as much as possible structural steelwork for the support of the skylight itself. A skylight which is self-supporting, regardless of length of span, effects a considerable saving because it requires no structural steelwork for its support other than that which is a part of the skylight itself.

Another important feature is the freedom from unsightly steel trusses, etc., in the skylight well opening and the consequent elimination of shadows and obstruction of light.

Like our "Anti-Pluvius" construction, the basic principle in this construction is the elimination of condensation forming on the ribs or, as we call them, rafter bars, so prevalent in a wrongly constructed skylight. This is accomplished by our patented method of isolating the condensation gutter from the rafter bars, and glass rest again from the condensation gutters, permitting a free circulation of air between rafter bars and condensation gutters and between condensation gutters and channel shaped glass rest. In this construction the condensation gutters are of ample size to take care of all condensation and yet the over-all width of the condensation gutter, which is the widest point of light obstruction in this skylight, is only 2¼ in.

This skylight, Type C construction, is furnished, so far as materials are concerned, exactly as noted above. More detailed information and specifications for this skylight can be found on pages 7 and 8 following.

Type D

The above illustration shows our "Drou-Ve-Lite" *semi-non-corrosive* puttyless glass structure, Type D construction.

This skylight in design and construction is identical with Type C, the difference being only in the materials used. This type has all sheet metal parts, such as condensation gutters, glass rests, and all metal parts which are exposed to the weather, of copper. These features give non-corrosive materials where they are most needed.

For example, the glass rest will develop condensation due to its direct contact with the glass (felt or other glass rest cushions not being an insulator against this); this condensation, in turn, drops into the condensation gutters which are also of copper. These are the two parts of the skylight exposed to the interior of the building which are continually wet and dry but, nevertheless, being of copper, they are free from corrosion. Also, as stated above, metal exposed to weather, being of copper, is free from corrosion. Rafter bars are of steel, painted, and inasmuch as this construction prevents condensation forming on them, they are always dry and the life of them is indefinitely prolonged. It is also to be noted that the construction of "Drou-Ve-Lite" is such that the rafter bars, like other steelwork in the building, can be very readily and thoroughly painted from time to time without dis-assembling the skylight, a most important feature.

This skylight, Type D construction, is furnished, so far as materials are concerned, exactly as noted above.

More detailed information and specifications for this skylight can be found on pages 7 and 8 following.

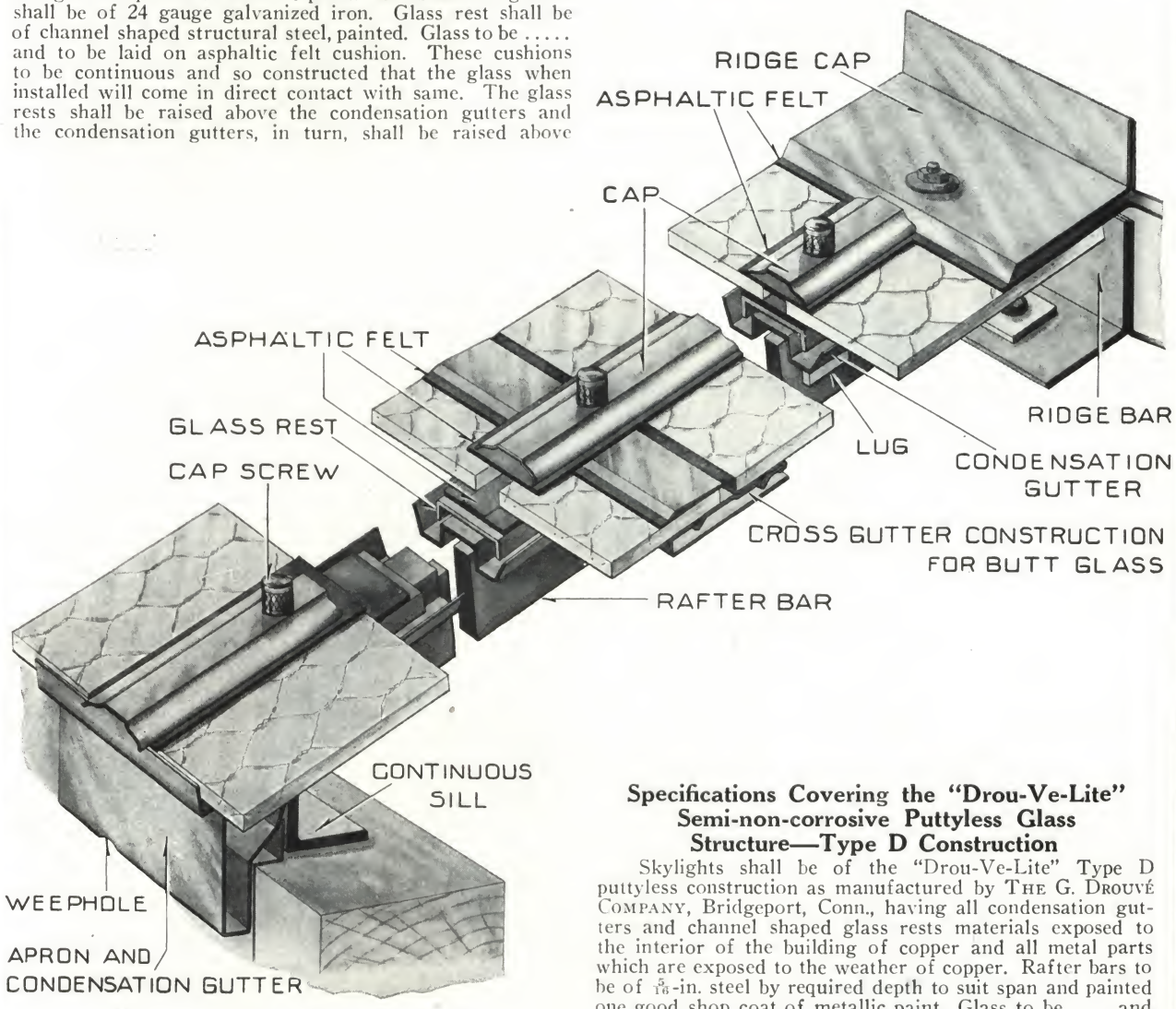
Continued on next page

DROU-VE-LITE
GLASS STRUCTURE

Specifications Covering the "Drou-Ve-Lite" Puttyless Glass Structure—Type C Construction

Skylights shall be of the "Drou-Ve-Lite" Type C puttyless construction as manufactured by The G. Drouvé Company, Bridgeport, Conn., having all metal parts which are exposed to the weather of copper. Rafter bars to be of $\frac{5}{16}$-in. steel by required depth to suit span and painted one good shop coat of metallic paint. Condensation gutters shall be of 24 gauge galvanized iron. Glass rest shall be of channel shaped structural steel, painted. Glass to be ..... and to be laid on asphaltic felt cushion. These cushions to be continuous and so constructed that the glass when installed will come in direct contact with same. The glass rests shall be raised above the condensation gutters and the condensation gutters, in turn, shall be raised above the rafter bars a sufficient distance so that there will be a free circulation of air between the rafter bars and the condensation gutters and between the condensation gutters and the glass. Skylight caps will be so constructed as to allow for expansion, contraction and vibration.

Skylights shall be self-supporting without the use of any structural steel other than that steel which is a part of the skylight itself.



Specifications Covering the "Drou-Ve-Lite" Semi-non-corrosive Puttyless Glass Structure—Type D Construction

Skylights shall be of the "Drou-Ve-Lite" Type D puttyless construction as manufactured by The G. Drouvé Company, Bridgeport, Conn., having all condensation gutters and channel shaped glass rests materials exposed to the interior of the building of copper and all metal parts which are exposed to the weather of copper. Rafter bars to be of $\frac{5}{16}$-in. steel by required depth to suit span and painted one good shop coat of metallic paint. Glass to be .... and to be laid on asphaltic felt cushions, these cushions to be continuous and so constructed that the glass when installed will come in direct contact with same. The glass rests shall be raised above the condensation gutters and the condensation gutters, in turn, shall be raised above the rafter bars a sufficient distance so that there will be a free circulation of air between the rafter bars and the condensation gutters and between the condensation gutters and glass. Skylight caps will be so constructed as to allow for expansion, contraction, and vibration.

Skylights shall be self-supporting without the use of any structural steel other than that steel which is a part of the skylight itself.

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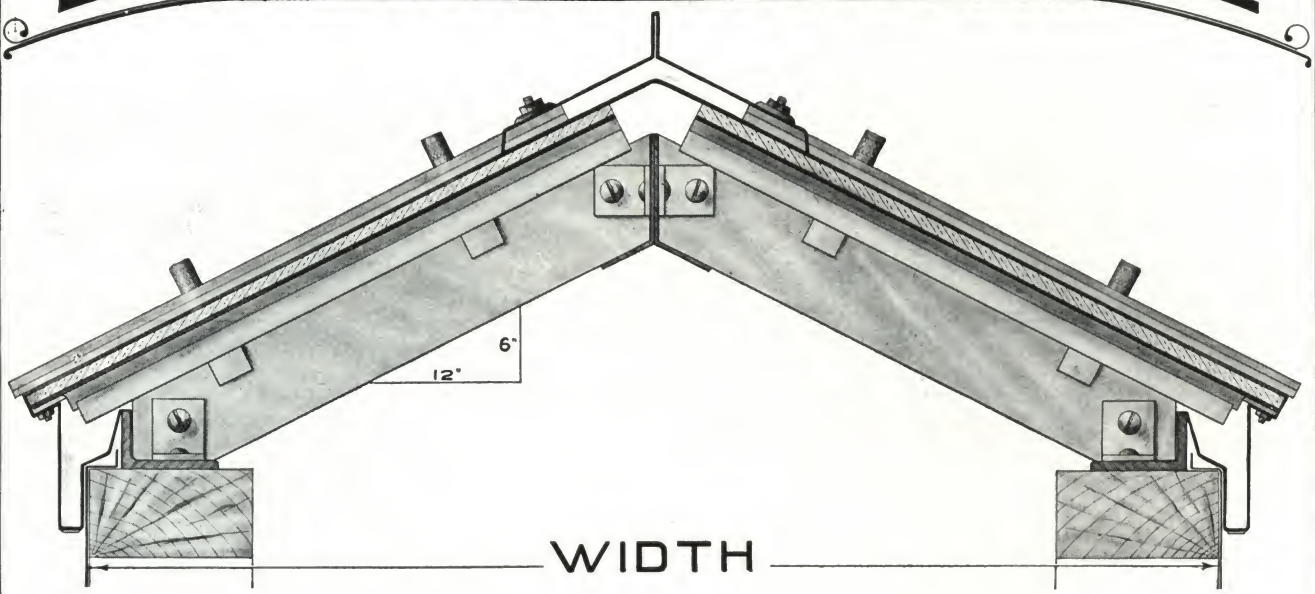
DROU-VE-LITE
GLASS STRUCTURE



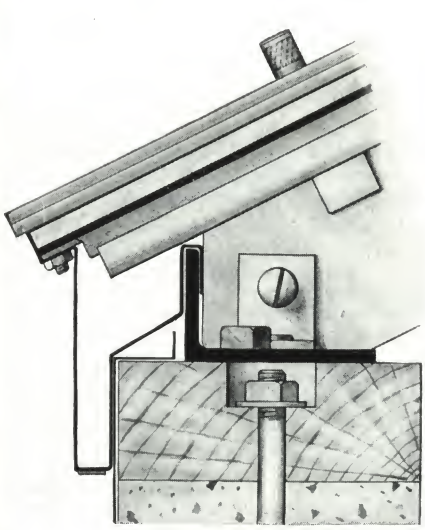
The above illustration shows a section through our "Drou-Ve-Lite" puttyless glass structure, either Type C or Type D construction. This skylight, regardless of width size up to a certain point, requires no structural steel trusses and purlins for its support.

Maximum width dimension with this skylight is 24 ft. Rafter bars in this structure are always $\frac{5}{16}$ in. thick but the depth of same varies to suit required span without deflection. We carry in stock always for use in this skylight $\frac{5}{16}$-in. rafter bars by 2, 2½, 3, 3½ and 4-in. depth. 4-in. depth bars are for skylights with width dimensions from 22 to 24 ft. With this variety in sizes we are in a position to give this skylight with correct size bar to adequately carry spans without any additional structural steel work.

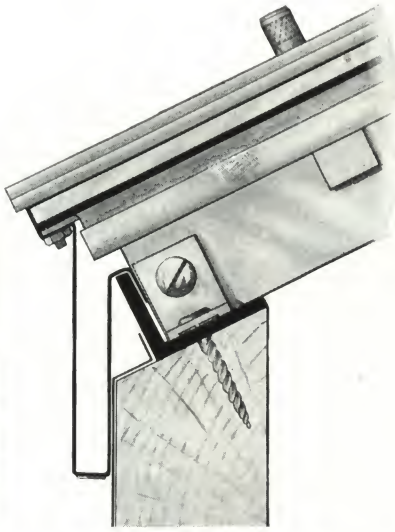
Regarding the length of skylights, they can be of any length desired as our construction is not in any way affected by this.

Our "Drou-Ve-Lite" puttyless glass structure possesses many advantages:

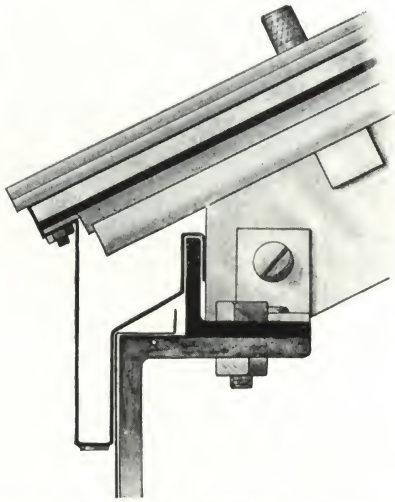
(1) This construction is entirely suitable for use over very small openings as well as exceptionally large ones, because the rafter bars are furnished proportionately to the size of the skylight.
(2) Easily adaptable to all types of roof construction.
(3) Positive watertightness.
(4) Sweating of rafter bars is eliminated.
(5) Admits maximum daylight and casts minimum shadows.
(6) Structure is an absolutely rigid unit when in place.



FLAT TOP CURB



BEVEL TOP CURB



STRUCTURAL STEEL CURB

The illustrations above show three different types of most generally used skylight curbs.

Concrete curbs should have wood plate on top, anchored to the curb as shown. Concrete curbs should not be less than 6 in. in thickness.

Wood curbs can be furnished either with bevel top as shown or flat top and should not be less than 4 in. in thickness.

Structural steel curbs, made either from angles as shown or channels, should have a top leg or flange of not less than 3 in.

It is understood that the curbs are not a part of the skylight manufacturer's contract. These are always furnished by others. Also, the flashing of these curbs is not a part of the skylight contract but should be done by the roofing or sheet metal contractor.

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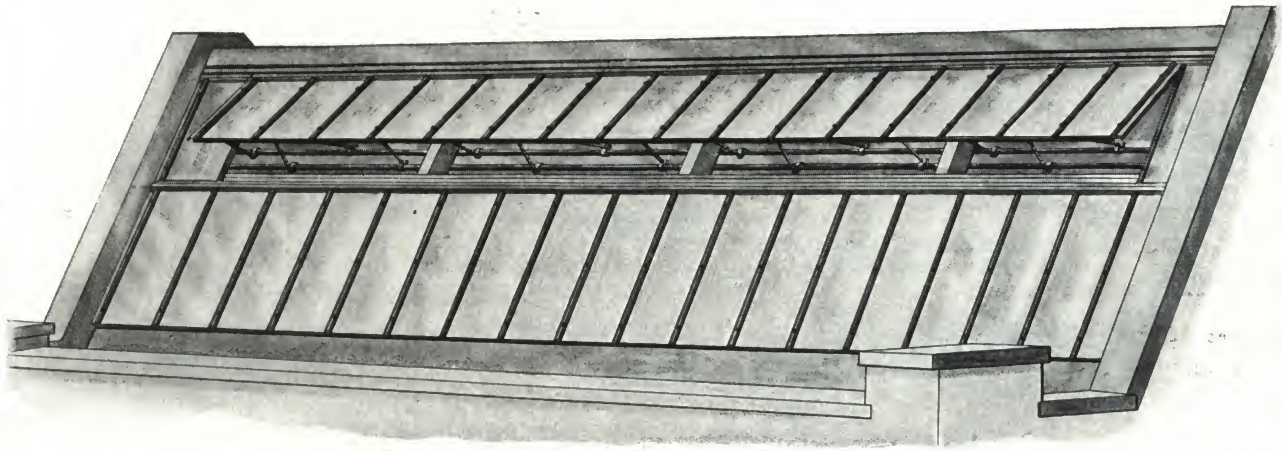
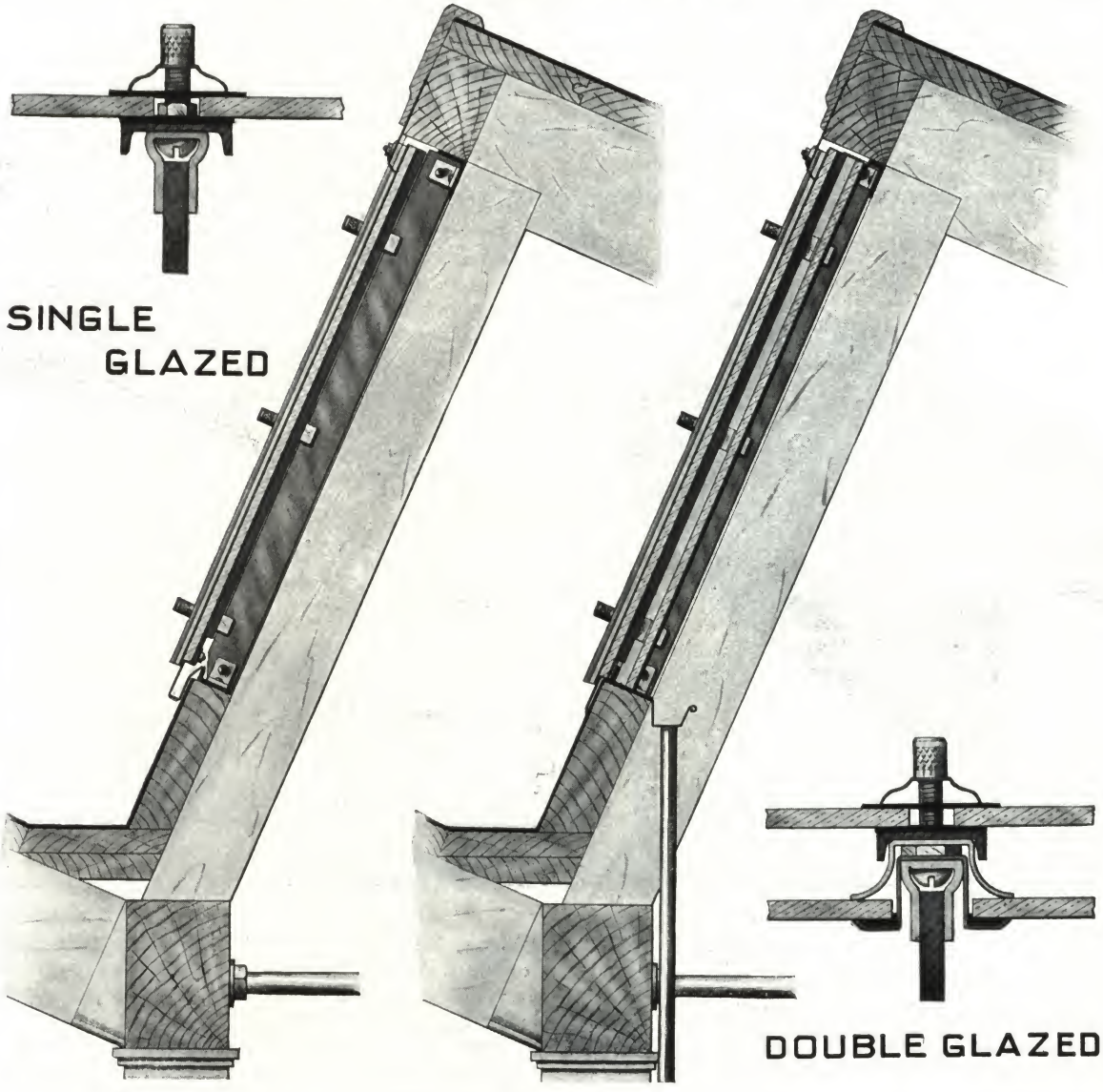
DROU-VE-LITE SAWTOOTH CONSTRUCTION



CONTINUOUS VENTILATING



SINGLE GLAZED

DOUBLE GLAZED

ESTABLISHED 1906

THE T. J. FLYNN METAL WORKS

Manufacturers of Skylights

TELEPHONES
UNIVERSITY 10225-10226

6 Portland Street near Massachusetts Avenue
CAMBRIDGE, MASS.

Products

BUILT-RITE STRUCTURAL SKYLIGHTS; SHEET METAL SKYLIGHTS.

Also Roof Drains, Sheet Metal Work and Roofing.

Built-Rite
TRADE-MARK

Features of Built-Rite Skylights

A study of the detail will show the many advantages of our design.

Adaptation of Types

For spans of less than 10 ft., sheet metal skylights are recommended. For spans exceeding 10 ft., T-bar skylights are most practical and economical. The salient points of advantage of our glass structure are as follows:

Rafter Bar—The bar is of T-iron, of size proportionate to span. Condensation is carried on independently of structural parts; a most important feature.

Curb—The thrust of the structure is taken by a continuous angle bolted directly to the bars without the use of clips.

General Features

(1) Size and weight of the bar are varied to suit exact conditions of span.

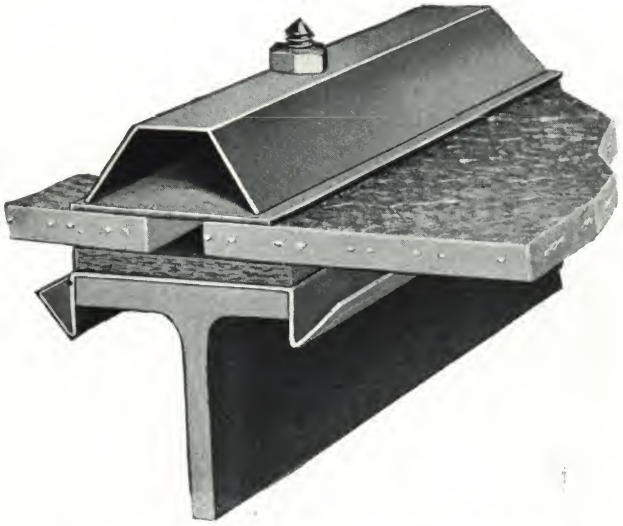
(2) Corrosionproof because condensation is eliminated *independently of the supporting rafters.*

(3) Cushioning of glass. Glass can be cushioned to suit individual preference—either on felt, heavy asphalt paper, or on special formed condensation gutter directly on thin edge of metal.

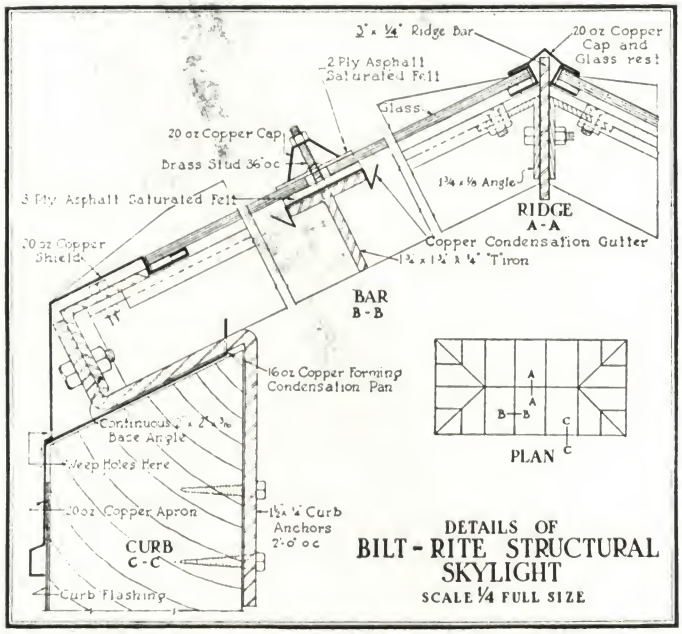
Consulting Service

This service furnished to architects without obligation.

We thoroughly analyze skylight problems, making correct recommendations for perfection of skylights.



Section of Bar, Built-Rite Structural Skylight



A Few Prominent Built-Rite Skylight Installations

BUILDING	LOCATION	BUILDING	LOCATION
Amoskeag Mills	Manchester, N. H.	Dahlquist Manufacturing Co.	South Boston, Mass.
Cambridge Hospital	Cambridge, Mass.	Reading High School	Reading, Mass.
Municipal Garage	Boston, Mass.	Massachusetts School of Art	Boston, Mass.
Stevens High School	Claremont, N. H.	Boston Elevated (Fields Corner Terminal)	Boston, Mass.
Standard Oil Company	Cambridge, Mass.	U. S. Post Office	Leominster, Mass.
Glendale Laundry Building	Everett, Mass.	Market Building	Worcester, Mass.
Boston Stove Foundry	Reading, Mass.		

GENERAL SHEET METAL WORKS

Manufacturers of Cibulas Puttyless Skylights, Ventilators and Turrets

BRIDGEPORT, CONN.

CIBULAS PUTTYLESS SKYLIGHTS FOR SHORT AND LONG SPANS

(PATENTED)

No Water—No Ice—No Trouble

Cibulas Puttyless Skylights are built to take care of practically any condition of installation and any reasonable length of span. They are made in two different types. One type for short spans as shown below, without reinforcement, the other for spans of practically any length, reinforced with a special rolled steel channel made in varying lengths of legs to take the span.

They are also made in copper, aluminum and copper bearing galvanized iron. They are furnished with or without ventilation for hip, turret, sawtooth, double pitch, single pitch and marquise skylights. They are glazed with either ribbed or rough, plain or wire glass, or actinic glass. When desired, our engineers will furnish complete detail drawings and estimates without obligating the architect.

A list of installations will be gladly sent on request.

CIBULAS SKYLIGHTS FOR SHORT SPANS—NON-FREEZING, PUTTYLESS

Skylights for Straight Spans up to 10 ft. and for Hip Type Spans up to 16 ft.

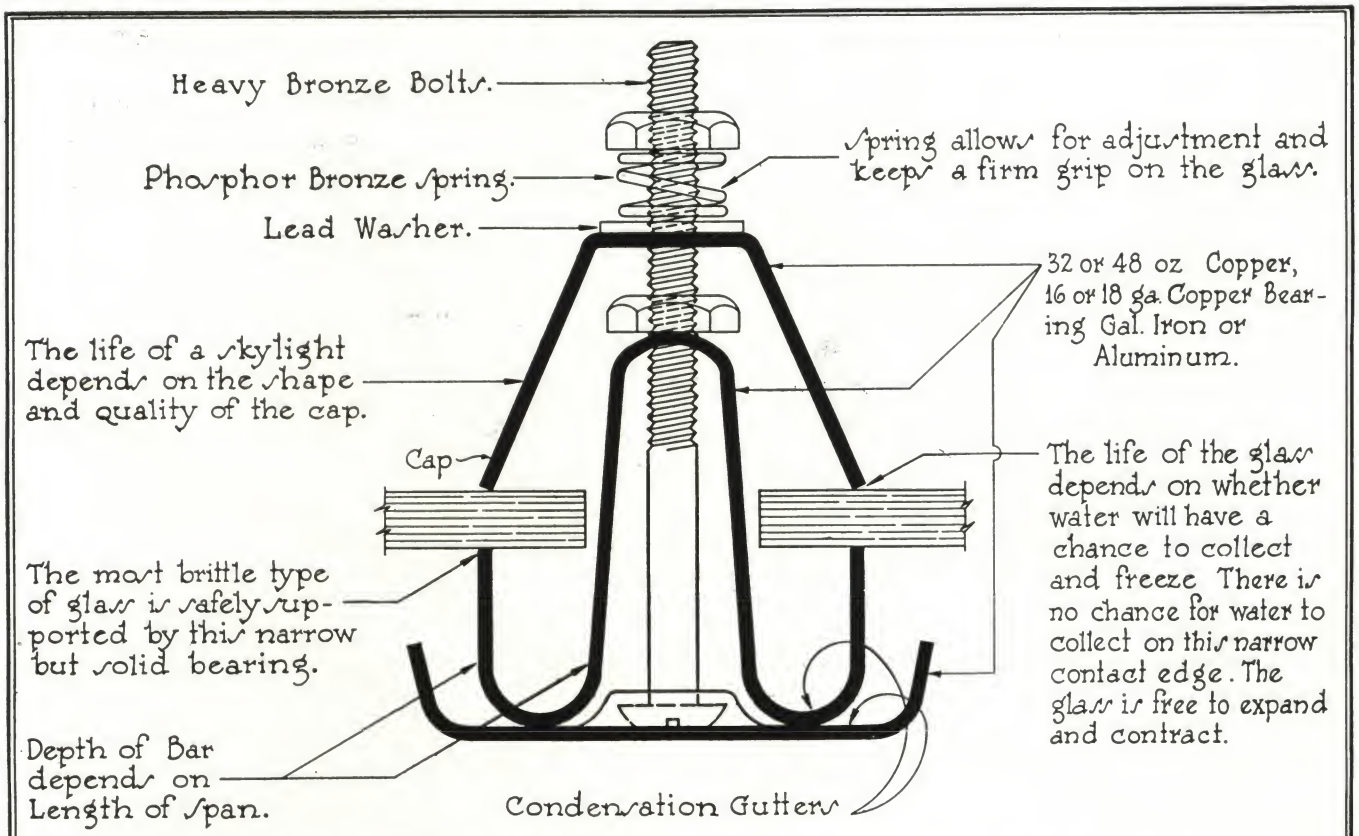
This skylight is the type we recommend for all ordinary spans. It has been tested for years and has a record of the highest character. The breakage of glass is reduced to a minimum through the elimination of possible collection of water and its freezing. There is no chance for capillary attraction of water due to the thin but firm bearing of the metal. The glass is free to expand and contract at all times. The freezing of water on skylights and the inability of the glass to expand and contract is the greatest cause of glass breakage.

Special Features

The skylight bar as shown below is made of heavy gauge, non-corrosive metals, No. 18 or 16 gauge copper, aluminum or galvanized copper bearing iron as desired or specified. It is designed for each job to support 35 or 40 lb. per sq. ft. to take care of snow or wind loads, the depth of the bars varying with the span.

These bars are perfectly weathertight.

They dispose of all condensation. Gutters are made large enough to carry off water and prevent accumulation of dust and dirt.



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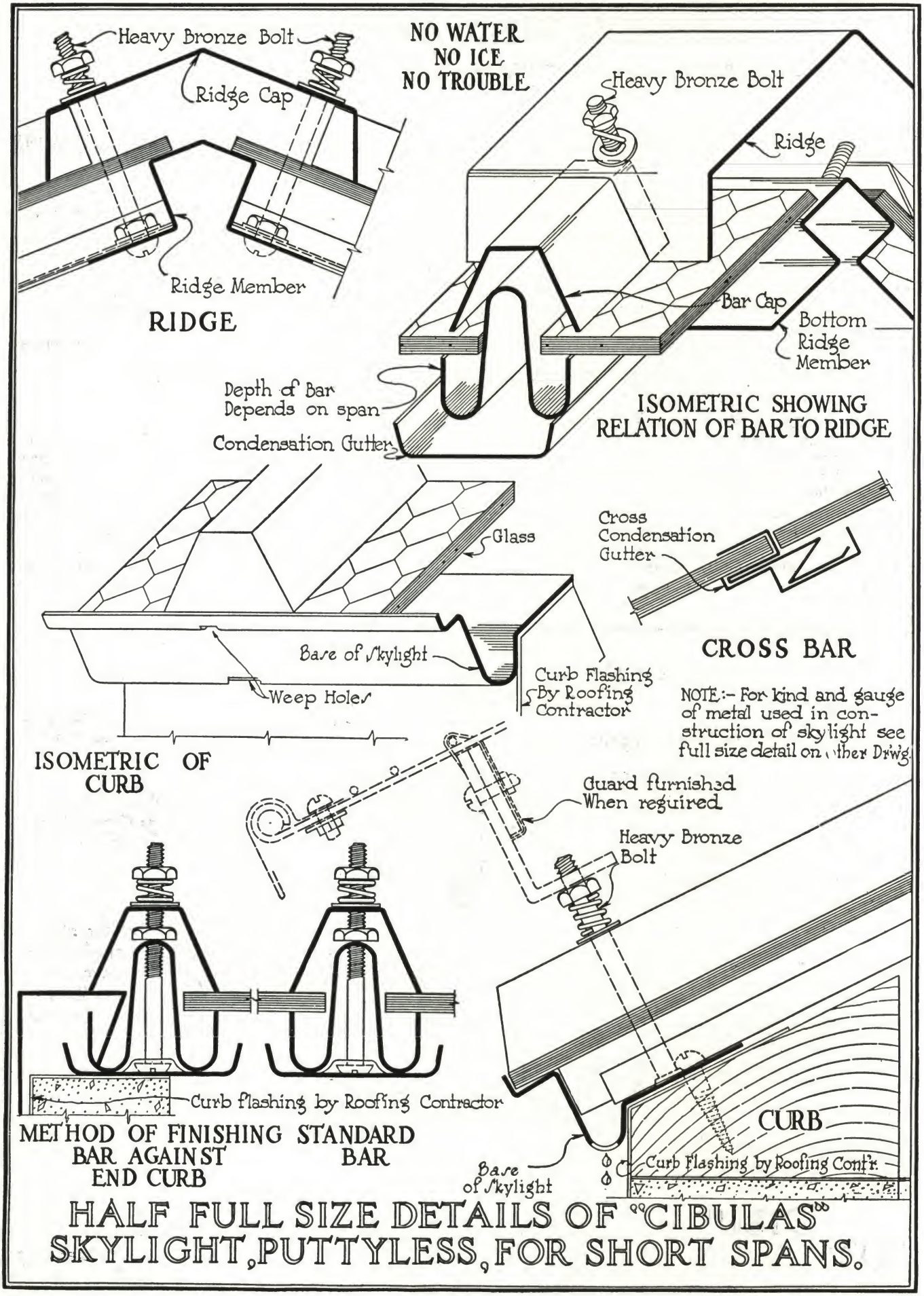


HALF FULL SIZE DETAILS OF "CIBULAS" SKYLIGHT, PUTTYLESS, FOR SHORT SPANS.

Continued on next page

SUGGESTED SPECIFICATIONS FOR "CIBULAS" PUTTYLESS SKYLIGHTS AND TURRETS

Furnish and erect where shown on plans "Cibulas" Puttyless Skylights and Turrets as manufactured by the GENERAL SHEET METAL WORKS, of Bridgeport, Conn. All parts to be of No. 18 gauge rust-resisting metal throughout, assembled with $\frac{5}{16}$-in. bronze bolts and nuts and phosphor bronze springs to take care of expansion and contraction. No packing of any kind to be used in connection with the glazing. Skylights shall be glazed with ribbed or rough plain glass, or ribbed or rough wire glass.

For copper-trimmed construction, use the above specifications with the exception of caps to be 18-oz. copper and all parts not exposed to the weather to be painted one shop coat of first class metal protective paint.

For all copper construction, use 48-oz. copper for supporting members and 18-oz. copper for the caps.

For all aluminum construction use aluminum $\frac{1}{16}$ in. thick throughout, assembled with $\frac{5}{16}$-in. aluminum bolts and nuts. The springs to be of phosphor bronze.

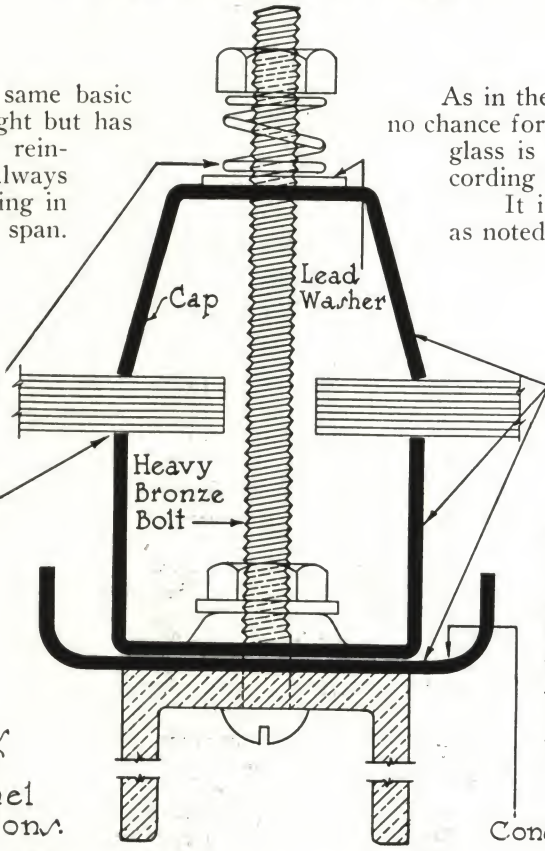
CIBULAS STRUCTURAL SKYLIGHTS FOR ANY SPANS—NON-FREEZING, PUTTYLESS

No Water—No Ice—No Trouble

This skylight is built on the same basic principles as our short span skylight but has the advantage of a steel channel reinforcement. The bar section itself is always standard, the channel section varying in depth according to the length of span.

As in the short span skylight bar there is no chance for water to collect and freeze. The glass is free to expand and contract according to the temperature.

It is made of non-corrosive metals, as noted on the drawing.



Phosphor Bronze spring for adjustment of cap pressure against glass.

32 or 48 oz. Copper. 16 or 18 ga. Copper Bearing Gal. Iron or Aluminum.

The most brittle type of glass is safely supported by this narrow but solid bearing.

The life of the glass depends on whether water will have a chance to collect and freeze. There is no chance for water to collect on this narrow contact edge. The glass is free to expand and contract.

Depth of upper part of this skylight remains constant. The depth of structural steel channel varying to suit conditions.

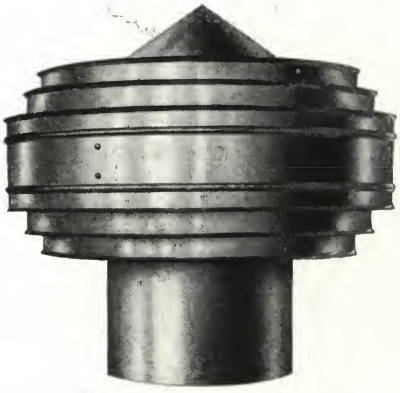
Condensation Gutters.

CIBULAS VENTILATOR

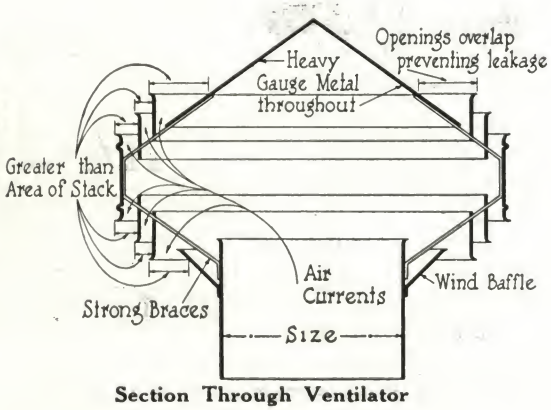
More Fresh Air per Dollar

The Cibulas Ventilator is based on the open stack principle. For this reason the greatest possible area is allowed in the ventilator. It has 5 overlapping circular vanes which make the exhaust greater than the stack.

The air displacement is greatly increased by the vanes causing more suction within the head. It is storm and down draft proof. It is made of heavy gauge metals as specified and will last indefinitely as there are no moving parts.



Exterior of Ventilator



Section Through Ventilator

TABLE OF SIZES AND CAPACITIES

Size	Cu. ft. exhaust per min.	Gauge metal
12	531	22
16	1033	22
18	1197	22
20	1724	22
24	2125	22
30	3314	20
36	4784	20
42	6507	18
48	8508	18
54	10742	18
60	13294	18
66	15953	18
72	19143	18
84	25853	18

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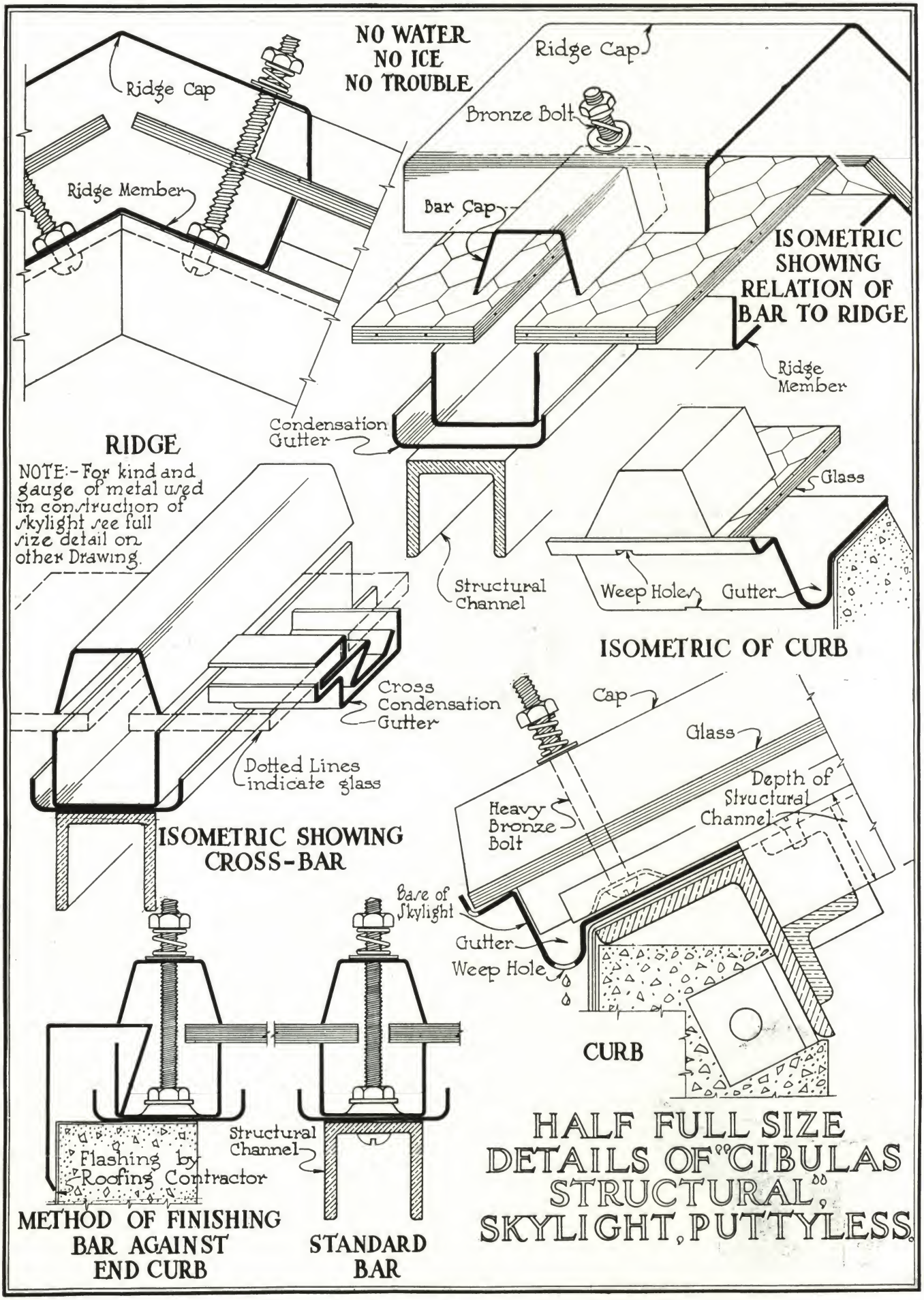

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"CIBULAS" PUTTYLESS TURRETS

After much experimenting, the GENERAL SHEET METAL WORKS have succeeded in developing a puttyless turret which is enduring and, to all practical purposes, faultless. Here are some of the many good features of this construction:

Heavy gauge galvanized iron, aluminum or copper.

Two to three times heavier metal than ordinary construction, thus can be built larger without structural steel framing.

Rain and weather proof. No putty, packing or solder used.

Center pivoted sash, counterbalanced.

Greatest amount of ventilation.

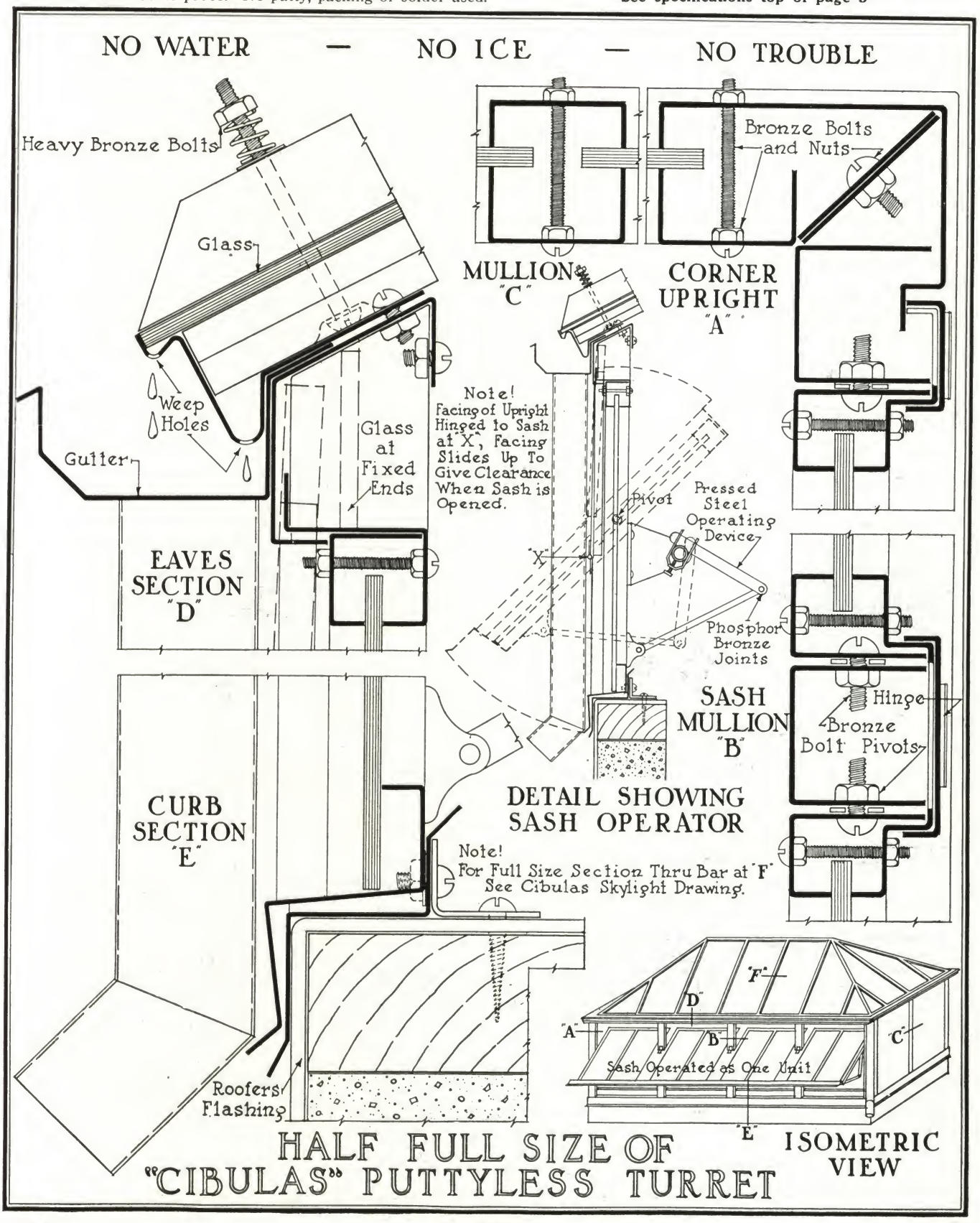
Can be controlled from minimum to maximum ventilation.

Easy in operation, opens in ten seconds.

Principal parts of operating device of pressed steel.

Movable joints of operating device have phosphor bronze bushings.

See specifications top of page 3



AUGUST KUHNLA, INC.

Manufacturers of Skylights

TELEPHONE
WILLIAMSBURGH 1017-18-19

10 to 20 Lorimer Street
BROOKLYN, N. Y.

ESTABLISHED OVER
HALF A CENTURY

Member of N. Y. Building Trades Employers' Association

Products

"KUPE" AUTOMATIC STAGE VENTILATORS; "KUPE" AUTOMATIC VENTILATING SKYLIGHTS.

Also "KuPe" Better Standard Non-automatic Skylights.

KUPE
TRADE-MARK

When Specifying

Architects in specifying should mention skylight number to avoid misunderstanding in type desired.

Catalogue

Supplementary illustrated sheet for complete list of automatic and non-automatic skylights mailed on request.

Patents

"KUPE" Automatic Skylights and Ventilators are protected under various U. S. Letters Patent and the trade-mark "KUPE" is registered. Any infringement of patent or trade-mark rights, either in whole or in part, will be prosecuted.

Guarantee

All genuine "KUPE" products bear the trade-mark "KUPE", signifying excellence of workmanship and material assured by the long creditable reputation of a reliable manufacturer.

Estimates

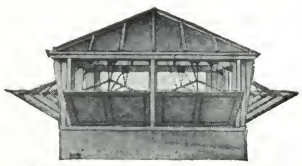
Price lists are not available for general distribution, owing to fluctuation of market, etc. Quotations made upon application for specific jobs will be found extremely reasonable, considering the high grade product and service offered.

Inquiries

When writing, please mention job, location and architect in order to facilitate proper filing and closer estimating.

"KuPe" Standard Automatic Stage Ventilator No. 67

For Theatres, Schools, Auditoriums, etc.



"KuPe" Standard Automatic Stage Ventilator No. 67
(Patented)

A combined ventilator and weatherproof skylight. It consists of a metal frame with hipped glass roof, and sides provided with bottom hinged metal shutters. Flexible cable equipped with fusible links passes over brass pulleys and connects the top of each shutter to a main rope which extends down to the stage floor. This main rope is also provided with fusible links. Under ordinary conditions the shutters are hand operated, but in times of emergency the shutters may be quickly opened by cutting the rope; in case of fire the operation of the shutters is effected either individually or simultaneously by the melting of said fusible links.

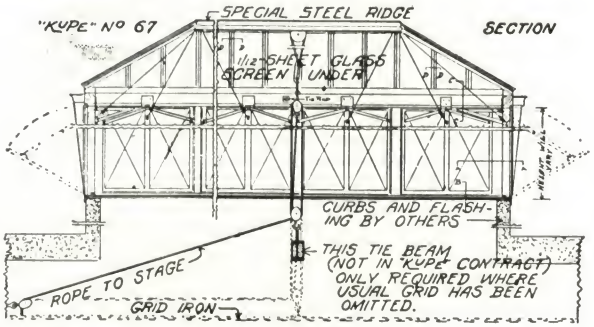
This is a scientifically constructed, efficient, self-opening ventilator, proof against obstruction by ice or snow, and positive in action under all conditions.

Construction and Installation—We manufacture and install these ventilators to any dimension, complete, glazed with ⅛-in. sheet glass and equipped with woven wire screen under the glass. We use standard gauges of galvanized steel (or copper) and the shutter hinge plates and pins are of brass.

Indorsement—Approved by the Board of Fire Underwriters, Department of Labor, city officials, architects and owners.

Installations—Prominent theatres, high schools, parochial schools, public auditoriums, Masonic temples, etc., throughout the country, are now equipped with the "KuPe" Stage Ventilator; list of these installations will be gladly furnished on application. For immediate reference a partial list of recent installations follows:

LOCATION	ARCHITECT
Hollywood Theatre, New York, N. Y.	Thos. W. Lamb
Essex County Girls Vocational School, East Orange, N. J.	Guilbert & Betelle
Kenmore Theatre, Brooklyn, N. Y.	Eugene De Rosa
Westchester County Center Auditorium, White Plains, N. Y.	Walker & Gillette
The Coles School, Glen Cove, N. Y.	Knappe & Morris
Alvin Theatre, New York, N. Y.	H. L. Krapp
Loew's Theatre, Jersey City, N. J.	C. W. & G. L. Rapp
Westbury Theatre, Westbury, N. Y.	Douglas P. Hall
Mineola Theatre, Mineola, N. Y.	George Keister
Fisher Avenue School, White Plains, N. Y.	Starrett & Van Vleck



"KuPe" Standard Automatic Stage Ventilator No. 67
(Patented)

Note: Shutter openings will vary in height to conform with area of skylight shaft.

Outline Specification for "KuPe" Stage Ventilator

The ventilator skylight over the stage shall be a "KuPe" No. 67 Combined Ventilator and Skylight as manufactured by AUGUST KUHNLA, INC., of 10-20 Lorimer Street, Brooklyn, N. Y., automatic in case of fire and adjustable by hand for ordinary purposes.

All metal shall be of No. 24 galvanized iron (or 16-oz. C. R. copper).

The sides of ventilator shall have well constructed corners and mullions with openings fitted with metal ventilating doors.* The doors* shall be hinged at bottom with brass hinges and shall swing out, leaving an absolutely unobstructed passage for gases, smoke and foul air.

*Connecting the upper part of each door with the head jamb there shall be a combined jack knife bracket and check arm arrangement to act as a lever in thrusting doors outward, and at the same time preventing the doors from opening beyond a certain point, as well as holding same rigid against wind when open.

The doors* shall be operated by flexible cable running over brass wheel pulleys attached to fusible links, which in turn shall be controlled by a main rope or set of ropes that shall be carried down to a point where they can be conveniently operated from the floor.

The roof of ventilator skylight shall be of hip design, with heavy bars and condensation gutters, glazed with plain sheet glass, and shall have wire guards placed under same.

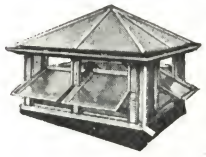
All shall be made and installed subject to the approval of the Board of Fire Underwriters and departments having jurisdiction over same.

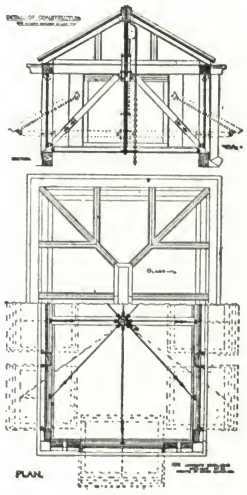
**Note:* If the "KuPe" No. 87 is wanted in place of the Standard "KuPe" No. 67, change all mention of "doors" to "drop-hoods," also omit entire paragraph No. 4 which refers to lever arms.

Continued on next page

"KuPe" Automatic Quick Acting Ventilator Skylight No. 66

Not Intended for Stage Use





A combined ventilator and skylight that operates instantaneously. It consists of a rectangular metal frame having a hipped roof of glass. Designed especially for immediate vent action in time of emergency.

The sides of the structure consist of vertical sash openings, fitted with side pivoted sash.

Struts from the bottom rail of these sash connect with a runner which is on a fixed vertical rod.

A chain from this runner extends to a point suitable for manual operation, where it passes through a key slot arrangement permitting the sash to be opened simultaneously and locked in any desired position.

Sash may also be opened thermally if so desired, by means of a fusible link.

Construction and Installation—We manufacture these skylights of standard gauge galvanized steel (or copper) and deliver same f.o.b. Brooklyn, N. Y., complete (except glass) ready for installation by the purchaser in the following sizes:

2x3 ft. 3x4 ft. 4x5 ft. 5x5 ft.
3x3 ft. 4x4 ft. 4x6 ft. 5x6 ft.

Larger sizes also furnished; these, however, are shipped knocked down and will require assembly at job by practical mechanics.

When requested, quotations will be based on complete manufacture and installation by us. (Architects desiring this method should specify accordingly.)

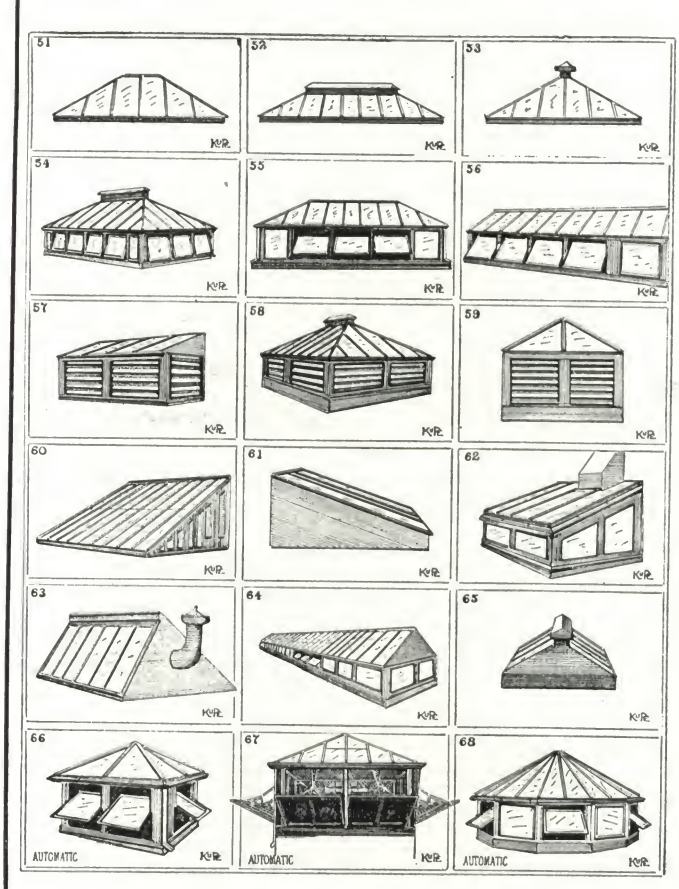
Indorsement—"KuPe" Automatic Ventilating Skylight No. 66 is approved by architects, engineers, contractors and owners, after rigid tests and inspection.

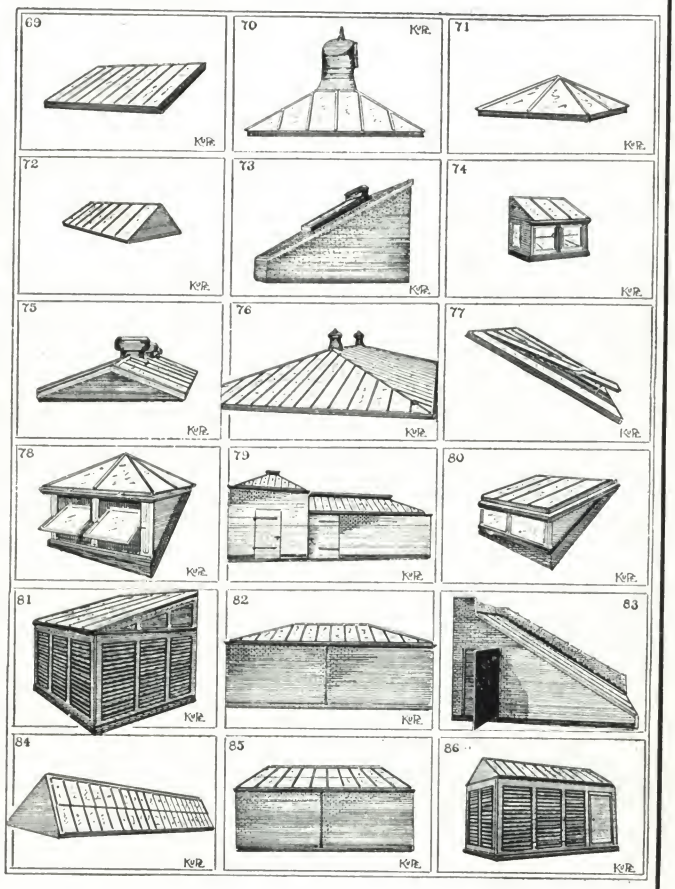
Recent Installations of Ventilator Skylight No. 66

Location	Architect
Public Schools and High Schools, Mt. Vernon, N. Y.	Harold Werner
Armory, Staten Island, N. Y.	Harold Werner
Hampton Hall, Cranford, N. J.	Hollingworth & Bragdon
Larsen Baking Plant, Brooklyn, N. Y.	McCormick Company
Dugan Bros. Baking Plant, Brooklyn, N. Y.	Henry Holder
Dugan Bros. Baking Plant, Newark, N. J.	Marshall N. Shoemaker
Horn & Hardart Baking Plant, New York, N. Y.	F. P. Platt & Bro.
Mill Building, Brooklyn, N. Y.	Brutus Gundlach
Candy Factory, New York, N. Y.	Geo. Casazza
Parochial School, Brooklyn, N. Y.	Murphy & Lehmann
Chemical Plant, Brooklyn, N. Y.	Chas. Pfizer & Sons
Meat Plant, Brooklyn, N. Y.	Himmelback & Schlick
Scranton & Lehigh Bldg., Brooklyn, N. Y.	Benj. Dreisler, Jr.
White Motor Plant, Iong Island City, N. Y.	Watson Engineering Co.
Bohack Office Bldg., Brooklyn, N. Y.	Koch & Wagner
Bush Terminal Bldg., New York, N. Y.	Helmle & Corbett
Music Emporium, New York, N. Y.	George F. Pelham
Hotel, Riverdale, N. Y.	Dwight Baum
St. James Hall, Brooklyn, N. Y.	F. J. Berlenbach
Office Building, Jamaica, N. Y.	A. P. Sorice, Jr.
Pump House, Port Washington, N. Y.	Harold Stephens
Police Headquarters, New York, N. Y.	Supt. O'Brien

Various Types of "Better Standard" Skylights Manufactured by August Kuhnla, Inc., 10 to 20 Lorimer Street, Brooklyn, N. Y.

Kindly Specify and Order by Number





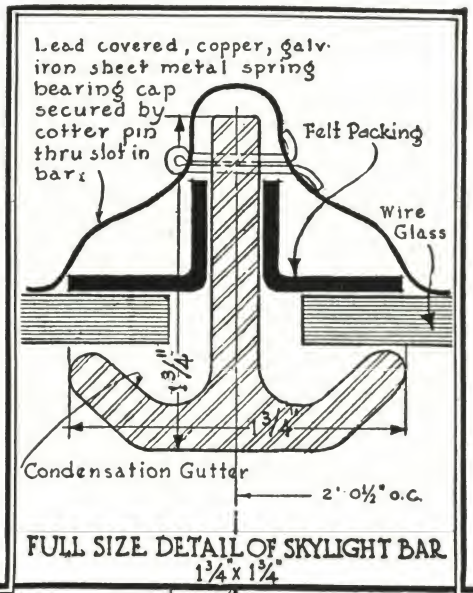
THE HOWIE COMPANY, INC.

Manufacturers of Skylights
9011 Central Avenue
DETROIT, MICH.

Products

PEERLESS SKYLIGHTS.

Also manufacturers of Fireproof Windows, Tin Clad and Metal Covered Doors, approved by Underwriters' Laboratories, Inc.; Copper and Bronze Doors, Architectural Sheet Metal Work.



FULL SIZE DETAIL OF SKYLIGHT BAR
1¾" x 1¾"

Peerless Skylight, Sawtooth and Marquise Constructions

These are designed to provide a weatherproof and dustproof skylight construction and one guaranteed against any and all possible glass breakage due to vibration, or through expansion and contraction due to temperature changes.

Specifications for Peerless Skylight and Marquise

Intent—This specification together with the accompanying drawings and details is intended to provide for all labor and material required for the completion and erection of all skylights as shown or mentioned.

Work by Others—All steel framing, wood curbs, nailing strips, gutters and roof flashings, shall be provided for under another contract, unless otherwise specified.

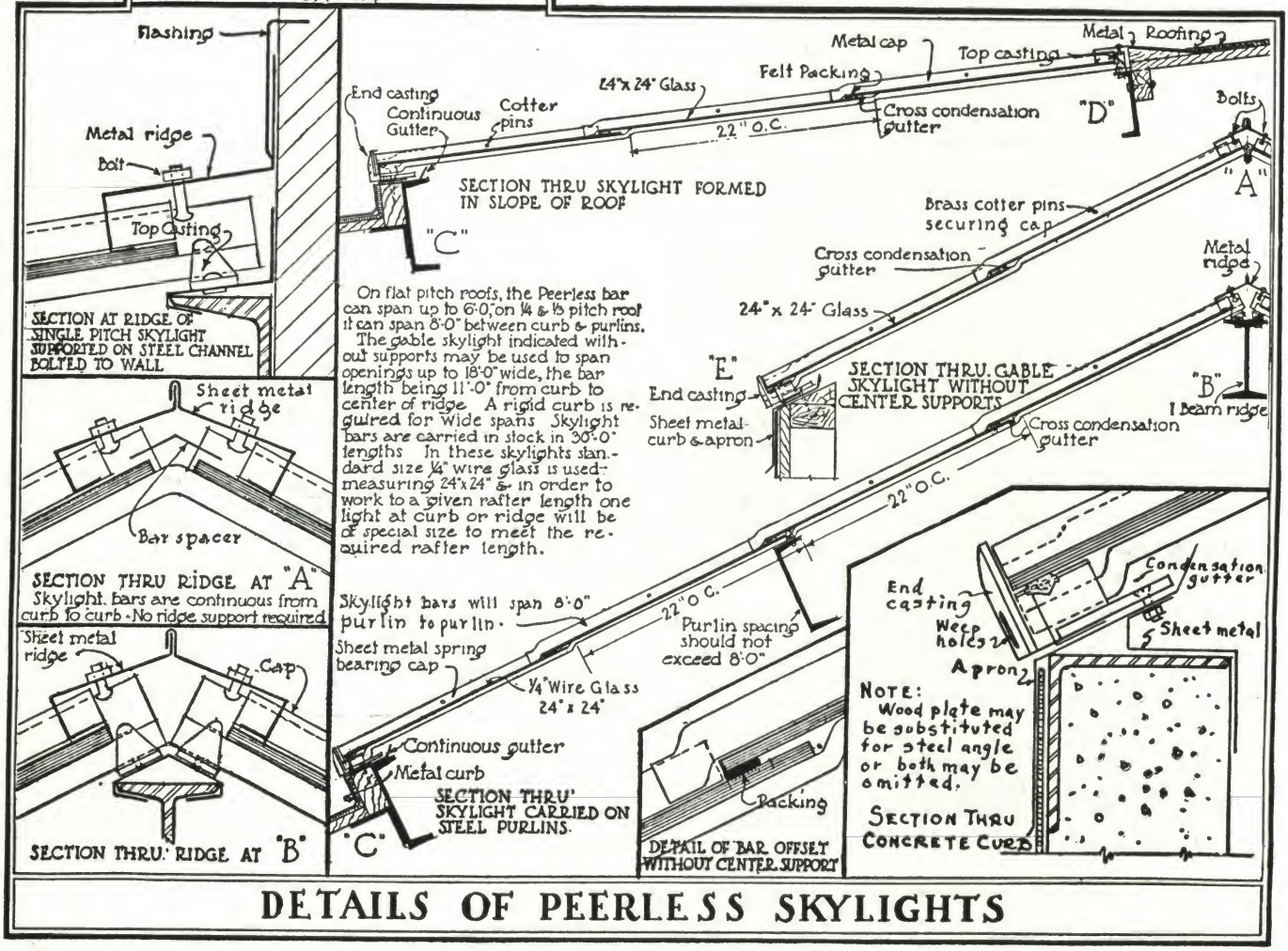
Work Required—Provide and install all skylights as shown or indicated on drawings. All skylights shall be "Peerless" skylight construction as manufactured by THE HOWIE COMPANY, INC., DETROIT, MICH., complete as shown by their standard details, and adapted to the construction of the building.

All sheet metal trimming shall be of No. 24 gauge galvanized iron [or 16 oz. cold rolled copper] [or No. 11 zinc].

Glazing—All skylights to be glazed with best quality ¼-in. rough wire glass not to exceed 24 in. in width. All glass to be left whole and clean at completion of the work.

Painting—All metal work in connection with skylight, except copper or zinc, shall be painted; also paint all skylight bars with 1 good coat of approved paint.

Guarantee—This contractor is to furnish a written guarantee for 5 years.



DETAILS OF PEERLESS SKYLIGHTS

NONPAREIL SKYLIGHT CO.

Manufacturers of Nonpareil Puttyless Skylights

MAIN OFFICE
37 L Street, S. E., WASHINGTON, D. C.

Product

The NONPAREIL PUTTYLESS SKYLIGHT (patented November 1, 1910; October 3, 1911; October 14, 1913).

Some of Our Claims, for Our Construction

(1) It can not, and does not leak.

(2) Glass breakage with this construction is reduced to a minimum.

(3) A highly practical construction.

(4) Our lead glazing cushions are practical and lasting. Detail 5, Fig. 1.

(5) These cushions are *not* attached until after all field work is done, therefore, they are always in perfect condition when the glass is put in place.

(6) They are reversible, so that in case of accident to the glass and they are injured, they can be reversed for installing new lights of glass—very advantageous feature.

(7) Our condensation gutters are so made, and of such size, as to really and properly perform the functions they are supposed to perform. Details 6 and 7, Fig. 1.

(8) Our bars are made from lead coated Ingot Iron in standard construction, and of cold rolled copper when so specified. They are also of the proper size and section, to make the best and most practical job. Details 6 and 7, Fig. 1.

(9) Our bolts and nuts are made from cold drawn brass (*not cast brass*) and all our exterior castings are brass.

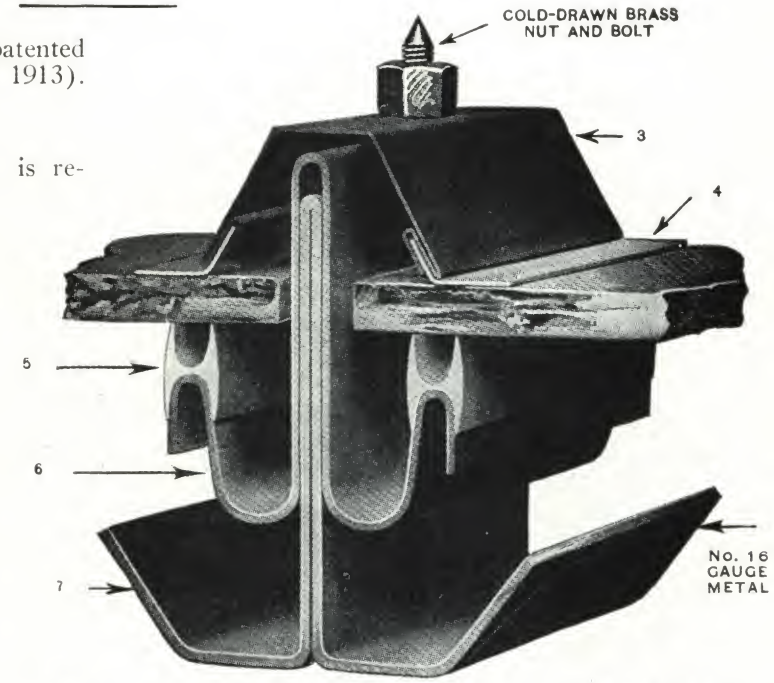


Fig. 1. Complete Bar Assembled, Showing the Glass and Details of Construction
(Patented November 1, 1910; October 3, 1911; October 14, 1913)

Specifications for Nonpareil Skylights

The skylights must be of a type that can be made watertight without the use of putty, and shall *not* contain any material other than metal and glass in their construction, and, where shingle of flexible type is used, it must not be more than ⅝ in. from one plane of glass to the one below.

Some Recent Installations of Nonpareil Skylights

Lincoln Memorial, Washington, D. C.
United States Navy Yard, Building No. 41, Washington, D. C.
Central High School, Washington, D. C.
Cuban Legation, Washington, D. C.
United States Treasury Building, Washington, D. C.
Canadian Pacific Railway, Montreal, Que.
Pratt Tennis Court, Glen Cove, L. I., N. Y.
Vitagraph Building, Brooklyn, N. Y.
New Corcoran Gallery of Art, Washington, D. C.
Currier Gallery of Art, Manchester, N. H.
New York Central R. R. Station, Watertown, N. Y.
United States Post Office, Santa Barbara, Cal.
Biograph Building, New York, N. Y.
Harrison Williams Tennis Court, Bayville, L. I., N. Y.
Eastern High School, Washington, D. C.
Beloit State Bank, Beloit, Wis.

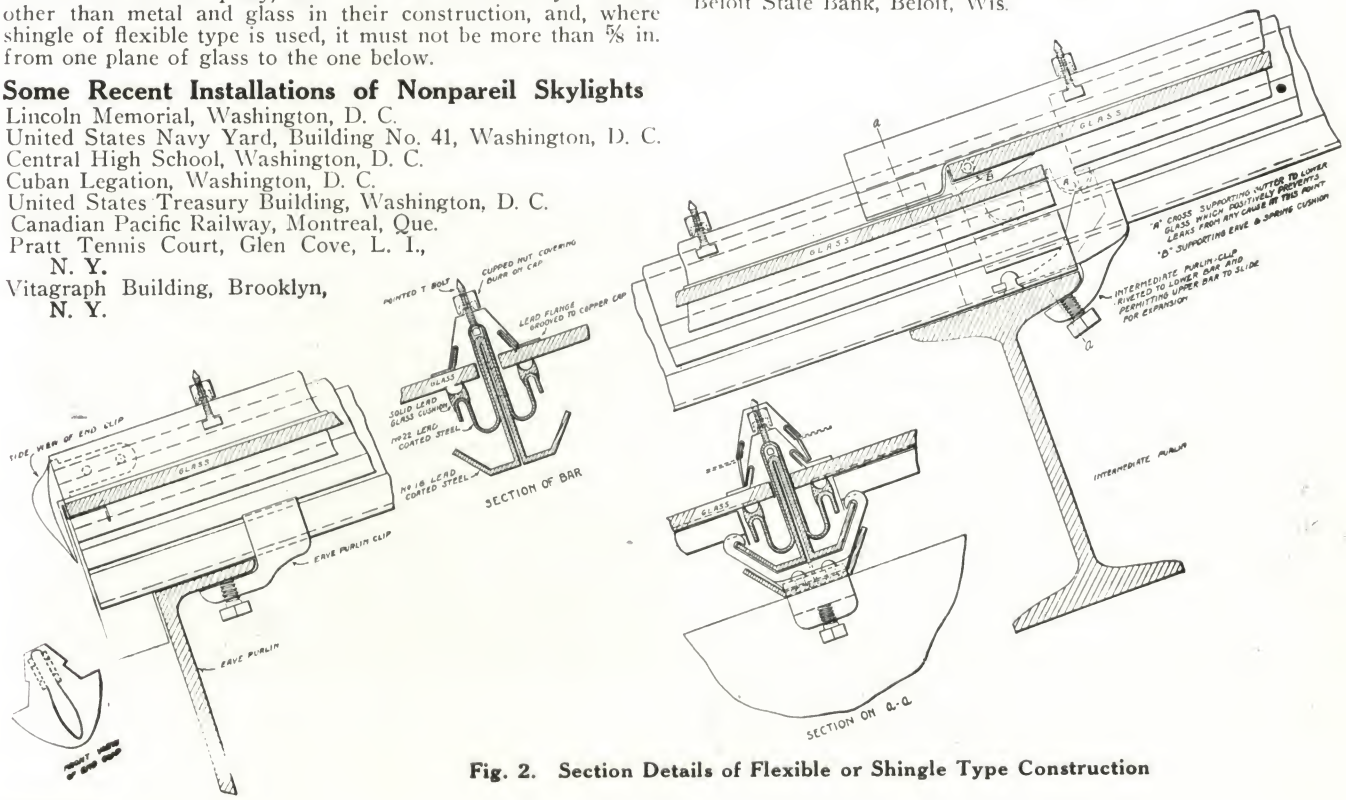


Fig. 2. Section Details of Flexible or Shingle Type Construction

NATIONAL VENTILATING COMPANY

Manufacturers of Puttyless Skylights

GENERAL OFFICE AND FACTORY

TELEPHONE
STILLWELL 5733, 5734

75 Tenth Street
LONG ISLAND CITY, N. Y.

Products

MULTI-UNIT PUTTYLESS SKYLIGHTS.

Also manufacturers of Side Lights, Operating Sash, and National Ventilating Devices; all kinds of Sheet Metal Products; Drawing and Stamping.

Adaptability

Skylights for railway terminals, power stations, machineshops, factories, foundries, libraries, museums, art galleries, and all other buildings whereon permanent watertight skylights of large area are required.

Advantages and Distinctive Features

Referring to Fig. 4 on following page, the bar and upper lights are supported in a fixed manner by the purlin thereunder; while the lower bar, supporting the lower lights, is secured by the same purlin in a loose manner, permitting it to expand freely.

This construction, being repeated at each purlin, permits movement, all in same direction, due to expansion, contraction, or vibration (along the slope of the skylight) of the cap, glass and bar of each unit or tier of glass, independently of every other unit or tier.

Along the longitudinal line of the skylight the steel frame of the building and the entire length of the glass are each taken as separate units, and the difference, nearly 100%, in the expansion and contraction of these materials (glass and steel) is likewise thoroughly taken care of by the copper spreader clips shown in transverse section at supporting bar (Fig. 2). These spreader clips are placed over each cap bolt, spaced about 10 in. along each skylight bar, and incidentally they serve also to better secure in place the brass bolts for holding the caps.

The cap is strong and yet resilient. Its upper half is of an inverted "U" shape, which provides strength and rigidity; while the lower half, especially at the lower extremities, is resilient, so as to conform thoroughly, when secured in position, to the surface of the glass.

All gutters and parts that are non-accessible, without removing the glass, are of non-corrosive material. The entire top of the bar is covered with 8-oz. copper, the same being applied while the last coat of bar-paint is still wet; and a flexible bearing for the glass is formed, which adjusts itself to any warps or irregularity of the glass along its bearing line.

The company is equipped to cover the bottom of the bar also. Both the top and bottom bar covers are made by special dies and both fit the bar snugly.

No packing or filling substance of any kind is required, and no material is used other than glass and metal.

Standard Specification, Multi-unit System Puttyless Skylights

All curb and roof flashings shall be included under heading "Sheet Metal Work." They must be well connected, ready to receive the skylight work, and must include all necessary counter flashing, well secured to roof flashings and made water-tight.

The skylights shall be of the puttyless type, of a design to allow for free expansion and contraction, or movement due to vibration, of the glass and supporting bars in line with the pitch of roof, *all in the same direction.*

Each light of glass shall be entirely independent of every other light, so that one light does not support another; and the glass shall be held laterally in a manner to prevent its coming in contact with any rigid part.

The bearing for the glass shall be flexible, so as to adjust itself to any warps or irregularities of the glass along its bearing line.

The caps shall be spring bearing, in order to thoroughly conform along the lines of contact, when secured in position, to the surface of the glass.

All bar gutters shall be of copper and all exposed parts other than sheet metal shall be of brass.

The supporting bars shall be of rolled steel, and shall be held in a loose manner at the upper end and in a fixed manner at the lower end.

Packing, filling substance of whatever kind, or material other than glass and metal shall not be used.

All skylight sheet metal work shall be [copper] [zinc] [galvanized iron].

The glass shall be ⅜ in. thick [wire] [plain] [ribbed].

Adopted by Leading Railroads

The Pennsylvania Railroad Company, after carefully examining all other types of puttyless skylights in actual service, adopted the construction herein shown and described for its new New York & Long Island Railroad Passenger Station, 31st to 33d Streets and 7th and 8th Avenues, New York City, on which building this company completed, over 15 years ago, the erection of 83,000 sq. ft. of skylight, embracing nearly every known variety, such as hipped, ridge, flat, barrel-roof, sawtooth with bowed ridges, circular, elliptical, etc., all constructed with flat glass.

The Central Railroad of New Jersey adopted this system of skylights for its new terminal at Jersey City, N. J., where 116,000 sq. ft. of this construction has been installed.

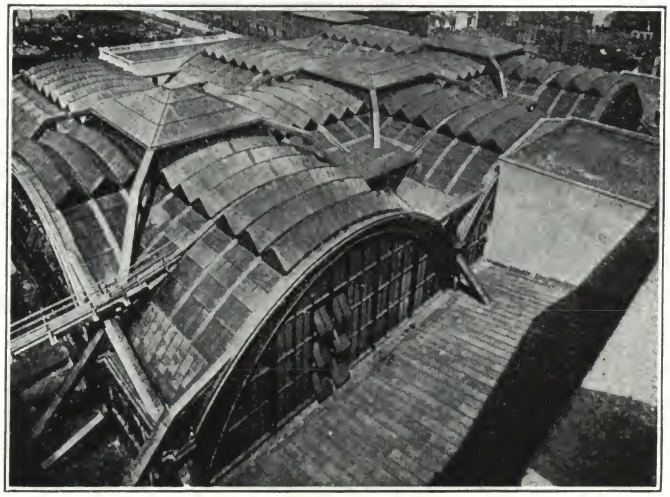


Fig. 1. Group of Multi-unit Skylights Over Concourse of Pennsylvania Terminal, New York, N. Y.

Area of this group, about 50,000 sq. ft. Total area on the terminal, 83,000 sq. ft.

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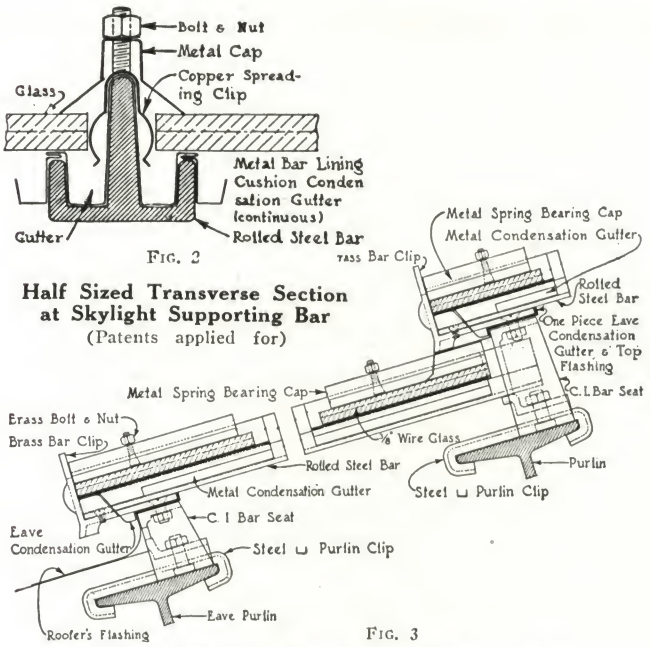


FIG. 2

Half Sized Transverse Section at Skylight Supporting Bar
(Patents applied for)

FIG. 3

Reduced Scale Cross Section from Eave to Next Purlin Above
(Patents applied for)
Construction shown on the right side is repeated at each purlin between the eave and the ridge
Scale, 2 in. equals 1 ft.

The New York Central Railroad Co. also has this construction on its new Grand Central Terminal at 42nd Street, New York City; on its New York City Power House at 50th Street and Lexington Avenue; Power Stations at Yonkers and Port Morris, N. Y.; Boiler Shops at West Albany, N. Y., Reed & Stem, Architects, and for their new Passenger Station at Utica, N. Y., Stem & Fellheimer, Architects.

Result of Thorough Investigation

The system of skylight construction described here is the result of experience and investigations made by the NATIONAL VENTILATING COMPANY in this line over a period of nearly 20 years.

All efforts during this time have been directed to producing, not the cheapest, but the best construction. As to skylights, true economy does not consist in buying the cheapest.

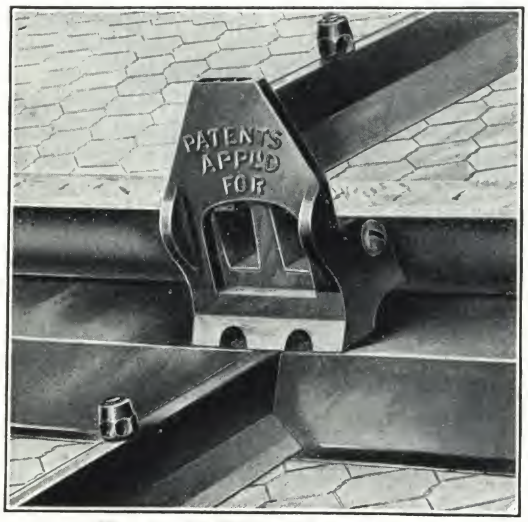


Fig. 4. Half Sized Perspective
Showing exterior view over each purlin between the eave and the ridge

Public Buildings and Other Notable Installations

The following are a few, among many, installations made by this company during the past 24 years; in some cases replacing other work with the new and improved system above described. They include building, location and architect.

New Library Building, Bar Harbor, Me., Delano & Aldrich
Sun Parlor for E. Parmalee Prentice, New York, N. Y., Delano & Aldrich
International Paper Co. Mills at Niagara Falls, Palmer and Fort Edward, N. Y., and Rumford Falls and Chisholm, Me
Maryland Institute, Baltimore, Md., Pell & Corbett
Auditorium Building, Springfield, Mass., Pell & Corbett
Municipal Building, Springfield, Mass., Pell & Corbett
New York Edison Co. Waterside Power Station, New York, N. Y.
U. S. Navy Yards at Norfolk, Va., Charlestown, Mass., Brooklyn, N. Y., Pensacola, Fla., and Washington, D. C.
Brooklyn Rapid Transit Co. Shops, Maspeth, N. Y.
American Steel & Wire Co. Mill, Worcester, Mass.
Terminal Passenger Station, Norfolk, Va., Reed & Stem
New York Stock Exchange Building, New York, N. Y.
New U. S. Post office, New York, N. Y., McKim, Mead & White
New Municipal Building, New York, N. Y., McKim, Mead & White
Munsey Building, Washington, D. C., McKim, Mead & White
Brockton Library, Brockton, Mass.
New York, Westchester & Boston R. R., Quaker Ridge Station, New Rochelle, N. Y., and 180th Street Station, Bronx, N. Y., Stem & Fellheimer.
United Electric Light & Power Co. Powerhouse, 201st Street Station, New York, N. Y.
Institute of Arts and Sciences, Brooklyn, N. Y., McKim, Mead & White
The Beaver Companies' Mill, Thorold, Ont., Canada
Museum of Fine Arts, Minneapolis, Minn., McKim, Mead & White
Administration Building, Balboa, Canal Zone, Panama
Metropolitan Museum of Art Building, Sections "J" and "K," New York, N. Y., McKim, Mead & White
Robert Brewster's Enclosed Tennis Court at Mount Kisco, New York, Walter D. Blair
Enclosed Pastime Tennis Court, Long Island City, N. Y., Walter D. Blair
Ford Motor Co. Service Building, Long Island City, N. Y.
Union Passenger Station, Macon, Ga., Alfred Fellheimer
John J. Raskob's Residence, Claymont, Del., McClure & Harper
Buffalo General Electric Co., 1917 River Station Extension, Black Rock, N. Y., Stone & Webster, Engineers
American Tobacco Co. Building, Brooklyn, N. Y., Francisco & Jacobus
American Can Co. Building, Brooklyn, N. Y., N. M. Loney
U. S. Naval Operating Base, Hampton Roads, Va.
National City Bank, New York, N. Y.
Trenton Bank Building, Trenton, N. J., Dennison & Hirons
Commodore Hotel, New York, N. Y., Warren & Wetmore
Amherst College Library, Amherst, Mass., McKim, Mead & White
Standard Oil Company, Devoe Works, Long Island City, N. Y.
Kwang Tung Electric Supply Co. Building, Canton, China
U. S. Assay Building, New York, N. Y.
Westinghouse Electric Co. Warehouse, Essington, Pa.
S. W. Straus Building, New York, N. Y., Warren & Wetmore
Continental Can Co., Jersey City, N. J., Francisco & Jacobus
Empire City Bank, New York, N. Y., Trowbridge & Livingston
New York Telephone Co., 6 Central Exchange Buildings, McKenzie, Voorhees & Gmelin
S. W. Straus & Co. Building, Chicago, Ill., Graham, Anderson, Probst & White
Paterson Paper Parchment Co., Edgerly, Pa., Abbott, Merkt & Co.
Federal Sugar Refining Co., Yonkers, N. Y., Dwight P. Robinson Co.
Tryon Art Gallery, Northampton, Mass., Frederick L. Ackerman
Fine Arts Building, Geo. Peabody College, Nashville, Tenn., McKim, Mead & White
Kleinberger Art Gallery, 12 East 54th Street, New York, N. Y., Harry Allen Jacobs
International Motor Co., Long Island City, White Plains, Rochester and Albany, N. Y., and Camden, N. J., Faile & Seelye

W. F. OVERLY & SONS

Architectural Sheet Metal Work

GREENSBURG, PA.

OFFICES

BUFFALO, N. Y. PITTSBURGH, PA. ERIE, PA. GREENSBURG, PA.

Products

GOODWIN AUTOMATIC STAGE VENTILATOR.

Also manufacturers of Special Architectural Sheet Metal Products, including Cornices, Skylights, Roof Ventilators, Gutters and Conductors.

For Metal Covered Doors and Marquees, see Manufacturers' Index.

Goodwin Automatic Stage Ventilator

Constructed of heavy galvanized sheets reinforced by structural steel members of sufficient cross section to support many times the wind and snow loads that may be expected. This construction is so substantial that even in case of fire the Goodwin Automatic Stage Ventilator will not be damaged greatly unless the supporting members of the roof structure are destroyed.

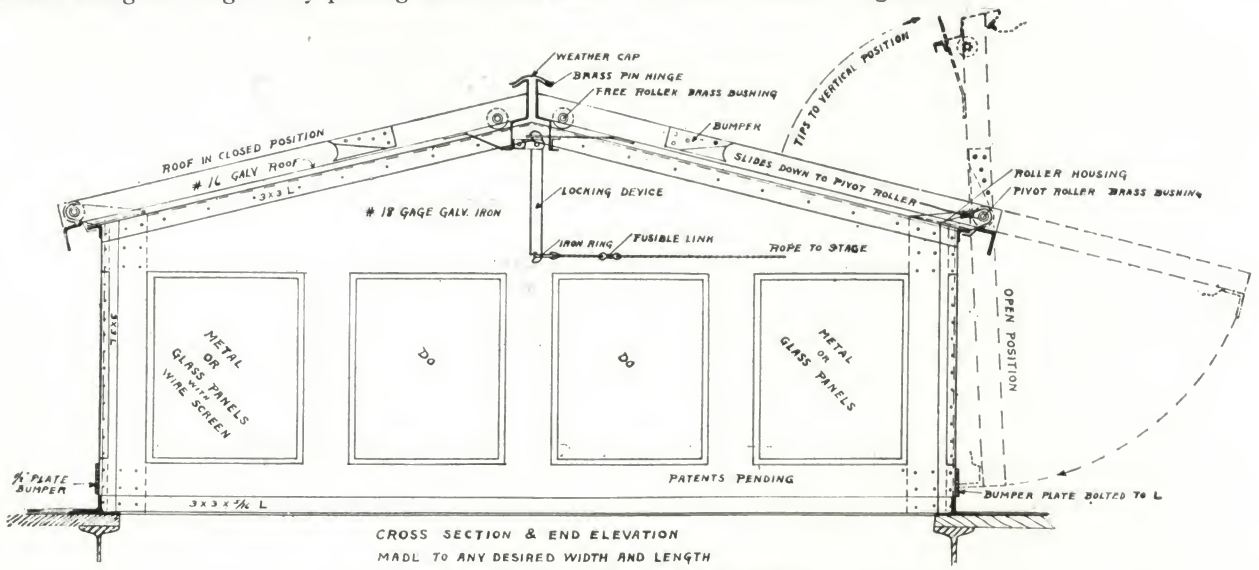
Primarily designed for fire protection purposes, the Goodwin Automatic Stage Ventilator may also be used for natural gravity ventilation by installing a ventilator along the ridge or by placing sash in the base. If light is desired the sash in the base may be glazed.

Operation—Should a fire occur on the stage of any theater which is provided with a Goodwin Automatic Stage Ventilator the first slight increase in temperature causes a fusible link to separate and allows the heavy sections to roll down on both sides. The sections assume a vertical position, providing a clean space the full area of the ventilator for the free discharge of smoke and flame. The proscenium arch being fully protected by the asbestos curtain, the entire stage and equipment may be completely destroyed without any material damage to the auditorium.

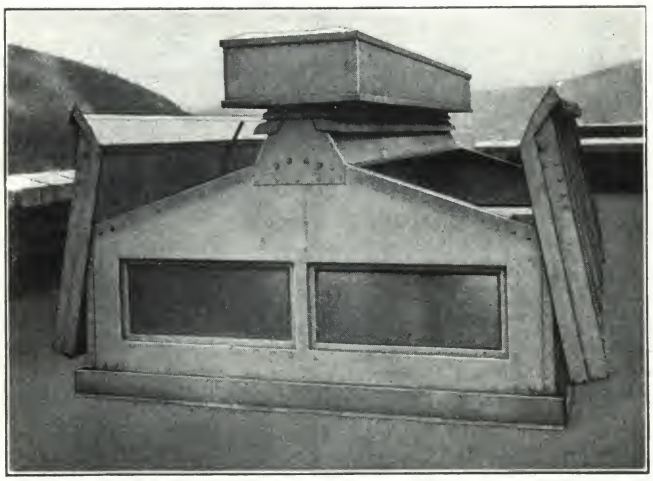
Sizes—The Goodwin Automatic Stage Ventilator is built to any desired width and length.

Engineering Service

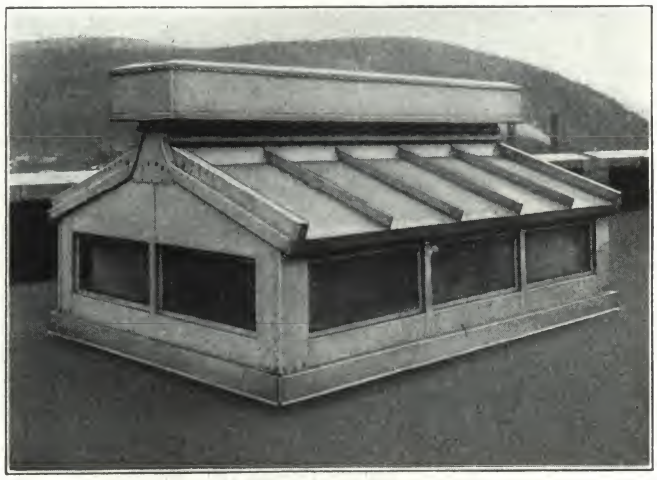
We will be glad to co-operate with architects, engineers, contractors or owners and offer our Engineering Service without obligation.



Goodwin Automatic Stage Ventilator



Showing Natural Gravity Action of Sections to Open



With Sections Closed

Exterior Views Goodwin Automatic Stage Ventilator

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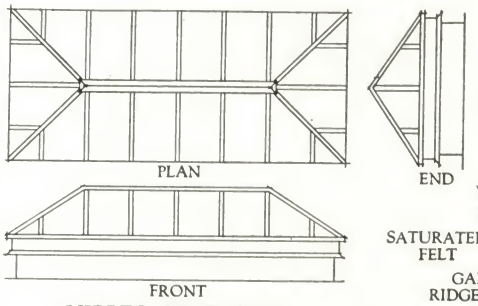
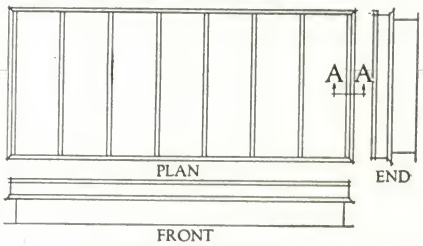
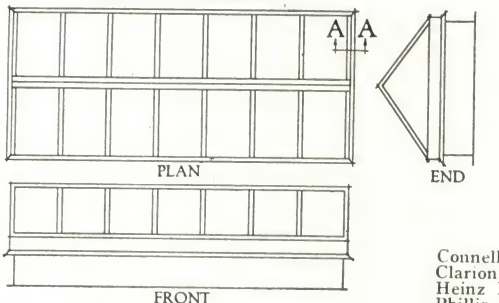


HIPPED SKYLIGHT



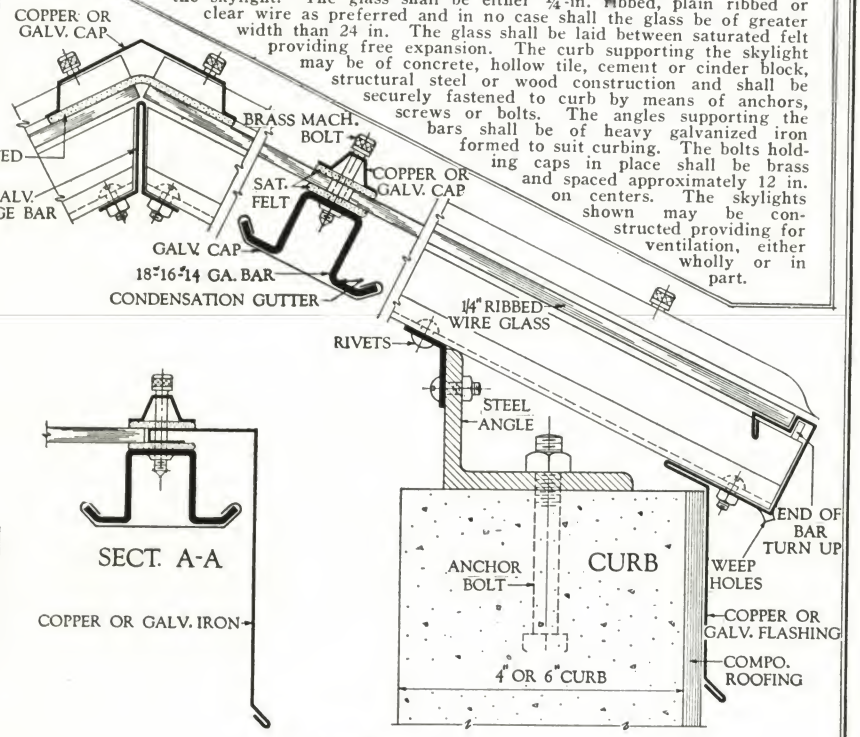
FLAT SKYLIGHT



COMB SKYLIGHT

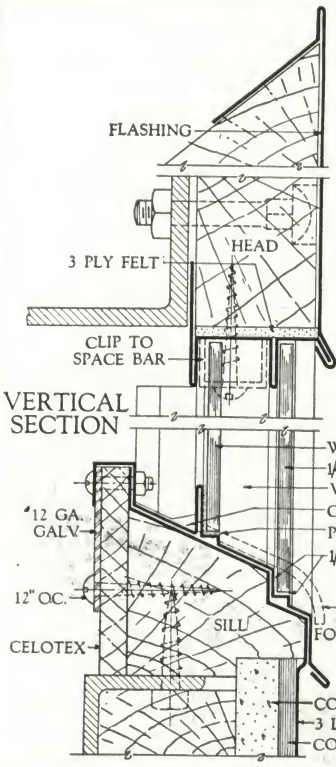
Specifications of the Goodwin Puttyless Skylight

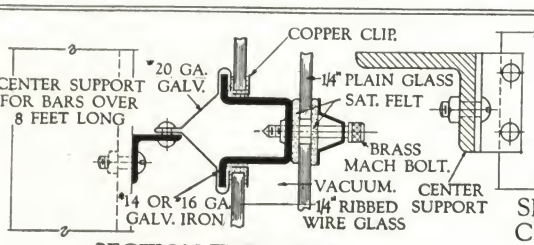
Glass supporting bars shall be of size shown to insure against a greater deflection than $\frac{1}{4}$ in. per lineal foot with a live load of 60 lb. per square foot on the skylight. The glass shall be either ¼-in. ribbed, plain ribbed or clear wire as preferred and in no case shall the glass be of greater width than 24 in. The glass shall be laid between saturated felt providing free expansion. The curb supporting the skylight may be of concrete, hollow tile, cement or cinder block, structural steel or wood construction and shall be securely fastened to curb by means of anchors, screws or bolts. The angles supporting the bars shall be of heavy galvanized iron formed to suit curbing. The bolts holding caps in place shall be brass and spaced approximately 12 in. on centers. The skylights shown may be constructed providing for ventilation, either wholly or in part.



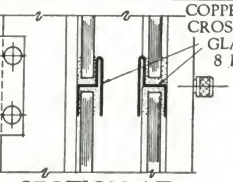
Installations

Connelly Trade School, Pittsburgh, Pa.
Clarion Nat'l Bank, Clarion, Pa.
Heinz Plant, Medina, N. Y.
Phillip Jones Corp., Barnesboro, Pa.
Avalon Bank, Avalon, Pa.
State Office Bldg., Buffalo, N. Y.
E. H. Caste Bldg., Vandergrift, Pa.
G. C. Murphy Co., Verona, Pa.
New City Hall, North Tonawanda, N. Y.
Iron City Dry Cleaning Co., Pittsburgh, Pa.
Schenley High, Pittsburgh, Pa.

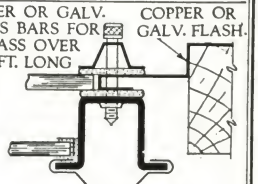




SECTION THRU BAR



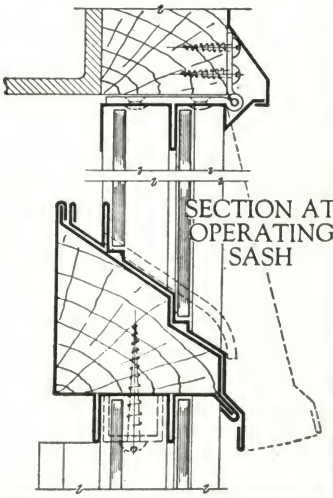
SECTION AT CROSS BARS



SECTION SHOWING FLASHING AT END OF RUN

Some Recent Installations

American Enka Corporation, Asheville, N. C.
87,000 sq. ft. sawtooth skylights
Susquehanna Silk Mills, Jersey Shore, Pa.
40,000 sq. ft. sawtooth skylights
Susquehanna Silk Mills, Sunbury, Pa.
2500 sq. ft. sawtooth skylights
Greensburg High School, Greensburg, Pa.



W. F. OVERLY & SONS. GREENSBURG, PA.	SKYLIGHT DETAILS.	PLATE NO. 1. SCALE 1 1/2" = 1'-0"

PENNSYLVANIA WIRE GLASS COMPANY

EXECUTIVE OFFICE
Pennsylvania Building
PHILADELPHIA, PA.

FRANK L. MARTIN, President

WORKS
DUNBAR, PA.

HIRES TURNER GLASS COMPANY, DISTRIBUTORS
ALBANY, N. Y. BALTIMORE, MD. ROCHESTER, N. Y. PHILADELPHIA, PA. WASHINGTON, D. C.

PACIFIC SLOPE DISTRIBUTORS, H. B. Mills Co., SAN FRANCISCO, CALIF.

Products

Skylights and Glazed Roofing; Marquises; Glazed Canopies; Sidewalls, etc.

Solid Wire Glass—Rough, Ribbed, Polished, Corrugated (CWG), Figured, and Actinic Glass.

Also Glass without wire netting, in various patterns and thicknesses, to suit every requirement.

TRADE-MARK

Wire Glass

Process—Solid wire glass, made by the Pennsylvania continuous process, is completely formed by one pouring and one rolling; the only process that makes possible the manufacture of wire glass as thin as ⅛ in.

Fire Protection—Wire glass is a valuable fire retardant—it prevents flames from attacking adjacent buildings.

Approval (Distinguishing Mark)—All of our wire glass, ¼ in. and over in thickness, has the full approval of the National Board of Fire Underwriters as a fire retardant, which requires a distinguishing mark to identify the glass. Our distinguishing mark is our *cabled strand,* appearing every 10 in. across the sheet and the full length of each sheet.

Service—We offer gratuitous engineering advice on all glass problems.

Samples—Samples, catalogues and circulars on request.

Specifications—Architects should always specify "Solid Wire Glass manufactured by the Pennsylvania Wire Glass Company" (mention the kind desired).

Corrugated Wire Glass

CWG is a corrugated sheet of glass with wire netting incorporated.

Corrugated Wire Glass Skylight—Corrugated Wire Glass is made to meet the demand for a substantial skylight, admitting properly diffused light. CWG can be placed on a roof of any material, including corrugated iron and corrugated asbestos.

Uses—CWG can be used also on roofs, sidewalls, marquises, canopies and wherever *daylight* is desired.

Weight—CWG weighs about 4½ lbs. to the sq. ft.

Strength—CWG has strength many times greater than any other glass of equal thickness, owing to the corrugations.

Kind—CWG is made in deep angle, 2½ in. center to center of corrugations.

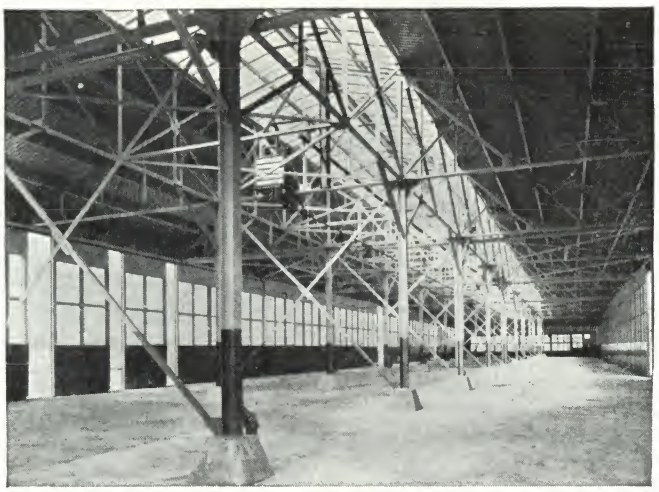
Standard Size—27¾ in. wide by 42 or 63-in. long, or any length up to 126 in., conditions governing.

Specifications for Installation of CWG

The skylights, roof or sidewall construction, where marked "Corrugated Wire Glass" on the plans and elevations, shall be formed of Corrugated Wire Glass (if Actinic Corrugated Wire Glass is wanted, say "Actinic Corrugated Wire Glass"), with standard fittings of 18-oz. copper and brass (can be furnished, if desired, in galvanized iron, zinc, aluminum or lead), in accordance with details and instructions submitted.

Instruction and Details for Erecting

To assist the architect in detailing and supervising the erection of Corrugated Wire Glass Skylights, we have prepared complete instructions and detail drawings. Some of the drawings from this book are presented on the following page and the publication, Bulletin D3, will be sent upon request.



Corrugated Wire Glass in Wright Field Airplane Hangar, Dayton, Ohio

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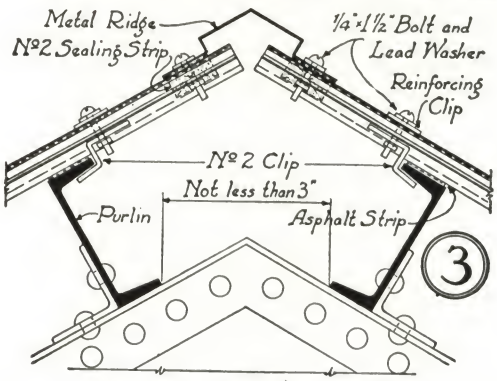
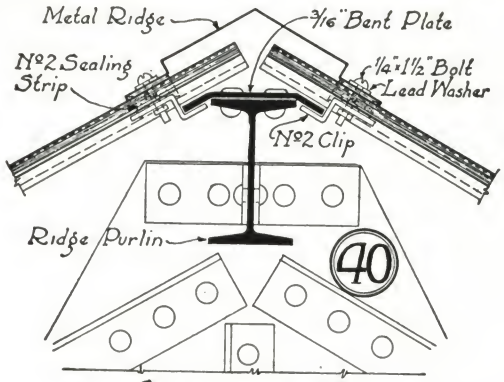
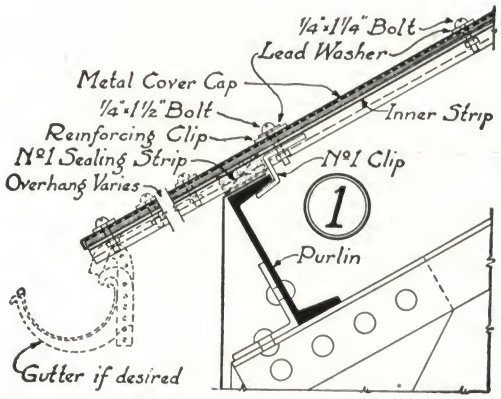


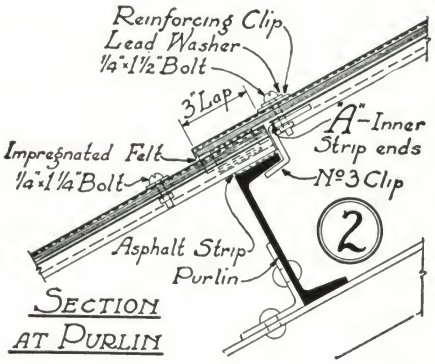
SECTION AT RIDGE



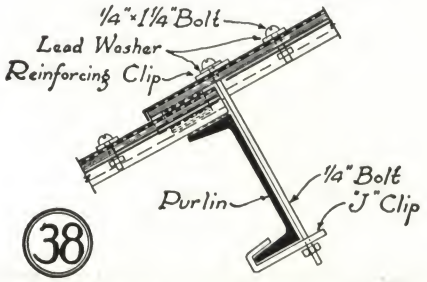
SECTION AT RIDGE



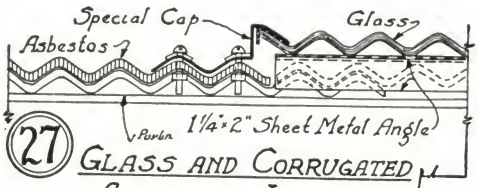
SECTION AT EAVE



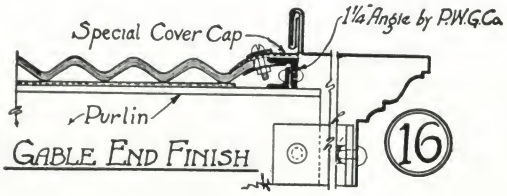
SECTION AT PURLIN



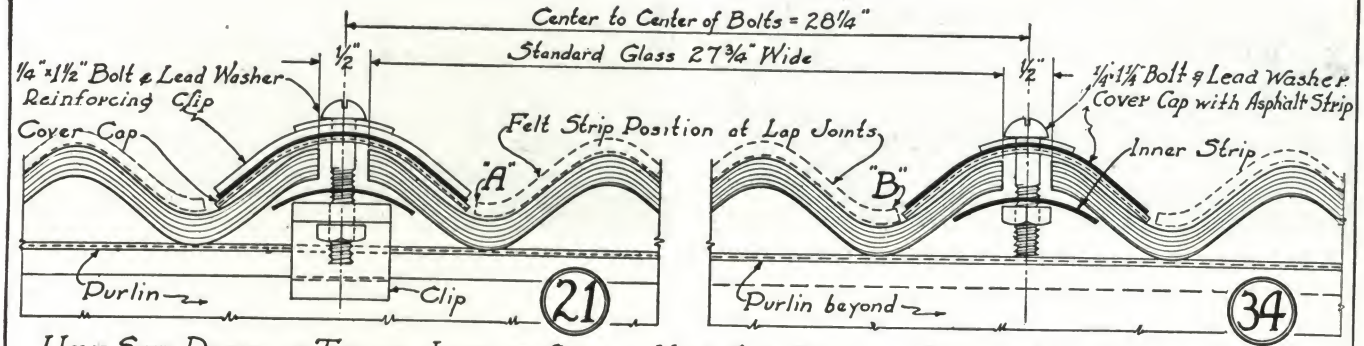
FASTENING WHEN PURLIN FLANGES POINT DOWN THE ROOF



GLASS AND CORRUGATED ASBESTOS JOINT



GABLE END FINISH



HALF SIZE DETAIL OF TYPICAL JOINT AT CLIP

HALF SIZE DETAIL OF TYPICAL JOINT BETWEEN PURLINS

PENNSYLVANIA WIRE GLASS CO.	TYPICAL INSTALLATION DETAILS CORRUGATED WIRE GLASS SKYLIGHT (SEND FOR COMPLETE DETAILED INFORMATION)	NOT DRAWN TO SCALE

Continued on next page

Actinic Glass—An Aid to Industry

Why Actinic Glass Is Needed

No one in these times would build a dark and gloomy factory with a few small windows. Yet in modern daylight construction, with its large glass areas, the problems of glare in various forms and of excessive heat from direct sunlight cannot be evaded.

Actinic Glass solves these problems so successfully that literally acres of it have been installed in new industrial buildings.

How It Differs from Ordinary Glass

Without going into technical details, the reasons why Actinic Glass reduces glare and also the heat of sunlight, lie in its special chemical composition. As to appearance, it looks like ordinary rolled glass, except it has a tint technically described as an "unsaturated yellow."

Facilitates Production by Reducing Eyestrain

Glare in various forms is such a hindrance to workers that it obviously increases manufacturing costs and impairs quality of output. As an illustration, when the sun is shining through an ordinary window or skylight, such objects as white paper or light colored textiles are often so glaringly illuminated that it may be actually painful and injurious to the eyes. When, on the other hand, Actinic is used under such conditions a person can even read print upon white paper with comfort. The relief is so pronounced that it can scarcely be appreciated without seeing an actual comparison.

Small samples for this purpose will be sent free upon request.

Improves Morale by Moderating the Sun's Heat

Daylight factories glazed with ordinary glass often suggest a florist's hothouse. The best proof of relief from heat gained by Actinic is its extensive recent use in mills of the south where it is specified by leading architects.

As indicated by thermometers, the discomfort due to direct sunlight is reduced about 55% by ¼-in. and about 40% by ⅛-in. Actinic.

Saves Costs of Curtains, Painting, etc.

Mills with large areas of Actinic have found it unnecessary to use shades or awnings, or to paint their windows, although if colorless glass had been used, glare and heat would admittedly have been intolerable.

Other Advantages

More cheerful illumination.

Improved ability to see, and retardation of undesirable chemical changes, such as fading of colors, add to the general satisfaction given by this novel product.

Technical details will be cheerfully furnished upon request.

Designs and Thicknesses

Actinic Glass is made in the following designs and thicknesses:

⅛-in. plain rough or ribbed
¼-in. rough or ribbed wire
Corrugated Wire Glass

Actinic CWG Used in Hall Planetary Thread Milling Co., Philadelphia, Pa.

Interior View of Dayton Arcade Market, Dayton, Ohio
Actinic CWG Used

SAINT PAUL CORRUGATING CO.

ESTABLISHED 1885

Manufacturers of Skylights

3-23 West Water Street, SAINT PAUL, MINN.

CABLE ADDRESS
"COR-SHEL"
(W. U. Code)

Products

SAINT PAUL SKYLIGHTS, puttyless or putty type.

Also manufacturers of Saint Paul Ventilators, Guaranteed Steel Ceilings and Sidewalls, Steel Buildings, Sheet Metal Building Material, including Cornices and Stamped Ornaments, and Industrial Sheet Metal Work.

For Rib Type Steel Decking, see Manufacturers' Index.

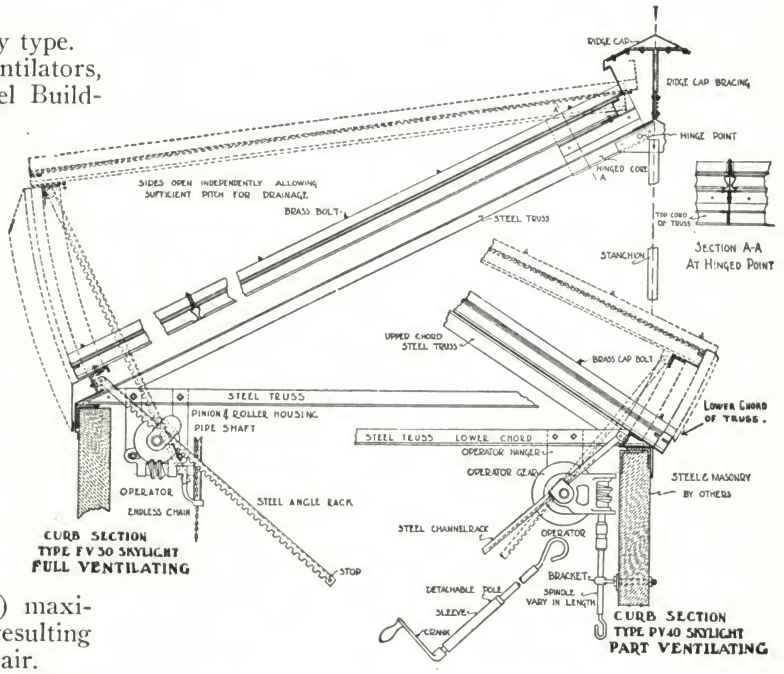
Saint Paul Heavy Duty Skylights

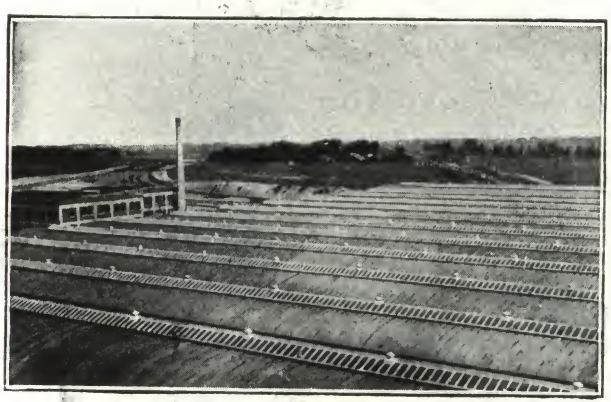
Adaptability—Skylights for industrial plants should be of the heavy duty construction to withstand vibration, and rust caused by acid and smoke in the manufacturing districts of large cities. Especially recommended for schools, public buildings and wherever a maximum of air and light is required.

Construction Features—All parts of Saint Paul Heavy Duty Skylights were developed with these thoughts in mind: (1) greater strength; (2) weathertightness; (3) ease of erection; (4) longer service; (5) maximum amount of daylight without glare and resulting deep shadows; and (6) an abundance of fresh air.

Skylight Bar—Gauge of metal used is an element in the ultimate strength of a bar, but the way that metal is formed is what must finally determine what strain a bar will carry. The carrying capacity of a bar can be cut in half when poorly designed although weight of metal used remains unchanged.

Simple to Glaze—Glazing has been simplified to the point where any handy man can do this work well. The asphaltic composition with which the felt is treated makes perfect sealing simple. These glazing cushions are always pliable. They never become hard and cannot break, fall out or disintegrate.





Saint Paul Skylight on Freight Transfer House
Type SG-20 stationary heavy duty skylights

Large Condensation Gutters—To cope successfully with condensation conditions, the main, cross, hip and curb bars have large gutters to collect and carry away this water. Curb has clean-cut weep holes, ½-in. round.

Metal Used—Glass-carrying bars, curbs and ridges are made of 18 gauge, and caps and gable ends of 24 gauge, all dead soft tight-coated galvanized copper alloy as standard.

Genuine open hearth copper alloy iron ("Gohi") or pure copper or other special metals are used when desired.

Brass bolts with clips are spot welded to bar.

Types of Operators—Ridge ventilating skylights are provided with various types of operators for opening and closing ventilated section in skylights.

Whether vertical, spindle or chain operated, sections can be raised or lowered with a minimum of effort.

Ventilation in Any Weather—An abundance of air changes is assured by the use of Saint Paul Ridge Ventilating Types of skylights. In no other way can the air be changed so quickly and such thoroughly comfortable conditions be maintained in hot summer weather as by the opening of a skylight. On windy days the leeward sides can be kept open so direct air currents will go over the skylight and not disturb things within the building, yet it will be ventilated amply by the suction.

On still days both sides can be opened when desired, giving full play to all air currents passing over the building.

Sufficient air changes are assured on cold days by opening the leeward ventilators an inch or two and, if the weather is not too windy or cold, by slightly opening both the leeward and windward sections.

GLENDON A. RICHARDS CO.

Manufacturers of Puttyless Skylights and Revolving Ventilators

Winter Avenue and Blumerich Street, Northwest

GRAND RAPIDS, MICH.

Products

The SIMPLICITY PUTTYLESS SKYLIGHT; the SIMPLICITY SKYLIGHT VENTILATOR; the VENTWELL REVOLVING VENTILATOR.

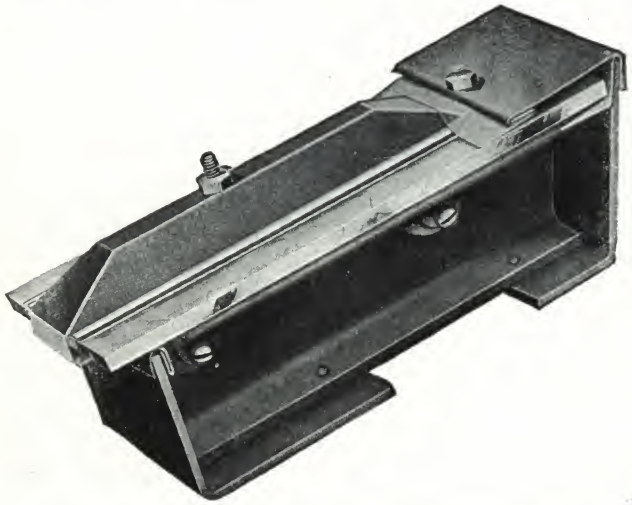
Simplicity Puttyless Skylight

Our aim in designing this skylight was to provide a product which would combine the maximum amount of daylight per square foot of area, with the lowest maintenance cost possible, and at the same time be of such construction as to lend itself to erection in the field with a minimum amount of time and labor.

The Simplicity Puttyless Skylight consists of a steel supporting frame of tee iron rafters with angle curb and ridge members. The rafters are provided with sheet metal condensation gutters over which the glass (set in came lead glazing strips or channels) is laid. The mounting caps are set in place over the glass and secured, compressing the glazing channel firmly against both sides of the glass. The ridge cap and end flashing are then applied completing the assembly.

Steel Frame—The sizes of the steel members comprising the frame vary to suit conditions. Ridge and hip members are made in two sections (details on following page); this form of construction allows the frame for each slope, consisting of rafters, ridge and hip members, to be assembled complete at the factory. The erection work in the field is reduced to bolting the ridges and hips together and anchoring frame at curb.

Glazing Strips—These strips are small channels of came lead placed on the edges of the glass resting on the rafter members. When the mounting caps are set and secured they compress the lead firmly against both sides of the glass, making an absolutely windtight and weathertight joint. The soft lead takes up any unevenness in the surface of the glass and gives a continuous bearing surface; it also permits enough come and go in the glass to provide for contraction and expansion, thereby eliminating glass breakage from either of these sources.



SECTION OF SIMPLICITY PUTTYLESS SKYLIGHT BAR

Materials—The sheet metal work consisting of the mounting cap, ridge cover, condensation gutter and flashing may be of lead coated metal, galvanized iron or copper.

Advantages—Absolutely weathertight construction; maximum amount of daylight; condensation conducted to the exterior; glass breakage reduced to a minimum by use of lead glazing strip; ease of erection; ease of glass replacement.

Specification—Furnish and erect where shown on plan, skylights of the puttyless type, of a design to allow for free expansion and contraction of the glass, or movements due to vibration.

Each light of glass shall be entirely independent of every other light and the glass shall be held laterally in a manner to prevent its coming in contact with any rigid part.

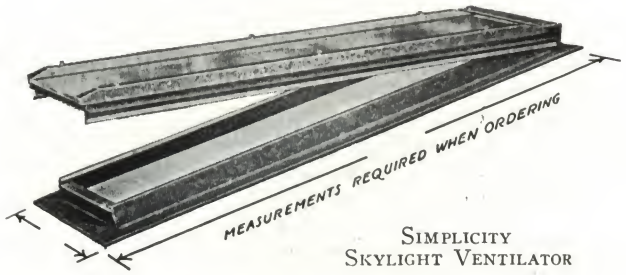
The bearing of the glass shall be flexible, so as to adjust itself to any warps or irregularities in the glass.

Simplicity Skylight Ventilator

These ventilators may be placed in any of our skylights by removing the glass and substituting the ventilating frame.

These ventilators are also made with flat flanges for use on shingle or composition roofs.

We manufacture an efficient and reliable operating device for these ventilators. Prices and description will be sent on request.



SIMPLICITY SKYLIGHT VENTILATOR

"Ventwell" Revolving Ventilator

This ventilator revolves with the wind and is so constructed that the action of the outside air creates a vacuum in the ventilator itself thereby drawing up the air to be expelled. It is efficient, and guaranteed to give satisfaction under all weather conditions.

It may be had in either galvanized iron or copper.

Bases and dampers extra.

Prices quoted on application.

"VENTWELL" REVOLVING VENTILATOR

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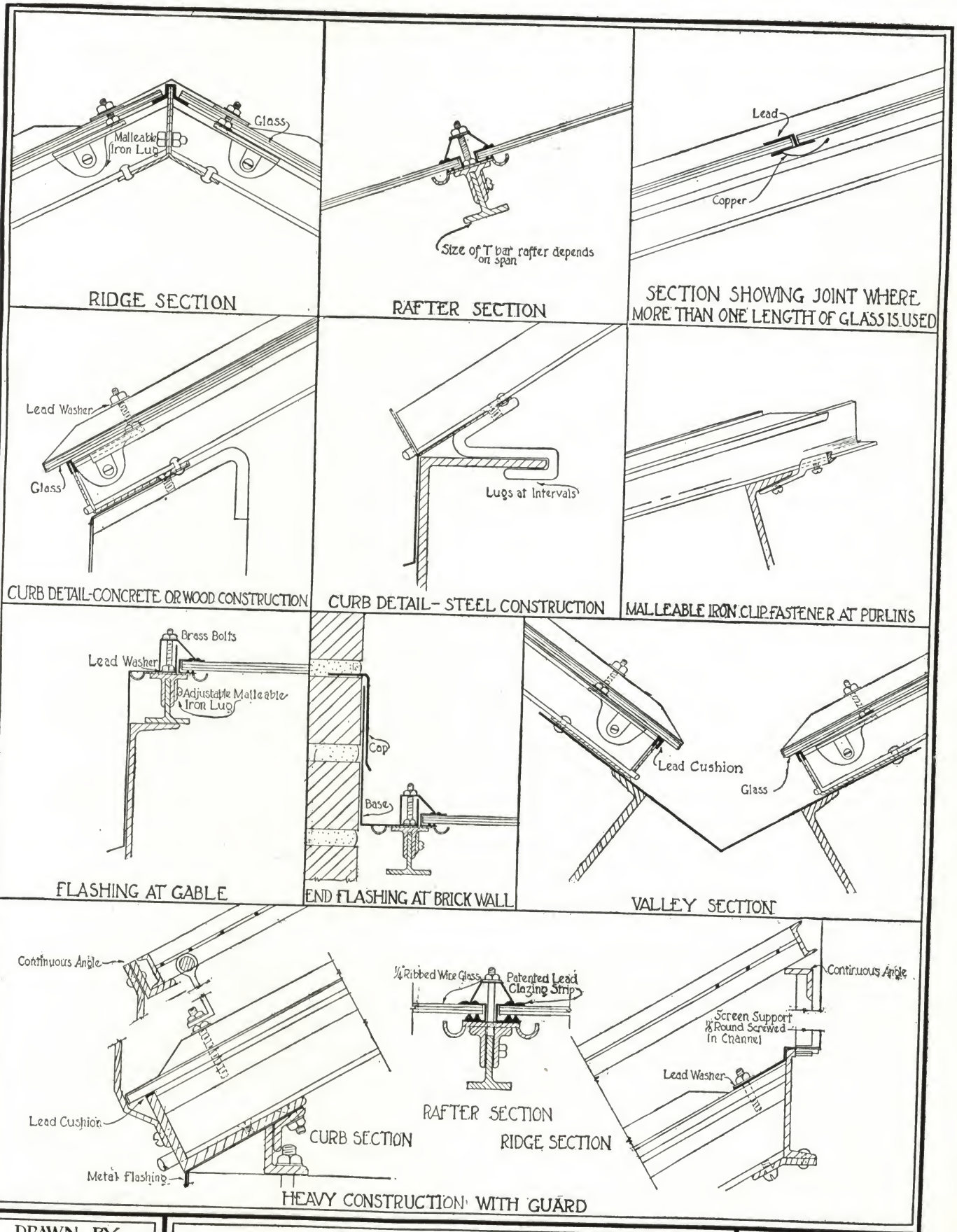


DRAWN BY SWEET'S CATALOGUE SERVICE INC.	STANDARD DETAILS OF SIMPLICITY PUTTYLESS SKYLIGHT CONSTRUCTION	SCALE 3" EQUALS 1'-0" DATE-JULY24	DR'WG 1

H. H. ROBERTSON COMPANY

Robertson Glazing Construction, Skylights, Sidewall and Special Sash

PITTSBURGH, PA.

FACTORIES: AMBRIDGE, PA.; SARNIA, ONT., CAN.; ELLESMERE PORT, CHESHIRE, ENG.

DISTRICT OFFICES

BALTIMORE, MD. BIRMINGHAM, ALA. BOSTON, MASS. BUFFALO, N. Y. CHICAGO, ILL. CLEVELAND, OHIO DETROIT, MICH. HAVANA, CUBA HOUSTON, TEX. JACKSONVILLE, FLA. ST. LOUIS, MO. LOS ANGELES, CAL. NEW YORK, N. Y. PHILADELPHIA, PA. PITTSBURGH, PA.

AGENCIES

ALLENTOWN, PA. BUTTE, MONT. CHARLESTON, W. VA. DENVER, COLO. EASTON, PA. EL PASO, TEX. HOUGHTON, MICH. LITTLE ROCK, ARK. MILWAUKEE, WIS. MINNEAPOLIS, MINN. NEW HAVEN, CONN. PORTLAND, ORE. RICHMOND, VA. ST. PAUL, MINN. SALT LAKE CITY, UTAH SAN FRANCISCO, CAL. SCRANTON, PA. SEATTLE, WASH. SYRACUSE, N. Y. WASHINGTON, D. C.

ENGLAND, ELLESMERE PORT, CHESHIRE: Mersey Iron Works

CANADA: H. H. ROBERTSON CO., LTD., TORONTO, ONT., AND MONTREAL, QUE.

Products

In addition to the Glazing Construction described below, the H. H. Robertson Company manufactures Robertson Protected Metal for Roofing, Siding and Flashings; Robertson V-Beam Protected Steel Roof Decks, Robertson Ventilators, all described elsewhere in Sweet's. (See Manufacturers' Index.)

(Robertson Skylight and Sash construction are protected by United States Patent No. 1,243,020, October 16, 1917, and No. 1,666,764, April 17, 1928; also covered by other patents in the United States and other countries; other patents pending.)

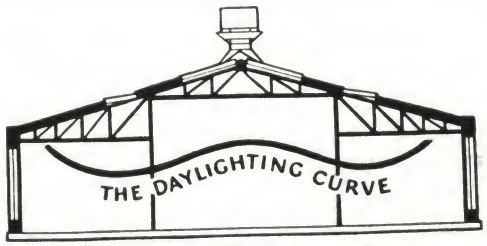
Also manufactures Robertson Process Asphalts, Pipe Coatings, Battery Sealing, Insulation, Saturation and Waterproofing Compounds.

TRADE-MARK

Daylighting Engineering Service

As a result of years of research and experiment, Robertson Engineers are equipped to prepare for architects, engineers and builders, complete daylighting layouts for any type of building. These layouts will take into consideration the type of work done in the building, the amount of light required for that work, the atmospheric and climatic factors which have a bearing upon the daylight, the associated problems of condensation, heat loss, etc. If you will send blue prints or sketches on any new or old building, the engineers will submit their recommendations without cost or obligation.

Through the scientific study of the problems of daylighting, the Robertson Engineers have been been able to reduce spoilage and accidents, cut light bills, and increase production.



The Robertson Daylighting Curve

Robertson Daylighting Engineers can take blue prints of a building and lay a daylighting curve like this across them to show, in advance, exactly how much light you will get at any point in the building, from any given area or placement of glass. A booklet on the Daylighting Curve sent on request

Robertson Skylights

Robertson Skylights represent one of the most successful solutions of the two most frequent and aggravating causes of skylight troubles—that is, leakage and glass breakage, growing out of (1) deflection (or sagging) of the glass supports, and (2) improper methods of holding the glass in place.

The detail drawing at the bottom of this page and the perspective drawing at the top of the following page show clearly how these difficulties have been overcome.

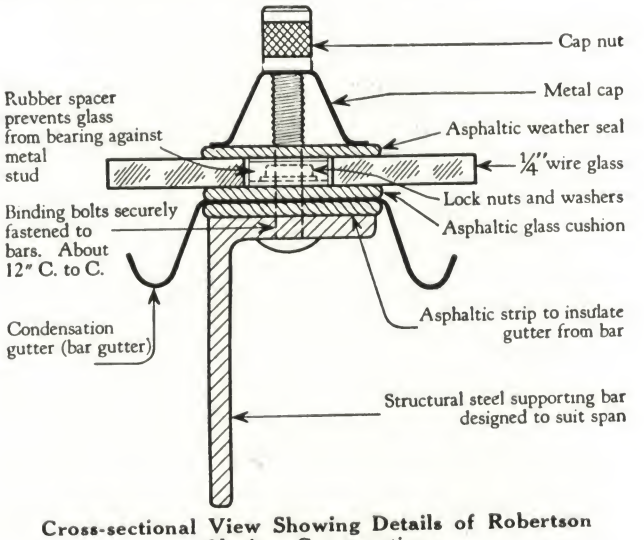
Eliminating Sagging—As shown in the drawings, the supporting member of the Robertson Skylight is a standard structural steel bar, designed and fabricated like the steel framework in a building, and as strong as the other structural members of the building. Its strength is calculable; all steel formulae apply to it. Size and weight of the bar is varied to suit exact conditions of load and span. The steel has a *minimum* thickness of $\frac{3}{16}$ in. Robertson Skylights therefore can be as wide as 20 ft. without need for supporting trusses.

Research has shown that deflection in the supporting member must not be more than 1/30th in. per foot of span. In Robertson Skylights there is never more than 1/30 in. deflection, even under a load of 40 lb. per sq. ft.

The Strength Is Permanent—Corrosion in skylights usually starts in the condensation gutter. In many skylights, this gutter is considered as a part of the supporting member, and when the gutter corrodes the supporting member is weakened. In Robertson Skylights (as you can see in the drawings) the condensation gutter is a separate unit and does not touch the supporting bar. Between it and the bar is a layer of asphaltic felt. If corrosion starts in the gutter there is little danger of it spreading to the bar of a Robertson Skylight.

Also, the supporting bar is no more affected by corrosion than is any other *structural* member of the building. It is so arranged that it is easy to reach with a paint brush from all sides. In extremely corrosive conditions, the bar can be galvanized, or covered with asphaltic coatings (such as used in the construction of Robertson Protected Metal).

Proper Cushioning of Glass—The second great cause of trouble in skylights is improper methods of holding the glass. Skylight glass has an irregular surface. When this surface rests on an unyielding bed, it makes contact at some points



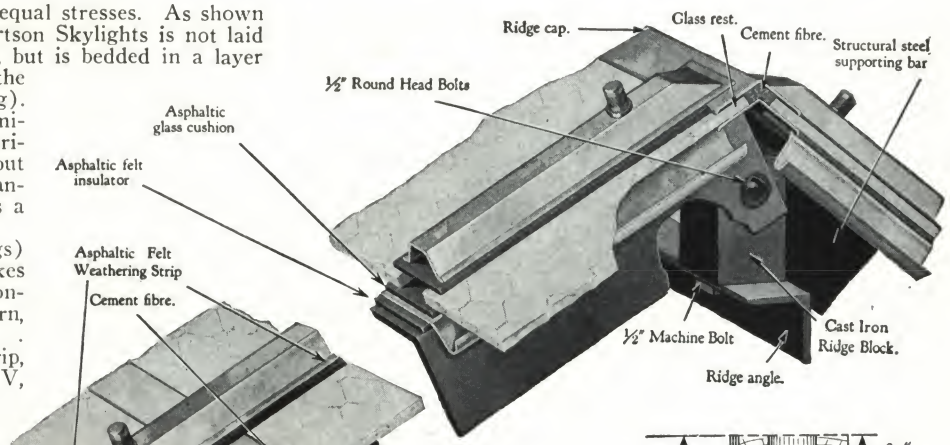
Cross-sectional View Showing Details of Robertson Glazing Construction

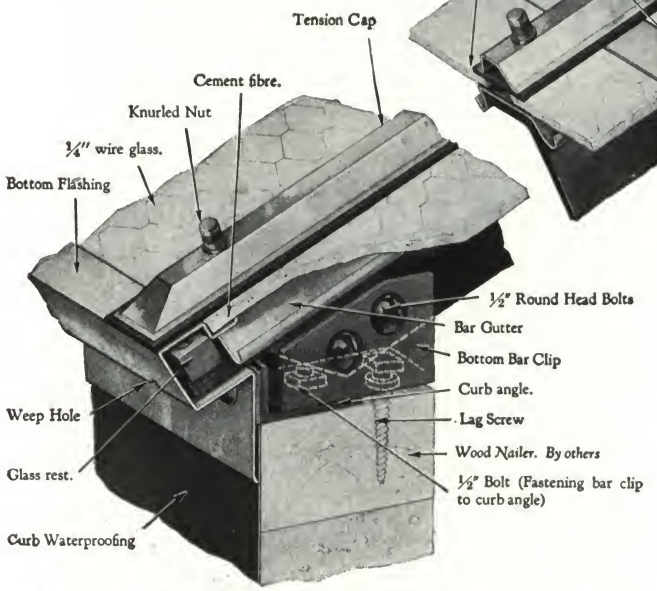
For further description see text herewith

Continued on next page

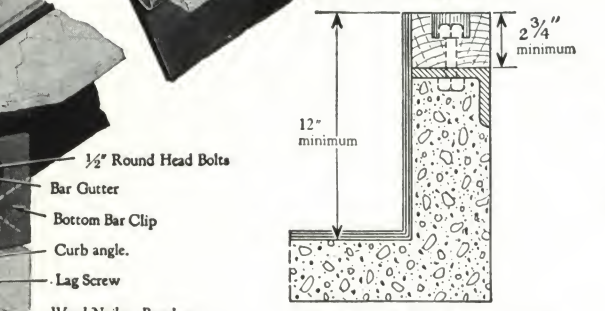
and not at others. This results in unequal stresses. As shown in the illustrations, the glass in Robertson Skylights is not laid on metal or other unyielding surface, but is bedded in a layer of asphaltic felt (shown just above the condensation gutter in the drawing). This felt is flexible, resilient, and semi-plastic. It conforms to the irregularities of the glass and makes a firm but not rigid, contact. It allows for expansions and contractions. And it makes a continuous, water-tight seal.

Above the glass (see drawings) another layer of this asphaltic felt makes the same sort of easy cushioning contact from the top. Above this, in turn, is the final unit of the skylight . . . the metal cap. It is a continuous strip, shaped somewhat like an inverted V,

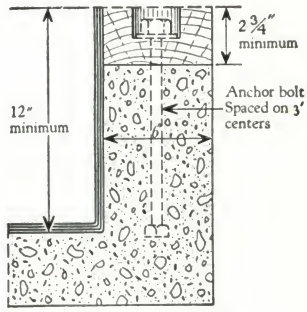




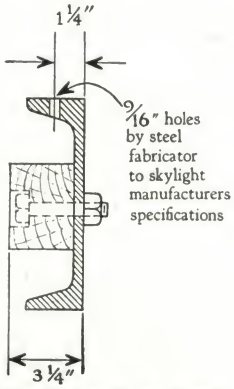
Typical Robertson Skylight Section (Double-Pitch Type)



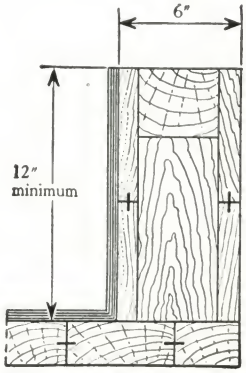
Detail of Gypsum Curb



Detail of Concrete Curb



Detail of Steel Curb



Detail of Wood Curb

which runs the entire length of the joint. This cap is so designed that it has a spring-like effect. When tightened by a nut and bolt, it exerts a continuous, evenly distributed binding action along the length of the skylight, forcing the semi-plastic asphaltic layers into the depressions in the glass surface, yet its tension is so flexible it allows fully for expansion.

All Glass Butt Jointed—Another advantage of Robertson Glazing Construction is that where two panes of glass come together, they are always butt jointed, *never lapped*. The glass is all in the same plane: the panes can never slip; and there is no obstruction to form a lodging place for snow, water, or dirt. Top and bottom edges of glass are held in weatherproof copper cross-gutters.

A Typical Skylight Specification

The skylights shall be of the puttyless Type "A," manufactured by the H. H. Robertson Company of Pittsburgh, Pennsylvania, and shall conform to the following description:

The skylight bars shall be of standard rolled steel shapes that can be accurately figured for deflection. They shall support a combined snow and wind load of .. lb. per sq. ft. without a deflection greater than 1/30th in. per lin. ft. of bar length, measured center to center of supports. This deflection is to be calculated from deflection formula for simple beams.

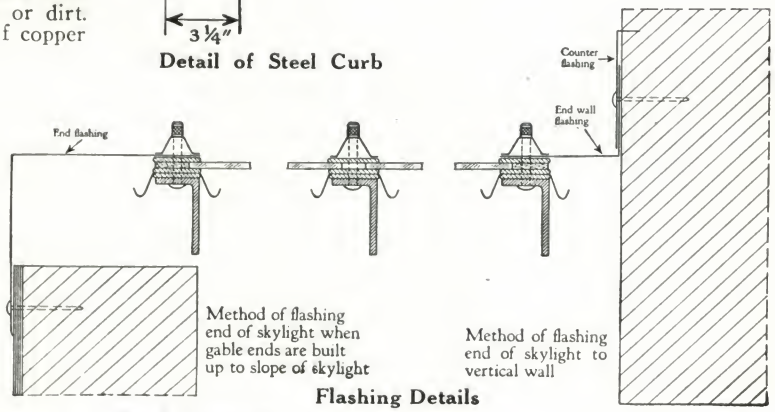
The bars shall be equipped with condensation gutters. They shall not be considered as part of the load-carrying member.

The glass shall be ¼ in. wire, and shall be embedded in a soft pliable and permanent asphaltic material.

The bars shall be covered with caps, which are to be fastened to bars by drive bolts and knurled nuts.

The trim shall be [copper], [aluminum] or [galvanized iron]. In case where two or more different materials meet, they shall be insulated from each other by asphaltic strips.

Detailed drawings shall be submitted by the manufacturer for the approval of the architect, engineer or owner.



Flashing Details

Curb Details

Details of built-up curbs of the commonly-used types are shown on this page. You can use these details to trace directly on your blue prints. Perfect curb details on your plan will often save two or three weeks in delivery time on skylights.

Show out-to-out dimensions of curbs and state whether skylight is to be double-pitch or hip type. If double-pitch, indicate whether ends are to be built up of the same material as curb, or are to be covered with metal, or to be of glass.

Continued on next page

Robertson Double-Glazing

The Robertson Double-Glazed Skylight is one of the most important developments in glazing construction in recent years. It was originally designed to overcome the difficulties encountered where considerable differences in temperature exist between the inside and outside of buildings, and where the indoor air carries excess humidity, but its use has now spread far beyond that field. It has come into general popularity for office buildings, schools, lofts, garages and every other type of building where glass is used in the roof.

The great advantage of Robertson Double Glazing lies in the fact that the two layers of glass with an air space between them greatly increase the heat insulation. The heat transmitted through a single glazed skylight with ¼-in. glass is approximately 1.12 B.t.u. per sq. ft. per hour for each degree of temperature difference; whereas the heat transmission of Robertson Double-Glazing is only 0.133 B.t.u.

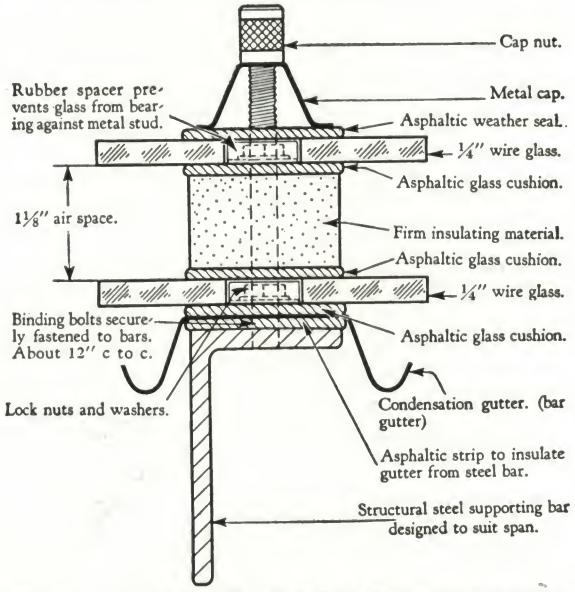
Robertson Double-Glazing minimizes condensation and drippage, reduces heat losses through skylights, and cuts fuel bills. In hot climates, it keeps buildings cool and comfortable in spite of high temperatures outside. In paper mills, textile mills, turbine rooms, power houses, swimming pools, and many other types of buildings where heat radiation and condensation are above the average it is of special benefit.

The large illustration on this page shows the method of attaching the skylights to the curb. The curb illustrated is concrete, but these skylights can be attached readily to steel, wood or any other standard form of construction. The illustration shows the position and attachment of the necessary flashings to make a weather-tight union between the skylight and the curb.

The Robertson perfected system of removing the water of condensation is shown in the drawings on this and the next page. Condensation on the underside of skylight glass is usually caused by differences between indoor and outdoor temperatures. Double glazing gives greater insulation between the indoor and outdoor temperatures, and this reduces condensation. Whatever condensation *does* occur forms principally between the layers of glass rather than on the inside of the bottom layer; trapped between the two panes, it cannot drip down into the building

Water on the upper surface of the lower pane runs down the slope and out through a ¼-in. weepage space (see detail of curb) at the bottom edge of the pane, whence it drips into the interior gutter. This interior gutter runs continuously along the curb and empties into conductor pipes (as shown) spaced at regular intervals. These pipes carry water onto the roof, or, if preferred, into the building.

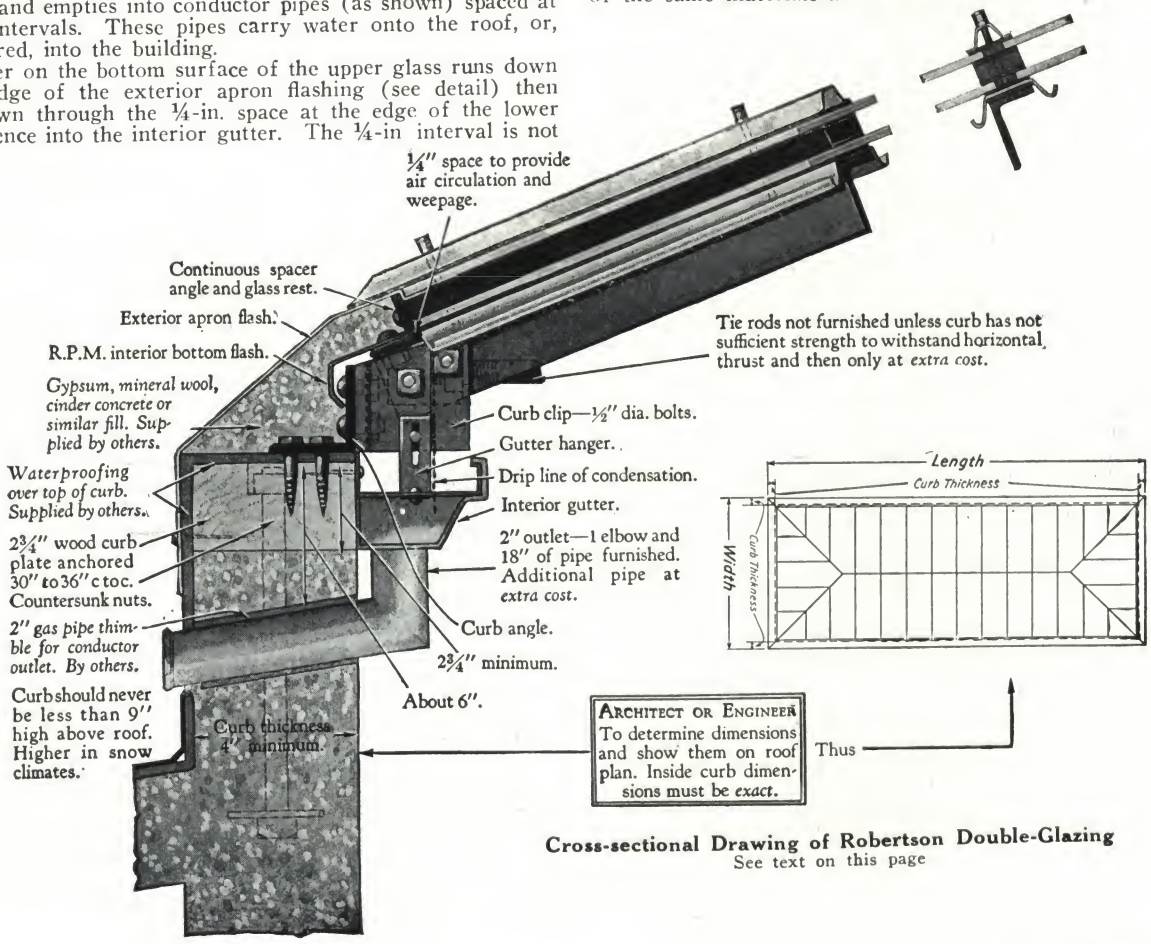
Water on the bottom surface of the upper glass runs down to the edge of the exterior apron flashing (see detail) then drips down through the ¼-in. space at the edge of the lower pane; thence into the interior gutter. The ¼-in interval is not only an outlet for water but also provides for the slow continuous movement of air between the two layers of glass, and minimizes fogging.



Cross-sectional Details of Robertson Double-Glazing
For general information see text on this page

Any water that may form on inside of the lower pane is caught in cross condensation gutters (as shown in the cross-section of the large detail and in the "close-up" in the upper left hand corner of the next page). Water gathering in these cross gutters empties into the bar gutters running up and down the slope, then into the interior curb gutters and out.

Interior bottom flashings should always be of Robertson Protected Metal (which is impervious to corrosion). Other sheet metal parts and flashings may be of copper, aluminum, galvanized steel or other suitable material. Interior gutters are made of the same materials as the trim.



Cross-sectional Drawing of Robertson Double-Glazing
See text on this page

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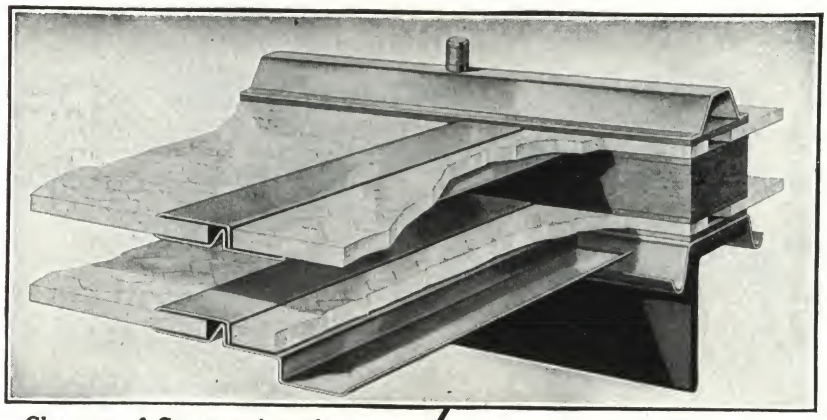
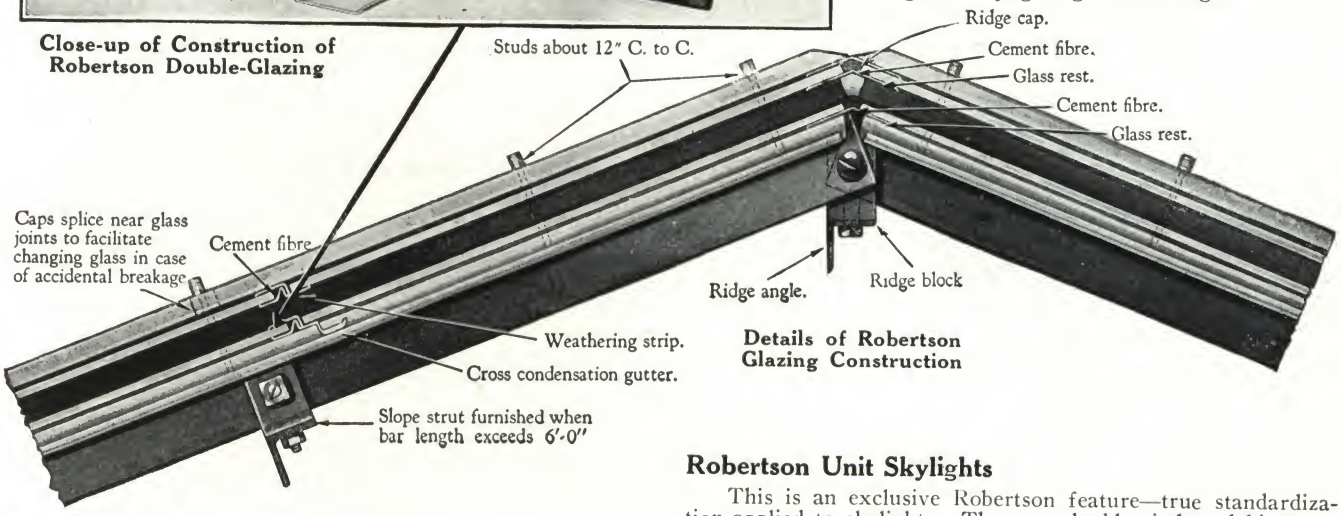


Close-up of Construction of Robertson Double-Glazing

Glazing Available in All Forms

Robertson Glazing Construction is available in all forms: double-pitch and single-pitch skylights, hip skylights, monitor and special sash sawtooth sash, sidewall sash, fixed and operating; and complete glass roofs. Also in standardized unit skylights.

The H. H. Robertson Company is equipped to take your blueprints or rough preliminary sketches and recommend the most suitable type of glazing construction to meet the situation . . . to suggest the number of skylights or sash that will be needed, what size they should be and where they should be placed. Send for 48-page Robertson booklet on Daylighting which explains many of the fundamental rules governing the daylighting of buildings.



Details of Robertson Glazing Construction

Depressed Head Construction

The Robertson method of installing single-pitch skylights (known as depressed-head construction) is illustrated at the bottom of this page. Note how the head of the skylight is inserted under the roofing material, and the bottom of the skylight is extended out over the roofing material, to facilitate the free flow of water, and to eliminate any place of lodgment for snow, water, ice, or dirt.

Depressed head construction eliminates the necessity for curbs and for "saddles" or "crickets" to carry off the water. It can be used with any type of roof material or roof coverings, where the slope of the roof will permit use of skylights. Slope must never be less than 2½ in. in 12 in.

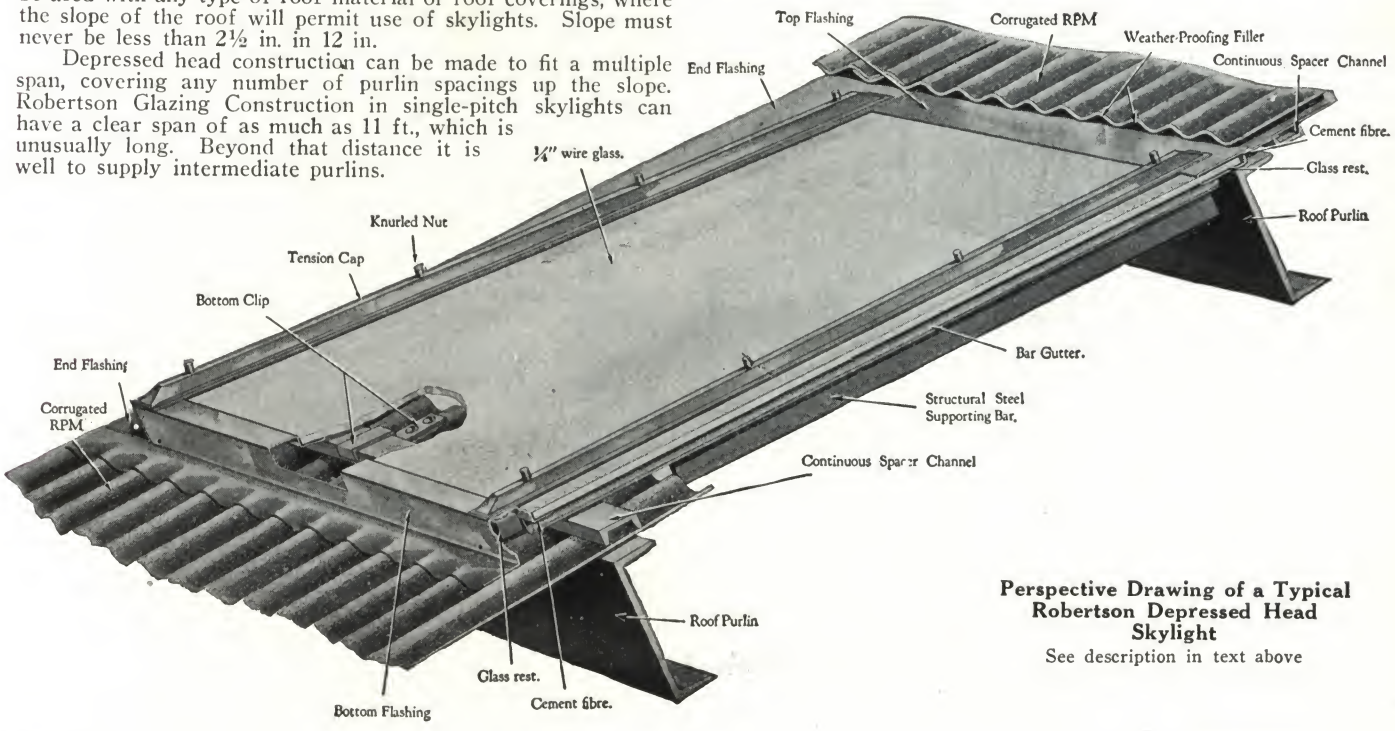
Depressed head construction can be made to fit a multiple span, covering any number of purlin spacings up the slope. Robertson Glazing Construction in single-pitch skylights can have a clear span of as much as 11 ft., which is unusually long. Beyond that distance it is well to supply intermediate purlins.

Robertson Unit Skylights

This is an exclusive Robertson feature—true standardization applied to skylights. They are double-pitch and hip types in units of standard widths from 3 to 20 ft. and in any desired length.

Ordering in Even Foot Widths

Skylights are primarily planned in even foot widths. If ordered on that basis, considerable savings in both time and money can often be made, and much quicker deliveries are possible. However, Robertson Skylights can be delivered to you in any widths you desire. Widths should be figured on the out-to-out of curb.



Perspective Drawing of a Typical Robertson Depressed Head Skylight

See description in text above

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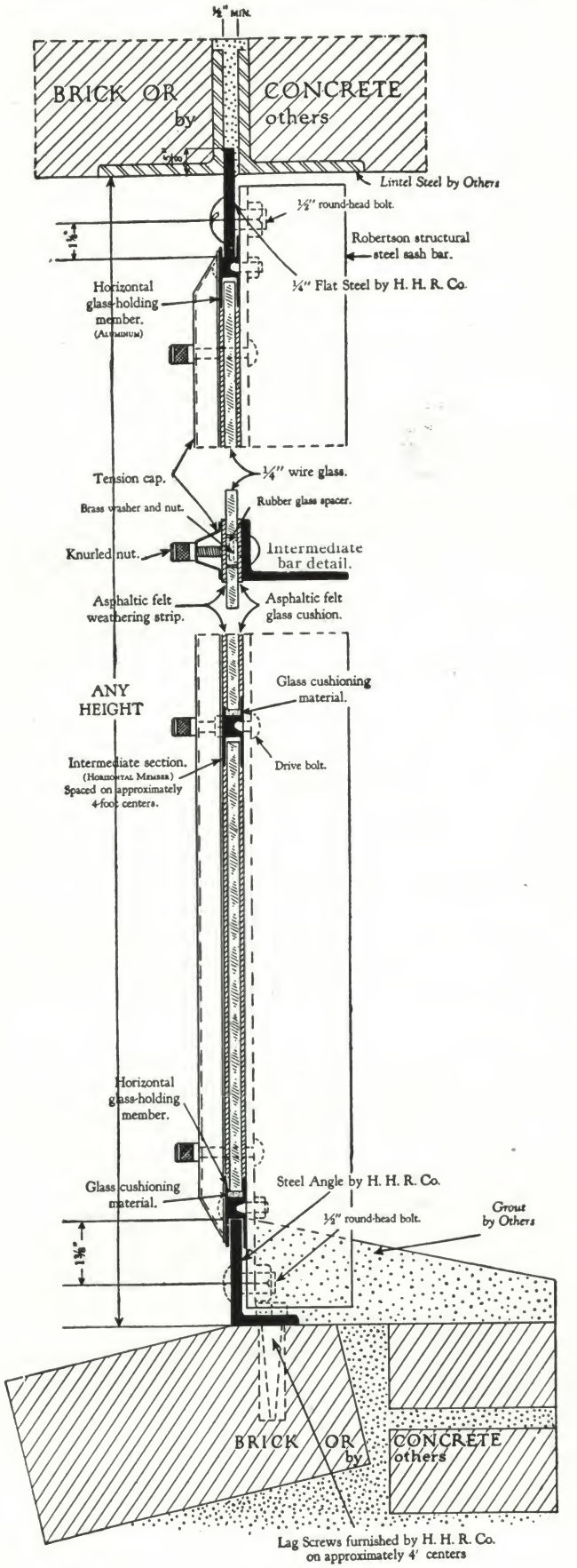
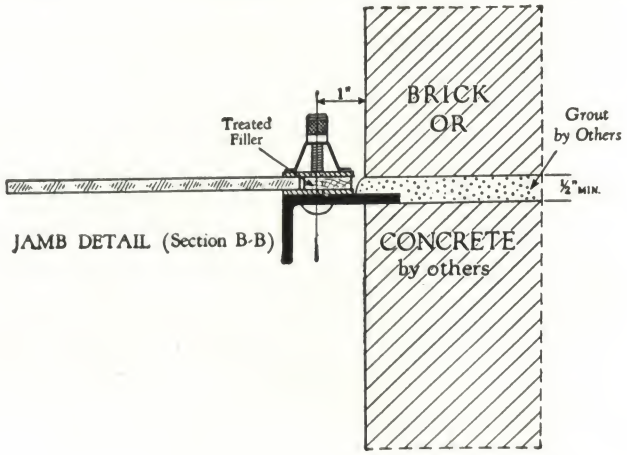


CROSS-SECTION DETAIL
(Section A-A)



Details of Robertson Structural Sidewall Sash for Buildings of Brick or Concrete

For description see text

Robertson Structural Sidewall Sash

The name of this Robertson product suggests what it is—an industrial sidewall sash with load-carrying members of structural steel. The glass is supported on standard rolled steel bars placed vertically and attached (in the case of steel buildings) to the girt framing.

The special features and advantages of Robertson Structural Sidewall Sash are:

Greater Strength—All supporting members are of structural steel instead of light steel sash. Bars are designed like beams and can take care of any required loading. Glass is ¼-in. wire glass instead of ⅛-in. window glass.

Longer Lived—The structural steel supporting bars provide a weight of metal and a consequent resistance to corrosion that light steel sash cannot approach. On the outside, the only exposed metal part is the tension cap, which is made of corrosion-resistant aluminum. Horizontal members are few and are made of aluminum almost flush with the surface of the glass, so that there is no place for corrosive elements to lodge. Glass is held in resilient asphaltic felt strips; no metal touches it; no putty is used.

Low Maintenance—There is less glass breakage; no puttying to be done; and little or no painting. The aluminum tension caps and the horizontal members never require paint.

Remarkably Adaptable—Robertson Structural Sash is designed and fabricated to fit sidewall openings of any dimensions or proportions.

Easier to Clean and Keep Clean—The glass panes are large (2x6 ft. maximum). There are fewer corners and bars, and fewer places for dirt and dust to lodge. All horizontal members practically flush; it is possible to wipe, in one operation, a section of glass 6 ft. in height.

More Light—The large panes give more effective lighting than the small panes of ordinary sash set in a network of bars.

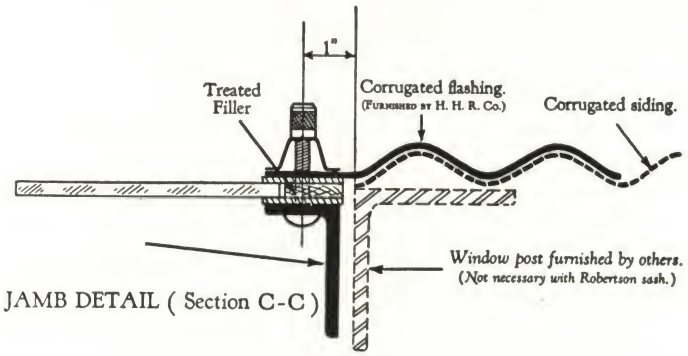
Better Appearance—The large panes provide a fine architectural effect; they form an appropriate relationship with the masses and lines of a structure. The bright aluminum caps harmonize in tone and color with the glass.

Key to Illustrations—Illustrations on this page show cross-sectional views of details of Robertson Structural Sash applied to buildings of brick or concrete.

Section A-A (vertical section through sash) indicates method of attaching at head and sill. With brick, Robertson Structural Sash is fitted at the head into space left by steel contractor between lintel angles. In concrete, sash is fitted into a similar space provided by concrete contractor. At sill, sash is fastened to brick or concrete by means of lag screws (as shown).

Section B-B is horizontal sectional view through the sash and its attachment to window jamb. As indicated, position of sash bar is modified at this point; glass-holding members are attached to longer leg of the bar, and the longer leg is inserted into the brick or concrete. Sash is weatherproofed by grouting as shown.

Continued on next page



JAMB DETAIL (Section C-C)

Key to Illustrations—Cross-sectional views on this page show Robertson Structural Sash applied to buildings with sidewalls of corrugated sheets.

Section A-A (vertical section through sash) indicates method of attaching sash to head and sill. Girts placed as shown in Section A-A are recommended; but Robertson Sash can be adapted to any type of steel framework.

It is also adapted to window openings of any height. Panes of glass come in any height up to 6 ft. For openings more than one pane high, union between upper and lower edges of pane made by standard intermediate section shown in Section A-A.

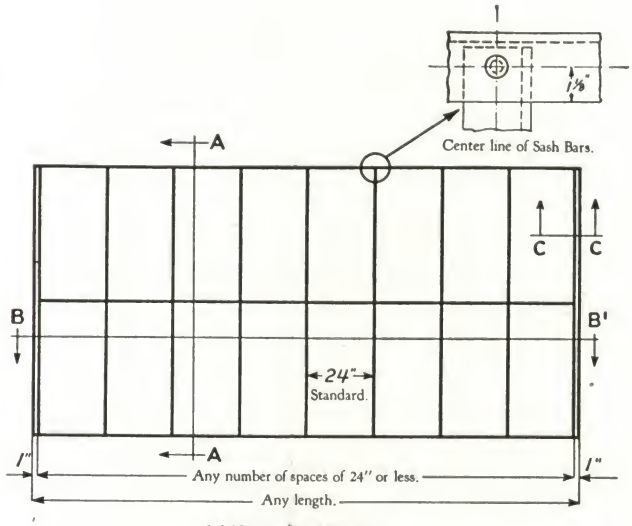
Girts to which sash is attached to be furnished and punched by building owners. Section B-B shows typical girt-punching layout. Center lines through angle lines in B-B indicate exact location of girt punchings. Sash bars should be spaced on 24-in. centers if possible, but can be varied to meet requirements of *any* opening.

Section C-C (horizontal sectional view through the sash and its attachment to window jamb) shows how Robertson Structural Sash is weatherproofed at the joints. Because of strength and rigidity of Robertson Sash bars, no window posts needed.

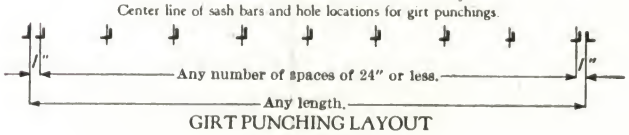
Tension caps, which form outside or weathering member, furnished in aluminum, copper or galvanized steel.

Operating Devices

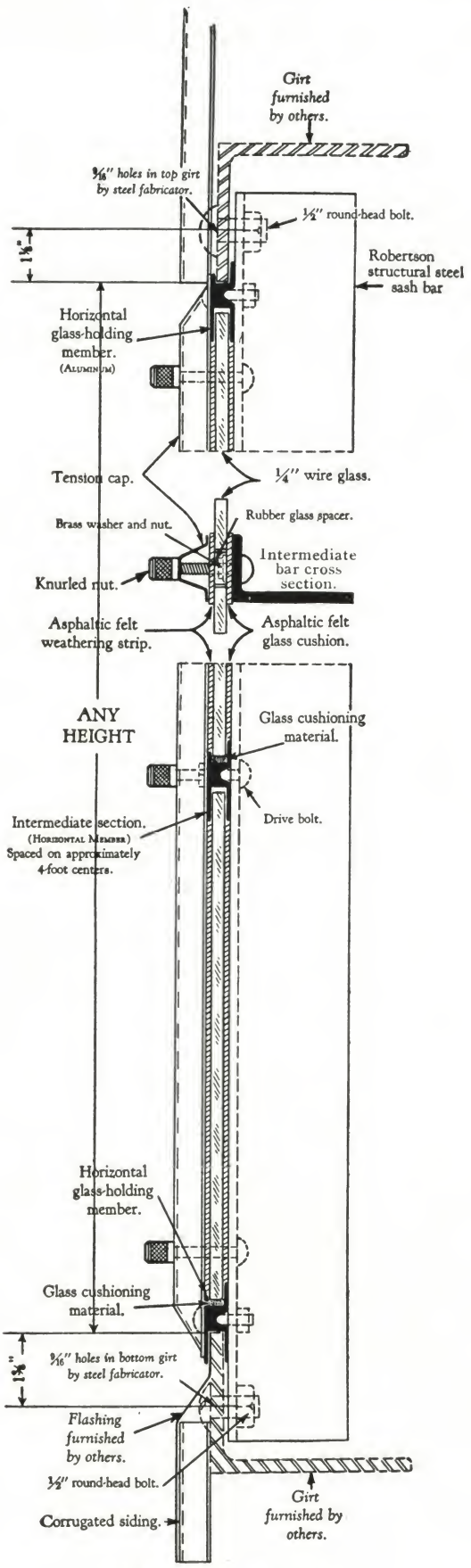
If operators are desired for sidewall sash we can furnish tension or torsion types, with chain, handwheel, pole or electric drives.



SASH ELEVATION



GIRT PUNCHING LAYOUT
(Section B-B)



CROSS-SECTION DETAIL
(Section A-A)

Details of Robertson Structural Sidewall Sash for Corrugated Buildings

ESTABLISHED 1888 BARNEY GOLDMAN, PRESIDENT

SUPERIOR SKYLIGHT COMPANY, INC.

Automatic Gravity Stage Ventilators

95 Webster Avenue
LONG ISLAND CITY, N. Y.

Products

SUPERIOR AUTOMATIC GRAVITY STAGE VENTILATOR.

SUPERIOR FOUR-IN-ONE PROJECTION ROOM VENTILATOR.

For Superior Roof Leader Connections and Expansion Roof Fittings for Vent Stacks, see Manufacturers' Index.

Superior Automatic Gravity Ventilator for Theater Stages and Auditoriums

A combined ventilator and skylight. Universally approved for use over the stages of theaters, fraternal buildings and school auditoriums. Efficient, reliable and automatic in action in case of fire.

Operation—The operation and automatic action depend on a series of hempen cords, each of which is attached to a sash or ventilator and which are immediately released, either independently or all at once, by the melting of fusible links, such as are in common use on fire doors, sprinkler systems, etc. They will melt and release the ventilators at a temperature of 160° F.—long before the flames reach them.

The ropes connecting with the sash are brought down to the stage and attached to a triangle plate which is connected with one main rope to the stage floor. Chains are also attached to the ropes permitting the manual opening and closing of the sash from the stage floor.

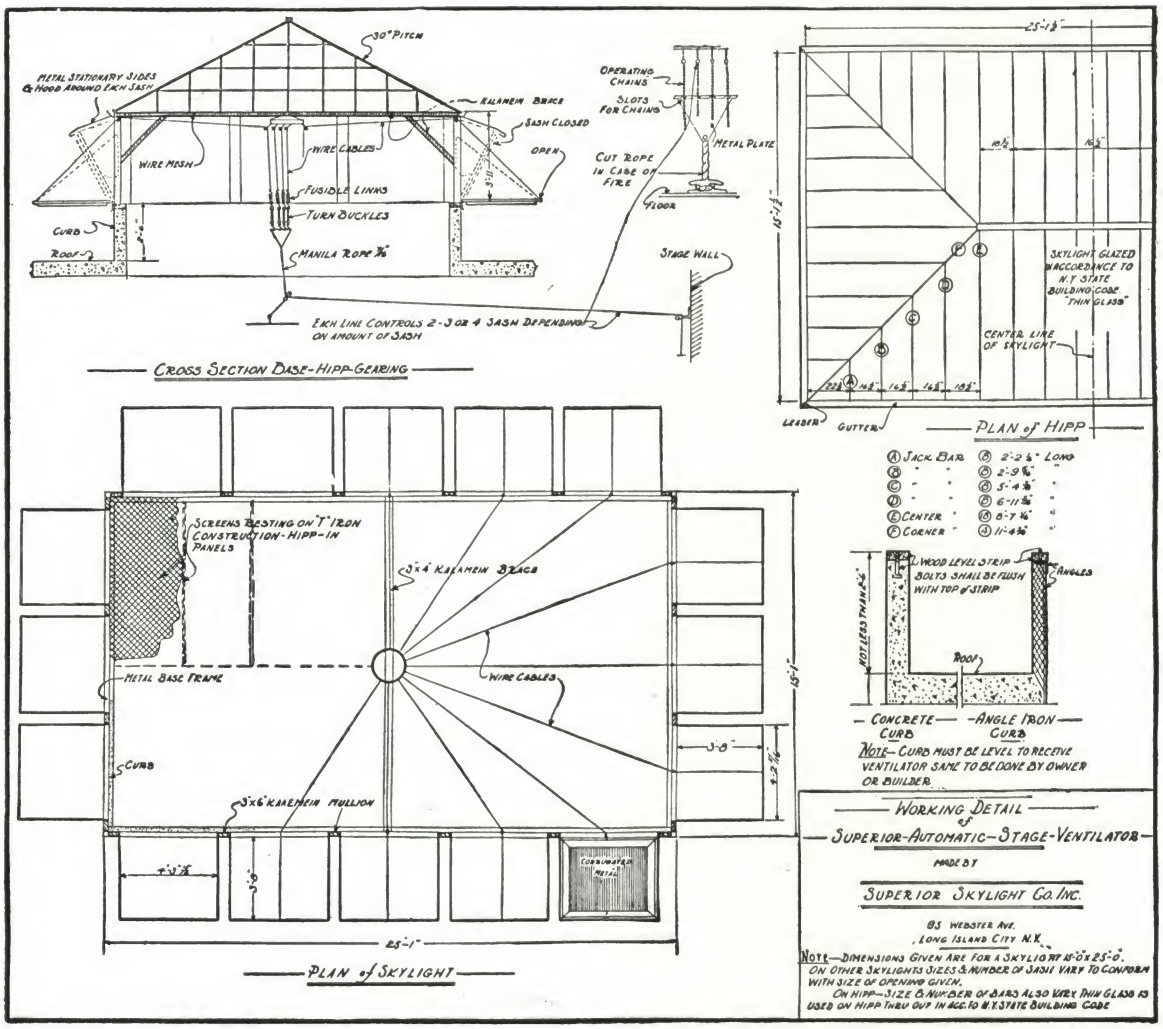
The automatic ventilator is to be mounted on an ordinary curb of concrete or angle iron frame made level with the wood plate set flush with the outside of the curb. The curb should be not less than 2 ft. 6 in. high from the finished roof in order that snow drifts and other encumbrances will not prevent outward gravitation.

The roof of the ventilator skylight is to be of first class hip ridge construction with heavy bars and condensation gutters, glazed with a thin glass in accordance with the New York Building Code and made perfectly watertight. A No. 12 galvanized 1-in. underwriters' wire mesh is placed underneath this roof to gather in the glass which invariably breaks from excessive heat in case of fire.

Construction and Installation—We manufacture these ventilators to any specified dimensions using standard gauges of galvanized iron or copper, and will deliver them, ready to assemble, to any part of the United States, Canada and Europe.

We will supervise their installation and guarantee that they will meet with the approval of local fire marshals, inspection bureaus, fire insurance underwriters, etc.

Endorsement—Superior standard automatic ventilators are constructed in a manner approved by the National Board of Fire Underwriters, and in accordance with "An Ordinance Regulating the Construction and Equipment of Theater Buildings, and Auditoriums as approved by the National Fire Protection Association and the Board of Standards of the City of New York."



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The Superior Four-in-One Projection Room Ventilator

Complete Unit—The Superior Four-in-One Projection Room Ventilator is a complete unit which carries off heated and impure air from the projection rooms of motion picture theatres. It also draws off fumes and heat from the projectors and introduces fresh air into the room.

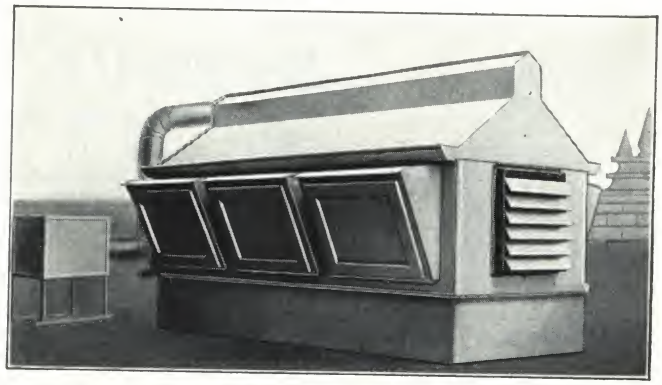
It is a separate unit in itself and does not conflict with existing theatre ventilating systems.

Construction—The ventilator has two exhaust fans—one to remove heated air from the room—the other to remove fumes from the projectors. The ventilator is also equipped with gravity panels which can be adjusted by hand for ventilation. In case of fire in the projection room, fusible links release the panels—preventing spread of smoke to any part of the auditorium.

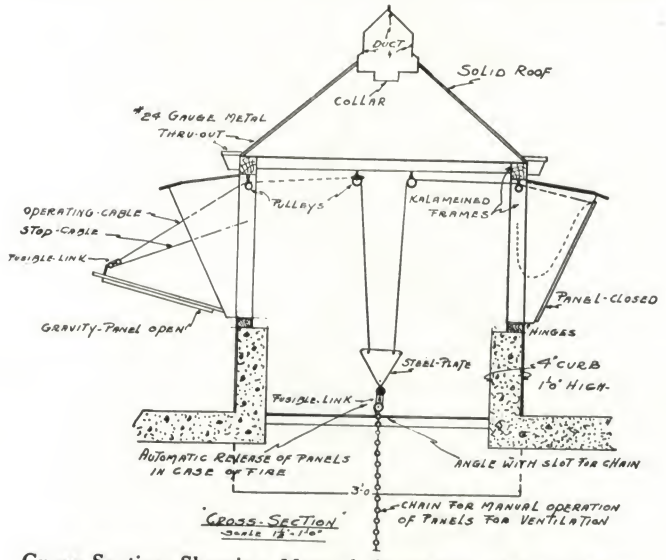
Advantages—The Superior Projection Room Ventilator improves working conditions, increases the life and efficiency of the projectors and reduces fire insurance rates.

Sizes—The Superior Projection Room Ventilator is made in two sizes: 3x4 ft. for two projectors, 3x7 ft. for three or more projectors.

Estimates—We will gladly submit estimates for installation either in new theatres or in existing theatres.



Four-Projector Installation with Panels Closed
Exhaust blower at left end, automatic louvres of exhaust fan at right



Cross Section Showing Manual Operation of Ventilator

Specifications for the Four-in-One Ventilator

General—The projection room shall be ventilated by means of the Superior Projection Room Ventilator, manufactured by the Superior Skylight Company, 95 Webster Avenue, Long Island City, N. Y.

Construction—(1) The ventilator shall be built up of 24-gauge galvanized sheet iron (or 16-oz. cornice temper copper) with hip top and ridge. Hinged ventilating panels on the long sides shall be so arranged as to open by gravity when the cables holding them are released.

(2) The ridge shall form a duct, with metal collars for connection to vertical branches direct to the exhaust flues of projector machines and connected at exhaust end to a squirrel cage blower.

(3) At the blower end of ventilator a 4½x36 in. hooded duct shall be carried on the inside and fitted with collar for connection to intake duct system. Hood shall be fitted with 12-gauge 1 in. mesh bird screen.

(4) At the opposite end of the ventilator an exhaust fan shall be installed with protective hood and automatic louvre to exhaust direct from the room without duct work.

(5) Ventilating panels shall be provided with rain hoods and fitted with all required operating cables, pulleys, triangle plates, chains, fusible links, and wall cleats.

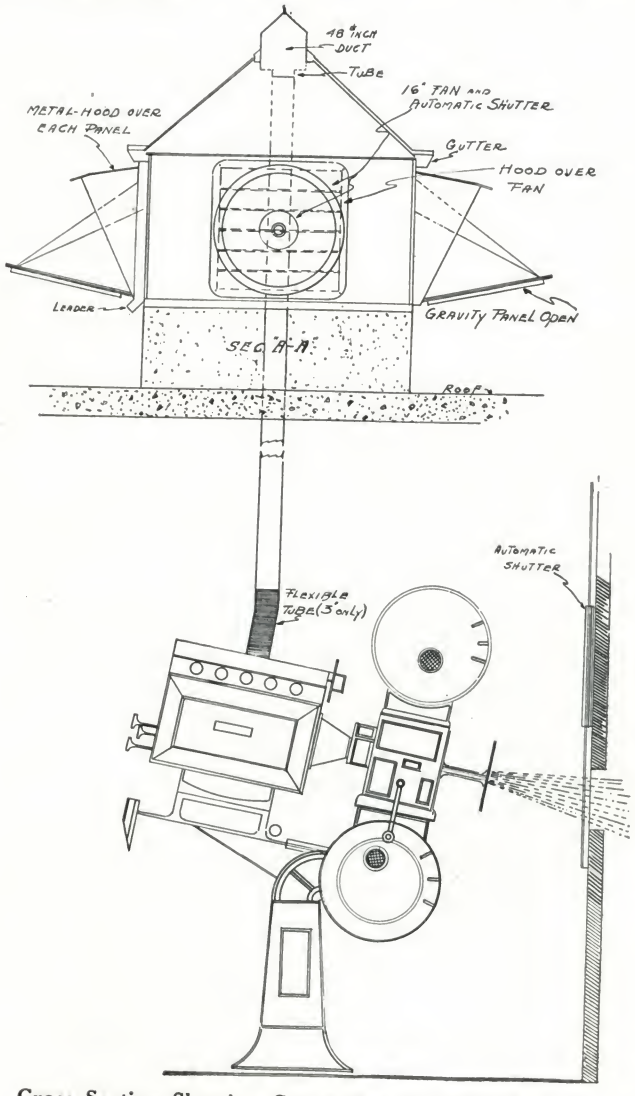
(6) Blower shall be of standard manufacture and of ample capacity to exhaust fumes from (state number) projectors. The fan shall be of standard manufacture and of capacity to provide a complete change of air every (state time) minutes, in accordance with the manufacturer's rating.

(7) Motors shall be wound for direct (or alternating current, single (or double) phase.

Note: The following duct work should be specified in connection with the Superior Projection Room Ventilator:

(1) Galvanized sheet iron ducts shall be connected by flexible collars to the exhaust flue of each projection machine and at the upper end to collar in ridge of ventilator.

(2) Two 18x14½-in. galvanized sheet iron ducts shall be connected to intake collar of ventilator at ceiling line. These ducts shall cross the ceiling to nearest wall, where each shall be divided into two 9¼x4½-in. ducts. Each branch shall be carried to a corner of the room, and down to the floor. Each shall be fitted at the bottom with 6x9-in. stamped metal register grille.



Cross Section Showing Connection from Projector to Ventilator

ESTABLISHED 1880

LIONEL VALLAS

Manufacturer of Sheet Metal Products

2850 West Lake Street, CHICAGO, ILL.

See Manufacturers' Index for Lionel Hollow Metal Windows and Syphon Type Ventilators

LIONEL FULL VENTILATING SKYLIGHTS

Construction

Lionel Full Ventilating Skylights are built with truss supports built up of 1½x2x⅛-in. angle iron spaced not more than 8 ft. on centers. (Spans of more than 8 ft. are supported with heavier trusses.)

All parts are bolted, riveted or interlocked.

Materials

The bars, ridge, rails, gable ends, caps and apron are all constructed of 18-gauge galvanized iron, aluminum, copper, etc.

Weathertight

Lionel Full Ventilating Skylight is absolutely stormproof because of its scientific construction. (Note details.)

The method of forming gutter at the ridge and at curb as well as the construction of skylight bars, absolutely prevents dripping of condensation.

Operators

A heavy rack and pinion type operating device of special design is a part of Lionel Ventilating Skylights; comes equipped with either endless chain or detachable rod with crank.

Glazing

¼-in. ribbed wire glass is used in these skylights securely held in place with putty and skylight caps. Skylights may be purchased with or without glass.

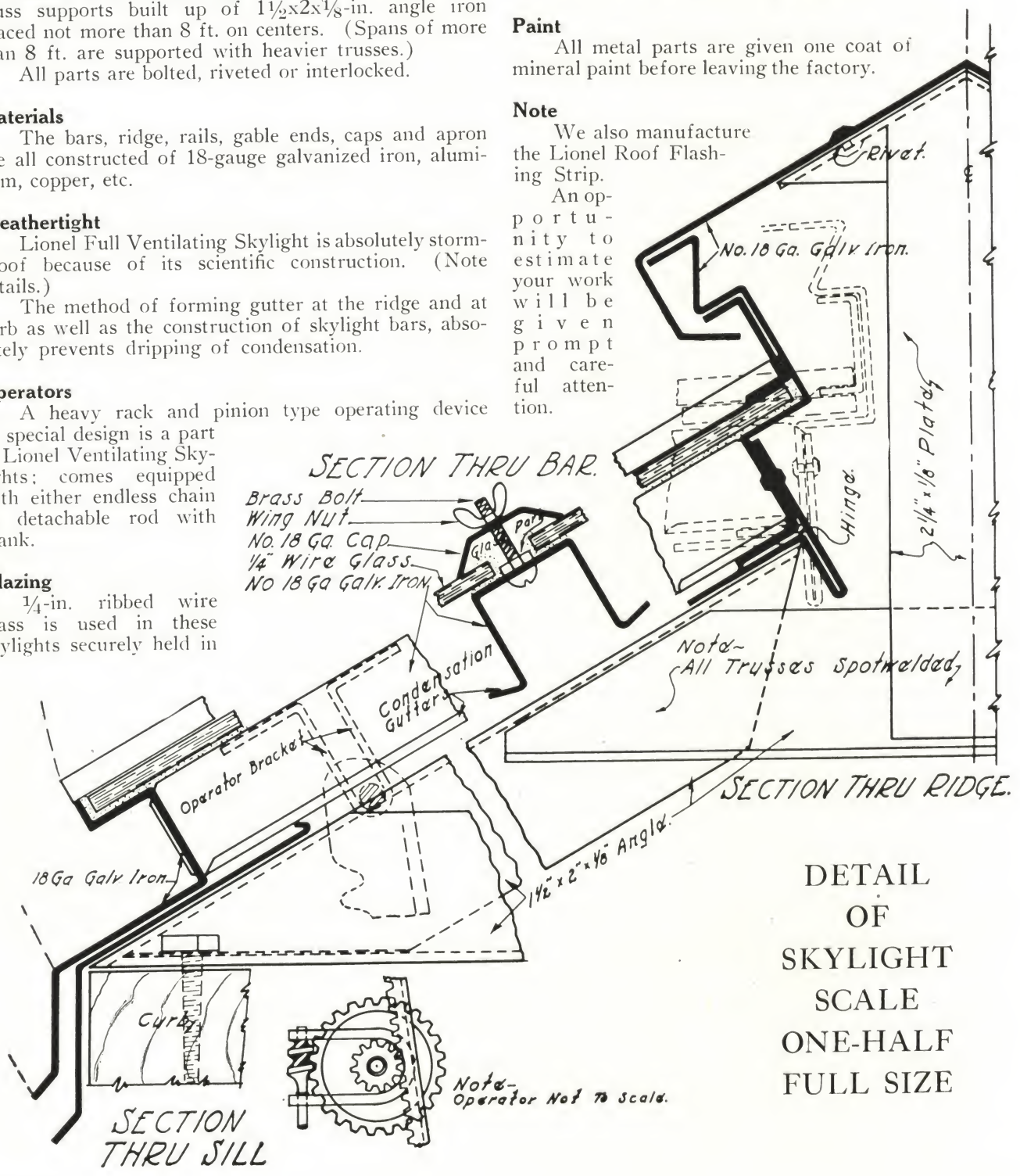
Paint

All metal parts are given one coat of mineral paint before leaving the factory.

Note

We also manufacture the Lionel Roof Flashing Strip.

An opportunity to estimate your work will be given prompt and careful attention.



DETAIL OF SKYLIGHT SCALE ONE-HALF FULL SIZE

ESTABLISHED 1873

E. VAN NOORDEN COMPANY

Puttyless Skylights

TELEPHONE
HIGHLANDS 3040, 3041, 3042

100 Magazine Street, near Massachusetts Avenue
BOSTON, MASS.

For our page on Roof Ventilators, see Manufacturers' Index

Rolled Steel Puttyless Skylights—"Anchor-bar" Type (Patents No. 931638 and No. 1140909)

The Van Noorden rolled steel "Anchor-bar" puttyless skylight is designed particularly for large skylight areas, and is a most economical construction for skylights where the bar length exceeds 8 ft. *Fewer purlins* and *steel supports* are required than for any other skylight.

The structural parts of rolled steel, and the trim of sheet metal (generally copper), form a combination which can not be surpassed; namely—steel for strength and copper for weather protection.

Bar—The bar consists of a tee and angle combination as shown. The angle member serves as a gutter for condensation. The glass rests loosely on cushion of pure wool felt.

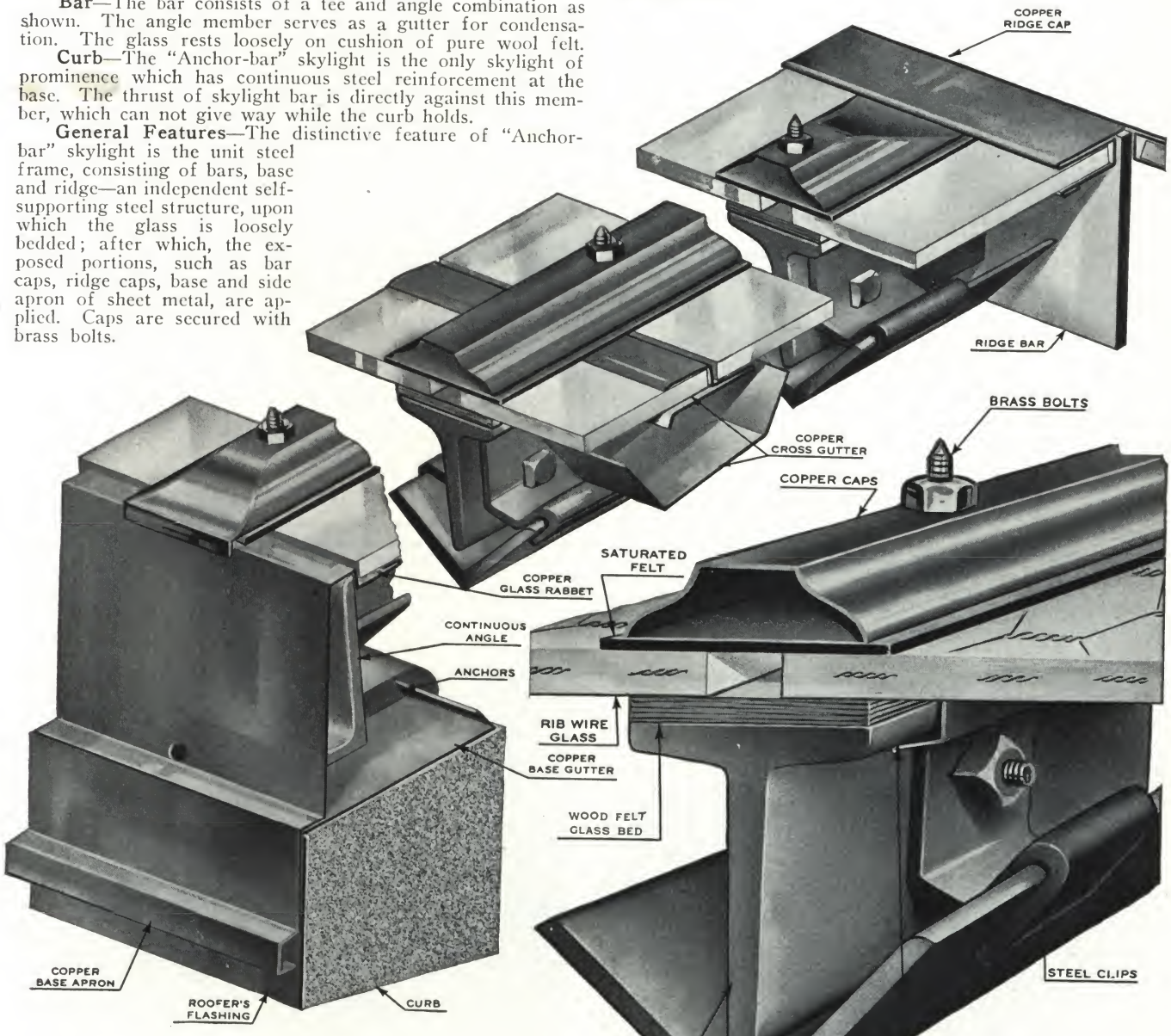
Curb—The "Anchor-bar" skylight is the only skylight of prominence which has continuous steel reinforcement at the base. The thrust of skylight bar is directly against this member, which can not give way while the curb holds.

General Features—The distinctive feature of "Anchor-bar" skylight is the unit steel frame, consisting of bars, base and ridge—an independent self-supporting steel structure, upon which the glass is loosely bedded; after which, the exposed portions, such as bar caps, ridge caps, base and side apron of sheet metal, are applied. Caps are secured with brass bolts.

Accessibility for Re-painting—A feature to be recommended in "Anchor-bar" skylights is their accessibility for the easy re-painting of the rolled steel portions. The sheet metal portions, being preferably of copper, are impervious to weather conditions.

Adaptability—"Anchor-bar" skylights are recommended wherever overhead light is desired. Inquiries should state overall length of outside of curb, bar length, pitch of skylight (5 in. to the foot or more) and distance between intermediate purlins.

"Anchor Truss Bar"—"Anchor truss bars" are used where bar length is more than 10 ft., unless intermediate purlins are provided. Truss bars are self-supporting for a bar length up to 15 ft. The saving effected in the steel frame support is far greater than the excess cost of truss bar construction. Details on application.



SECTIONAL VIEW ABOUT HALF SIZE

BAR FULL SIZE

VENT-O-LITE COMPANY

Manufacturers of Solderless Ventilating Skylights

One North La Salle Street, CHICAGO, ILL.

Product

SOLDERLESS VENTILATING SKYLIGHTS.

TRADE-MARK

Construction Features of Vent-O-Lite Skylights

Supporting Trusses—Vent-O-Lite Skylights are supported by steel trusses spaced approximately 6 ft. on centers. These trusses carry the entire load and require no special preparatory construction, except the curb.

Panels, Ridge, etc.—The bars, rails, ridge, end panels, etc., are all constructed of 18 gauge galvanized iron, and the entire skylight is made rigid and weathertight *without the use of solder*. Ample provision is made for condensation at all necessary points.

When desired, 18 gauge aluminum construction can be secured.

Operating Device—A heavy rack and pinion type operating device of special design is furnished as an integral part of Vent-O-Lite Skylights. This device facilitates smooth and even operation.

Glass—¼-in. wire glass set in putty and securely held by 18 gauge galvanized iron glazing caps.

Flashing—Vent-O-Lite standard curb flashing consists of a 6-in. strip of heavy 3-ply asphalt felt underneath a 24 gauge galvanized iron curb strip which extends 2 in. below the top of the curb.

Paint—The entire skylight is given one coat of mineral paint before it leaves the factory.

Sizes—Vent-O-Lite Skylights are manufactured in standard widths of 6, 8, 10, 12 and 14 ft. and can be furnished to any length in multiples of 2 ft. Greater widths can be furnished when required.

Ventilating Feature—Vent-O-Lite Skylights can be furnished either part or full length ventilating as required.

Shipments from Stock

Since we maintain large stocks of standard sizes at all times, we are always able to make prompt shipments of Vent-O-Lite Skylights, to all parts of the United States.

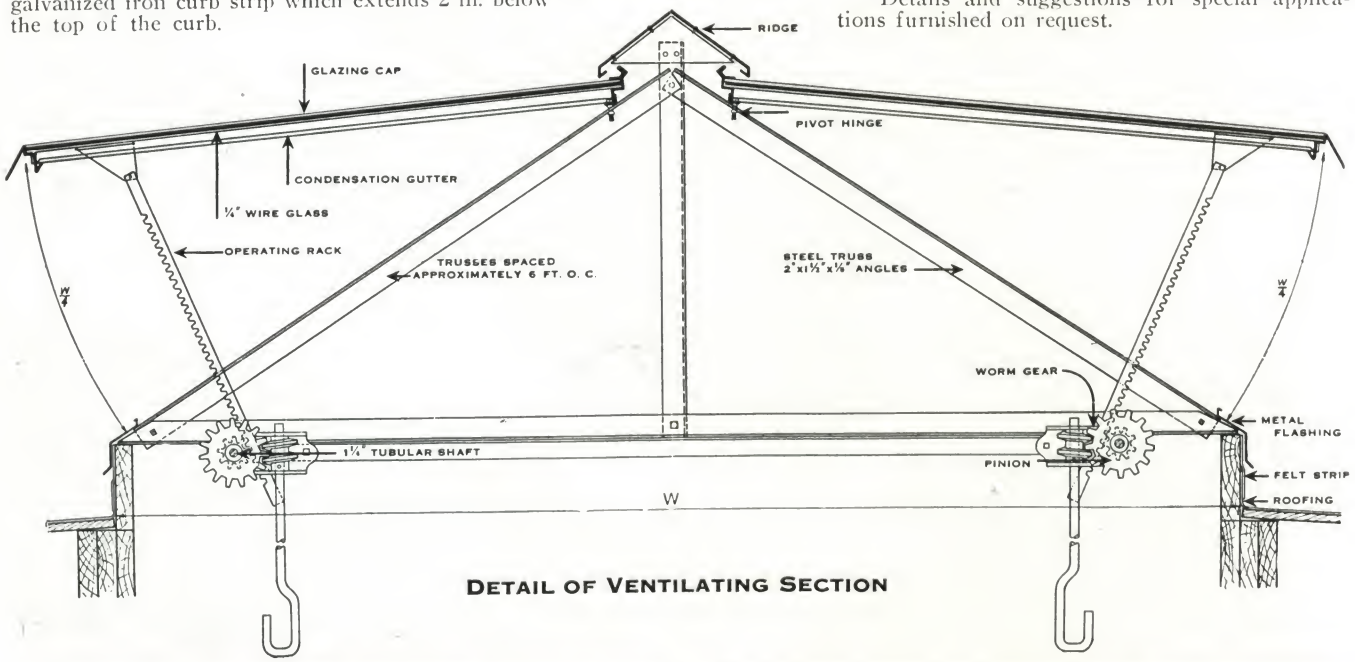
Erection

These skylights are regularly quoted with glass and erection included. However, when desired, shipment may be made knocked down for erection by the customer.

Vent-O-Lite Service

Vent-O-Lite Service includes assistance in designing for better light and ventilation in garages, industrial buildings, etc.

Details and suggestions for special applications furnished on request.



DETAIL OF VENTILATING SECTION

Vent-O-Lite Skylights, 10 Ft. Wide
Widths 6 ft. to 10 ft. open from ridge to curb

12x118-ft. Vent-O-Lite Skylight
Widths of 12 ft. and over open the upper section only, as shown here

WESTERN WIRE & IRON WORKS, INC.

Manufacturers of Woven Wire Skylight and Ventilator Screens

1820-1830 South Sangamon Street
CHICAGO, ILL.

Products

WOVEN WIRE SKYLIGHT SCREENS and VENTILATOR SCREENS.

For our pages on Improved Folding Gates, Woven Wire Bank Cage, Office and Industrial Partitions, Door and Window Guards and Bankers Approved Sliding Door Locks, see Manufacturers' Index.

Uses

Exterior skylight screens are required by law where there is danger of falling objects from above. No. 9 W&M (.148) gauge wire is recommended to protect from falling icicles. Inside screens are used to catch broken glass in case of fire, and are a necessary requirement in many States.

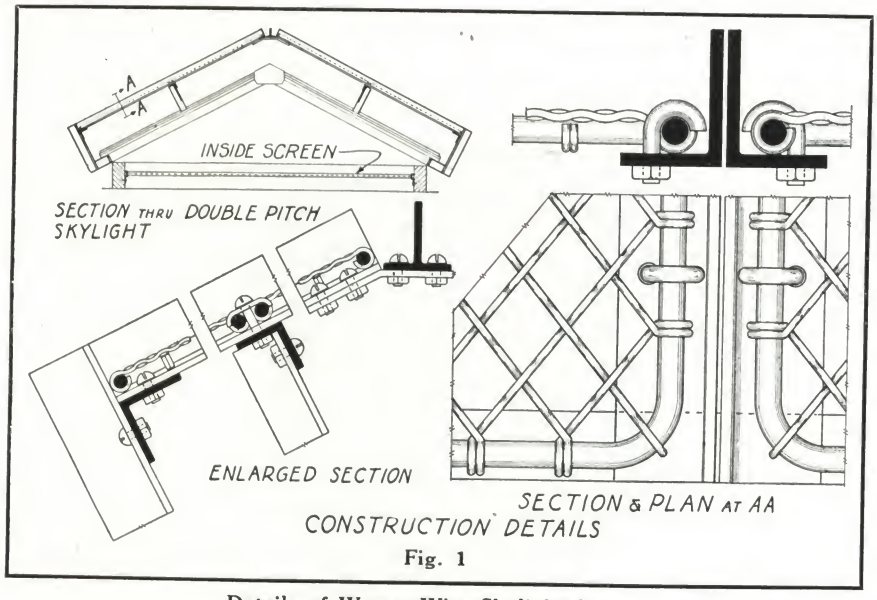


Fig. 1

Details of Woven Wire Skylight Screen

Advantages

Construction presented herewith (Fig. 1) cuts down chance of corrosion, usually caused by moisture pockets. Woven wire, being drawn, has no fractured surfaces. This type of construction can be made to fit any skylight, stationary or ventilated.

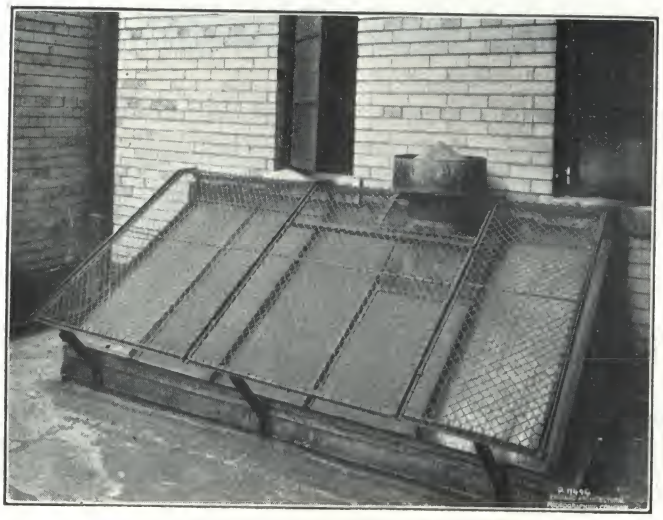


Fig. 2

Specifications for Skylight Screens

Furnish over all skylights, Woven Wire Screens made of 1-in. diagonal mesh No. 12 W&M (.105) gauge wire with ⅜-in. round rod frames. Weld same size stiffening rods through center of screens containing more than 20 sq. ft. No panels to be larger than 5x8 ft. All screens to be supported on 1¼x1¼x$\frac{3}{16}$-in. angle and tee iron supporting framework as detailed, held not less than 8 in. from glass by means of 1½-in. angle struts at ends and sides, and intermediately where necessary, bolted to lugs placed in skylight construction by Skylight Contractor. All screens and supporting framework to be hot-galvanized after fabrication. All as made by WESTERN WIRE & IRON WORKS, INC., Chicago, Ill., or equal. (See Fig. 1.)

In openings under skylights place Woven Wire Screens at ceiling line, made as above.

Special Metals

We are equipped to make skylight and ventilator screens in monel, bronze, copper, Allegheny, aluminum and other metals.

Other Styles

Fig. 2 shows application to single pitch skylight. Double pitch similar, except at ridge.

ÆOLUS DICKINSON

INDUSTRIAL DIVISION PAUL DICKINSON, INCORPORATED

Ventilators

TELEPHONE
LAFAYETTE 1862, 1863

3324-3354 South Artesian Avenue
CHICAGO, ILL.

For our page on Scuppers, Exhaust Heads and Roof Drains, see Manufacturers' Index

ÆOLUS IMPROVED DOUBLE SYPHON VENTILATORS

Over forty years experience in the manufacture of roof ventilators enabled us to design and introduce the Æolus Improved Double Syphon Ventilator. This ventilator is a step of undeniable progress toward perfect syphon ventilation.

The positive action of the Æolus Improved Double Syphon Ventilator is due to the scientific design of the flues which are two and one-half times larger at the bottom than at the top and equipped with baffles, thereby increasing the compression caused by wind velocities and also enlarging the vacuum at all points of exhaustion.

The efficiency rating is higher under lower wind velocities, which shows conclusively that the "Æolus" is very effective under the most adverse conditions. "Æolus" is built of 16 different metals to withstand unusual conditions, such as smoke, fumes, moisture, acids and gases.

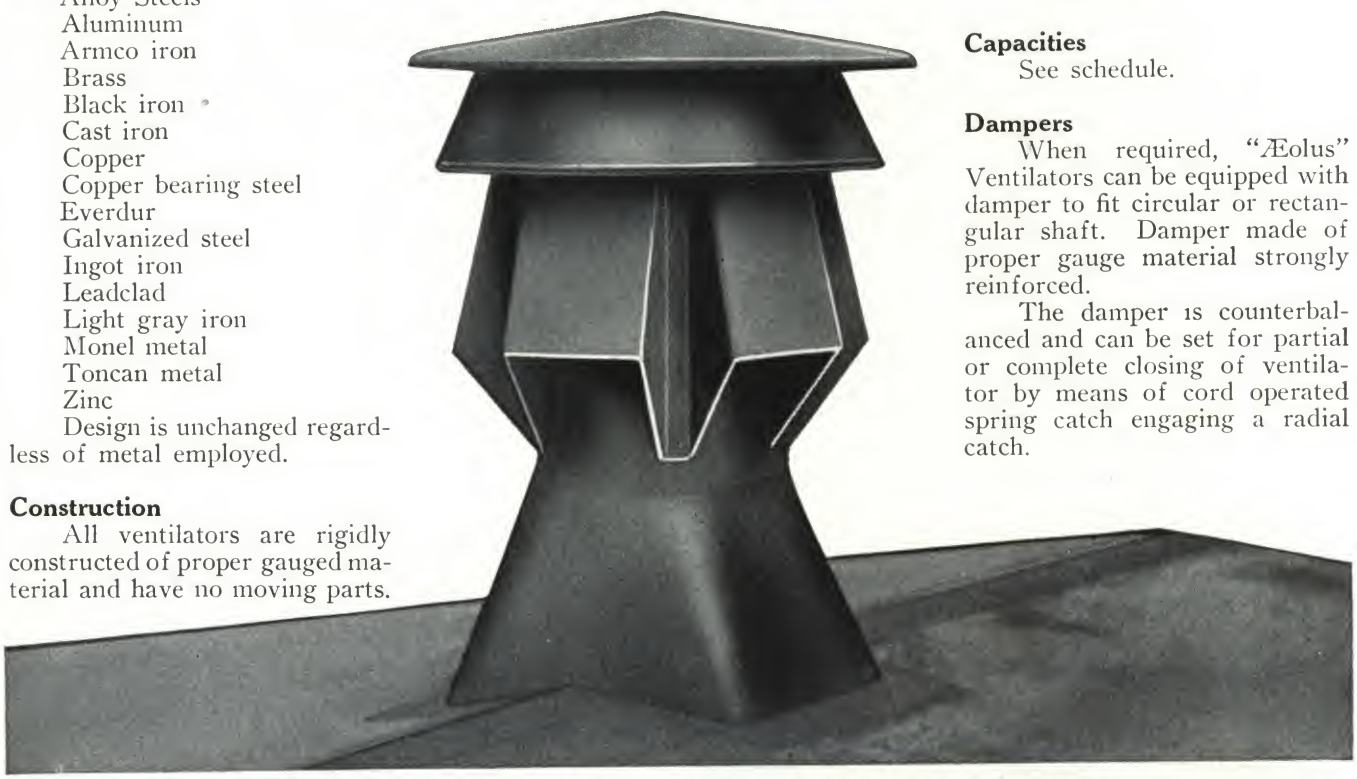
Materials

Alloy Steels
Aluminum
Armco iron
Brass
Black iron
Cast iron
Copper
Copper bearing steel
Everdur
Galvanized steel
Ingot iron
Leadclad
Light gray iron
Monel metal
Toncan metal
Zinc

Design is unchanged regardless of metal employed.

Construction

All ventilators are rigidly constructed of proper gauged material and have no moving parts.



Sizes

See schedule.

Capacities

See schedule.

Dampers

When required, "Æolus" Ventilators can be equipped with damper to fit circular or rectangular shaft. Damper made of proper gauge material strongly reinforced.

The damper is counterbalanced and can be set for partial or complete closing of ventilator by means of cord operated spring catch engaging a radial catch.

444 Æolus Ventilators Installed on Building Illustrated Below

Repeat Orders—The Best Endorsement for Any Product

Original Building—185 Ventilators

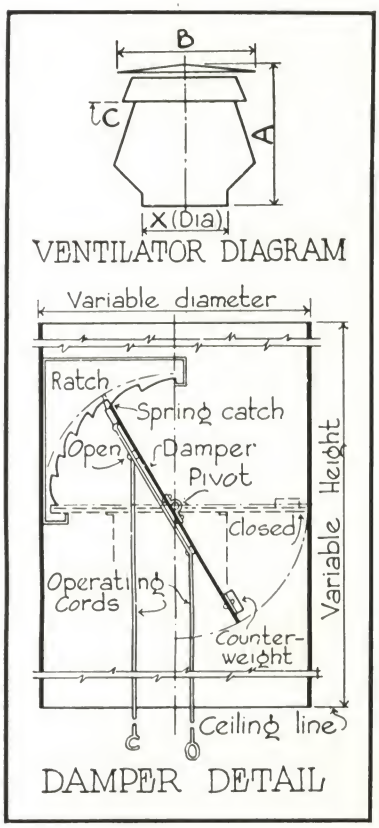
Addition to Building—259 Ventilators

Continued on next page

Æolus—Capacity—Schedule

Wind velocity, miles per hour	Size of ventilator, in.	Cubic feet of air through ventilator									
		12	14	16	18	20	24	30	36	40	48
5	Per min.	435	589	769	973	1,075	1,725	2,689	3,879	4,779	6,901
	Per hr.	26,100	35,340	46,140	58,380	64,500	103,500	161,340	232,740	286,740	414,060
10	Per min.	627	857	1,121	1,417	1,745	2,513	3,919	5,651	6,965	10,049
	Per hr.	37,620	51,420	67,260	85,020	104,700	150,780	235,140	339,060	417,900	602,940
15	Per min.	901	1,227	1,606	2,030	2,510	3,601	5,615	8,096	9,975	14,403
	Per hr.	54,060	73,620	96,360	121,800	150,600	216,060	336,900	485,760	598,500	864,180
20	Per min.	1,143	1,559	2,041	2,580	3,178	4,575	7,144	10,290	12,675	18,302
	Per hr.	68,580	93,540	122,460	154,800	190,680	274,500	428,640	617,400	760,500	1,098,120

Inside temperature 70° F. Outside temperature 69° F. Temperature difference 1° F. From tests by L. E. Davies, Armour Institute.



TO COMPUTE VENTILATOR SIZE

A = 2X B = 2X

C should not be lower than top of parapet wall.

See diagram at left.

SCHEDULE OF SIZES AND PRICES

Prices do not include bases.

Prices for any other size or any other material on application.

Diam. of pipe, in.	Area of pipe, sq. in.	Gauge of galv. iron	Price list of galv. iron ventilators	Additional for damper	Weight of copper, oz.
6	28	26	$ 7.50	$ 1.40	16
8	50	26	8.50	1.85	16
10	79	24	10.50	2.35	18
12	113	24	12.00	2.80	18
14	154	24	14.00	3.25	18
16	201	24	17.00	3.75	18
18	254	24	20.00	4.25	18
20	314	22	25.00	4.75	20
22	380	22	29.50	5.25	20
24	452	22	33.50	5.50	20
26	531	22	39.50	6.00	20
28	616	22	46.50	6.50	22
30	707	22	55.00	7.00	22
36	1018	20	80.00	8.40	24
42	1385	20	115.00	10.00	24
48	1810	18	155.00	11.25	28
60	2827	18	250.00	18.15	32

View of Flues
(Looking up)

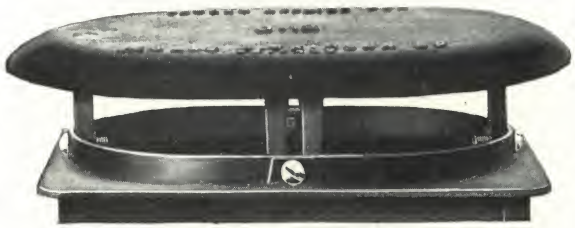
NOTE
Sturdy Construction
Large Area of Flues

Baffles

Large Area of Top and Storm Band Providing Increased Outlet Area

Dickinson Cast Iron Floor Vents (Mushroom)

Oval Type—Standard size—8x12 in. Cap size—11¾x15¾ in. Squared floor size—6, 8 and 10 in. Maximum height—at full capacity 3½ in. from floor.

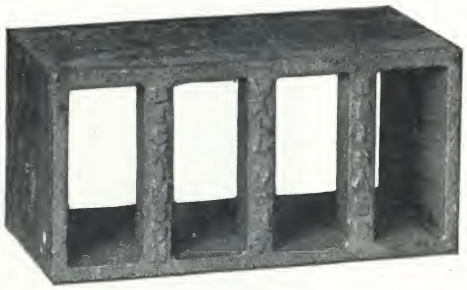


Round Type—Standard sizes—6, 8, 9 and 10 in. The floor section may be had with or without means for bolting to the floor.

The caps are easily and fully adjustable, and the only tool needed is a screwdriver, the nuts being held firmly in slots.

Dickinson Cast Iron Wall Vent

Size—8 in. long, 4 in. high, 4 in. deep.



This vent is designed to provide for air circulation in attic spaces, enclosed spaces under porches, spaces under buildings not having basements, and similar "dead air" spaces. Vent can be installed in concrete, stone or brick walls. Furnished with bird or fly screen if desired.

AMERICAN-LARSON VENTILATING COMPANY

MAIN OFFICE
Keystone Bank Building
PITTSBURGH, PA.

Product

AMERICAN-LARSON SUCTION VENTILATORS (Patented 1927).

The Principles of Static Ventilation

Two distinct sets of forces produce natural air currents in ventilators. These forces are stack action, and wind action.

Stack action occurs when air in a stack is heated above the temperature of the surrounding atmosphere. This action is independent of wind velocity, and ceases when the temperatures inside and outside of the stack are equalized.

Wind action is not so simple, and its effects follow different laws at different wind velocities.

In the flow of fluids in pipes, ducts, etc., it is found that there are two critical velocities. Below the lower critical velocity, the fluid moves in parallel lines, and pressure drop is due to viscosity only. Above the upper critical velocity, the fluid moves in a turbulent manner, and pressure drop grows as the square of the velocity. Between the upper and the lower critical velocities, the motion of the fluid is unstable, and vacillates between one or the other states of motion, depending upon small irregularities and accidental happenings.

Design of High Efficiency Ventilators

The air moving force due to stack action or buoyancy is

$$h_1 = 39.7\ H\left[\frac{1}{t_o + 460} - \frac{1}{t_1 + 460}\right] \times \frac{B}{30}$$

or very closely,

$$h_1 = \frac{H\ (t_1 - t_o)\ B}{206{,}000}$$

in pounds per square foot, where H is the height of the column of warm air in the building at temperature t_1; t_o is the temperature of the outside air, and B is the height of the barometer in inches of mercury. This force is the same for all types of ventilator.

The other air-moving force, the suction produced by the action of the wind on the ventilator, has as its upper limit of possibility the full-impact pressure of the wind, or

$$h_2\ (\text{limit}) = \frac{v^2.\ B}{12000}$$ pounds per sq. ft., where v is wind velocity in miles per hour. This ultimate value can never be reached, because the full impact of the wind cannot be utilized. In the ordinary cowl type of ventilator and in most stationary ventilators, the suction is produced only by viscous drag and not by impact, and for these it is only about 30% of the full-impact. In the improved American-Larson Ventilator, due to the efficient utilization of the impact of part of the wind stream, the suction attains the high value of 50% of the full-impact pressure difference, and, to the best of our knowledge, this figure has never been exceeded or equalled. The force produced by the action of the wind on the ventilator then is

$$h_2 = \frac{v^2.\ B}{24000}$$

Furthermore, the suction is produced at all wind velocities, even the lowest—whereas for the other types the suction drops rapidly, and finally disappears altogether below 3 miles per hour, as is evidenced by the curves of test results at the right.

If these two air-moving forces could be added together, the velocity of discharge which they would produce, in feet per second (barometer 30 in. Hg. standard) would be

$$v' = 29.1\sqrt{\frac{H\ (t_1 - t_o)}{6870} + \frac{v^2}{800}}$$

and the air discharged per square inch of cross section of the throat, if the ventilator had 100% coefficient of discharge, would be

$$Q \text{ cu. ft./hr.} = 728\sqrt{\frac{H\ (t_1 - t_o)}{6870} + \frac{v^2}{800}}$$

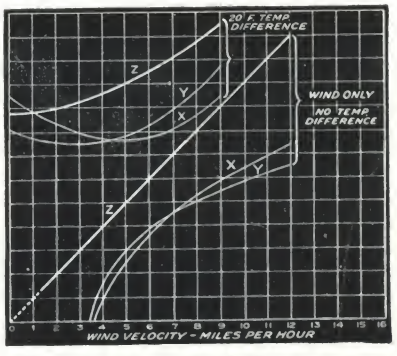
No air-discharging device, however, can have 100% coefficient because there is always some contraction of the air stream entering the throat, and some friction against the sides; furthermore, in any ventilator head, the air must change its direction from vertical to horizontal, which causes some added resistance. These effects are unavoidable, but in the American-Larson they are reduced to the minimum; the conical inlet to the throat reduces the contraction, and the air is required to make only one easy turn of less than 90°. The discharge coefficient therefore reaches the high value of 70% for this ventilator, as compared to 50% or less in some designs where the air is compelled to make a number of turns before it can leave the ventilator head. The discharge would therefore be

$$Q = 510\sqrt{\frac{H\ (t_1 - t_o)}{6870} + \frac{v^2}{800}}$$

cubic feet per hour for each square inch of throat area in the American-Larson ventilator.

It is evident from these figures that not only has the American-Larson a much higher capacity than other types of ventilator, but that in the improved form it approaches closely to the highest limit of what is physically possible in an ideal ventilator.

In the practical ventilator, the two forces do not add directly, and there are other modifying conditions such as the influence of wind pressure on the building, which make it preferable to use, in calculation of capacities, the American-Larson formula given in a paragraph below.



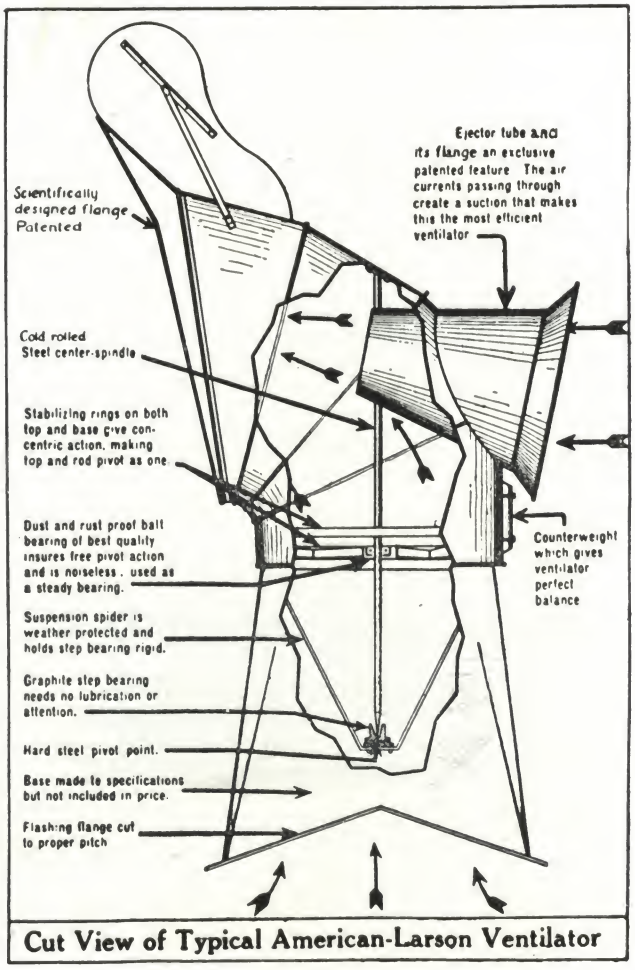
Graphic Record of Comparative Tests by Professor Trinks at Carnegie Institute of Technology

X = 18-in. stationary siphon ventilator
Y = 18-in. rotary siphon ventilator
Z = 18-in. American-Larson suction ventilator

The Practical Design of Ventilators

The practical designer of ventilators endeavors to combine the greatest possible draft, with the least possible resistance to air flow. He must accomplish this at extremely low wind velocities. The action at low wind velocities must be quite independent of temperature differences. Under no conditions must the design be subject to interference by back-drafts.

Unless proper provisions are incorporated in the design these features are very hard to combine. In the American-Larson Ventilator however, the patented ejector tube effects air movement in direct ratio to wind velocities and temperature dif-



Cut View of Typical American-Larson Ventilator

Continued on next page

ferences. When there is no temperature difference many ventilators do not function at all unless wind velocity is greater than 3½ miles per hour; furthermore under temperature differences as great as 20° F., the efficiency of such ventilators actually decreases in gentle breeze up to 4 or 5 miles per hour velocity.

In the American-Larson the kinetic energy of the wind is used to the maximum possible extent, by creating suction, due to the viscous drag both inside and outside the cowl.

On account of the easy or gradual turn of the air current and the unobstructed discharge area, the discharge for a given pressure drop in the American-Larson is unusually high —about 75% of that through a rounded opening of the same area.

In the stationary type of ventilator the great number of turns of direction of the air causes excessive resistance or pressure drop. To avoid this the proportions of the passage have in some designs been made excessively large in order to reduce air velocities, but these large passages mean that the ventilator is not properly shielded and that down-draft is an ever present source of trouble in high winds, so one or the other feature (freedom from downdraft or low pressure drop) which ever is considered of least importance must be sacrificed. This condition is particularly unsatisfactory when snow is falling with relative humidities around 96 to 98%.

Static Draft

The static draft produced by the wind action on the ventilator is equal to h_2. Expressed in inches of water, it is

$$\text{Draft} = \frac{v^2}{4160}$$

v being wind velocity in miles per hour. This value, which is very high for natural ventilation, applies only to the improved American-Larson Ventilator, and is attained by the combination of ejector tube and flanges developed through extensive and scientifically planned experimentation.

This is the static draft produced by the wind action only. Where there is a temperature difference, the total static draft is the sum of h_2 plus h_1 as given in the paragraph on design of high efficiency ventilators.

Solution of a Typical Ventilation Problem

A given building is 44x110x28 ft. average height and will be used to house equipment and appliances which will throw off approximately 416 lb. of steam per hour.

The ventilator capacity to be figured on the following conditions: 10 changes of air per hour; temperature difference, 20° F.; wind velocity, 5 miles per hour; ventilators 36 ft. above the floor level. The heating system will be adequate.

In summer the proper ventilating requirements will be a question of providing sufficiently rapid flow of air into the building to (a) absorb a large part of the water vapor, and (b) produce sufficient upward velocity of air flow to carry upward the minute globules of water which compose visible steam. The temperature difference between air inside and outside the building in summer is usually small, but the building is wide open. Under these conditions the problem is simply that of providing sufficient ventilator capacity.

In winter, while the same requirements are to be met as in (a) and (b) above, the temperature difference is great and the wind velocity usually high; since the building must be kept at a reasonable temperature, the air inflow will naturally be restricted by closing doors and windows. It is evident that the ventilation conditions in winter do not depend entirely upon the number or size of ventilators installed, but on the capacity of the heating system and the amount of heat given off by the equipment and appliances in the building.

Another item which must be considered is that of condensation and dripping of water from the roof. This is rather a question of roof construction than one of ventilation. If the roof is unprotected sheet iron, and if the building is kept at a rather high temperature in winter, with very restricted air inflow, condensation on the under surface of the roof will inevitably occur. On the other hand, with a roof laid on wood or protected with insulation, if a reasonably large air inflow is permitted, condensation will not occur.

Considering all of these features it would appear proper to install the ventilator capacity required under summer conditions.

Calculation of Capacity—The volume of air moved per hour by a ventilator or set of ventilators can be derived from the following American-Larson Ventilator capacity formula,

$$Q = A\left[\frac{36\sqrt{H\,(t_1 - t_0)}}{6 + v} + 20 \times v\right]$$

where Q = cu. ft. of air exhausted per hour; A = throat area of ventilators in sq. in.; H = center of ventilator outlet to floor; v = (wind velocity) miles per hour; t_1 = inside, and t_0 outside average temperatures.

In solving; Q = 10 (44 × 110 × 28) = 1,357,000 cu. ft. per hour ventilating capacity, whence, from the formula, A = 7200 sq. in.

Seven 36-in. American-Larson Ventilators have an area of 7150 sq. in.
Six 40-in. American-Larson Ventilators have an area of 7540 sq. in.
Four 48-in. American-Larson Ventilators have an area of 7220 sq. in.

Actually, the results given by the formula are very conservative and the last term of the equation should be multiplied by the factor of 140% which would, with any of the three combinations figured on, give a capacity of 12 changes per hour instead of 10. The lower figure has been used, however, to allow a greater "factor of safety." And since the average wind velocity for the vicinity in which the building is located is shown by the U. S. Weather Bureau reports to be about 12 miles per hour, the ventilating capacity at most times would be considerably greater. It is best, however, to provide for the least favorable conditions.

Moisture Absorption—(A) Moisture content of air 70°, 75% relative humidity = .00086 lb. cu. ft.

If raised to 90° F. and saturated, moisture content = .00213.

Moisture absorbed per cu. ft. = .00213 — .00086 = .00127.

Moisture absorbed by 10 changes of air per hour = .00127 × 1,257,000 = 1720 lb. per hour.

Steam given off by the equipment and appliances = 416 lb. per hour, or only 24% of what could be absorbed.

(B) If air is not heated at all, but absorbs all of the steam given off by the equipment and appliances, $\frac{416}{1{,}357{,}000}$ = .00030 lb. per cu. ft. = increase in moisture.

This corresponds to a relative humidity of 100%—that is to say, the air at 70° F. could absorb all of the steam without becoming over saturated.

Recommendations—The combined throat area of all ventilators should be approximately 7000 sq. in. This is equivalent to seven 36-in. ventilators, or six 40-in., or four 48-in. of the American-Larson type.

The location of the ventilators or the best number to use, will depend largely upon the number of bays of the building, since it is generally preferable, although not essential, to locate each ventilator at the center of a bay (i.e., midway between the roof trusses).

Suggested Form of Specification

(1) All ventilators shall be American-Larson Suction Ventilators, as manufactured by the AMERICAN-LARSON VENTILATING COMPANY, of Pittsburgh, Pa., and shall [shall not] be equipped with dampers.

(2) The ventilators shall be made of *(see Note 1)* and shall be of the following gauges:

Below 18-in. diam., No. 24 gauge; 20 to 24-in. diam., No. 22 gauge; 30 to 48-in. diam., No. 20 gauge; 54-in. diam., No. 18 gauge.

(3) Where so indicated, the ventilators shall be mounted on extension piping of sufficient height to raise ventilators above surrounding obstruction.

(4) The ventilators shall be erected plumb and in a substantial manner. Where extension pipes are used they shall be anchored to four points with heavy gauge guy wires.

(5) Ventilators for ———— shall be equipped with fusible links to close dampers automatically in case of fire.

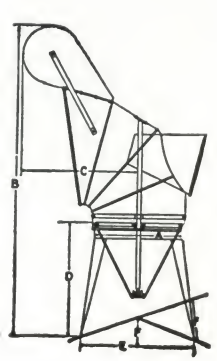
Note 1:

Material of ventilator	Uses of ventilator
Galvanized iron.....	1. All purposes for which no acid or corrosive fumes pass; standard practice.
Copper.....	2. All purposes for which long life is desired, provided that no strong acid or alkaline fumes pass.
Choice of metal.....	3. For ventilating buildings or rooms from which acid or other corrosive fumes rise.
Monel metal.....	4. Same as No. 3; has longer life, but is more expensive.
Zinc.....	5. Similar to copper, but a little cheaper.

DIMENSIONS, GAUGES, WEIGHTS, PRICES AND CAPACITIES

Size (throat diam.), A in.	B in.	C in.	D in.	E in.	Iron gauge No.	List price, damper	List price, ventilators only	Net weight, lb.	Crated weight, lb.	Conservative average discharge 5 miles velocity, cu. ft. per hour
8	27	10	10	10	24	$1.50	$20.00	12	26	14,438
10	34	13	12	12	24	2.15	20.00	18	35	22,273
12	41	16	13	13	24	2.90	30.00	26	46	31,000
14	48	18	17	17	24	3.30	35.00	32	57	43,725
16	55	21	20	20	24	3.80	40.00	39	70	57,750
18	62	24	21	21	24	4.30	45.00	49	85	73,013
20	69	26	25	25	22	4.80	50.00	68	115	89,925
24	83	32	30	30	22	5.80	60.00	92	145	129,525
30	104	40	38	38	20	7.15	75.00	146	206	202,125
36	125	48	46	46	20	9.30	110.00	225	325	291,113
40	139	53	51	51	20	11.50	140.00	282	412	359,700
48	167	64	61	61	20	17.00	170.00	390	560	515,625
54	187	72	63	63	18	20.00	220.00	620	820	655,875
60	208	80	76	76	18	25.00	360.00	790	1025	808,500
66	229	88	84	84	18	35.00	375.00	930	1215	977,625

Prices subject to change without notice. Discounts furnished on request.



ESTABLISHED 1906

AREX COMPANY

Industrial Ventilating Engineers
333 North Michigan Avenue Building
CHICAGO, ILL.

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STATE 2772

FACTORY AND WAREHOUSE
GARY, IND.

EASTERN OFFICE: 132 Nassau Street, New York, N. Y., Telephone, Beekman 7980
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Products

AREX-AUSTOR (Air Exhauster), the Original Siphonage Roof Ventilator—*"The Power Fan's Only Rival."*

ECONOMY VENTILATOR (Plain Type).

Also Utility Ventilators; "Arin" Anti-draft Window Ventilators installed in sash.

For "Arin" Adjustable Louvers, see Manufacturers' Index.

Arex-Austor

Scientific Design — This ventilator, designed on the original siphonage principle, assures by natural means constant, positive and uniform ventilation. The siphon or vacuo chambers are so placed as to concentrate all wind currents into a steady pulling force; by means of deflections opposite each siphon (see sectional view on following page) a powerful vacuum is created, drawing out air at a tremendous speed. Foul air, warm air, fumes, gases, vapors, steam and smoke are quickly and completely removed. Passing wind plays upon the siphons so as to accelerate the outflow of foul air from interior of building, but it permits none of the outside wind to enter the ventilator. Every opening is an outlet. Under ordinary conditions Arex-Austor will remove 300 cu. ft. of foul air per square inch per hour on a 9-mile wind velocity. Upper part consists of a conical deflector top surrounded by a scientifically adjusted broad stormguard, making the Arex-Austor absolutely stormproof.

First Class Construction—Fabricated in one solid unit, no solder used, every joint rigidly riveted. Has no movable parts, no shutters, or louvers to break off, no ball bearings to clog, no meaningless fancy trimmings to impede ventilating action, nothing to get out of order. In short, a ventilator, simple in principle, durable in construction and sure to give year-in and year-out service without attention or repair. Made of galvanized iron, ingot or toncan metal, cold rolled copper; or in any special metal in size or gage. Prompt shipments from large factory stock.

Bottom View

Actual photograph. Note the extraordinary outlet for escape of air—greater than in any other ventilator. Observe the immense ventilating area—the deep, penetrating siphons—the triangular channels between the siphons. Well-balanced and mechanically perfect *throughout.*

120 Arex Austors on This Forge Shop

Arex-Austor (Original Siphonage)

Wide Adaptability—Thousands of installations have proven the Arex-Austor to be the ideal ventilator for mills, factories, foundries, warehouses, power plants, train sheds, railway cars, ships, theaters, hospitals, schools, etc. Can be installed on flat roofs, sawtooth roofs, slant roofs or on skylights and monitors.

Caution: The phenomenal success of Arex Ventilators has provoked petty imitations by name, design or principle. Beware of such infringements. Arex is the only trade-name under which our ventilator is sold.

Standard Specifications for Arex Ventilators—All roof ventilators to be Arex original siphonage ventilators as patented and manufactured by the AREX COMPANY, 333 North Michigan Avenue Building, Chicago, Ill.

Engineering Service — The first and foremost requirement is air exhaust capacity. Every factor that makes for or against results is of vital importance. The mere purchase of ventilating units does not in itself always solve a problem. That is why we, with over 20 years' experience and the record of 200,000 successful installations, recognizing our position and responsibility as the world's largest exclusive manufacturers in this field, surround our product with an engineering service aimed to assure maximum Arex efficiency.

This service consists of analyzing a problem, preparing sketch or blue print, making correct recommendation and giving valuable information and expert advice on this all-important subject of ventilation.

Economy Roof Ventilator

This ventilator is designed to meet the demand for a ventilator at lowest possible cost, yet capable of solving any ordinary ventilating problem.

Manufactured in attractive proportional design of solid sturdy construction. Absolutely guaranteed stormproof. Furnished with or without damper or base. Made in same sizes and gages as Arex-Austors. Workmanship and materials are of the same high quality.

Prompt shipment from large stock always on hand.

Economy Roof Ventilator

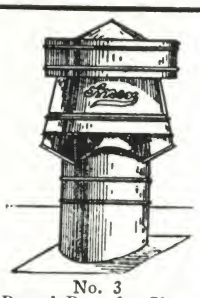
Manufacturing Facilities

Our modern plant and warehouse at South Gary, Ind., afford us unequalled advantages for manufacturing and shipping standardized ventilators in large quantities on short notice. Special bases and pipe connections made to order from submitted sketches.

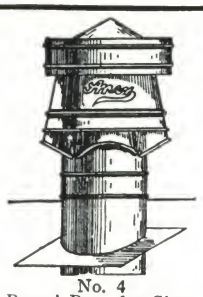
Continued on next page

No. 1
Round Base for Flat Roof

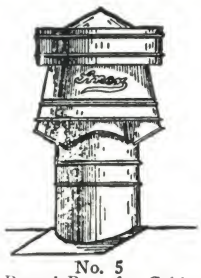
No. 2
Round Base for Flat Roof with Extension



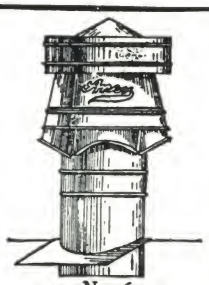
No. 3
Round Base for Slant Roof



No. 4
Round Base for Slant Roof with Extension

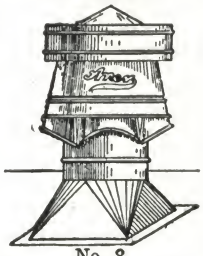


No. 5
Round Base for Gable Roof

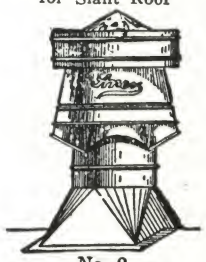


No. 6
Round Base for Gable Roof with Extension

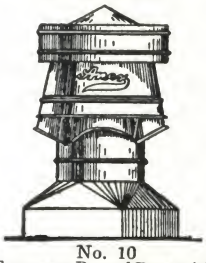
No. 7
Square to Round Base for Flat Roof



No. 8
Square to Round Base for Slant Roof



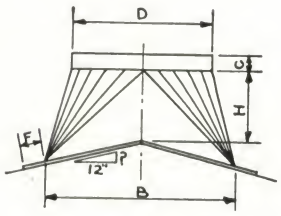
No. 9
Square to Round Base for Gable Roof

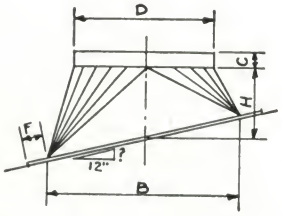


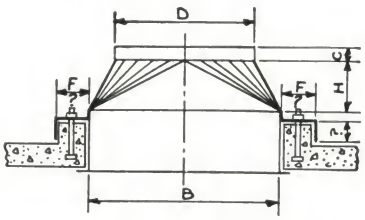
No. 10
Square to Round Base with Shoulder for Flat Roof

How to Order Arex Ventilators

Simply multiply cubical contents of room by number of air changes required per hour. The exhaust capacity table below will indicate the exact size of Arex-Austor required.







DATA, AREX-AUSTOR (ORIGINAL SIPHONAGE) VENTILATORS

Principal dimensions, in.			Exhaust per hour, cu. ft.	Gauge of ventilators		*Ship. wt., lb.
D	O.W.	O.H.		Galv. iron	Copper, oz.	
12	18	24	37,699	24	16	28
14	21	28	51,313	24	18	38
16	24	32	67,021	24	18	54
18	27	36	84,823	24	18	68
20	30	40	104,720	22	18	93
24	36	48	140,796	22	20	130
30	45	60	235,619	22	20	225
36	54	72	339,293	20	24	405
42	63	84	461,813	20	24	475
48	72	96	603,187	20	28	620
54	81	108	763,407	20	32	800
60	90	120	942,477	18-20	36	910
66	99	132	1,140,397	18	36	1170
72	108	144	1,357,167	16-18	44	1450
84	126	168	1,847,256	16	48	2225

*Weights given are for ventilators only.

Sectional View of Arex-Austor

DATA, AREX-AUSTOR (ORIGINAL SIPHONAGE) BASES

Dimensions of bases, in.				Gauge of bases	
B	H	F	C	Galv. iron	Copper oz.
15 x 15	12	4	3	24	16
17½x 17½	13	4	3	24	18
20 x 20	14	4	3	24	18
22½x 22½	15	4	3	24	18
25 x 25	16	4	3	22	18
30 x 30	18	4	3	22	20
37½x 37½	21	4	3	20	20
45 x 45	24	4	3	20	24
52½x 52½	27	5	4	20	24
60 x 60	30	5	4	18	28
67½x 67½	33	5	4	18	32
75 x 75	36	5	4	18	36
82½x 82½	39	6	5	16	36
90 x 90	42	6	5	16	44
105 x105	48	6	5	16	48

Shipping weight of bases is approximately one-third of that given for ventilators.

Arex-Austor Construction

Arex-Austors are made of Galv. Iron, Ingot or Toncan Metal, Cold-rolled Copper or any other special metal, in any size or gauge. The installations shown on this page are standard; special bases and pipe connections made to order—submit sketch.

Arex-Austors, 24-in. and upwards are provided with brass bolts connecting the frustum to the siphons. This permits installation in two halves and facilitates painting inside and outside at any time after they have been installed.

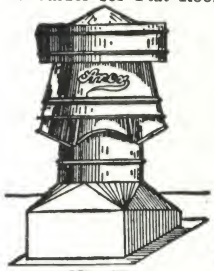
Condensation arrestors furnished at nominal cost when requested.

Unequalled facilities for turning out any quantity of any size ventilators on short notice. Prompt shipments from large stock always on hand.

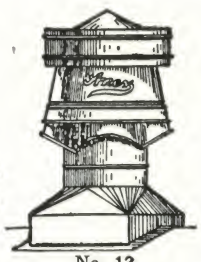
Our engineering department will solve your ventilating problems.

Expert advice without obligation. It will pay you to investigate.

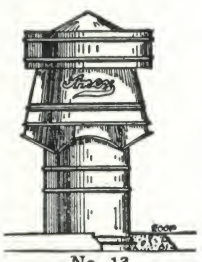
Thousands of installations without a single complaint.



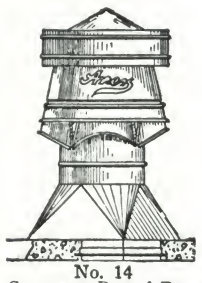
No. 11
Square to Round Base with Shoulder for Slant Roof



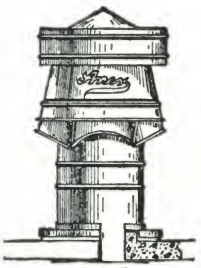
No. 12
Square to Round Base with Shoulder for Gable Roof



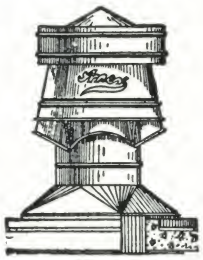
No. 13
Round Base for Flat Concrete Roof with Angle Iron Ring at Bottom



No. 14
Square to Round Base for Flat Concrete Roof with Angle Iron at Bottom



No. 15
Round Base for Flat Concrete Roof with Curb



No. 16
Square to Round Base for Flat Concrete Roof with Curb

Details and Data, Arex-Austor Ventilators and Bases

THE ALLEN CORPORATION

GENERAL OFFICES AND FACTORY
Fourteenth and Lafayette Streets, DETROIT, MICH.

SALES ENGINEERS IN PRINCIPAL CITIES

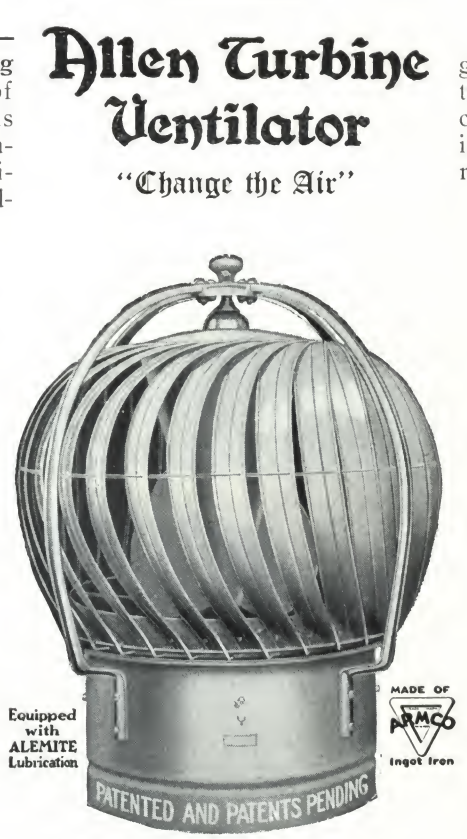
The New Allen Turbine Ventilator—Patented and Patents Pending

This new ventilator, on account of its unusual design and construction, is automatic and operates silently, continuously and efficiently. The principle of operation is a perfectly balanced turbine, propelled by outside air, which not only pulls up and ejects heat, smoke, fumes, foul air, dust and moisture, but also creates an air circulation. The powerful upward suction makes down-drafts a mechanical impossibility.

Due to the fact that operation is not hampered by ice, sleet or rain, this ventilator functions constantly under all conditions, thus insuring positive and uniform ventilation. It is also absolutely leakproof, sturdy, durable and true-rotating and represents the utmost in ventilating efficiency.

The general appearance of these ventilators will fit into the architectural line of any building and harmonize with any style.

Whenever a definite number of air changes are required in any type of building, the Allen Ventilator can be used. The following table of recommended air changes will be of value in laying out the ventilating problem in question.



The New Allen Turbine Ventilator

Building	Cu. ft. per min. per occupant	Minimum air changes per hr.
Boiler rooms		10
Engine rooms		8 to 10
Factories	20 to 30	4
Foundries		4
Garages		12
Mill buildings	20 to 30	4
Offices	20 to 30	6
Laundries		10

Note: Each ventilator should be calculated to cover a maximum range of 20-ft. radius.

Constant and uniform displacement enables engineers to figure the air conditions of any building by applying the guaranteed table of displacement capacities shown below.

ALLEN TURBINE VENTILATOR DISPLACEMENTS

Diam. of throat, in.	Air displacement, cu. ft. per hr.		Diam. of throat, in.	Air displacement, cu. ft. per hr.	
	Wind velocity, 4 miles per hr.	Wind velocity, 8 miles per hr.		Wind velocity, 4 miles per hr.	Wind velocity, 8 miles per hr.
8	17,300	21,600	24	149,000	185,000
10	26,500	32,500	30	225,000	272,000
12	38,600	46,200	36	281,000	330,000
15	54,000	69,000	42	324,000	414,000
18	85,200	102,100	48	360,000	473,000
20	105,100	125,600			

Construction — Constructed of galvanized Armco ingot iron, the ventilator is protected with a special compound which renders it practically immune to the deteriorating action of rust, acid fumes, heat and weather.

It is also constructed of cold rolled copper, aluminum or monel metal.

Lubrication—A complete Alemite pressure lubricating and relubricating system is embodied in the construction.

Sizes—Size is denoted by the diameter of the base of the ventilator. Eleven sizes are available, 8, 10, 12, 15, 18, 20, 24, 30, 36, 42 and 48 in. Such a range of sizes makes these ventilators suitable to care for any ventilating problem.

Where Allen Ventilators Have Been Successfully Used

All industrial interests of the most diversified types are so impressed with the thoroughness of Allen efficiency under varying conditions that they have adopted these ventilators for all problems of ventilation and the displacing of heavier-than-air bodies. They are particularly adapted and have proven to be most satisfactory in actual installation in displacing vapor (steam), smoke, fumes, poisonous gases, dust, etc., from factories, foundries, marine craft, mills, laundries and garages; for displacing foul air, moisture, odors and dust from chemical and food process rooms, engine rooms, etc., and for removing excessive heat units and vitiated air from factories, foundries, boiler rooms, industrial offices, etc.

Each industry presents an entirely different problem of ventilation. Allen Ventilators, wherever installed and in whatever line of industry, have proven to be not only the most economical in first cost and maintenance, but efficient in operation.

Engineering Service

THE ALLEN CORPORATION maintains an Engineering Department, the service of which is extended without cost or obligation.

Our engineering staff have had a most diversified experience in handling all kinds of ventilating problems in connection with various types of buildings, and the broadest experience in eliminating smoke, vapor and heavier-than-air bodies.

Our sales engineers in the principal cities supplement this service and make practical and definite recommendations for the adaptability of Allen Exhausters.

ESTABLISHED 1890

THE BURT MANUFACTURING COMPANY

Manufacturers of Roof Ventilators

600 Main Street, AKRON, OHIO

BRANCH OFFICES

ATLANTA, GA., Conklin Tin Plate Metal Co.
NEW ENGLAND, F. M. Mills, 115 Metropolitan Avenue, Kew Gardens, N. Y.
BUFFALO, N. Y., M. J. Rodman, 454 Ellicott Square
CHARLOTTE, N. C., Metal Window Products Co.
CHICAGO, ILL., C. A. Pipenhagen, 170 West Chicago Avenue
DENVER, COLO., George P. Heinz & Co., 812 12th Street
DETROIT, MICH., B. E. Englander, 13948 Roselawn Avenue
FORT WAYNE, IND., Domestic Sales Co., 2016½ Fairfield Avenue
KANSAS CITY, MO., Natkin Engineering Co.
LOUISVILLE, KY., Sheet Metal Supply Co.
NEW ORLEANS, LA., Woodward-Wight & Company Ltd.
NEW YORK, N. Y., E. S. Bishop, 70 East 45th Street
PITTSBURGH, PA., Dravo Equipment Co., Dravo Building
ST. LOUIS, MO., F. A. Cammann Builders Service Co.
WASHINGTON, D. C., Fries, Beall & Sharpe

CANADA, Canadian Fairbanks-Morse Co., Ltd.

ALL OTHER PRINCIPAL CITIES

Burt Ventilator Types

Our over 30 years' experience in the roof ventilator business has proven beyond doubt that *no one type* of ventilator will adequately meet all conditions.

We have designed *various* types and are prepared to tell exactly which of these types of the proper size will handle any particular requirement. Some installations require revolving type ventilators, others require metal top sliding sleeve damper ventilators, still another will need a fire retarding type, and weave sheds will best be served by our double damper ventilator.

The new Burt Direct Connected Fan Ventilator gives positive action for bad conditions and natural action with fan shut off, so for many jobs it is the ideal installation. Conclusive tests have proven that under certain conditions this ventilator will exhaust its maximum per cubic foot while another type will hardly pull anything.

Burt Ventilator
"A Size and Type for Every Purpose"

Engineering Service

At Akron, we maintain an Engineering Department which will expeditiously co-operate with architects, engineers, contractors and others in selecting the proper types and sizes of ventilators to suit particular conditions and requirements.

Blue prints of our various types will be furnished on application. Send your specifications, rough pencil sketch or blue print to our engineers, and they will, without cost or obligation, send a detailed analysis of your situation, together with recommendations and quotations.

Materials Used

Burt Ventilators are made from only the highest grades of prime open hearth galvanized sheets, from 4 to 6 gauges heavier throughout than is customary in many makes of ventilators. Black iron is not used in the construction of Burt Ventilators. Among the other materials commonly used in their construction are copper, zinc, lead-clad sheets, toncan metal, armco iron, alcumite, aluminum and monel metal.

Burt Patented and Exclusive Features

Among the many features that account for the popularity of Burt Ventilators are the sliding sleeve damper, the spring clip, the notch rim, the condensation gutter and heavy construction.

The sliding sleeve damper efficiently regulates the flow of the air. The spring clip holds the damper rope in place after changing adjustment. The notch rim holds the glass in place on top of ventilator. The condensation gutter gathers the condensation and carries it off to the roof.

The above features are more fully described under the various ventilators of which they are a part.

Ventilator Capacities

Burt does not publish a table of capacities in Sweet's because it would require several pages to give comprehensive data on the many types of Burt Ventilators. Each building has its specific ventilating problem and it is practically impossible to select the proper size and type of ventilator unless the table of capacities takes into consideration the many variables which affect the amount of air exhausted.

To be comprehensive a table of capacities should include all the variables such as wind velocities, temperature differences, heights above intake and humidities. These variables are essential to the completeness of any table on capacities, and yet a table which would include all of these would only be useful for comparative purposes because the capacity of the ventilator is also dependent upon its specific location on the building.

Burt Engineers have made reliable tests on their ventilators and are prepared to furnish complete and comprehensive explanations to any one interested. The Bureau of Standards at Washington, a reliable authority, has given reports which indicate that Burt Ventilators of all types have proven equal or superior to any ventilator on the market.

As a matter of fact, the best way to select the proper size and type ventilators for your building, provided your engineers are not familiar with the situation, is to submit a rough sketch of your building and let our engineers place the ventilators for you.

Burt Guarantee

We guarantee Burt Ventilators to be free from defects in workmanship and material, and will replace at any time free of charge, f.o.b. Akron, any Burt Ventilator proven defective.

Burt Sliding Sleeve Damper Ventilator

Marketed for over thirty years, this ventilator is not an experiment—it is used by many of the largest industrial plants in the United States.

Fig. 20A

These ventilators may be had with either metal tops or glass tops. The metal top ventilator serves as a ventilator only, while the glass top serves as a *combination skylight and ventilator.*

Exclusive Features—(1) The patented damper in this ventilator consists of a sliding (telescopic) sleeve, which is operated from below by means of a cord or chain running over a rust resisting pulley. Each ventilator is equipped with a patented clip so that damper can be set in any position and held there without fastening the cord to a nail, hook or post. As the sliding sleeve damper is not affected by air currents, *it maintains its position* and requires no attention. This construction is a marked improvement over the flat damper type.

Continued on next page

(2) The sliding sleeve damper has no flat surface, therefore, it does not collect dust or dirt to be shaken off into the building.

(3) The air shaft is open and unobstructed at all times. Air currents are not deflected downward, and it is possible to adequately ventilate with a smaller number of Burt Ventilators than most competing types.

(4) The sliding sleeve damper makes our glass top ventilator an ideal skylight, as the light is never obstructed.

(5) The glass top ventilator is equipped with heavy ribbed wire glass held in place by a patented notched rim, and made absolutely watertight by means of waterproof cement. Glass can be replaced quickly by merely removing the notched rim, without removing ventilator from the roof.

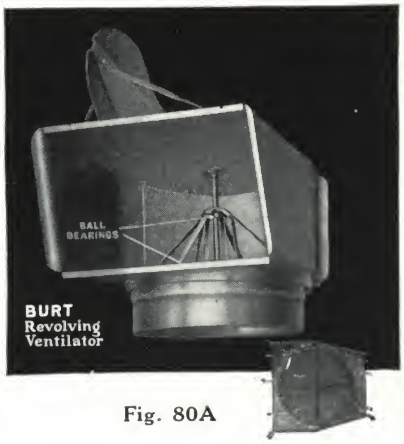


Fig. 80A

(6) Our patented trough or lip is placed below the glass top, into which runs any condensation which may gather on the glass. A similar trough on the lower part of the base collects all condensation forming on the air shaft.

Dimensions and Weights—See following page.

How to Specify—See specifications on the following page.

New Burt High Efficiency Fire Retarding Cone Damper Ventilator

In this type of ventilator, an inverted cone is used as a damper, which is operated from the floor (moved up and down) by a copper chain running over a rust-resisting pulley as shown.

The damper of this ventilator is furnished with fusible link which insures it automatically closing in case of fire. When the damper is thus equipped this ventilator is listed by the Underwriters' Laboratories, Inc.

One of the very latest improvements on the Cone Damper Ventilator is the patented Spring Clip which replaces the elongated slot formerly used in Cone Damper Ventilators. When the fire retarding feature is desired, the fusible link is inserted in the damper chain and the patented Spring Clip that is furnished should be placed in the air shafting below the ventilator or down below in the room. If the fire retarding feature is not desired, the patented clip is bolted to the cone damper itself.

Fig. 50A

The spring clip and fusible link, of course, obviate the necessity of tying the chain to a post, nail or hook in the building itself.

The construction of this ventilator embodies all the essential features of construction recommended by the American Society of Heating and Ventilating Engineers.

The patented raising and lowering device is simple and positive in action, and is guaranteed not to stick or bind. The air shaft is open and unobstructed at all times—there are no braces of any kind in the air shaft or neck.

The inverted cone damper permits easy flow of air outward—there are no sharp turns or obstructions, and no air pockets.

The *extra wide wind band* makes this ventilator absolutely stormproof and creates a larger low pressure area, and a better exhaust. The location of the louvers, top and wind band have been scientifically worked out so that regardless of the direction of the wind, it can not pass through the ventilator head and get into the building—guaranteed against back-drafts.

Exhaust area is larger than cross-sectional area of pipe, which assures guaranteed exhaust capacity.

Dimensions and Weights — See following page.

How to Specify—See specifications on the following page.

Fig. 90A

Burt Revolving Ventilator

A neat and well constructed ventilator of the revolving type that has been perfected to the highest point of efficiency.

Its design and open back construction cause the air currents to pass not only over the top and sides, but directly through it, thus creating a partial vacuum in front of the air shaft, which greatly increases its capacity or pulling power. This construction also holds the ventilator steady with the wind.

Each Burt Ventilator is erected and tested in our factory before shipment, insuring perfect balance.

This ventilator is equipped with two sets of high grade steel ball, Timken roller bearings or other bearings specified—it is positively guaranteed not to stick or bind.

There are no louvers in the revolving head, consequently maximum efficiency is obtained. If bases are furnished by us, we will install flat dampers without charge. When specified, we furnish dampers of the fire retarding type which close automatically in case of fire.

This ventilator has proven a success under a wide range of conditions and thousands are now in use.

Dimensions and Weights—See following page.

How to Specify—See specifications on the following page.

Burt Fan Ventilator

This ventilator is designed for ventilating foundries, steel mills, laundries, motor rooms, auditoriums or any other building where a definite number of air changes are required, and where ordinary gravity ventilators are inadequate because they must depend upon air movements and other outside sources for their effectiveness.

Each size of Burt Fan Ventilators has a definite capacity and is guaranteed to exhaust that amount of fumes, steam or bad air from a building at all times.

It includes all the advantages of a high grade gravity ventilator, and has the added advantage of the powerful motor driven exhaust fan which gives it capacities that are from five to ten times greater than those of ordinary ventilators. The fact that a few fan ventilators will do the same work that would require several gravity ventilators cuts down the labor cost in erecting and eliminates the necessity of cutting the roof of the building full of holes.

The Burt Fan Ventilator is quiet in operation, and the specially built motor is fully enclosed to prevent it from deterioration on account of fumes or steam coming in contact with the windings. It has a very low power consumption and, when conditions within the building are normal, can be shut down without interfering with the efficient operation of the ventilator as a gravity type.

Sizes—Standard sizes are from 14 to 48 in., inclusive, and can be furnished in practically any electrical characteristics, either alternating or direct current.

Motors vary in speed from 670 to 1750 r.p.m.

How to Specify—See specifications on the following page.

Burt Rectangular Ventilators

Made in all sizes, of any metal desired, metal or glass tops, and equipped with Burt patented sliding sleeve damper described as used on metal top. Suitable for public buildings, foundries, schoolhouses, etc.

Can be adapted to any size or shape of roof opening.

How to Specify—See specifications on following page.

Continued on next page

Burt Double Damper Ventilator

Designed for weave sheds and places where condensation forming on air shaft and cowl must be prevented from entering the building. Adopted by many of the largest textile mills in the United States.

Fig. 26A. Burt Double Damper Ventilator

The condensation trough in the air shaft of the Burt Double Damper Ventilator collects most of the moisture and passes it out on the roof through the condensation drain. When condensation is severe, the trough-shaped lower damper acts as a drip pan and collects the moisture, the latter being quickly evaporated. The lower drip pan (below bottom damper) is a safety device that collects any overflow from the bottom damper. It can be piped to pass water out on the roof.

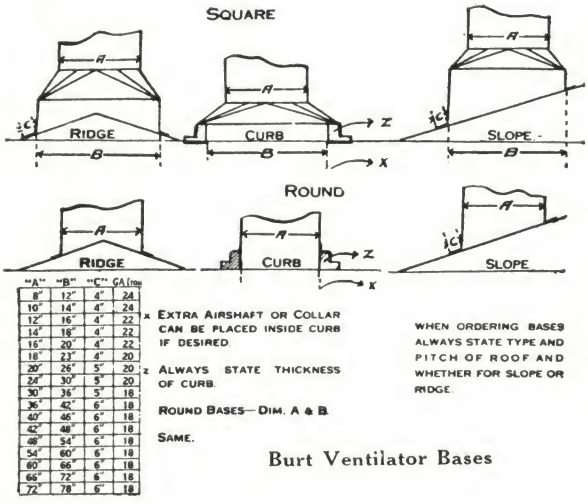
The two dampers are operated simultaneously by means of a cord from below which is held firmly by a patented clip fastened to roof. Made in all sizes.

How to Specify—See specifications below.

Ventilator Bases

Ventilator bases are made to conform to the pitch of the roof, either round or square. Square bases are recommended for maximum efficiency, capacity and rigidity. Extra heavy —of the same gauge metal as the ventilator itself.

Burt Bases have the following features: condensation trough in every base, 4-in. flashing or more on every base to insure stormproofness, four different types (flat roof, slope, curb or ridge) and every base made separately for each particular job.



"A"	"B"	"C"	GA (no
8"	12"	4"	24
10"	14"	4"	24
12"	16"	4"	22
14"	18"	4"	22
16"	20"	4"	22
18"	23"	4"	20
20"	26"	5"	20
24"	30"	5"	20
30"	36"	5"	18
36"	42"	6"	18
40"	46"	6"	18
42"	48"	6"	18
48"	54"	6"	18
54"	60"	6"	18
60"	66"	6"	18
66"	72"	6"	18
72"	78"	6"	18

x EXTRA AIRSHAFT OR COLLAR CAN BE PLACED INSIDE CURB IF DESIRED

z ALWAYS STATE THICKNESS OF CURB.

ROUND BASES—DIM. A & B SAME.

WHEN ORDERING BASES ALWAYS STATE TYPE AND PITCH OF ROOF AND WHETHER FOR SLOPE OR RIDGE.

Burt Ventilator Bases

DIMENSIONS AND WEIGHTS OF BURT VENTILATORS

Size or diam neck, in.	Area of neck, sq. in.	Gauge of steel	Sliding Sleeve Damper						Cone Damper				Revolving				
			Diam. wind band, in.	Height without base		Average net weight, lbs.		Average crated weight, lbs.		Diam. wind band, in.	Height without base, in.	Average net weight, lbs.	Average crated weight, lbs.	Width mouth opening, in.	Height mouth opening, in.	Length of head, in.	Average net weight, lbs.	Av'age crated weight lbs.
				Metal top	Glass top	Metal top	Glass top *	Metal top	Glass top **									
8	50.22	22	15	13¼	11¼	10	8	18	22	15	15	15	23	12	7½	15	18	30
10	78.54	22	18	15½	12½	12	10	20	24	18	15½	18	26	16	9½	19	20	35
12	113.10	22	22	17	14	15	13	25	30	22	16	27	37	19	12	22½	30	50
14	153.94	22	24	17½	15	20	18	30	35	24	17	30	40	21	14	26	35	65
16	201.06	22	26	19	15½	24	21	40	46	26	19	37	52	24½	14½	30	42	75
18	254.44	20	29	21	16	28	25	48	55	29	21	43	63	28½	15	34	50	100
20	314.19	20	32	23	18	33	30	60	70	32	22	50	75	29½	16½	36	60	125
24	452.39	20	38	26	22	53	50	83	85	38	27	60	90	33½	18	40	90	160
30	706.85	18	46	30	24	94	90	146	155	46	33½	112	170	41	24	47½	140	220
36	1017.88	18	54	36	27	145	140	205	245	54	39	156	220	50	24½	56	190	310
40	1256.00	18	64	40	33	180	171	245	290	64	43½	215	310	48½	25½	63½	250	350
42	1386.00	18	68	42	34	200	187	275	300	68	45	235	330	54½	26½	65	280	470
48	1809.00	18	78	46	36	260	249	350	340	78	48	300	400	61	36	76½	390	650
54	2390.00	18	86	51	40	350	330	455	450	86	57	390	500	67	44	98	575	750
60	2827.00	16	94	54	43	430	405	550	545	94	58	480	590	74	52	98	650	980
66	3456.00	16	102	55	46	500	470	635	625	102	62½	560	690	79	52	107	750	1120
72	4071.00	16	110	66	51	625	585	775	760	110	69	731	874	.....	.....	.....	.....	.....

*Net weight does not include glass.
**Weight of glass included in gross weight.

How to Specify Burt Ventilators

Metal Top Ventilator—(1) Furnish and install on roof, where shown on drawings, Burt Metal Top Ventilators, as manufactured by The Burt Manufacturing Company, Akron, Ohio.

(2) Ventilators shall be of diameters shown and shall be constructed of prime open hearth galvanized steel sheets of The Burt Manufacturing Company's standard gauge, strongly braced with galvanized steel bands and properly riveted.

(3) Ventilators shall be provided with sliding sleeve dampers, operating by chains or cords over rust resisting pulleys and equipped with clips so that they can be set in any position and held permanently. When sleeve is at its highest point it shall completely close ventilator.

(4) Ventilators shall be guaranteed against defects in workmanship and material by the manufacturer, who shall agree to replace or repair without charge, any ventilator proving so defective.

(5) Ventilators shall be thoroughly flashed to the roof and be made absolutely watertight.

Glass Top Ventilator—(6) Furnish and install on roof, where shown on drawings, Burt Glass Top Ventilators, as manufactured by The Burt Manufacturing Company, Akron, Ohio.

(Insert paragraph 2 here.)

(7) Ventilators shall be provided with notched rims as manufactured by The Burt Manufacturing Company, Akron, Ohio, for holding glass in place so that same can be replaced if necessary without removing ventilators from roof.

(8) Ventilators shall have troughs or lips placed below glass so as to conduct any condensation or moisture that may form to the roof.

(Insert paragraphs 3, 4 and 5 here.)

Double Damper Ventilator for Weaving Rooms—(9) Furnish ventilators for weaving rooms, as shown on drawings, to be provided with double dampers as manufactured by The Burt Manufacturing Company, Akron, Ohio.

(Insert paragraphs 2, 4 and 5 here.)

Fan Ventilators—(10) Ventilators in ....., as shown on drawings, shall be Burt Direct Connected Fan Ventilators, provided with 4-blade fan and fully enclosed motor. Motor supports are to be fitted into barrel of ventilator by means of composition mountings. Motor to be standard horsepower and speed as furnished by The Burt Manufacturing Company, Akron, Ohio, unless otherwise specified.

(11) Fan ventilators shall be provided with cone dampers, operated by cord or chain and rust resisting pulleys with fusible links which will cause dampers to drop and completely close in case of fire.

(Insert paragraphs 2, 4 and 5 here.)

Sliding Cone Damper Ventilators—(12) Furnish and install on roof, where shown on drawings, Burt Fire Retarding Sliding Cone Damper Ventilators as manufactured by The Burt Manufacturing Company, Akron, Ohio.

(13) These ventilators shall pass the approval of the Underwriters Association of America.

(13a) Ventilator is to have an extra wide wind band as per The Burt Manufacturing Company's standard for this type. Wind band to be located so as to prevent any entrance of outside wind into the ventilator head, whether up from a sloping roof or any other angle.

(Insert paragraph No. 11, but substitute "cone damper regulators" in place of fan. Follow with paragraphs 2, 4 and 5.)

Ball Bearing Revolving Ventilators—(14) Furnish and install on roof, where shown on drawings, Burt Ball Bearing Revolving Ventilators as manufactured by The Burt Manufacturing Company, Akron, Ohio.

(15) Ventilators shall be equipped with two sets of hardened steel ball bearings, and shall have open back construction so as to hold ventilators steady with the wind.

(Insert paragraphs 2, 4 and 5 here.)

Note: In order to satisfy people who are not convinced as to our type of bearing, we are prepared to install at no additional charge bronze ball bearings in place of the hardened steel bearings. We do not recommend nor guarantee this type, but will furnish them if specified.

Square and Rectangular Ventilators—(16) Furnish and install on roof, where shown on drawings, Burt Square or Rectangular Ventilators as manufactured by The Burt Manufacturing Company, Akron, Ohio. These ventilators shall be equipped with sliding sleeve dampers [common flat dampers] and with glass [metal] top.

(Insert paragraphs 2, 4 and 5 here.)

Note: If ventilators are to be constructed from copper, zinc, lead clad sheets or any other metal, insert these words in proper space above.

GLOBE VENTILATOR COMPANY

Manufacturers of Roof Ventilators

TROY, N. Y.

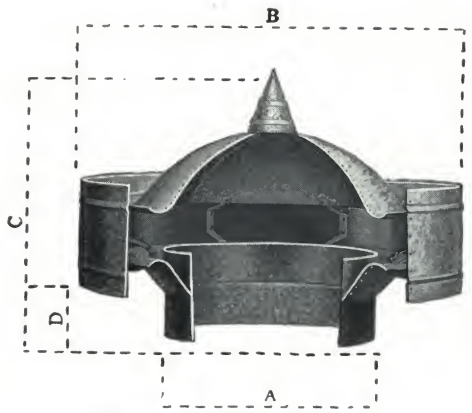
Products

"Globe" Ventilating Devices:
Roof Ventilators.
Barn Ventilators.
Chimney Caps.
Car Ventilators.

"Globe" Ventilator Construction

"Globe" ventilators are made of heavy gauges open hearth galvanized copper-bearing steel (see table below) and are rigidly braced with extra heavy steel bars. In sizes 18 in. and above, the tops and bottoms are made in a number of sections which overlap and are riveted, making them double at each of these points and exceptionally strong ventilators. Their simple and sturdy construction guarantees long life.

They can also be furnished in Armco iron, Toncan metal and copper and with glass tops when light as well as ventilation is required.



Section of "Globe" Ventilator

A—Diameter of pipe
B—Diameter of band
C—Height of ventilator
D—Distance from bottom of band to bottom of ventilator

DIMENSIONS, GAUGES OF MATERIAL, AND LIST PRICES OF "GLOBE" VENTILATORS

Principal dimensions, inches				Gauge of iron	Wt. of copper, ounces	Area, sq. in.	*Price list subject to liberal discount
A	B	C	D				
6	11	9	1½	26	18	28.27	$ 3.40
8	14	11	1¾	26	18	50.26	4.65
10	17	13	2	24	18	78.54	5.75
12	19	14	2	24	18	113.10	6.75
14	25	18	3	20 & 24	18	153.94	13.00
16	28	20	3	20 & 24	18	201.06	20.00
18	32	23	4	20 & 24	20 & 18	254.47	27.00
20	36	25	4½	20 & 24	20 & 18	314.16	33.00
24	43	30	6	20 & 22	24 & 20	452.39	40.00
30	52	35	6	18 & 22	24	706.8	65.00
36	66	50	8	18 & 20	24	1017.9	120.00
40	74	57	9	18 & 20	24	1256.6	180.00
48	84	64	10	18 & 20	24 & 28	1809.6	240.00
54	92	67	10	18 & 20	28	2290.2	300.00
60	99	70	10	18 & 20	28	2827.4	360.00

The heavier weights of material are placed in bands and collars of ventilators.
Fire-retardant dampers furnished when desired.
*Galvanized iron ventilators only. Prices of copper ventilators on request.

The design of the "Globe" ventilator, with its curved inner and outer surfaces, is such as to induce a rapid movement of the air outward, at the same time offering a minimum of resistance to the flow. Every inch of its opening is effective in creating efficient, positive ventilation. It utilizes all wind currents and works without wind by natural suction.

Metal Top "Globe" Ventilator

Uses—The "Globe" ventilator has been in operation for many years on practically every known type and class of building.

It is removing smoke, steam, fumes, gases, dust, etc., from factories, foundries, steel mills and other industrial buildings, and providing for fresh air in school buildings, churches, theaters, barns, etc. It has back of it years of *proved efficiency.*

Information and Estimates—Prices, blue prints, capacities, working model and complete information will be furnished on request.

Shipment—"Globe" ventilators are carried in stock in the leading cities, and immediate shipment can be made from our factory.

"Globe" Ventilator Bases

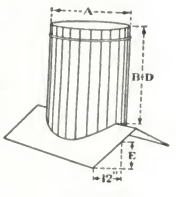
Ventilator bases, either round or square, are made to fit accurately the roof pitch, and have 4-in. flanges.

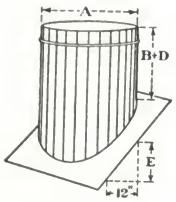
Different types of bases, dimensions, gauges of materials used and average shipping weights are shown below. Square bases are recommended for maximum capacity and strength.

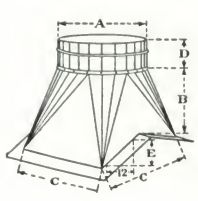
When inquiring or ordering, please furnish pitch of roof (E), state whether for ridge or slope and whether round or square bases are desired. When ordering bases to fit over concrete curbs, give size of opening and curb.

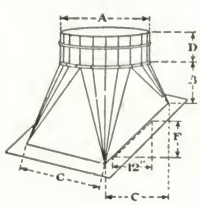
GLOBE VENTILATOR BASES

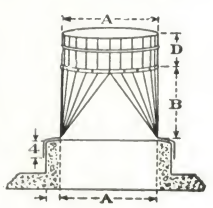
A in.	B in.	C in.	D in.	E in.	Gauge iron	Wt. copper, oz.	Aver. crated wt., lb.
10	10	12	6	State pitch of roof in rise to 12 in. run and whether for slope or ridge	24	20	21
12	10	14	6		24	20	25
14	10	16	6		24	20	30
16	10	18	8		22	20	35
18	10	22	8		22	20	39
20	12	24	8		22	20	45
24	12	30	10		20	24	56
30	12	36	10		20	28	63
36	14	42	10		20	28	81
40	14	48	10		18	32	116
42	14	52	10		18	32	130
48	16	56	10		18	32	150
54	16	64	12		18	32	190
60	18	72	12		18	32	215











THE IONA VENTILATOR COMPANY, INC.

2821-2829 West Dauphin Street, PHILADELPHIA, PA.

Products

XIT VENTILATORS, Round or Rectangular, metal tops; IVCO AIR INTAKES; IONA VENTILATORS, Round or Rectangular, with metal or glass tops; XIT AUTOMATIC TEMPERATURE CONTROLLED DAMPERS.

Xit Ventilators

Designed for maximum efficiency. Of unusually substantial construction. The high efficiency has been repeatedly proved in actual comparative tests because of the large vertical and total exit areas.

Xit Ventilator

Basic Principles of Design—Head 80% greater in diameter than shaft of ventilator. Width of storm band 80% of diameter of shaft and so placed as to exclude external air from ventilator head. Area for air leaving ventilator head (not including bottom opening at head) 75% greater than cross-sectional area of shaft. Principle of action or suction is that of chimney or stack, which is doubled by a second or internal band, thereby making two points of suction that are always to the lee side of ventilator, resulting in greater increased movement of air therefrom.

Dampers—Flat, butterfly, fire retarding or temperature controlled types, with felt edge when desired to be airtight.

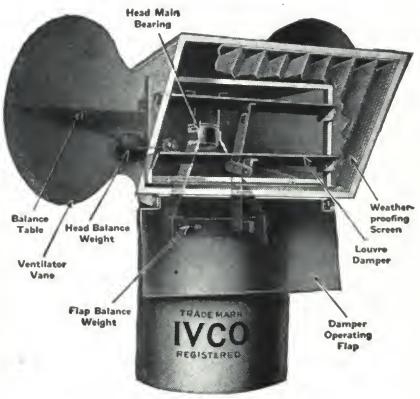
Xit Guarantee—We guarantee without qualification both materials used and operation.

Iona Ventilators

The standard for 25 years.

Ivco Air Intakes

Made of copper, brass, galvanized or lead clad material. Intake head rotates on bronze bearings with non-corrosive hard composition balls. Provided with weatherproof screening of brass, bronze or copper wire. Damper may be automatically closed, regulated by balance weight, or manually closed. All Ivco Air Intakes are guaranteed to rotate freely and to be stormproof.



Ivco Air Intakes

SIZES OF XIT VENTILATORS

Vent size, in.	Gauge iron or metal	Approx. finished w'ts, lb.	Gauge copper	Vent size, in.	Gauge iron or metal	Approx. finished w'ts, lb.	Gauge copper
6		5		26		84	
7		6		28		105	
8	26	8	16	30	22	131	20
9		10		32		146	
10		12		34		160	
				36		178	
12		16	16				
14	24	28	18	40		238	
15		31		42	20	275	20
				44		305	
16		34		48		350	
18		43					
20	22	50	18	54		615	
22		55		60	18	757	24
24		61		66		880	
				72		980	

IVCO AIR INTAKES

Wind velocity, miles per hr.	Cubic feet of air injected into building, per hour — Shaft sizes of air intakes, inches							
	6	7	8	10	12	14	16	18
2	2376	3234	4224	6589	9504	12925	16853	21352
4	4752	6468	8448	13178	18008	25850	33706	42704
6	7128	9702	12672	19767	28512	38775	50559	64056
8	9504	12936	16896	26356	38016	51700	67412	85408
10	11880	16170	21120	32945	47520	64625	84265	106706
	20	24	30	36	42	43	54	60
2	26357	38016	59368	85356	115948	152064	191980	237600
4	52714	76032	118736	171072	231896	304128	383960	475200
6	79071	114048	178104	256608	347844	456192	575940	712860
8	105428	152064	237472	342144	463792	608256	767920	950400
10	131785	190080	296840	427680	579740	760320	950400	.....

*GUARANTEED EXHAUST OF CUBIC FEET OF AIR PER MINUTE FROM XIT VENTILATORS

Inside excess temperature F.	Wind velocity, miles per hr.	Height of ventilator above intake, ft.	Sizes of ventilators, in. 12	14	16	18	20	24	30	36	42	48	54	60	66	72	84
0	2	15	58	70	82	94	106	128	168	207	245	282	326	370	413	455	539
		30	82	99	106	123	140	180	226	271	334	396	447	497	547	596	737
		50	106	128	149	170	191	233	304	374	444	513	591	669	746	823	977
		100	150	180	210	240	270	330	429	528	627	726	835	944	1053	1162	1379
0	4	15	70	84	98	112	126	154	200	246	293	339	390	440	481	521	645
		30	99	119	139	159	179	218	284	350	415	480	553	625	698	770	913
		50	127	153	177	203	228	279	363	447	531	614	707	799	891	983	1168
		100	180	216	252	288	324	396	515	634	753	871	1002	1133	1264	1395	1657
0	6	15	87	107	122	138	156	191	248	304	362	420	483	546	608	669	796
		30	123	147	172	196	221	271	351	431	514	596	684	772	860	948	1131
		50	159	191	223	255	287	350	456	561	666	770	886	1002	1118	1234	1465
		100	224	269	314	359	405	493	642	790	940	1085	1249	1412	1575	1738	2068
0	8	15	103	124	145	166	187	227	296	365	432	499	575	651	727	830	950
		30	145	174	203	232	261	319	415	510	606	702	808	913	1008	1122	1333
		50	188	226	266	304	340	414	542	669	790	911	1052	1192	1332	1472	1738
		100	273	327	381	435	489	601	779	957	1140	1322	1468	1714	1860	2005	2508
0	10	15	120	144	168	192	216	264	343	422	502	581	668	755	842	928	1104
		30	169	203	237	271	305	372	484	596	707	818	942	1065	1188	1311	1555
		50	219	263	307	351	396	482	627	772	916	1060	1220	1379	1538	1696	2015
		100	310	372	434	498	650	682	889	1096	1298	1500	1728	1956	2180	2411	2856
5	2	15	73	88	102	118	132	161	211	260	307	354	409	464	518	572	675
		30	103	124	145	166	187	227	296	365	432	499	575	651	727	803	950
		50	133	160	187	214	241	293	382	471	558	645	743	840	938	1036	1228
		100	188	226	266	304	340	414	542	669	790	911	1052	1192	1332	1472	1738
5	4	15	88	106	124	141	159	194	252	310	369	427	491	554	618	682	812
		30	124	148	173	197	222	273	353	433	517	601	689	777	865	953	1137
		50	160	192	224	256	288	352	458	563	669	774	891	1008	1124	1239	1572
		100	227	272	317	362	408	499	648	796	947	1098	1262	1426	1589	1751	2083
5	6	15	115	138	161	184	208	253	329	405	478	551	638	724	808	891	1052
		30	162	194	226	258	290	356	462	568	676	783	900	1016	1133	1250	1487
		50	210	252	294	336	378	462	601	739	878	1016	1169	1322	1474	1626	1932
		100	298	357	416	475	534	656	851	1045	1244	1443	1658	1872	2086	2299	2737

*Note: The figures in this table are for immediate practical use without reduction. They are not theoretical calculations but can be depended upon for actual ventilator capacities. They do not have to be divided by 2 or 3 to arrive at a practical working basis.

W. F. HIRSCHMAN CO., INC.

Manufacturers of Roof Ventilators

BUFFALO, N. Y.

FACTORY: LE ROY, N. Y.

NEW YORK, N. Y., 205 East 42nd Street
PHILADELPHIA, PA., 1338 Spring Garden Street
BOSTON, MASS., 37 Pearl Street
DETROIT, MICH., 97 West Warren Avenue

Products

EFFICO ROTARY BALL BEARING VENTILATOR HEADS.
EFFICO INTERNAL LOUVER UNIT ROOF VENTILATORS.
EFFICO WIND-ELECTRIC FULL AUTOMATIC VENTILATORS.
S E VENTILATOR EXHAUST HEADS.
F FAN VENTILATORS, non-automatic (electric).
L U VENTILATORS.
EFFICO STANDARDIZED ROOF VENTILATOR BASES.
HIRSCHMAN ELECTRIC DAMPER CONTROL.

Also Le Roy Internal Louver Unit Roof Ventilators and Effico Skylight Ventilator Unit (Puttyless).

Permanent Exhibit

Permanent exhibit of our complete line at all offices, also stock carried at New York, Buffalo, Detroit and Philadelphia. Visitors also are welcome at our factory at LeRoy, N. Y. (see thousands of ventilators in course of production).

Effico Fan Equipped Rotary Ball Bearing Roof Ventilators

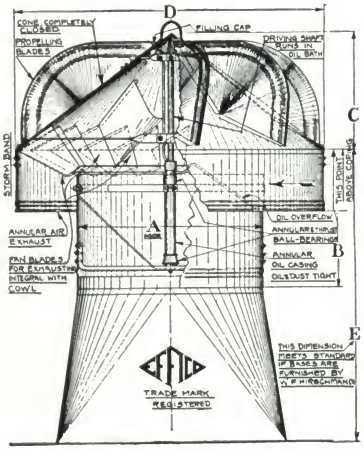
Construction and Principle of Operation—The Effico rotating cowl exterior is covered by wind propelled blades; interior by suction blades. There are no moving parts. Effico shaft rotates on ball bearings, fitted with clock precision in solidly enclosed dusttight and oiltight housings, and is flooded in inches of non-freezing oil (furnished by us); no oiling required for years (proven), but we oil flood them as an extra precaution, and the Effico is absolutely noiseless.

Great Air Volume Exhaust at Low Wind—All Efficos will draw considerable air at a 1-mile breeze (an apparent calm) without stack or heat assistance. The 30-in. size will rotate (standing start) at .7-oz. pressure, ½-mile breeze. Cowl outlet is over 50% larger than its stack area, which is ample, as no wind enters ventilator to gain the so-called siphonage effect. Suction fan is same size as rotating cowl (note dimension chart). Thus each Effico is equipped with fan over 50% greater in diameter than its stack area. Fan pulls air up stack at even the slowest turning movement and wind blowing across the outlet adds to its efficiency.

Percentage of Constancy—With United States Weather Bureau reports as a basis, and their findings that the wind at line of ventilators (over roof) is three miles slower than the tower records, shows the Effico Wind Driven Head during July and August to be 96% constant in New York City, Philadelphia, Boston, Buffalo, Cleveland, Detroit, Galveston, Kansas City, San Francisco, Chicago, Jacksonville, Florida; 90% constant in Columbus, Ohio, Toronto, Louisville, St. Louis; 80% constant in New Orleans, Milwaukee, Cincinnati and Baltimore.

Symmetry—The Effico has artistic lines and pleasing appearance. Lowest in height of rotary ventilators by over 50% average. Note dimension chart.

Weatherproof—The Effico Rotary Ball Bearing Ventilator operates during all kinds of weather—rain, ice, snow or sleet does not affect or hamper its exhausting. No drip pans or bird screens are needed.



Cost—Effico Ventilators exhaust more air per-dollar-cost of installation. The wind (only) driven heads exhaust greater volumes and during lower winds, thus a greater capacity within a given period. Effico Wind-Electrics, of course, are 100% constant, see second page following.

Corrosion Protection—All interior fabrication members after forming and punching and bolts and nuts are rustproofed. For copper ventilators, bolts and rivets are solid brass and copper. Only carefully selected prime sheets and materials are used throughout, whether of galvanized, copper, or other special metals.

Effico Rotary Ball Bearing Ventilator Installation

EFFICO STANDARDIZED VENTILATORS

Dimensions in inches					Galvanized steel			Copper, oz.		Code
					Gauge					
A	B	C	D	E	Cowl	Neck and base	Net weight, lb.	Cowl	Neck and base	
6	9	5	13	.....	26	26	10	14	14	sheck
10	9	5	16	.....	26	26	18	14	14	sachem
12	11	8	21¾	23	24	24	25	14	14	scene
18	11½	10	28½	24	24	24	38	16	16	saturn
24	16	14	42	26	24	22	95	16	18	shake
30	22	14	52	32	22	20	140	16	20	sank
36	24	18	62	34	22	18	180	18	24	sergeant
42	33	22	68	45	22	18	300	18	24	serpent
48	34	24	74	45	22	18	370	18	24	serve
54	35	24	86	46	22	18	525	20	24	sham
60	37	24	98	49	20	18	650	20	24	shawl
66	43	30	103½	61	20	18	700	20	32	sunk
72	50	30	114	68	20	18	750	20	32	shop
84	54	36	130	72	18	16	900	24	32	slave
96	54	45	153	72	18	16	1025	24	32	shekel

CAPACITIES OF EFFICO ROTARY BALL BEARING VENTILATORS

Guaranteed and Conservative

Cubic Feet of Air Exhausted Per Minute

Wind velocity, miles per hour	Temperature difference in degrees Fahrenheit in building and outside											
	0	10	20	30	0	10	20	30	0	10	20	30
	12-in. Ventilator				**18-in. Ventilator**				**24-in. Ventilator**			
5	350	440	515	560	600	850	950	1040	1020	1600	1780	1900
10	430	525	600	625	910	1050	1200	1300	1490	1900	2100	2300
	30-in. Ventilator				**36-in. Ventilator**				**42-in. Ventilator**			
5	1560	2300	2690	2900	2300	3400	3810	4100	3150	4500	5010	5500
10	2300	3210	3490	3600	3250	4200	4720	5050	4390	5700	6300	6800
	48-in. Ventilator				**54-in. Ventilator**				**60-in. Ventilator**			
5	4000	5900	6700	7400	5100	7300	8450	9500	6500	9300	10600	11900
10	5900	7900	8900	9050	7850	9900	11000	11500	9200	12500	14000	14500
	72-in. Ventilator				**84-in. Ventilator**				**96-in. Ventilator**			
5	9800	13500	14600	16000	12500	18000	21000	23000	16000	22500	27000	29000
10	13000	17000	19000	20000	18000	24000	27000	28000	22800	30000	33500	35500

Suggested Specifications—The roof ventilators to be of the sizes as shown in plans and are to be constructed of [toncan iron] [copper]. They shall be the Effico Rotary Ball Bearing Ventilators as manufactured by W. F. HIRSCHMAN CO., INC., Buffalo, N. Y. Bases to be [square type] [round type] of same gauge metal as ventilator neck. Ventilator stack to be sufficiently high to elevate the ventilator propelling blades above coping.

Electric Damper Control

Where required, our Hirschman electric remote control damper device can be supplied with any Hirschman ventilator.

Effico Oil, Dust and Acid Proof Bearing Housings

Continued on next page

TWO-IN-ONE VENTILATORS

Effico Internal Louver Unit Ventilators

The Effico Internal Louver Unit comprises the Effico Rotary Ball Bearing Ventilator Head constructed with a specially short base or neck. In this base is built a circular multiple blade louver damper. The damper is carefully balanced and heavily constructed. The blades lap and are fitted in a circular frame. It is adaptable for manual control, but is intended for a thermostatic control system. The roof base is very low, is part of this unit, and is supplied with either the square or round base.

The roof base and the ventilator head are connected by means of angle iron companion rings which give solidity and facilitate the taking down of the ventilator when required. Each ventilator neck has also a tight fitting door to give free access to the louvers and to the operating motor. The operating motor is suspended underneath the damper to a cross brace. The object of the specially low base and the low roof base is to make the entire unit as low to the roof as possible.

Effico Louver Dampers—Made of stretcher leveled sheet steel. The pneumatic damper motor is supplied and installed with these units unless not desired. Note specifications below.

Effico Louver Unit—*Low height.* The Effico Louver Unit sets very low. Note dimensions in table at right.

Height Above Coping—Louver Unit "C" dimension should be above coping.

Typical Effico Louver Unit Installation

Effico Rotary Ball Bearing Ventilator Head—The Effico Rotary Ball Bearing Ventilator Head is already lower in height by 50% than any other ventilator of this type. By using the construction as outlined above, the entire unit is brought as *low* to the roof as is permissible to still allow the air free exhausting and to maintain the outlets above the snow line. By adopting the circular multiple louvers, of which we are the inventors, we can standardize on sizes and build the round louver for considerably less than the square or rectangular styles, many of which we have built in past years.

By installing the louvers in the neck of the ventilator in our shops, we not only give a perfect fit, but also eliminate all indefiniteness as to the correct location and size of the damper and cut the installing cost to one-quarter. It is also easier to install the operating motor and makes it more accessible. The size of the damper is the full size of the stack, and yet is about 40% smaller in area than those heretofore used in the square or rectangular louver, again reducing the cost considerably. By supplying the contractor with the complete unit the builder is assured of a well designed, uniform and complete apparatus.

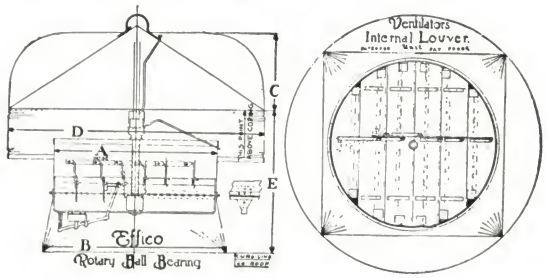
Heretofore, the contractor purchased the ventilator from one manufacturer, probably built the roof base himself, and purchased the dampers elsewhere, or even the dampers were supplied and installed by another contractor. This added materially to the cost.

Suggested Specifications—The roof ventilators shall be of the sizes as shown in plans, [square base] [round base] style, to be made of [toncan iron] [copper]. The pneumatic damper motor to be supplied with these units. These ventilators shall be the Effico Internal Louver Unit Ventilators as manufactured by the W. F. HIRSCHMAN CO., INC., Buffalo, N. Y.

EFFICO LOUVER UNIT SIZES AND DIMENSIONS

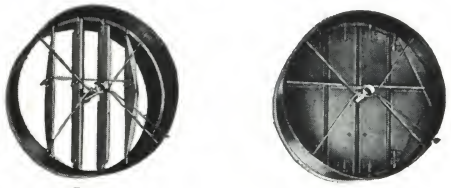
Dimensions, inches					Galvanized			Copper, oz.		Code for telegraphy
					Gauge					
A	B	C	D	E	Cowl	Base	Net weight, lb.	Cowl	Base	
18	20	10	28½	23	24	24	90	16	18	vale
24	30	14	40	30	22	22	140	18	20	valet
30	36	14	50	32	22	20	190	20	20	vive
36	42	18	60	32	22	18	225	24	24	varve
42	48	22	68	43	22	18	350	24	24	vetch
48	54	24	76	43	22	18	400	24	24	vax
54	60	24	86	43	22	18	600	24	24	vaid
60	66	24	98	43	20	18	710	24	24	valor
66	72	30	103½	49	20	18	800	24	24	vamp
72	80	30	114	54	20	18	880	24	32	vane
84	92	36	130	54	18	16	1050	24	32	vang
96	116	45	153	54	18	16	1200	24	32	van

For round bases, "E" dimension remains the same.
For capacities note preceding page.



Patented

Effico Rotary Ball Bearing Ventilator—Internal Louver



Open Closed

Multiple Circular Louver Damper in Neck of Ventilator

As a Wind-Electric

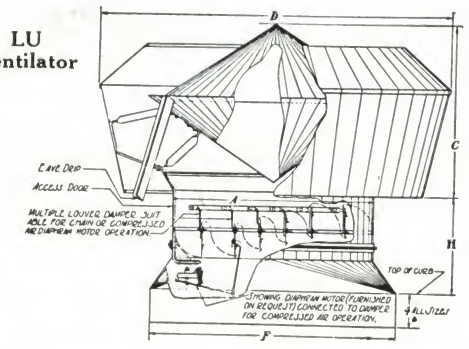
The Effico Louver Unit Ventilator can be furnished with automatically operating electric motor. Note following page.

L U Ventilator

A unit ventilator containing the circular multiple damper like the Effico shown above. This stationary head is described on the second following page. This head *only* is sold as the S E Head.

Cost—The L U Ventilator is low in cost and is well made. Note specifications on second page following. For those preferring a stationary ventilator we recommend this high class exhauster.

LU Ventilator



Patented

For dimension chart, see second page following.

Continued on next page

Effico Wind-Electric Ventilator, Full Automatic

Principle of Operation—This is the regular Effico wind driven head equipped with an auxiliary electrically-operated fan.

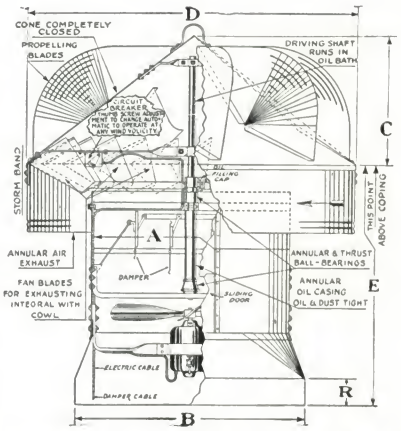
When the wind is blowing sufficiently to drive the wind turbine, and remove the desired amount of air from the building being ventilated, the electric motor is still. Instantly, when the wind turbine moves below previously-determined revolutions, the electric motor carries the load, starting automatically, and runs until the wind again drives the wind turbine.

The *electric motor is cut off and on automatically.* The throat is slightly enlarged to allow for the motor.

Wind-Electric Power—Wind or no wind, this ventilator will exhaust a previously determined volume of air.

When in Use—For installations which require a definite minimum exhaust at all times or which may require an unusually heavy exhaust at intermittent periods. For exceedingly difficult installations, where Effico Ventilator Heads (wind driven only) due to location are not practical, the Effico Wind-Electric Ventilator will successfully ventilate any type of building.

Special Advantages—Besides the regular automatic operation the motor may also be so connected as to give a maximum exhaust capacity (running full speed) by manual control, thus allowing a great volume of air to be exhausted at will.



Details of Effico Wind-Electric Rotary Ball Bearing Ventilator
Patented

Adaptability—Adjustable to exhaust various quantities of air within the limits of given sizes and is regularly supplied at capacities equivalent to a 5-mile wind and 10° temperature difference rating.

If the wind drops below 5 miles per hour or temperature below 10° difference, the Effico Wind-Electric Ventilator maintains its regular exhaust capacity.

Any other capacity can be supplied and the ventilator is adjustable to any constant capacity after installation.

Power Consumption—1/30 hp. to ½ hp. Effico Wind-Electric Ventilators require very little power.

Static Pressure—Motor and fan can be supplied to pull against ⅛-in. static resistance by the employment of motor only, or motor and wind turbine. This will have no deteriorating effect on using apparatus for regular ventilating purposes.

Selecting a Ventilator—When in need of a ventilating apparatus it is best to choose one that does not depend upon mechanical exhausting *only,* for a good roof ventilator is acknowledged to be *superior* to an arrangement that closes entirely unless the motor is running.

Self-contained United Construction—The Effico Wind-Electric Ventilator comprises the wind turbine, the same type head as described on previous pages, electric motor, fan, and roof base which form a complete exhaust unit.

The motor is furnished and installed by us in the ventilator.

Dampers—Effico Wind-Electric Ventilators are supplied with tight fitting, carefully balanced dampers. The larger sizes are furnished with Effico Multiple Circulator Louver Dampers.

See preceding page.

All dampers are operatable by chain, electrically, or by compressed air in connection with thermostatic controlled heating and ventilating systems.

Pneumatic or electric damper control is supplied and installed in the ventilator if desired.

Effico Low Height—All Effico Ventilators are lower in height than any other ventilator by almost 50%. "C" dimension should be above coping.

Note dimensions below.

Finish—Handsomely painted in gray or any desired color if made of galvanized sheets.

Specifications—The roof ventilators to exhaust from (....) to be the Effico Wind-Electric Ventilators (full automatic) as made by the W. F. Hirschman Co., Inc., Buffalo, N. Y., the sizes to be as shown on the prints. They shall be of [toncan iron] [copper]. The current for the motors is: current ....; voltage ....; cycle .....

CAPACITIES OF EFFICO ROTARY BALL BEARING VENTILATORS—AUTOMATIC WIND-ELECTRIC
Cubic Feet of Air Exhausted Per Minute

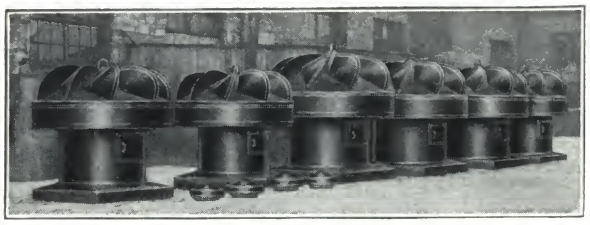
Wind velocity, m.p.h.	Temperature difference in degrees Fahrenheit between air in building and outside air								
	0°-10°	10°-20°	20°-30°	0°-10°	10°-20°	20°-30°	0°-10°	10°-20°	20°-30°
	12-in. Ventilator			**18-in. Ventilator**			**24-in. Ventilator**		
0 to 5	440	515	560	850	950	1040	1600	1780	1900
	30-in. Ventilator			**36-in. Ventilator**			**42-in. Ventilator**		
0 to 5	2300	2690	2900	3400	3810	4100	4500	5010	5500
	48-in. Ventilator			**54-in. Ventilator**			**60-in. Ventilator**		
0 to 5	5900	6700	7400	7300	8450	9500	9300	10600	11900
	72-in. Ventilator			**84-in. Ventilator**			**96-in. Ventilator**		
0 to 5	13500	14600	16000	18000	21000	23000	22500	27000	29000

Greater capacities by adjustment can be made after installation.

DIMENSIONS OF EFFICO WIND-ELECTRIC VENTILATOR

Ventilator sizes, in., corresponding to those in capacity table	Dimensions, in. (see diagram)					Thickness of metal			Motor h.p.
	A Actual size of ventilator	B Base	C Height of blades	D Diam. of storm band	E Height to propellor blades	Gage G. I. Cowl	Gage G. I. Base	Copper, oz.	
12	14	20	8	21¾	32	24	22	16	1/30
18	19	26	10	28½	32	24	22	18	
24	25	38	14	40	40	24	20	18	
30	31	40	14	50	42	24	20	20	
36	37	44	18	60	45	22	18	24	1/6
42	43	50	22	68	51	22	18	24	
48	49	56	24	76	51	22	18	24	
54	55	62	24	86	51	22	18	24	¼
60	61	66	24	98	55	22	18	24	
72	73	80	30	114	55	20	16	24	
84	85	92	40	130	55	20	16	32	½
96	97	116	45	153	55	20	16	32	

R dimensions—5 in. on all sizes.



Battery of Effico Wind-Electric Full Automatic Ventilators

This battery of three 48-in., two 42-in., and one 36-in. Effico Wind-Electric Full Automatic Ventilators was photographed before installing. Note size by contrast with the background. They have a combined exhausting capacity of 31,500 c.f.m., regardless of wind velocity or temperature difference and can be adjusted to a 25% increase if necessary. Combined motors have only 2 hp. consumption. Now installed in a Massachusetts school

Continued on next page

S E Ventilators

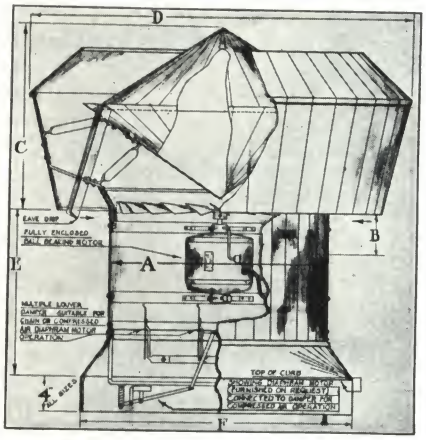
The S E Ventilator heads are made of only prime sheets. The fabricated members are carefully formed to offer the least resistance to the air flow. These members for galvanized ventilators, are rustproofed after forming. For copper ventilators, the smaller size members are made of copper. For very large ventilators the members are iron, rustproofed. Electric welding is used considerably, all rivets have washers under the burred end of rivet, like all Hirschman products.

Design and Appearance—A ventilator designed to exhaust air at the highest possible velocity. Strength (sturdy construction), weatherproof, high syphon exhaust capacity and appearance, in the order named are given consideration in the design of this ventilator.

S E Ventilator Head

Exhaust Head—The design is such that air driven 1200-ft. velocity through the head, registers only .015 water gauge static pressure. This is unequalled by any other known shape. Thus for a fan or high heat exhaust head, it is unequalled. When so used and the fan is cut off the ventilator still ventilates as a syphon ventilator. There are no shutters to blow or freeze shut.

Weatherproof — Absolute—no rain, snow or storm can beat in. Is also visionproof, will resist backdrafting during a 5-mile wind against an adverse temperature difference of 10° F. Also during the same wind velocity will not backdraft unless a greater than static pressure resistance of .025 water gauge.



F Fan Ventilator (Electric)
(Patented)

Exhaust Capacity Syphonage Principle—Note capacity chart, these capacities are conservative. The S E is a very high grade stationary type syphon ventilator. It starts exhausting at slightly over a 2-mile wind without any temperature difference.

F Fan Ventilator (Non-automatic)

For free air or as a pressure blower is decidedly an apparatus of high merits for a specific application.

Recommendation—A high class ventilator where a high exhaust velocity against resistance is required, especially at certain periodical times. Where the Effico Rotary Head, or the Effico Wind-Electric Automatic Ventilator, due to obstructed location or its moderate even capacity is not required, then we recommend the F Fan Ventilator.

Construction—Very heavily made and employing only the best types of motors. *Access door to motor and fan provided.* Motor and fan protected against the elements as well as if installed in the building.

Dampers—Chain operating, close fitting damper supplied with all sizes unless otherwise ordered. Can be supplied with circular multiple louver damper with, or for, pneumatic or electric damper motor.

Fire Damper—Fusing link furnished if required. There are no outside louvers to freeze or blow shut.

Bases—Included with fan ventilators.

Cost—A moderately priced exhauster of unusual merits.

Wind Direction—There is no front or back to this ventilator; the wind helps the F ventilator and is not an interference.

DIMENSIONS OF S E AND F VENTILATORS

Dimensions, in. (see diagram)						Thickness of metal			
						Ga. galvan.		Oz. copper	
A	B	C	D	E	F	Head	Base	Head	Base
12	6	10	22	24	16	24	24	16	16
18	6	16	32	24	24	24	24	16	16
24	8	21	42	30	30	24	24	16	16
30	8	27	52	30	36	22	20	18	20
36	10	33	36	30	42	22	18	20	24
42	10	38	71	30	48	20	18	20	24
48	12	42	81	36	54	18	18	20	24
54	12	46	91	36	60	18	18	20	24
60	12	60	102	36	66	18	16	24	24
66	16	66	102	36	72	18	16	24	32
72	16	70	120	36	78	18	16	24	32
84	16	76	120	36	92	18	16	24	32

For utilizing heads only use "B, C and D" dimensions.

GRAVITY EXHAUST CAPACITIES S E VENTILATOR HEADS

Cubic Feet of Air Exhausted Per Minute

Wind velocity, miles per hour	Temperature difference in degrees Fahrenheit in building and outside											
	0	10	20	30	0	10	20	30	0	10	20	30
	12-in. Ventilator				**18-in. Ventilator**				**24-in. Ventilator**			
5	160	275	330	380	360	610	740	800	600	1050	1280	1380
10	250	360	460	525	560	715	950	1050	900	1400	1675	1800
	30-in. Ventilator				**36-in. Ventilator**				**42-in. Ventilator**			
5	940	1660	2000	2200	1300	2400	2950	3150	1900	3275	4000	4300
10	1410	2220	2600	2800	2100	3160	3700	3900	2700	4300	5000	5300
	48-in. Ventilator				**54-in. Ventilator**				**60-in. Ventilator**			
5	2450	4200	5100	5500	3100	5375	6400	6800	3800	6600	7850	8500
10	3400	5390	6500	7000	4400	7200	8300	8800	5500	8000	9200	10000
	66-in. Ventilator				**72-in. Ventilator**				**84-in. Ventilator**			
5	4600	8000	9550	9800	5500	9500	11400	12000	7400	13000	14800	16000
10	6500	10600	11500	12000	7700	12700	14000	15000	9800	17400	19000	22000

CAPACITIES OF F FAN VENTILATORS

Size of stack, in.	Speed, r.p.m.	Cu. ft. min. less than 1/8-in. sp.	Cu. ft. min. 1/4-in. sp.	Cu. ft. min. 3/8-in. sp.	Type of motor	Hp.	Telegraph code
12	1425	650	.....	.....	T.D.	1/30	Range
	1750	900	.....	.....	S. R.	1/25	Ram
18	855	1675	900	.....	S.D.R.	1/8	Rank
	1140	2000	1350	.....	S.D.R.	1/6	Rap
	1420	2200	1600	1200	T.Q.	1/6	Raze
24	780	2600	1700	900	S.T.D.Q.	1/6	Ray
	850	3000	2600	1400	T.D.S.R.	1/4	Rat
	570	4000	3000	2100	S.T.	1/3	Rash
	870	3500	3000	2600	T.D.S.	1/2	Rase
	1140	4500	3700	3200	S.D.R.	1/2	Rugn
30	680	4500	3600	2700	D.Q.	1/4	Rein
	680	5500	4500	3200	D.Q.	1/2	Ride
	900	6000	5000	3600	S.R.T.	1/2	Rinse
36	550	5500	5200	3900	S.R.	1/2	Rime
	575	8500	7200	5900	S.T.Q.R.D.	3/4	Rig
42	575	11000	8000	6500	S.T.Q.R.D.	3/4	Roar
	490	10000	7000	5000	S.T.R.Q.D.	1	Roast
	490	7000	5700	.....	S.T.R.Q.D.	1/2	Rook

Prefix letters in motor column indicate kind of current for which the motors are available.

Alternating—S, single-phase, 60 cycle. R, two or three-phase, 60 cycle. T, single-phase, 25 cycle. Q, two or three-phase, 25 cycle. D, direct current.

The low speeds are suitable for schools, theaters, auditoriums and other quiet running requirements.

Suggested Specifications for Fan Ventilators—The Fan Ventilators shall be the size as shown in plans [square base] [round base] style, to be of [toncan iron] [copper] the motors of (....) r.p.m., (....) hp., (....) current, delivering each (....) c.f.m. They shall be the F Fan Ventilators as manufactured by W. F. Hirschman Co., Inc., Buffalo, N. Y.

KERNCHEN COMPANY

Ventilating Engineers
101 East Wacker Drive, CHICAGO, ILL.
FACTORY
SOUTH GARY, IND.
EASTERN OFFICE: 15 Beekman Street, NEW YORK, N. Y. Telephone Beekman 7980
AGENCIES IN PRINCIPAL CITIES

Product

"K-S-V's" (KERNCHEN SIPHONAGE VENTILATORS).

"K-S-V's" Are Correct Siphons

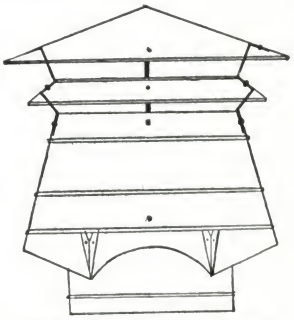
The correct siphon is the most powerful pulling force known to this field of ventilation. It not only exhausts, but it pulls terrifically. The siphons harness the lightest air currents, compressing and compelling them to co-act in mightily increasing the suction of air out through the ventilator.

TRADE-MARK

Construction

Simplicity of construction and complete absence of the friction inevitably involved in old-style rotary mechanisms make the "K-S-V" a troubleproof, lasting investment. Free area of outlet over 200% of pipe area. Nothing to choke or hinder. Friction at minimum, exhaust at maximum.

The eduction pipe is cylindrical with V-shaped notches or openings at the top, each covered by a siphon tapered inwardly toward the top, the total of four siphons being covered by a jacket of conical shape, whereby other siphons (four) are formed, greatly increasing the terrific pulling power. In addition, a top construction of two specially designed hoods is used, augmenting considerably the pulling force and making the unit stormproof.



"K-S-V" Drawn to Exact Proportion

The absence of friction, no revolving mechanism being present, means silent performance, nothing to wear out, nothing flopping around, no maintenance cost. A rotary requires a certain wind energy to swing it around *before it gets ready to ventilate*. The "K-S-V" *uses this wind energy to ventilate.*

Furnished in any size and made of any metal desired such as galvanized steel, Keystone copper steel, Armco iron, Toncan metal, cold rolled copper, aluminum zinc, monel metal, etc.

Furnished with or without base (see following page) damper or condensation arrestor.

Special Ventilation Service

The KERNCHEN COMPANY specializes in ventilation and its engineers are always available, gratis.

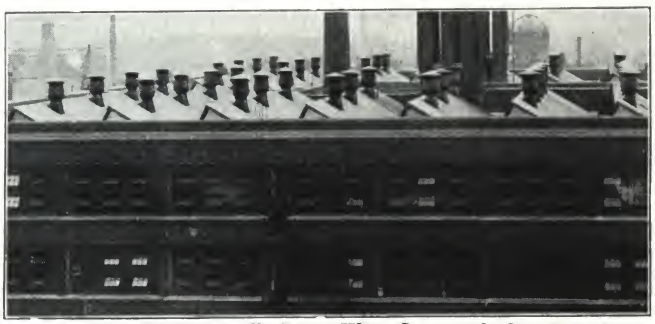
Particular attention given to difficult or unusual problems involving great heat as well as temperatures below the freezing point; steam conditions; elimination of condensation, moisture, fumes, gases or smudge, foul or vitiated air, in every type of building or room.

Specifications

Roof ventilators to be "K-S-V's" as manufactured by the KERNCHEN COMPANY, 101 East Wacker Drive, Chicago, Illinois, in the following sizes (specify sizes by neck diameter and quantity of each size).

Bases are to be "K-S-V's" as manufactured by the KERNCHEN COMPANY, 101 East Wacker Drive, Chicago, Illinois, and furnished in following types to fit ventilators (specify by type number; see following page and give pitch of roof in inches per foot).

Caution—Beware of imitations and infringements; protect yourself by specifying "K-S-V's."



52 "K-S-V's" Installed on This Sawtooth Roof with Pivoted Sash

Where Used

For all buildings and all bad air conditions. "K-S-V" does the work of three ordinary ventilators. Save this cost!

Booklet—"It Pulls"

A postal will bring our latest illustrated booklet, "It Pulls," containing complete information concerning "K-S-V's" (Kernchen Siphonage Ventilators).

Five 42-in. Ordinary Ventilators Replaced by Five 36-in. "K-S-V's"

This is one of hundreds of instances where ordinary ventilators have had to be torn out and replaced by "K-S-V's." But there is *not one* instance we know or ever heard of where "K-S-V's" were replaced by any other kind of ventilator.

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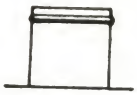
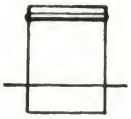


No. 1
Round Base for Flat Roof



No. 2
Round Base for Flat Roof with Extension

No. 3
Round Base for Slant Roof

No. 4
Round Base for Slant Roof with Extension

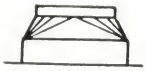
No. 5
Round Base for Gable Roof

No. 6
Round Base for Gable Roof with Extension

No. 7
Square to Round Base for Flat Roof

No. 8
Square to Round Base for Slant Roof

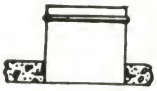
No. 9
Square to Round Base for Gable Roof



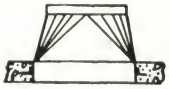
No. 10
Square to Round Base with Shoulder for Flat Roof

No. 11
Square to Round Base with Shoulder for Slant Roof

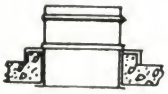
No. 12
Square to Round Base with Shoulder for Gable Roof



No. 13
Round Base for Flat Concrete Roof with Angle Iron Ring at Bottom

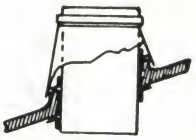


No. 14
Square to Round Base for Flat Concrete Roof with Angle Iron at Bottom



No. 15
Round Base for Flat Concrete Roof with Curb

No. 16
Square to Round Base for Flat Concrete Roof with Curb



No. 17
Straight Round Base for Federal or Similar Concrete Tile Roof

Official Tests

Nothing is more deceptive than irresponsible, theoretical tests.

Exaggerated performance figures will appear to be justified at times by laboratory tests conducted under conditions which are more favorable than those found in actual service.

It is only when laboratory and *field* tests agree, that the results can be taken as conclusive.

Note particularly the consistent figures in the two accompanying tests by national authorities, one conducted in the laboratory, the other on the Leader Building installation in Cleveland, Ohio.

OFFICIAL TEST OF "K-S-V's" (KERNCHEN SIPHONAGE VENTILATORS) CONDUCTED BY ARMOUR INSTITUTE OF TECHNOLOGY, CHICAGO

SHOWING EXHAUST UNDER DIFFERENT WIND VELOCITIES, AND WHICH SCIENTIFICALLY PROVES THE TERRIFIC PULLING POWER AND 100% TO 300% MORE EFFICIENCY THAN THAT OF OTHER VENTILATORS

Wind velocity miles per hour	Air pulled through ventilator, lineal ft. per min.	Cubic feet air pulled through ventilator: Size of ventilator, in.	12	14	16	18	20	24	30	36	42	48
5	460	Per min.	364.0	492.2	644.0	814.2	1,003	1,444	2,250	3,247	4,485	5,776
		Per hr.	21,840	29,532	38,640	48,852	60,180	86,640	135,000	194,820	269,100	346,560
10	670	Per min.	525.0	717.0	938.0	1,186	1,460	2,103	3,280	4,730	6,533	8,412
		Per hr.	31,500	43,020	56,280	71,160	87,600	126,180	196,800	283,800	391,980	504,720
15	960	Per min.	754.0	1,027	1,344	1,699	2,100	3,014	4,700	6,777	9,300	12,056
		Per hr.	45,240	61,620	80,640	101,940	126,000	180,840	282,000	406,620	561,600	723,360
20	1,220	Per min.	957.0	1,305	1,708	2,159	2,660	3,830	5,980	8,613	11,895	15,320
		Per hr.	57,420	78,300	102,480	129,540	159,600	229,800	358,800	516,780	713,700	919,200
25	1,480	Per min.	1,161	1,584	2,072	2,619	3,230	4,647	7,250	10,448	14,430	18,588
		Per hr.	69,660	95,040	124,320	157,140	193,800	278,820	435,000	626,880	865,800	1,115,280

(Signed) G. F. GEBHARDT, A. H. ANDERSON, Mechanical Engineers, Armour Institute of Technology

Case School of Applied Science—Test Nov. 6, 1913 on Roof of Leader Building, Cleveland, Ohio		Armour Institute of Technology—Test April 17, 1911, in Laboratory
15 inches	Diameter of ventilator	15 inches
5.32 miles per hour, or 6⅔% stronger than Armour's	Velocity of outside wind	5 miles per hour
497	Velocity of air pulled through ventilator per min., lineal ft.	460
610	Exhaust of ventilator per min., cubic ft.	564
Outside temperature, 67° Fahr.	Inside temperature, 85.8° Fahr.	

(Signed) E. H. Moore
Head of Mech. Eng. Dept., Case School of Applied Science

(Signed) A. P. Kimball, A. H. Anderson
Mech. Engrs., Armour Institute of Technology

Note: We challenge all to furnish such authentic unbiased and *official* tests as conducted and *signed* by three institute of technology professors.

A PARTIAL LIST OF CORPORATIONS USING "K-S-V'S"

Railroads all over the country
U. S. Steel Corporation
Republic Iron & Steel Co.
Carnegie Steel Co.
Standard Oil Co.
Buick Motor Co.
Pullman Co.
Studebaker Corporation
American Can Company
Continental Can Company
Packard Motor Car Company
Ford Motor Car Company
Ajax Forge Co.
International Harvester Co.
Jones & Laughlin Steel Co.
National Cash Register Co.
American Car & Foundry Co.
Western Electric Company
Barrett Mfg. Company
Willys Overland Company
Thompson-Norris Paper Company
Armour & Company
Swift & Company
Sears, Roebuck & Co.
Montgomery Ward & Co.
General Chemical Company
Marathon Paper Company
Bryant Paper Company
Grays Harbor Paper Co.
Crown Willamette Paper Co.
Churches and Hospitals

Details of "K-S-V" Ventilator Bases and "K-S-V" Test Data

ESTABLISHED 1866

MERCHANT & EVANS CO.

Manufacturers of Roof Ventilators

PHILADELPHIA, PA.

Also Sold by: GLOBE AUTOMATIC SPRINKLER COMPANY (General Agents)
OFFICES IN PRINCIPAL CITIES

Products

"STAR" VENTILATORS: Standard and Fire Retarding Types.

For "Almetl" Doors and Shutters, see Manufacturers' Index.

Standard "Star" Ventilators

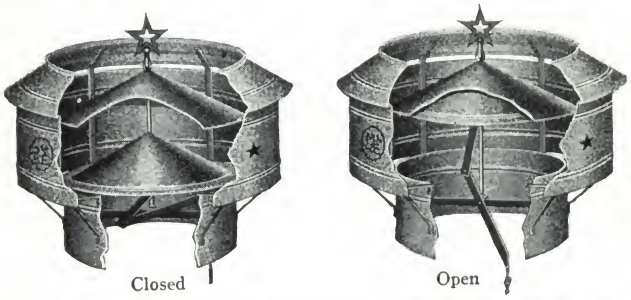
Standard "Star" Ventilator

A scientific combination of the ejector and siphon principles applied to stationary roof ventilators, which in conjunction with large exhaust outlets protected to defy the elements, gives a maximum of efficiency at a minimum of investment cost.

Fire Retarding "Star" Ventilators

Of the same appearance and construction details as the Standard with the addition of a patented gravity damper. A chain connected by a fusible link holds the damper in any position between open and closed; and is arranged to automatically drop the damper to a closed position when exposed to a high temperature.

This style is particularly recommended for factories, warehouses and buildings where control of heat losses during winter months is desired.



Closed Open

Fire Retarding "Star" Ventilator with Automatic Gravity Damper (Patented)

Bases

Bases are regularly made of the same weight material as the ventilator proper. Regulation bases are made square at the bottom and gradually taper to cylindrical shape at the top. Straight pipe bases furnished when requested. All bases have roof flanges of suitable width. All seams and joints thoroughly soldered to prevent leakage.

Flat disc counterbalanced dampers, strongly reinforced for rigidity, operated by either cord or chain, also furnished when required. These flat dampers are held on specially designed pivots, made of brass to prevent corrosion.

Exhaust Capacity

Recent comparative tests based on wind action only of roof ventilators conducted at Engineering Experiment Station, Kansas State Agricultural College, developed the "Star" to have a greater average exhaust capacity than any in the following groups of types tested: open pipe, plain stationary, siphoning stationary, and plain rotary, with wind velocities at 4, 6, 8 and 10 miles per hour.

EXHAUST CAPACITIES OF "STAR" VENTILATORS

Size, in.	Gauge steel	Weight C. R. copper, oz.	Exhaust* capacity in cu. ft. per hour based on wind action only at 10 miles per hour; no temperature difference	Exhaust capacity in cu. ft. per hour based on wind velocity at 10 miles per hour; temperature difference 20° F. and height above intake 20 ft.	Regulation square to round bases: Opening in roof, in.	Regulation square to round bases: Height of base, in.
3	26	16	1,260	1,880	.....	.....
4	26	16	2,230	3,380	.....	.....
5	26	16	3,490	5,280	.....	.....
6	26	16	5,020	7,600	.....	.....
7	26	16	6,830	10,340	.....	.....
8	26	16	8,930	13,510	10x10	15
9	26	16	11,300	17,100	12x12	15
10	26	16	13,950	21,110	12x12	24
12	24	16	19,930	30,160	14x14	24
14	24	16	27,350	41,380	16x16	24
15	24	18	31,400	47,500	18x18	30
16	24	18	35,720	54,040	18x18	30
18	22	18	45,200	68,400	22x22	30
20	22	20	55,800	84,440	24x24	30
22	22	20	67,530	102,170	28x28	30
24	22	20	79,740	120,645	30x30	30
26	22	20	93,580	141,580	32x32	30
28	20	20	108,520	164,200	34x34	36
30	20	20	124,570	188,470	36x36	36
32	20	20	141,750	214,460	38x38	36
34	20	20	160,020	242,120	40x40	38
36	20	20	179,400	271,440	42x42	40
40	20	24	221,490	335,110	48x48	48
42	20	24	244,190	369,450	50x50	48
44	20	24	267,990	405,470	50x50	48
46	20	24	292,730	442,910	52x52	48
48	20	24	318,930	482,530	56x56	48
54	18	24	403,640	610,710	64x64	48
60	18	24	498,340	753,984	72x72	60
64	18	24	566,810	857,590	.....	.....
66	18	24	602,980	912,310	.....	.....
72	18	24	717,600	1,085,720	.....	.....
84	18	24	976,740	1,477,810	.....	.....
96	18	24	1,275,750	1,930,200	.....	.....

*According to comparative tests made by engineering experiment station, Kansas State Agricultural College.

Prices on application.

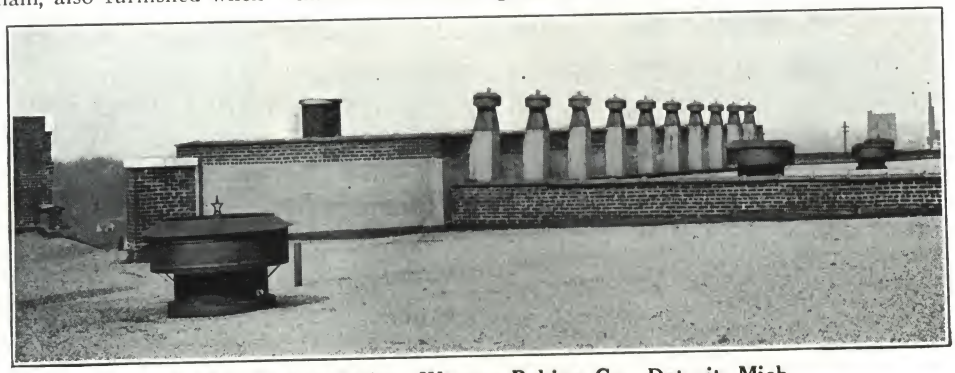
Ventilators larger than 50-in. diameter shipped in sections.

Specifications for "Star" Ventilators

The roof ventilators where shown on the plans shall be "Star" [Standard Type] [Fire Retarding Type] as manufactured by MERCHANT & EVANS CO., Philadelphia, Pa. Ventilators to be of sizes shown and shall be constructed of (state material) and of the manufacturer's standard gauge for the sizes shown.

Ventilator bases to be of the sizes and types shown and made of the same gauge and material as the ventilator heads.

Base without Ventilator Showing Disc Damper



A Notable Installation, Wagner Baking Co., Detroit, Mich.
Where forty-five 24-in. and six 36-in. copper fire retarding Star Ventilators are installed

PENN VENTILATING COMPANY

Manufacturers of Pul-Air, Liberty, Perfection and Penn Ventilators

2008-2010 East Arizona Street, PHILADELPHIA, PA.

OFFICES IN ALL PRINCIPAL CITIES

Liberty Ventilator

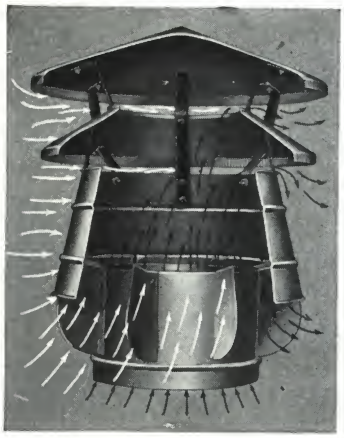
Because of the ingenious, effective way in which it harnesses and utilizes outside air currents, the Liberty Ventilator represents the supreme achievement of modern engineering skill.

All of the air currents—upward, downward, horizontal or swirling—are brought under control and forced to perform their task of drawing heat, foul air, steam fumes, smoke or floating dust up and out of the building.

The Liberty Ventilator utilizes four principles of physical science: (1) air impingement; (2) positive and negative air action (pressure and vacuum); (3) siphonage; (4) stack action.

It has eight wind catching fins which stop the wind and turn it upwards through the large cone-shaped skirt which is tapered at the top to increase the velocity of the current. A free area is maintained throughout the ventilator to prevent choking at any point.

The lower cone flange keeps rain and snow out of the flue, and the strong overhead cone makes it absolutely stormproof.



Cross section showing sturdy construction throughout. Arrows indicate path of outside air currents and foul air being exhausted through ventilator from building interior

LIBERTY VENTILATOR DATA

Size	Area sq. in.	Exhaust per hour cu. ft. in 8-mile wind	App. shipping wt. lb.	Gauge of metal
6	28	6364	6	26
7	38	8661	11	26
8	50	11331	14	26
9	64	14315	16	26
10	79	17671	19	24
12	113	25446	26	24
14	154	34638	36	24
16	201	45234	51	24
18	254	57252	65	24
20	314	70697	90	22
22	380	85536	103	22
24	452	101802	125	22
26	531	119459	150	22
28	616	138542	180	22
30	707	159054	220	20
36	1018	229038	395	20
42	1385	311721	460	20
48	1810	405360	600	20
54	2290	515160	850	20
60	2827	636000	900	18–20
66	3421	769800	990	18–20
72	4072	915948	1400	16–18
84	5542	1246752	2150	14–16

Years of experimentation and testing by skilled ventilating engineers have resulted in the manufacture of this most efficient ventilator, which is not dependent on stack action.

Pul-Air Ventilator

The Pul-Air Ventilator is the result of nearly a quarter of a century's specialized experience in the ventilating field.

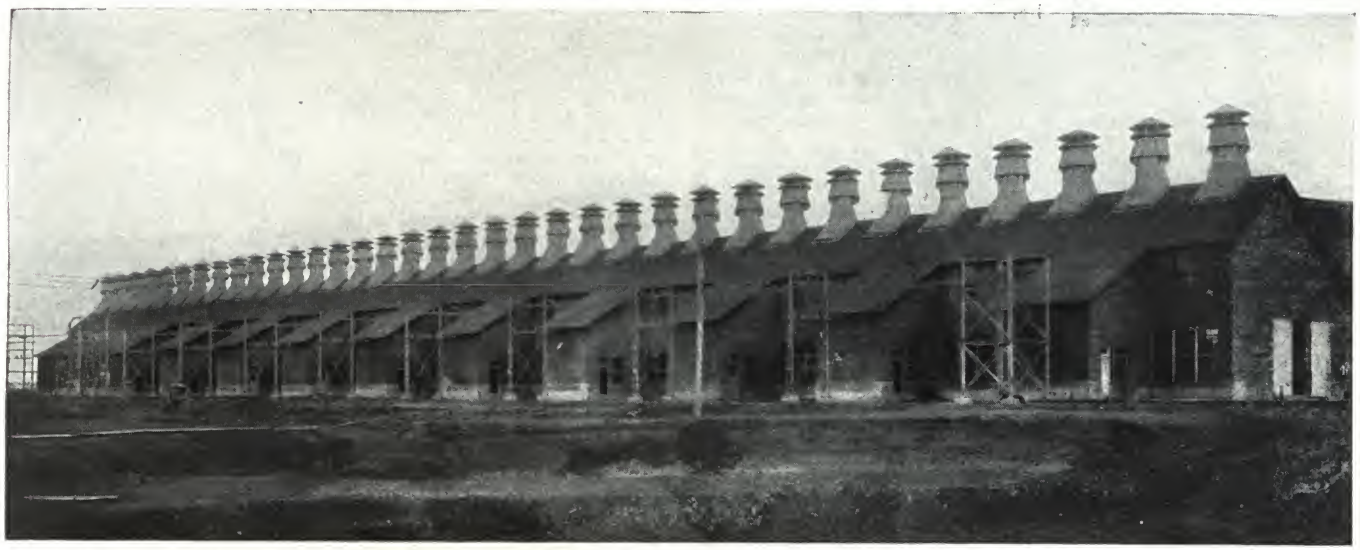
It successfully meets, in every particular, the demand for a highly efficient, weatherproof ventilator at a moderate price.

It is heavily and substantially built by expert workmen. It has a free air exhaust and is proof against back-draft. It is easy to install and has no upkeep expense attached. It is architecturally beautiful, and it can be made with glass top, if desired, thus serving the double purpose of ventilator and skylight. It can also—for the use of hospitals, schools, mills, railroads, and in fact, any type of enclosure—be readily screened insect and bird proof.

It has thoroughly demonstrated its superiority over the ordinary ventilator over a long period of time, and under practically every condition of overhead ventilation. It has been used on 100 prominent buildings.

Made in any metal. Prompt shipment from large stocks.

A Noteworthy Liberty Ventilator Installation



One of the World's Largest Ventilator Installations—Aluminum Company of America, Saguenay River, Canada

35 60-in. and 5 48-in. aluminum ventilators were used on this installation. We specialize in the manufacturing of aluminum ventilators using aluminum throughout

H. H. ROBERTSON COMPANY

Manufacturers of Ventilators

PITTSBURGH, PA.

FACTORIES: AMBRIDGE, PA.; SARNIA, ONT., CAN.; ELLESMERE PORT, CHESHIRE, ENG.

DISTRICT OFFICES

BALTIMORE, MD. BIRMINGHAM, ALA. BOSTON, MASS. BUFFALO, N. Y. CHICAGO, ILL. CLEVELAND, OHIO DETROIT, MICH. HAVANA, CUBA HOUSTON, TEX. JACKSONVILLE, FLA. LOS ANGELES, CAL. NEW YORK, N. Y. PHILADELPHIA, PA. PITTSBURGH, PA. ST. LOUIS, MO.

AGENCIES

ALLENTOWN, PA. BUTTE, MONT. CHARLESTON, W. VA. DENVER, COLO. EASTON, PA. EL PASO, TEX. HOUGHTON, MICH. LITTLE ROCK, ARK. MILWAUKEE, WIS. MINNEAPOLIS, MINN. NEW HAVEN, CONN. PORTLAND, ORE. RICHMOND, VA. ST. PAUL, MINN. SALT LAKE CITY, UTAH SAN FRANCISCO, CAL. SCRANTON, PA. SEATTLE, WASH. SYRACUSE, N. Y. WASHINGTON, D. C.

ENGLAND, ELLESMERE PORT, CHESHIRE: Mersey Iron Works

CANADA AND NEWFOUNDLAND: H. H. ROBERTSON CO, LTD., TORONTO, ONT., AND MONTREAL, QUE.

Products

Robertson Ventilators.

The Robertson Ventilator is protected by United States Patent No. 1,589,581, June 22, 1926; Canadian Patent No. 244,617; other patents pending; also covered by patents in other countries.

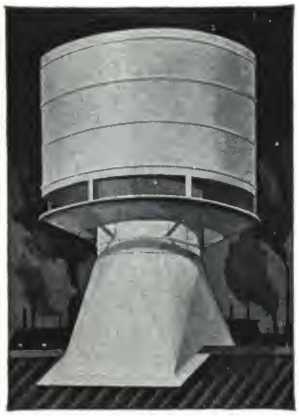
For Robertson Protected Metal (RPM) for Roofing, Siding, Flashings, etc., Protected Steel Roof Decks and V-Beam Roofing, Glazing Construction, Skylights, Sidewall and Special Sash, see Manufacturers' Index.

TRADE-MARK

Robertson Ventilator

The successful ventilation of industrial and commercial buildings depends directly on the achievement of correct answers to these fundamental questions:

How many roof ventilators will be needed to ventilate the building effectively and economically? . . . What should be the *size* of these ventilators? . . . Just *how* and *where* should the ventilators be installed for best results?



Robertson Ventilator

Equipped with an installation of Robertson Ventilators, a building will be ventilated with *maximum* efficiency and at the lowest cost obtainable with such efficiency. For every Robertson Ventilator installation is based on *facts*. Guesswork and rough estimates of ventilator requirements have no place in Robertson Ventilation Engineering.

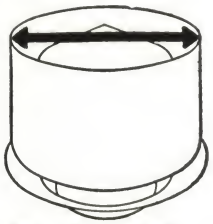
The services of the Robertson Ventilation Engineering Department are available without cost or obligation to architects, engineers and plant officials. Robertson Ventilation Engineers make a thorough and comprehensive study of each ventilation problem. They get at the facts underlying every particular requirement. They bring to bear on each specific problem the *facts* which they have accumulated through years of experience in the ventilation of buildings of almost every type.

Then, after having determined the building's ventilation requirements with scientific accuracy, our engineers specify an installation of Robertson Ventilators that meets each specific need in every respect. A Robertson proposal will call for exactly the size and number of ventilators required for the efficient and economical ventilation of the building. Robertson Engineers specify no more ventilators than are needed and no less.

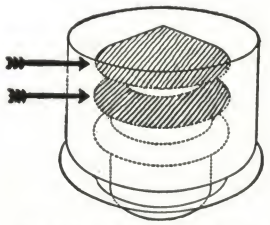
Robertson Ventilator Construction and Advantages

The Robertson Ventilator has an exceptionally powerful exhaust capacity—a superiority which is due primarily to the Robertson *suction band*. This band, scientifically designed as to size, proportions and position, multiplies the displacement or air pulling area of the ventilator more than six times. Passing winds blowing across the top and bottom of the *suction band* create a partial vacuum in the *ventilator pipe*—a strong, continuous suction which literally pulls foul air, fumes, smoke, steam, etc., out of the building.

The condensed table of capacities herewith shows the exhaust capacity of Robertson Ventilators of various sizes under the following conditions: wind velocity—8 miles per hour; difference in temperatures of indoor and outdoor air—20° F.; height of ventilators above air intake—50 ft. These figures are dependable. They represent *actual* discharge capacities, not the so-called "rated" capacities which are widely used in connection with roof ventilators and which are, as a rule, merely a matter of estimate.



Enlarged Air Displacement Area
Gives powerful exhaust capacity



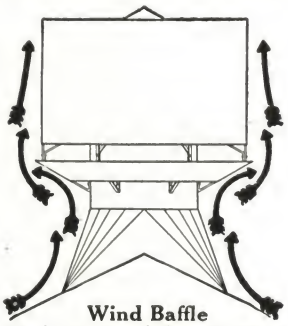
Cap and the Louvre Ring
Make the ventilator positively stormproof

ROBERTSON VENTILATOR CAPACITIES*

Size, in.	Discharge cap. per min., cu. ft.	Size, in.	Discharge cap., per min., cu. ft.
12	462	42	5658
16	898	48	7398
18	1041	54	9341
20	1499	60	11560
24	1848	66	13872
30	2882	72	16646
36	4160	84	22472

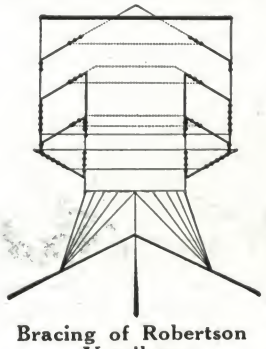
*For conditions affecting these capacities see preceding paragraph.

A roof ventilator whose design permits rain, snow and wind to enter a building is not an efficient ventilator. One of the great advantages of the Robertson Ventilator lies in the fact that the *cap* and the *louvre ring* render it positively stormproof and make it impossible for downward air currents to enter the ventilator and interfere with its natural discharge.



Wind Baffle
Produces remarkable efficiency on pitched roofs

The *wind baffle* of the Robertson Ventilator is the invention of Robertson Engineers and is to be found on no other ventilators. This feature has solved one of the most difficult problems in roof ventilator design. It positively overcomes the adverse effect of wind currents deflected upward from pitched roofs. Upward air currents entering a ventilator from below seriously interfere with the discharge of air. The Robertson *wind baffle* deflects such air currents, as shown in the illustration, and thus prevents them from entering the ventilator. This is the reason why we claim no other ventilator on the market can compare with the Robertson Ventilator in efficiency on pitched roofs.



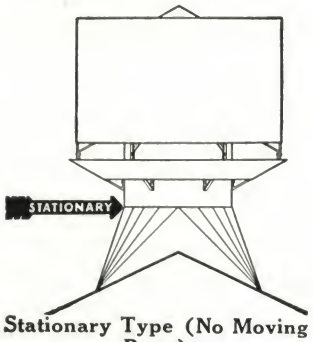
Bracing of Robertson Ventilator

The various component parts of the Robertson Ventilator are joined together into a strong, rigidly constructed unit by an efficient system of bracing (as shown in the accompanying illustration). The ventilator parts are bolted to the braces and held permanently tight by lock washers. The result is a ventilator of exceptional structural strength and rigidity.

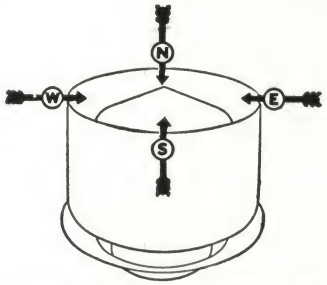
Continued on next page

The modern tendency is distinctly towards ventilators of the *stationary* type—ventilators with no moving parts that require a perfectly level setting for efficient operation. The Robertson Ventilator is of the *stationary* type. Once erected, it requires no further attention, no adjustments of any kind, no repairs.

Because it is of the *stationary* type—with no moving apparatus to be caught and operated by the wind—and because it presents a uniform surface in all directions, the Robertson Ventilator operates efficiently at all times *regardless of the direction of the wind.*



Stationary Type (No Moving Parts)



Operates Efficiently Regardless of Wind Direction

Robertson Ventilators are made of Robertson Protected Metal (RPM), copper, galvanized steel, aluminum, or any other material that may be specified.

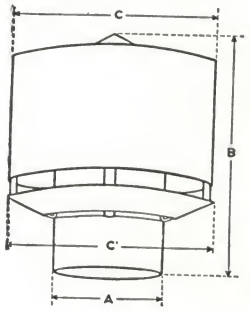
Where ventilators will be exposed to severe corrosive conditions, Robertson Protected Metal is the ideal material.

Ventilators made of Robertson Protected Metal are rust and corrosion proof and never require painting.

Dimensions, Gauges and Weights—As can be seen from the table below, Robertson Ventilators are made in all sizes used in standard practice.

You will note, too, that the material used in the Robertson Ventilators of each size are of a gauge which assures rigidity, strength and endurance. Below are given the dimensions, weights and the gauges of Robertson Protected Metal and galvanized iron.

Complete erection instructions are forwarded with each ventilator.



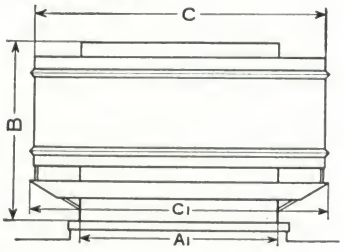
Dimensions, in.				Gauge* gal. and RPM	App. net wt., lbs.		App. shpg. wt., lb.	
A	B	C	C1		Galv.	RPM	Galv.	RPM
12	22 5/8	22 3/4	24	24	31	46	64	81
14	27 1/16	26 1/2	28	24	40	59	77	99
16	29 3/4	30 1/8	32	24	48	70	96	125
18	32 7/8	34	36	24	57	87	138	172
20	38 7/8	37 1/2	40	24	71	103	166	209
24	45	45 3/8	48	22-24	110	160	299	357
30	55 3/8	57	60	20-22	191	247	443	529
36	67 3/4	67 1/2	72	20-22	275	358	545	647
**42	74 7/8	79 3/8	84	18-20	528	584	786	933
**48	89 3/8	91	96	18-20	635	782	1026	1219
**54	101 3/4	102	108	18-20	796	969	1219	1465
**60	108 5/8	113	120	18-20	1127	1395	1697	2052
**66	126 1/2	125	132	18-20	1360	1645	2182	2589
**72	129	136	144	18-20	1680	1995	2476	2932
**84	149 3/4	158 3/4	168	16-20	2314	2805	3146	3784

*Where two gauges are shown, heavier gauge is for stock only.
**Indicates that ventilator is shipped partially knocked down.

Robertson Rectangular Ventilators

Made in rectangular shapes to harmonize with the architectural designs of buildings where straight lines are desirable. Popular for use in schools, public buildings, power houses and similar buildings.

The tables herewith show dimensions, net weights and shipping weights of Robertson Rectangular Ventilators.



All capacity tables are based upon the round-style Robertson Ventilators; in the tables you will find, opposite each size of Rectangular Ventilator, the size of the Robertson Round Ventilator of corresponding capacity.

The capacities of all sizes of round-style ventilators are given in the Robertson Ventilation Data Book. Send for a copy.

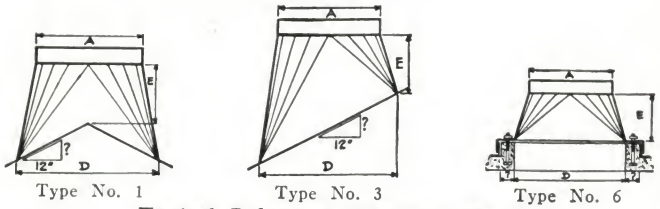
ROBERTSON RECTANGULAR VENTILATORS

Size A1	Dimensions, in. B	C	C1	Gauge, galv. and RPM	App. net wt., lb. Galv.	RPM	App. shpg. wt., lb. Galv.	RPM	Size, Robt Round Vents having same exhaust cap., in.
8 x 16	15 1/8	23 1/8	24	22	31	46	62	77	12
10 x 20	19 1/2	29 1/2	30	22	48	70	88	110	16
12 x 24	22 5/8	34 3/4	36	22	57	87	127	157	18
18 x 36	32 7/8	52	54	22	110	160	289	339	24
24 x 48	45	69 3/8	72	22	275	358	335	618	36
30 x 60*	55 3/8	87	90	22	528	584	638	694	42
36 x 72*	67 3/4	103 1/2	114	22	796	969	1061	1234	54
42 x 84*	74 7/8	121 3/8	126	22	1360	1645	1731	2015	66
48 x 96*	89 3/8	139	144	22	1680	1995	2084	2398	72
54 x 108*	101 3/8	156	162	22	2314	2805	2869	3360	84
60 x 120*	108 5/8	173	180	22	3340	3804	4143	4606	90
66 x 132*	126 1/2	191	198	22	3890	4426	4828	5363	96

*Shipped partially knocked down.

Robertson Ventilator Bases

Bases can be furnished with Robertson Ventilators to meet the requirements of any kind of roof. The three types diagrammed below are most commonly used. Types 1 and 3 are made to fit roofs of any slope; in ordering specify type of base and roof slope. Type 6 is made to fit over wood, concrete or other curbs; when ordering give size of opening and curb thickness. Round to square bases are strongest and are shipped unless special construction is ordered.



Type No. 1 Type No. 3 Type No. 6

Typical Robertson Ventilator Bases

DIMENSIONS, GAUGES AND WEIGHTS OF VENTILATOR BASES

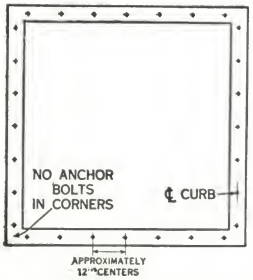
Dimensions, in. Size A	Size D	Size E	Gauges, RPM and galvanized	Approximate net weight, lb. Galv.	RPM	Approx. shipping weight, lb. Galv.	RPM
12	16 x 16	10	22	12	16	56	64
14	18 x 18	10	22	18	23	63	73
16	21 x 21	10	22	25	30	66	77
18	24 x 24	10	22	35	40	79	90
20	28 x 28	10	22	45	55	98	111
24	32 x 32	10	22	55	75	106	120
30	38 x 38	12	20	75	100	143	162
36	45 x 45	14	20	110	140	173	200
*42	52 x 52	**14	18	140	180	273	299
*48	60 x 60	**15	18	190	230	432	495
*54	68 x 68	**16	18	240	300	542	618
*60	78 x 78	**20	18	300	380	539	627
*66	87 x 87	**22	18	360	480	638	740
*72	96 x 96	**24	18	460	580	841	968
*84	110 x 110	**26	16	660	770	1090	1221
*90	118 x 118	**28	16	785	920	1329	1485
*96	126 x 126	**30	16	935	1085	1514	1689

*Ventilator base shipped in two pieces.
**Dimension E for Type No. 6 Bases, 42 in. and larger, is one-half of Dimension A.

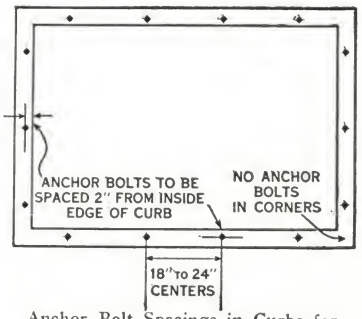
Anchor Bolt Spacings

The diagrams herewith show the spacings to use in placing bolts for Robertson Round Ventilators in concrete curbs, and for Robertson Rectangular Ventilators for either concrete or wood curbs.

For round ventilators on wood curbs, lag screws are usually used; on approximately 12-in. centers, ⅜-in. lag screws for ventilators up to 42-in. size, and ½-in. screws for ventilators over 42-in. size.



Anchor Bolt Spacing in Curbs for Robertson Round Ventilators



Anchor Bolt Spacings in Curbs for Robertson Rectangular Ventilators

Write for a copy of the Robertson Ventilation Data Book containing data on ventilation exhaust capacities under all probable conditions

ROYAL VENTILATOR COMPANY

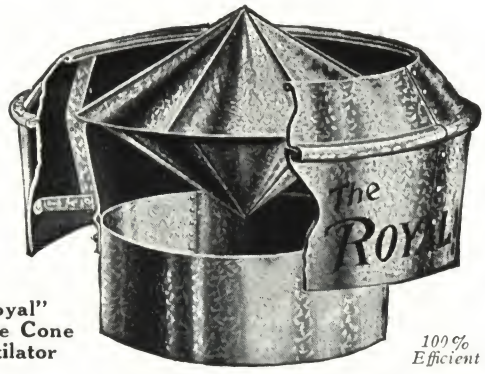
412 Locust Street
PHILADELPHIA, PA.

Products

Manufacturers of "ROYAL" VENTILATORS of Galvanized Steel, Copper, Toncan Metal, Armco Iron, etc.:

Glass Top Ventilators; Rectangular and Square Ventilators with fire retarding dampers; Smoke Jack and Combination Ventilators; Insectproof and Birdproof Ventilators.

The ROYAL TRADE-MARK (Reg. U. S. Pat. Off.)



"Royal" Double Cone Ventilator

100% Efficient

Double Cone Ventilators

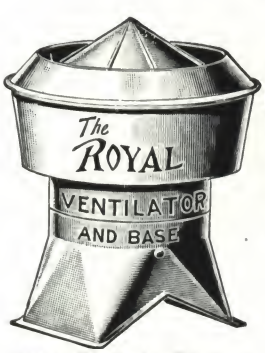
The "Royal" is so designed that full advantage is taken of the wind to produce additional draft. Complete renewal of air is accomplished under the most difficult and unusual conditions by installing "Royal" Double Cone Ventilators. The many unique and original principles embodied in the design of the "Royal" make it 100% effective and insure positive ventilation under any weather condition. Tapered frustums deflect the outer air over and under the edges of the frustums resulting in a powerful suction in the tube; this means maximum exhausting capacity. Foul gases, etc., will readily pass out even when no wind is blowing. The inverted or bottom cone of the "Royal" avoids the creation of eddies, the outgoing air having a free outlet unimpeded by excess friction. The upward moving foul air, etc., strikes the inverted cone and is drawn directly upward and outward.

The "Royal" is not affected by down-drafts.

Construction—Superior and exclusive construction features include lapped seams, giving three thicknesses of metal at joints, usually the weakest point. Wired edges and galvanized malleable iron or copper stays so arranged that they cannot interfere with the passage of air currents. The double cone has standing seams and gives two thicknesses of metal instead of one.

Adapted for foundries, powerhouses, factories, as well as schools and other buildings.

Made in standard sizes 2 to 96 in.



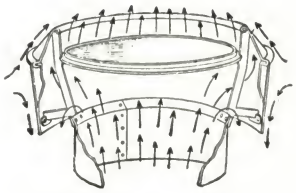
Bases Made to Fit Any Type or Pitch of Roof

Cone Damper "Royal"

Used where low base is required. Lower cone is detached, slides on rod closing ventilator when lowered. Can be fitted with fusible link. Unobstructed air passage when damper is open

Specification

"Furnish and erect Royal Double Cone [Glass Top] Ventilators, manufactured by ROYAL VENTILATOR COMPANY, Philadelphia, Pa."



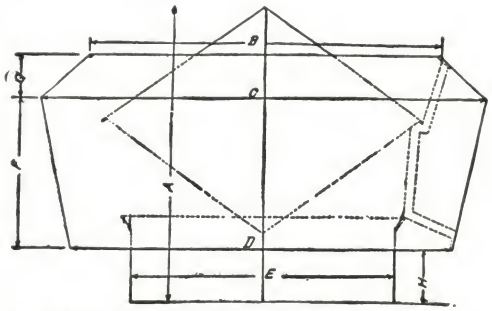
"Royal" Glass Top Ventilator

Contains greater glass area, reflects more light, gives more ventilation

"Royal" Ventilator with Disc Fire Damper

"Royal" Rectangular Ventilator

Designed to meet conditions where the maximum amount of ventilation is required at all times. Made in any desired size, with or without dampers, glass or metal top. Also made square



Sectional Drawing "Royal" Double Cone Ventilator

"ROYAL" DOUBLE CONE VENTILATOR DATA

Size, in.	Cu. ft. exhaust per min., wind 5 miles per hour		Dimensions, in.								Area, sq. in.	Gage of iron	Weight of copper, oz.
	Temp. dif. in bldg. and outside		A	B	C	D	E	F	G	H			
	0°	20°											
10	141	186	12	13	16	14	10	5	2	3	78	24	16
12	159	417	13	15	19	16	12	6	2	3	113	24	16
16	388	512	17	20	26	23	16	8	3	3	201	24	16
18	490	832	18	23	29	26	18	8	3	3	255	24	16
20	606	911	21	25	31	28	20	10	4	5	314	24	16
22	709	1059	24	26	34	32	22	11	4	5	380	24	16
24	874	1373	24	30	39	34	24	11	5	5	453	22	16
26	1005	1631	24	33	42	36	26	13	4	3	527	22	16
28	1186	2080	26	35	45	40	28	13	5	3	615	20	16
30	1364	2390	26	35	45	41	30	14	5	4	707	20	18
32	1551	2700	25	37	47	44	32	14	5	4	804	20	18
34	1765	2987	28	40	50	48	34	15	5	4	908	20	18
36	1961	3361	28	44	56	51	36	15	6	4	1017	20	18
40	2424	4124	34	47	61	55	40	16	7	5	1257	18 and 20	18
42	2673	4680	32	52	68	63	42	17	7	3	1386	18 and 20	18
44	3124	5310	35	54	70	64	44	18	7	5	1620	18 and 20	18
48	3489	5987	39	59	75	70	48	19	8	4	1809	18 and 20	20
54	5414	8304	42	68	84	77	54	22	9	4	2390	18 and 20	20
60	6665	9721	47	76	94	82	60	23	8	8	2807	18	24
66	7851	13346	52	81	103	94	66	26	9	6	3504	18	24
72	10682	16910	50	86	108	98	72	26	10	6	4071	18	24

Send for catalogue and detail card.

THE SWARTWOUT COMPANY

Rotary Ball Bearing Ventilators

18515 Euclid Avenue
CLEVELAND, OHIO

NEW YORK, N. Y., 103 Park Avenue
ST. LOUIS, MO., Chemical Building
ATLANTA, GA., Glenn Building
PITTSBURGH, PA., Grant Building
CHICAGO, ILL., 549 W. Randolph Street
AGENTS AND STOCKS IN PRINCIPAL CITIES

Products

SWARTWOUT ROTARY BALL BEARING VENTILATORS.

Other products manufactured are Swartwout Ventilator Bases, Swartwout Air Intakes; Swartwout Power Plant Equipment, including Feed Water Regulators, Pressure Valves, Pump Governors, Vacuum Governors, Master Controls, Reducing Valves, Relief Valves, Drainage Controls, Traps, Separators, Exhaust Heads, Desuperheater Governors, Feed Water Heaters and Swartwout Metal Insulated Ovens for industrial baking, burning and drying.

Swartwout
Rotary Ball Bearing
Ventilators

Swartwout Rotary Ball Bearing Ventilator

Swartwout Rotary Ball Bearing Ventilators are built in standard sizes of from 10 to 72-in. diameters; of heavy galvanized Armco ingot iron or special metal as required; collars two gauges heavier than body. All sizes shipped as completely assembled units.

All sizes are equipped with bronze bearings and bronze balls; louver dampers and ratchet attachment with 6 ft. of chain. Additional chain at nominal charge.

Turning freely on accurately machined bearings, Swartwout Ventilators always face away from the wind. As the air currents maintain a continuous suction at the mouth, a steady flow of air is drawn from the building.

By means of efficient louvers and a chain attachment, the open area of Swartwout Ventilators is easily controlled from within the building. This provides regulation of ventilation so that the amount of air movement may be changed, if desired, by simply resetting the louvers. No other type of ventilator can be controlled in this manner.

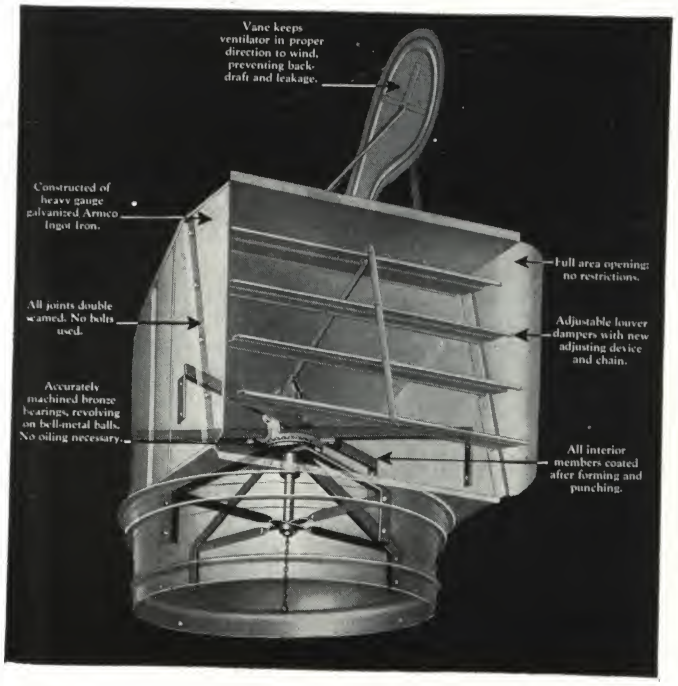
No Upkeep or Repairs—Efficient in design and sturdy in construction, Swartwout Ventilators operate automatically for years without the slightest attention. No oiling or greasing is necessary as moving parts are practically frictionless.

Determining Ventilator Sizes

The volume of air handled by any roof ventilator is affected by many conditions. Among these conditions are wind velocity, direction of wind, location and sizes of surrounding buildings or other obstructions and size of open windows, or doors, and methods of heating. In determining specifications, it is essential to use a sufficient factor of safety to be certain of complete ventilation at all times.

The cost of a few more or larger ventilators is insignificant when compared to the difference between satisfactory and unsatisfactory ventilation.

The conservative table herewith is presented for your guidance in determining ventilator sizes. The actual capacity will, in most cases, be much greater than that shown.

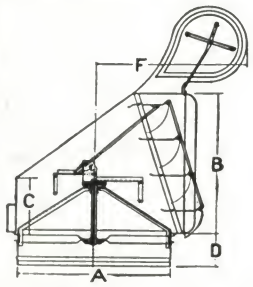


CONSERVATIVE AIR RATING OF SWARTWOUT ROTARY BALL BEARING VENTILATORS

Size of vent, in.	Cu. ft. per min.	Size of vent, in.	Cu. ft. per min.	Size of vent, in.	Cu. ft. per min.
12	275	24	1100	54	5500
14	370	30	1700	60	6850
16	490	36	2550	66	8250
18	650	42	3400	72	9850
20	800	48	4450		

Metal Ventilator Specification

All ventilators to be of rotary ball bearing type [galvanized Armco ingot iron] [special metal], all interior members [of angle iron, coated after forming and punching] [stamped from galvanized metal]. Ventilators to turn sensitively on accurately machined special hard bronze bearings, employing bronze balls, and counter weighted on outside. Ventilators to be equipped with outside louver dampers to throw accumulated dirt outside of building, louvers to be operated from within by chains over brass pulleys. Gauge of metal to be THE SWARTWOUT COMPANY, Cleveland, Ohio, standard, as furnished in Swartwout Rotary Ball Bearing Ventilators.



DIMENSIONS OF SWARTWOUT ROTARY BALL BEARING VENTILATORS

For dimensions A, B, C, D, F, in inches, see table below

A	B	C	D	F	Gauge iron	Weight copper, oz.	Net weight, lb.	Crated weight, lb.
10	9⅛	4	4	11½	24	18	15	20
12	11	4¾	4	14¼	24	18	20	25
14	12⅞	5¾	4	15½	24	18	28	30
16	14¾	6	5	17	24	18	35	40
18	16½	6⅝	5	19	24	18	45	55
20	18½	7 9/16	5	21	24	18	50	65
24	22	9	7¼	24½	24	20	60	80
30	27½	11 5/16	7¾	30	22	24	120	175
36	33	13½	7¾	34½	22	24	160	240
42	38½	15¾	9½	41¼	20	28	225	390
48	44	18 3/16	9¾	46½	20	28	320	465
54	49½	20¼	13½	47	20	28	485	690
60	55	21½	13½	61	20	28	560	750
66	60½	24¾	13½	62½	20	28	650	825
72	66	27	13½	67½	20	28	780	950

Drafting Room and Specification Helps

"The Gospel of Fresh Air," a new edition of the 44-page ventilation handbook that has proved so helpful to architects.

"Modern Ventilation Bulletins," devoted to outlining various ventilation problems and methods by which they have been solved.

"Ventilation Data Card," 8½x11 in. heavy card reference, covers air requirements, capacities, ventilator and base specifications and drawings.

Any or all of these will be sent without charge.

UNO VENTILATOR COMPANY

Exclusive Manufacturers of Electric-Welded Turbine Ventilators Equipped with Patented Oilless Bearings

TELEPHONE
SAUGUS 795

OFFICE AND WORKS
CLIFTONDALE, MASS.

UNO
"Sure As Sunrise"

The UNO VENTILATOR COMPANY was established in 1906. During the life of the Company thousands of Uno Ventilators have been manufactured and distributed by them through all the prominent metal jobbers of the country, for installation on practically every type of building, such as industrial plants, churches, theatres, restaurants, garages, etc.

The Uno is the one positive mechanical cure for balky chimneys.

Uno Turbines are extremely durable, sensitive to the lightest breeze, weatherproof, absolutely impervious to heat, and are efficient when properly installed, under any and all conditions. They exhaust air infallibly whether that air be hot or cold, dirty or clean, damp or dry.

Construction

The Uno Turbine Ventilator derives its remarkable drawing power through centrifugal force.

When the breeze revolves the head, a strong centrifugal push is given to the surrounding air, causing it to become thinner, almost to a vacuum.

This vacuum is replaced by an upward flow of air through the body and out through the head.

The faster the head revolves, the stronger is the centrifugal force, and accordingly the stronger the pull of the ventilator.

The main bearing is a hardened pivot in a patented oilless bearing.

There are no ball bearings to clog or stick.

Iron units are electric-welded. All units are equipped with patented oilless bearings, guaranteed to be trouble-free for at least 10 years.

Sizes from 4 in. through 12 in. carry two forged braces to support the head; 14 to 16 in. carry three. Sizes 18 in. through 48 in. carry four braces for the support and also carry an additional feature of an extra propeller fan built into the inside of the head for extra suction power.

Methods of Installation

Care should be taken not to install the Uno in any pocket under a ridge, or behind any obstruction.

Place the Uno high enough to get the breeze from every direction.

No lubrication whatever is needed at any time.

Uno Ventilators should be set plumb vertical and then absolute satisfaction is assured.

It is well to build condensation gutters into all ventilation bases which support Unos, since hot humid air striking a cold ventilator causes moisture. These gutters should have vents opening out over the supporting sills.

Standard Specifications for Uno Ventilators

The roof ventilators shall be Uno Turbine Rotary Ventilators of the standard construction of the UNO VENTILATOR COMPANY, in sizes as shown in plans. All ventilators shall be of standard weights of galvanized iron (or copper) as used by the UNO VENTILATOR COMPANY. All metal bases supporting Uno Ventilators shall incorporate drip gutters to carry off condensation.

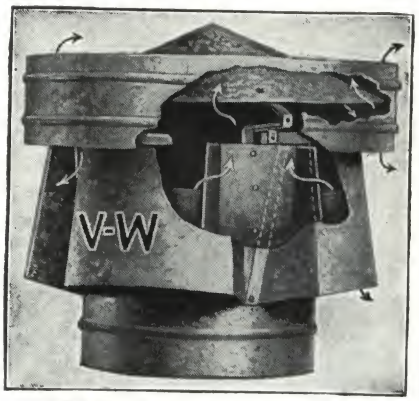
Size, in.	Exhaust capacities (cu. ft.) at wind velocities of		Galvanized iron painted		Copper		Approximate weights, lb.
	4 miles per hour	8 miles per hour	List price	Gauge*	Ounces	List price	
4	8,000	10,000	$ 7.20	28 and 24	14 and 18	$ 10.80	12
6	10,400	14,100	7.80	28 and 24	14 and 18	11.70	14
7	13,500	17,400	8.10	28 and 24	14 and 18	12.15	16
8	16,800	20,500	9.00	28 and 24	14 and 18	13.50	22
9	22,400	28,300	10.50	28 and 24	14 and 18	15.75	23
10	26,500	32,500	12.00	28 and 24	14 and 18	18.00	25
12	39,000	47,000	14.70	28 and 24	14 and 18	22.05	28
14	41,000	48,100	20.40	28 and 20	14 and 20	30.60	39
15	52,500	67,500	23.10	28 and 20	14 and 20	34.65	43
16	60,000	72,000	30.00	28 and 20	14 and 20	45.00	45
18	87,000	103,000	48.00	28 and 20	16 and 20	72.00	60
20	105,100	125,600	58.00	28 and 20	16 and 20	87.00	80
21	115,000	128,000	63.00	28 and 20	16 and 20	94.50	100
24	151,000	187,000	81.00	28 and 20	16 and 20	121.50	120
30	225,000	272,000	120.00	24 and 20	16 and 20	180.00	200
36	285,000	332,000	150.00	24 and 20	16 and 20	225.00	250
42	324,000	414,000	190.00	24 and 20	16 and 20	285.00	375
48	365,000	475,000	220.00	24 and 20	16 and 20	330.00	500

*Special gauges in any metal furnished on order.

THE V-W VENTILATOR COMPANY

V-W Roof Ventilators

2879 A. I. U. Building, COLUMBUS, OHIO



V-W Roof Ventilator—Type A

FRESH AIR

TRADE V-W MARK VENTILATOR THE V-W VENTILATOR CO. COLUMBUS, O.

EVERYWHERE

Products

V-W Roof Ventilators.

For V-W Built-in Ventilators, Window Ventilators, Tiger Floor Clips and Ceiling Clips, see Manufacturers' Index.

V-W Roof Ventilator—Type C

V-W Roof Ventilator Features

(1) Syphons Out Air—Built on the syphon principle, the V-W Ventilator actually sucks out foul air, gases, fumes, steam and odors regardless of direction or velocity of the wind.

(2) No Moving Parts—Being stationary, the V-W Ventilator always operates at full efficiency. Once installed, it automatically does all the work, with nothing to stick, rattle or get out of order.

(3) Stormproof—No Down-draft—V-W Ventilators are stormproof. There can be no back pressure or down-draft due to the shielded hood and the continual discharge of exhausted air.

(4) No Extra Costs—Once installed, the V-W Ventilator insures a lifetime of efficient ventilation without further cost. There are no operating expenses, no upkeep, no parts to wear out and nothing to replace. The first cost is the only cost.

Meets All Specifications

V-W Ventilators meet all specifications for positive removal of bad air. V-W's have even been accepted by building inspectors in many places where building codes prescribed fan or mechanical ventilation. The reason is that V-W's are always effective whereas the latter type must first be put in operation before they become effective.

Let V-W Solve Your Ventilation Problems

The V-W Ventilator Company specializes in the elimination of objectionable gases which arise in various manufacturing processes. This company will submit plans for special ventilators to meet any situation or ventilating problem.

Uses

V-W Roof Ventilators are used on schools, industrial plants, hospitals, theaters, hotels, and farm buildings.

The cross sections, above, show how V-W Ventilators, without moving parts, syphon out bad air and prevent down-draft.

V-W Roof Ventilator and Base

CAPACITY AND PRICE LIST OF TYPES A AND C VENTILATORS

*Size, in.	†Capacity cu. ft. per hr., 10 mile wind speed		Gauge metal		‡Price list, galvanized iron			
	A	C	A	C	A	C	Base	Damper
8	6,750	4,950	24	26	$ 11.00	$ 8.00	$ 15.00	$ 2.00
10	10,500	7,700	24	26	12.00	9.00	15.00	2.00
12	15,000	11,500	24	26	13.00	12.00	16.00	2.00
16	27,000	20,000	24	24	24.00	19.00	19.00	3.00
20	42,000	31,000	22	24	36.00	25.00	25.00	4.00
24	61,000	44,500	22	24	41.00	33.00	27.00	5.00
30	95,000	69,500	22	22	52.00	48.00	35.00	7.00
36	140,000	100,000	20	22	73.00	71.00	47.00	10.00
48	245,000	180,000	18	20	111.00	107.00	64.00	14.00
60	380,000	280,000	16	18	153.00	130.00	91.00	19.00
72	545,000	400,000	16	18	222.00	178.00	132.00	24.00

*Other sizes to meet any specifications.

†Capacities were taken from tests by A. I. Brown, Professor of Heating and Ventilating, Department of Mechanical Engineering, the Ohio State University. Capacities are with no chimney action present; chimney action increases ventilator capacities depending upon difference in temperature between inside and outside and upon height of ventilator above intake. Capacities are approximately proportional to outside wind speeds; ventilator velocity in per cent of outside wind speed: Type A, 37%; Type C, 27%.

‡Discounts furnished on application.

Suggested Specifications

V-W Type A (C) ....-inch, ...-gauge copper-bearing galvanized iron (non-copper-bearing galvanized iron, lead-coated iron, copper) Roof Ventilators, manufactured by The V-W Ventilator Company, Columbus, Ohio, shall be located as shown on plans, mounted level with the highest point on the building. Manufacturer shall guarantee ventilators against defects in workmanship and material.

Some Installations

Diamond Match Company, Morristown, New Jersey
J. W. Tottle Chain Stores, Baltimore, Md., C. W. Anderson, Architect
Lewis E. Tauber, Inc., Red Hill, Pennsylvania
New York Central Railroad Company
Pure Oil Company
State Hospital, Cleveland, Ohio, Herbert Briggs, Columbus, Ohio, Architect
Ohio State University, Columbus, Ohio, Joseph N. Bradford, Architect
Neil House Hotel, Columbus, Ohio, Gustave W. Drach, Inc., Cincinnati, Ohio, Architect
North High School, Columbus, Ohio, Frank L. Packard, Architect
Gallery of Fine Arts, Columbus, Ohio, Richards, McCarty & Bulford, Architects
Central Market House, Columbus, Ohio, T. J. Tully, Architect
International Derrick & Equipment Company, Columbus, Ohio
John Brown Manufacturing Company, Columbus, Ohio
Mead Pulp & Paper Company, Chillicothe, Ohio
Southwestern Portland Cement Company, Osborn, Ohio
Dayton Engineering Laboratories, Dayton, Ohio
Delco Products Company, Dayton, Ohio
Lima Woolen Mills, Lima, Ohio
Toledo-Edison Company Garage, Toledo, Ohio, Alfred A. Hahn, Architect
U. S. Roofing Company, Toledo, Ohio
Olds Motor Works, Lansing, Michigan
Sheridan High School, Sheridan, Wyoming

"Whichever way the wind doth blow, some heart is glad to have it so."

ESTABLISHED 1880

LIONEL VALLAS

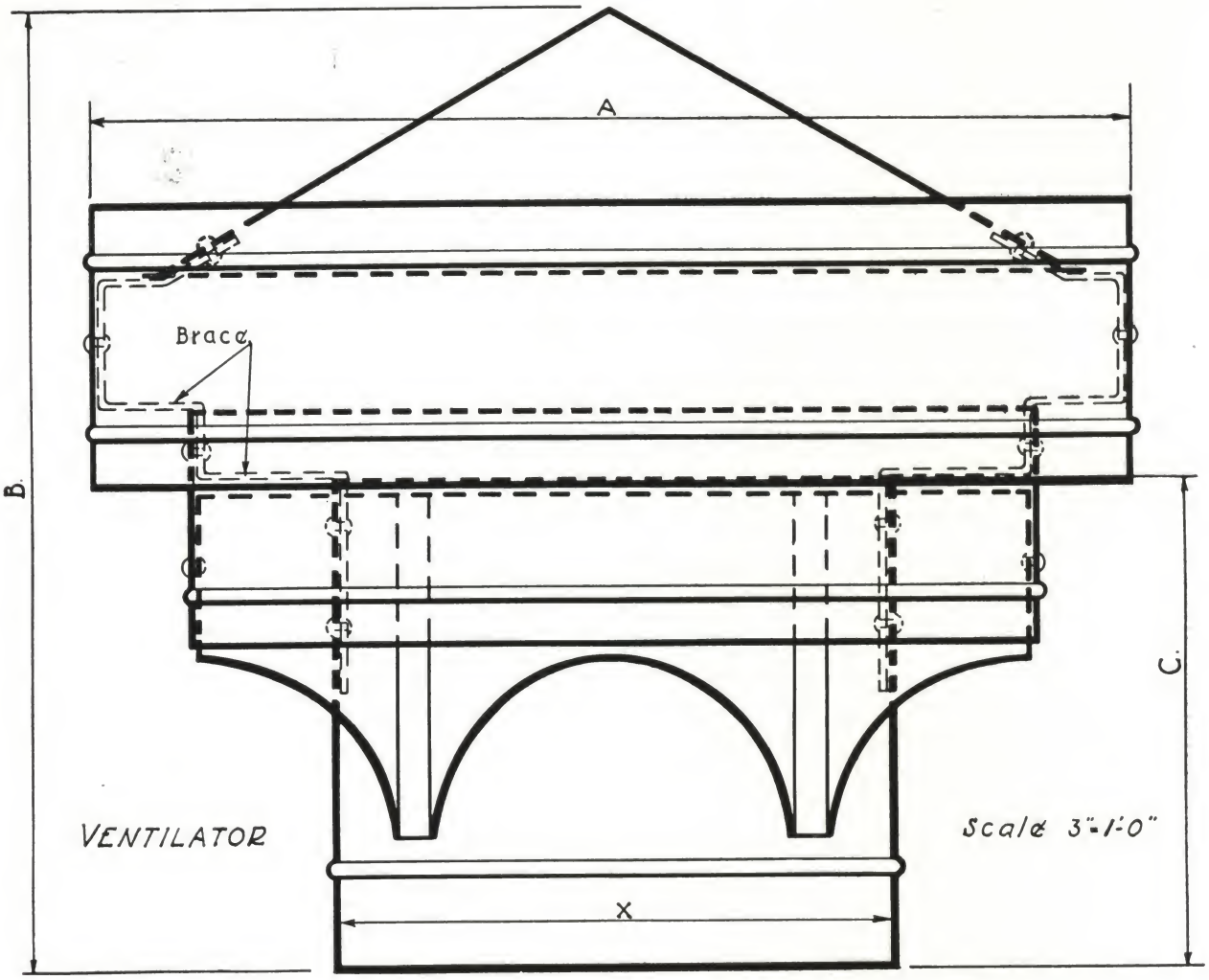
Manufacturer of Sheet Metal Products

2850 West Lake Street, CHICAGO, ILL.

See Manufacturers' Index for Lionel Hollow Metal Window and Lionel Full Ventilating Skylight

LIONEL SYPHON TYPE VENTILATOR

The Lionel Syphon Ventilator is the product derived from 50 years of constant experimenting with syphonage principles. By actual tests in our shop and in the field, under all different conditions that exist in theatres, factories, schools and offices it has proved itself most efficient.

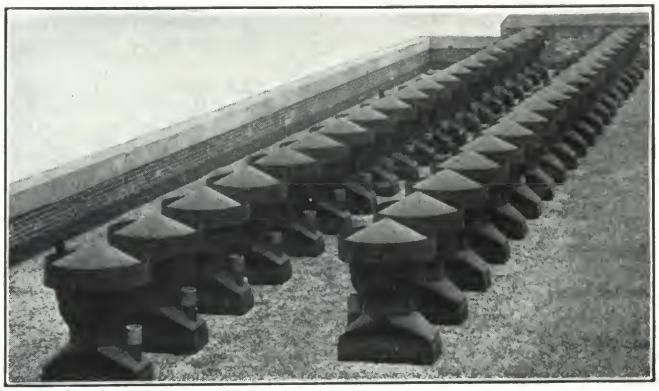


Sizes and Materials

Lionel Ventilators are furnished in any size with or without base or damper and made of any materials desired, such as galvanized iron, copper, aluminum, zinc, monel metal, etc.

Note

We recommend that you call at our office for an anemometer test or write for capacity information.



Typical Installation

An opportunity to estimate your work will be given prompt and careful attention.

PROPORTION SCHEDULE

X . . in.	12	14	16	18	20	24
A . . in.	22 1/8	26	30	34	37 3/4	45
B . . in.	20 1/2	23 1/2	25 3/4	30 3/4	35 1/2	39 3/4
C . . in.	8 7/16	11 1/2	11 3/4	14 3/4	17 3/4	19

ESTABLISHED 1873

E. VAN NOORDEN COMPANY

Roof Ventilators

TELEPHONE
HIGHLANDS 3040, 3041, 3042

100 Magazine Street, near Massachusetts Avenue
BOSTON, MASS.

Products

VAN NOORDEN VANCO-SYPHON VENTILATORS.
VANCO STEEL DOOR BUCK.

For our page on "Anchor-Bar" Rolled Steel Puttyless Skylights, see Manufacturers' Index.

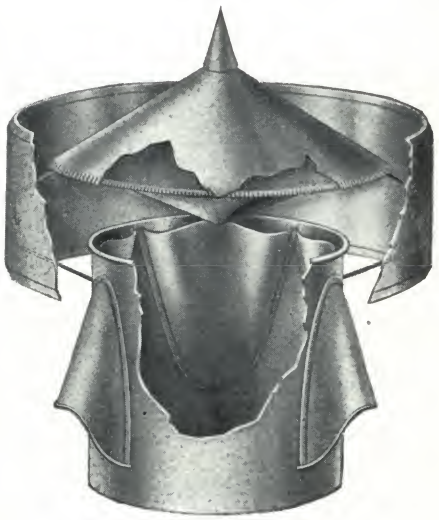
Van Noorden Vanco-Syphon Ventilator (Pat. Applied for)

The Van Noorden Vanco-Syphon Ventilator is a stationary type roof ventilator. It has an inner cone at the head and a group of scientifically designed syphons around the upper part of shaft. Air currents striking the shaft are sucked into the syphons, and due to the diminishing area of same are compressed so that a rapid syphonage is created. These currents do not enter the shaft. Their movement is up and out, causing a powerful acceleration around the mouth of the shaft. Other currents striking the flaring surface of the inner cone, are similarly compressed and cause an updraft in the center of the shaft.

The Vanco-Syphon Ventilator is stormproof and is equipped with a hinged damper.

Bases — Bases are provided with ventilators only when so required and stated.

Material — Made of sheet copper or genuine galvanized rust-resisting iron.



***CAPACITIES**

Size, in.	Cu. ft. exhaust per hr.	Size, in.	Cu. ft. exhaust per hr.	Size, in.	Cu. ft. exhaust per hr.
12	28,121	18	66,810	36	249,118
14	38,405	24	111,215	48	436,170
16	49,062	30	163,421	..	.....

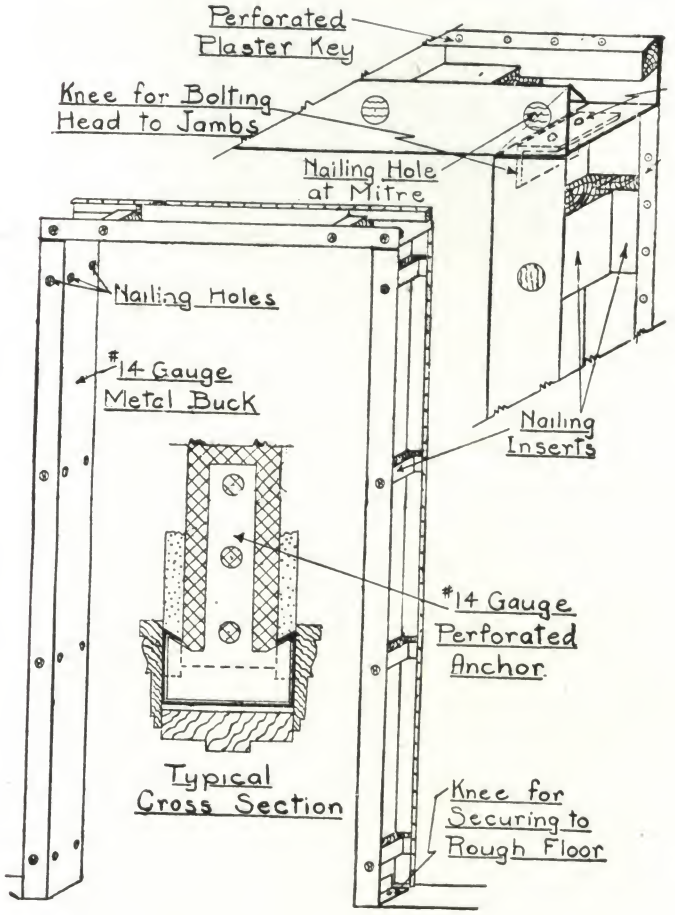
*Based on an average wind velocity of 5 miles per hour.

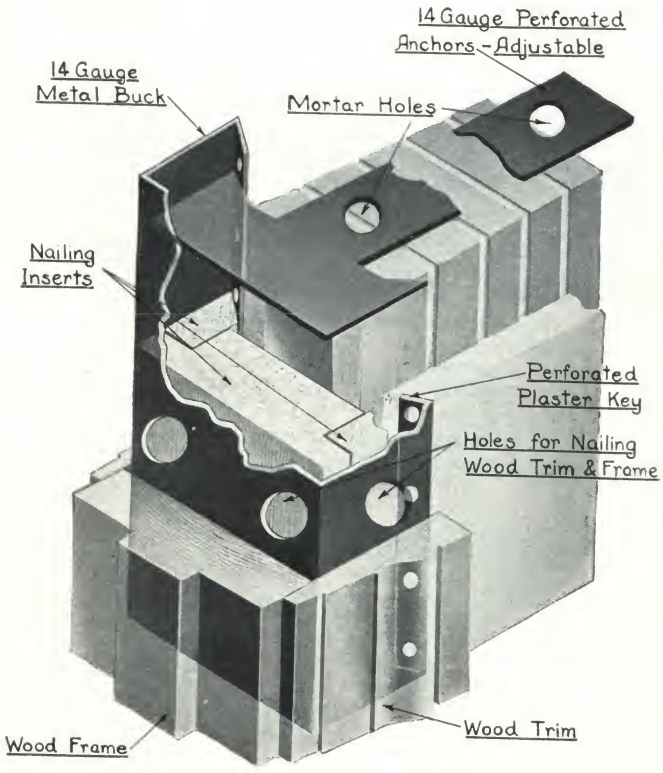
Vanco Steel Nail-To Buck (Pat. Applied for)

These new, time-saving steel bucks can be handled exactly as though they were wooden bucks. Wood frames and trim can be nailed in the same manner as wood buck. No drilling, tapping or bolting necessary. No shimming of trim.

Another feature is the movable lock anchors and perforated plaster flanges.

They do away with loose frames and wavy plaster lines and, what is very important, they minimize erection labor.





Vanco Steel Door Buck
The buck you can nail to

WESTERN ROTARY VENTILATOR CO., INC.

"Always on the Job—Never on Your Payroll"

1720 East 14th Street, LOS ANGELES, CALIF.

ONLY EXCLUSIVE VENTILATOR FACTORY WEST OF CHICAGO

DISTRIBUTORS

AMARILLO, Lydick Roofing Co., 401 No. Harrison Street
BAKERSFIELD, W. M. Fisher, 2606 Chester Avenue
BEAUMONT, J. T. Booth, 990 Fannin Street
DALLAS, Permanent Roofing Co., 3217 Knox Street
DENVER, H. W. Dawson, 850 Santa Fe Drive
DETROIT, Western Rotary Ventilator Co., Inc.
E. ST. LOUIS, ILL., Symonds Sheet Metal Works, 401 No. 26th Street
EL PASO, H. Welch Co.
FORT WORTH, Lydick Roofing Co.
HOUSTON, Houston Blow Pipe & Sheet Metal Works
KANSAS CITY, MO., Western Engineering Sales Co., 3031 Main Street
LITTLE ROCK, J. T. Hornbrook, 115 E. 2nd Street
PORTLAND, Ray F. Becker Co., Inc., 144 Page Street
RICHMOND, B. A. Bowers, 112 No. 8th Street
SALT LAKE CITY, Carver Sheet Metal Works, 134 W. Broadway
SAN ANTONIO, Corpus Cornice Works, 1212 W. Houston Street
SAN DIEGO, Perry-Christensen-Campbell Co., Inc., 742 First Street
SAN FRANCISCO, Cookson-Cromwell Co., 361 Brannan Street
SEATTLE, Puget Sound Metal Works, 3631 E. Marginal Way
AUSTRALIA, Naylor Co., Sidney
HONOLULU, Durant-Irvine Co. Ltd., 904 Nuuanu Street
NEW ZEALAND, Naylor & Co., Aukland

Western Rotary Ball Bearing Ventilators

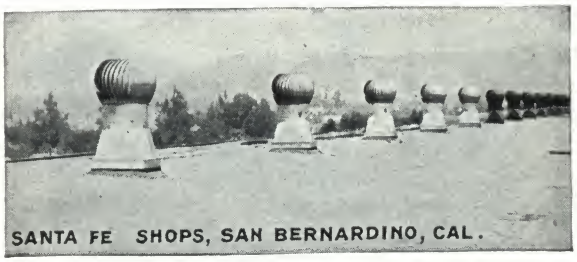
The Western Rotary Ventilator is designed primarily to give the entire construction industry a multivane turbine ventilator that is efficient at a very low wind velocity, symmetrical in design, absolutely silent in operation, and at a very reasonable cost.

Note in the illustration the simplified, compact bearing suspension of the Western Rotary. The multivane turbine revolves around a central support-shaft upon almost *frictionless* bearings, floating in a bath of oil and graphite, and absolutely sealed against dust, dirt, steam and smoke.

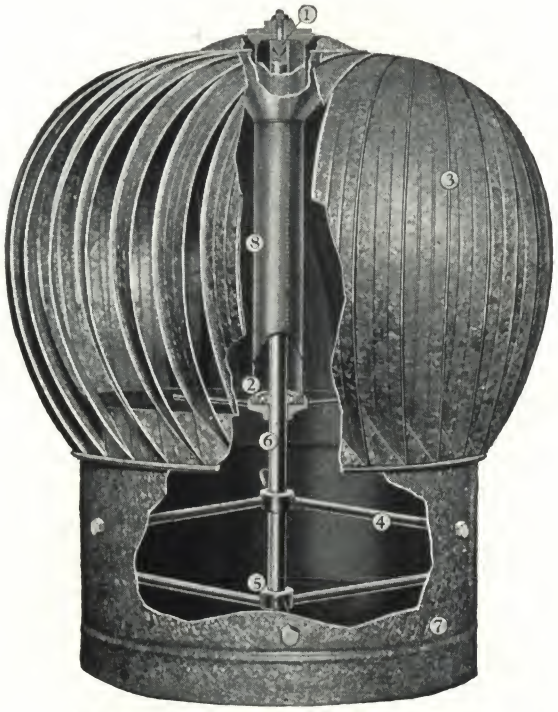
In specifying the Western Rotary you are in reality specifying an *exhaust fan,* which derives its power from wind, at even two miles an hour. This creates a centrifugal action through its turbine construction and, as a result, there is set up a steady circulation, through which natural action is aided by the mechanical lift of this revolving head. Thus a degree of venting efficiency is produced that can not be secured with any stationary device or revolving, cowl-type construction.

Specify

The Western Rotary Ventilator as manufactured by the Western Rotary Ventilator Co., Inc., of Los Angeles, Calif.



Roof of the Santa Fe Railway Shops
Over 100 Western Rotary Ventilators in use on this plant



Western Rotary Ventilator Construction

(1) Specially designed thrust bearing
(2) Radial ball bearing
(3) Multivane head construction
(4) Galvanized bracing
(5) Brass Castings
(6) Steel support shaft
(7) Galvanized iron or cold rolled copper
(8) Bearings positively sealed against dust, soot and dampness

DIMENSIONS, GAUGES, WEIGHTS

Stock Sizes, In.	Height, In.	Gauge of Iron	Air Displacement Cu. Ft. Per Hour 4 Mi. Velocity	Weights, Lb.	
				Net	Crate
6	12	26	14 360	7	12
8	12	26	17 400	9	15
10	15	26	26 100	12	20
12	18	26	38,200	17	26
14	22	24	43,200	25	35
16	24	24	50,000	30	45
18	28	24	76,310	35	53
20	31	24	109,200	42	63
24	36	24	149,000	70	105
30	42	24	230,000	94	150
36	52	22	310.000	161	210
42	62	20	420,000	200	250

A Few Users of Western Rotary Ventilators

Clubs

Hollywood Athletic Club
B. P. O. E. Temple, Rodondo
B. P. O. E. Lodge, Long Beach
Foreign Club, Tia Juana, Mexico
Pacific Coast Club, Long Beach
Masonic Temple, Rodondo
K. of C. Lodge, Hollywood

Studios

DeMille Studios
Metropolitan Studios
Paramount-Famous-Lasky Corp.
Ince Studios
Hal E. Roach Studios

Railways

Union Pacific R. R.
Santa Fe R. R.
Pacific Electric Ry.
Los Angeles Street Ry.
Pacific Fruit Express
Sacramento Northern Ry.

Schools

Los Angeles Board of Education
Commercial Experts Training Institute
Pasadena Parochial School
Sawtelle High School
Belmont High School
Beverly Hills Grade School
San Bernardino Junior College

Public Utilities

Los Angeles Gas & Electric Corp.
Pacific Gas & Electric Corp.
Great Western Power Co.

Oil Companies

General Petroleum Corp.
Shell Oil Company
Standard Oil Company
Pacific Gasoline Co.
Union Oil Co.
The Texas Co.
Richfield Oil Co.

AMERICAN SHEET METAL WORKS

MANUFACTURERS OF

Hoal's Leakproof Louver

NEW ORLEANS, LA.

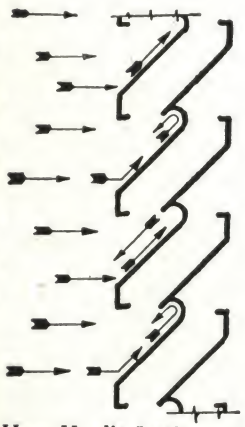
TELEPHONE
GALVEZ 3191

For the Patterson Clip, see Manufacturers' Index

Hoal's Leakproof Louver

A louver that really keeps out the rain and, at the same time, gives proper ventilation, has been a dire need in building construction for many years. This need is now fully taken care of with Hoal's Leakproof Louver.

A moment's examination of the diagram at the left will explain the working principle of Hoal's Louver and show how it checkmates the rain perfectly. The arrows show how the rain is driven against the louver, how it is caught and turned back to drain off the outside of the building. Like many other revolutionary devices, Hoal's Louver is as simple as it is efficient.



How Hoal's Leakproof Louver Checkmates Rain

Construction

Hoal's Louver is made of copper, galvanized iron, aluminum, monel metal or any other sheet metal desired. It is constructed in a rigid manner and is properly braced to withstand wind pressures of the severest kind. Buildings equipped with Hoal's Louver's can never be damaged even in the severest of rain or snow storms.

Stock Louvers

While Hoal's Louver is made to order in any size and architectural design such as Gothic, circular, etc., a large stock of square-top louvers are carried in the following standard widths and heights:

STOCK SIZES OF SQUARE TOP LOUVERS IN FT.-IN.

Width	1–6	2–0	2–6	3–0	3–6	4–0	4–6	5–0	5–6	6–0
Height	1–6	2–0	2–6	3–0	3–6	4–0	4–6	5–0		

By using the stock louvers wherever possible you assure prompt delivery and the cost is naturally less, because they are made on a production basis.

Stock louvers are made only in 26 gauge copper bearing, galvanized steel, and 16-oz. cold rolled copper.

Adaptability

The Hoal Louver is suitable for any purpose and any type of building construction where a leakproof louver is needed.

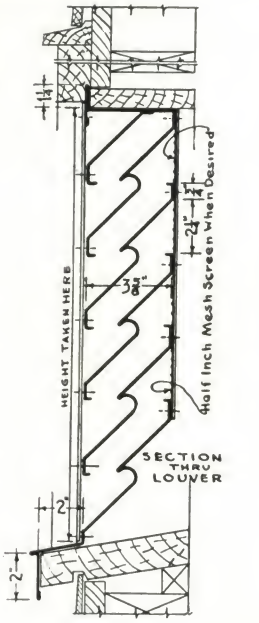
Illustrations at the right show the louver in a weatherboard finished frame wall, and also in a brick wall.

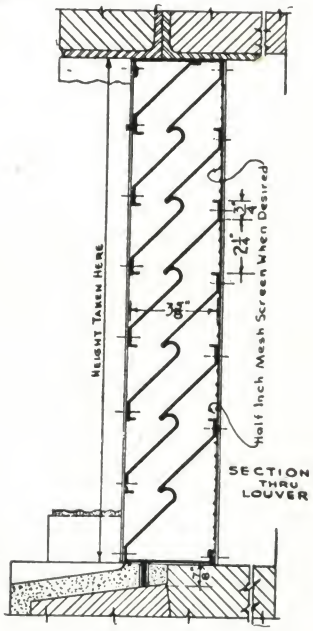
Prices

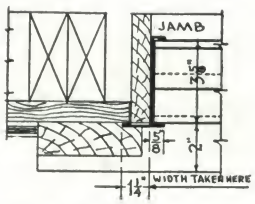
The prices of Hoal's Leakproof Louvers are remarkably low. In fact, we can supply the stock louver, made of copper bearing, galvanized steel, at a price equal to the wood or ordinary metal louver. Sizes other than those carried in stock at a slightly increased cost.

Engineering Service

Our Engineering Department is at your service in offering suggestions and in solving your problems of adapting louvers to any type of construction desired.

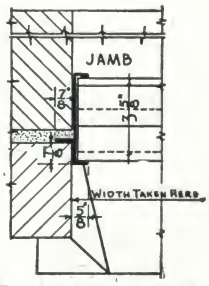






Type H—Frame Wall
Weatherboard finish

Scale:
1½" = 1' 0"



Type E—Brick Wall

AREX COMPANY

TELEPHONE
STATE 2772

28th Floor, 333 North Michigan Avenue Building
CHICAGO, ILL.

ESTABLISHED 1906

Product

"ARIN" ORIGINAL ACCELERANT LOUVERS.

For our pages on Ventilators, see Manufacturers' Index.

"Arin" Original Accelerant Louver

The AREX COMPANY, manufacturers of the Arex original siphonage roof ventilator, with many years of experience in natural gravity exhaust ventilation, in order to render their many clients a most complete service in the solution of their many difficult ventilating problems, have come to realize the importance and need for a device of highest efficiency and best possible construction providing at all times the proper amount of air supply.

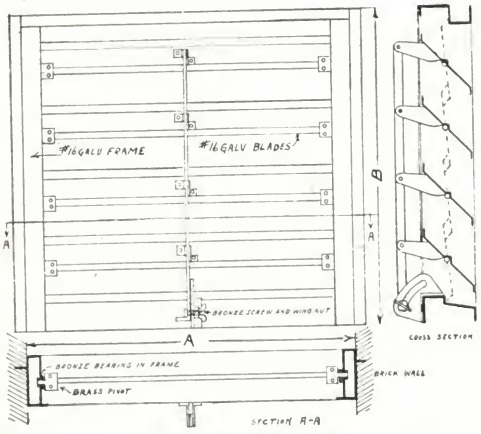
Special attention of architects and engineers is, therefore, called to the Arin Original Accelerant Louver as designed and perfected by Arex engineers and fully described and illustrated on this page. This louver, like all other Arex products, carries with it the same guarantee as to quality of material and workmanship plus assurance of dependable service and reliable performance at all times.

Engineering Service

Our Engineering Department is at your service to solve your ventilating problems with expert analysis and sound recommendations, free of charge—submit blueprint.

Adaptability

These high grade louvers are installed to insure adequate fresh air supply in connection with any heating and ventilating system, in schools, factories, power plants, public buildings, transformer vaults, etc.



Construction Features

Advantages

(1) Easy to operate—no sticking. (2) Absolutely foolproof. Practically indestructible. (3) Absolutely stormproof and weatherproof. (4) Blades do not protrude when louver is open. (5) Can be installed in series of two or more units to fit any size opening. (6) Blades can be removed entirely in case of emergency. (7) Furnished with birdscreen if required. (8) Reasonably priced, considering the high grade material and workmanship. (9) Also made of cold rolled copper or any other special material. (10) Frame and blades made of No. 16 gauge galvanized steel. Can be furnished in any special size in gauges up to No. 10.

Construction Features

(1) Bronze bearings in frame. (2) Bronze pivots in blades. (3) Bronze setscrews and slide. (4) Adjustable device to lock in any position. (5) Standard depth 4 in. for any brick or concrete wall. (6) Perfectly balanced. (7) Furnished with friction control for installation at roof line or at other high locations so as to be operated from below by means of a pole or chain. (8) If louvers are to be operated by thermostatic control, they can be furnished with ball-bearing blades and the necessary lever connections. (9) Can be furnished with fusible link so as to close automatically in case of fire. (10) Plain stationary type without adjustment can be furnished.

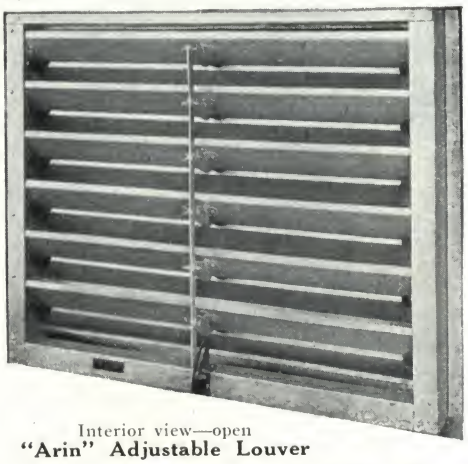
"Arin" Adjustable Louver Monitor Skylight

STOCK SIZES

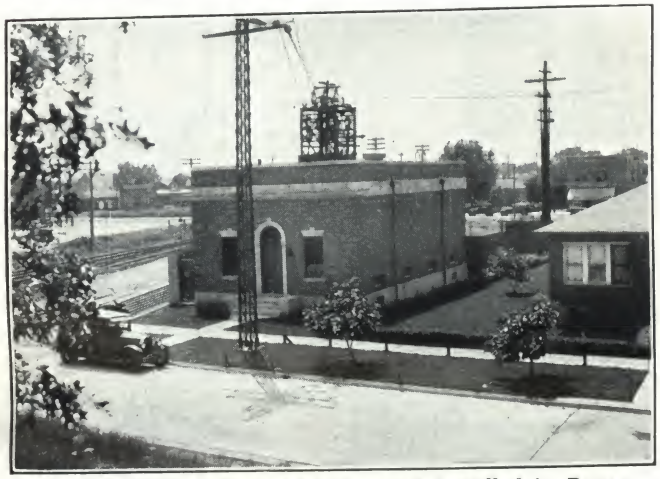
Width, in.	Height, in.	Width, in.	Height, in.
12	12	30	36
12	18	36	18
18	12	36	24
18	18	36	30
18	24	36	36
18	30	36	42
18	36	36	48
24	12	42	24
24	18	42	30
24	24	42	36
24	30	48	24
24	36	48	36
30	18	48	48
30	24	60	24
30	48	60	36

Specifications

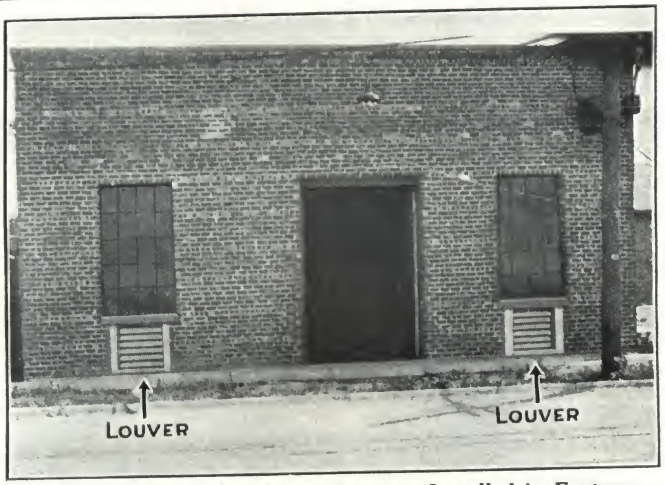
All louvers to be Arin Accelerant Louvers as manufactured by AREX COMPANY, 2815—333 North Michigan Avenue Building, Chicago, Ill.



Interior view—open
"Arin" Adjustable Louver



"Arin" Original Accelerant Louvers Installed in Power Substation



"Arin" Original Accelerant Louvers Installed in Factory

VICTOR VENT COMPANY

Correct Ventilation for Underneath Buildings

ANDERSON, S. C.

Products

The Victor Vent.
The Dixie Vent.

Foreword

Correct building ventilation will protect buildings against dry-rot. Ernest G. Blake, M.R.S.I., noted authority on timber, sums up dry-rot as follows: "One of the greatest enemies of timber . . . a highly infectious fungoid disease caused by the action of a vegetable parasite operating under suitable conditions . . . the four conditions necessary for germination and development are dampness, stagnant air, warmth and darkness."

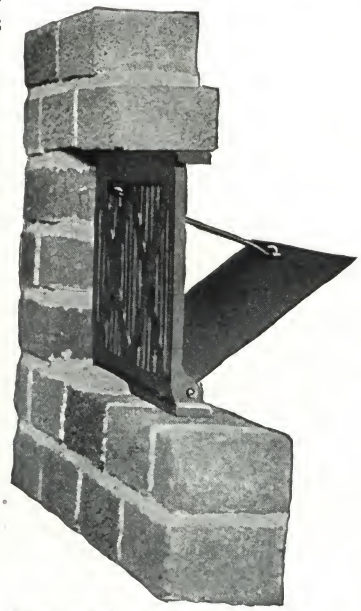
Victor Vent

The Victor Vent is a complete unit offering building ventilation with safety—safety from the ravages of dry-rot, rodents, reptiles and insects.

Construction—The Victor Vent is neatly and strongly made of cast iron—a single casting, 9x16 in. over all, with an arch bar over an inch in width to provide sturdy support for brickwork above. The vent face is divided into two parts, each side carrying six ½-in. bars, spaced ½ in. apart, and reinforced with cross bars on each side, adding extreme reinforcement and lending ornament to design. All vents are dipped in black paint.

Protection against reptiles, rodents and larger insects is afforded to buildings equipped with the Victor Vent by a non-rust hardware screen riveted to the back of the vent with copper rivets.

Operation—The novel feature of the Victor Vent is the shutter. Operating on a rolled hinge and made of sheet iron, the shutter is hinged to the bottom of the casting and attached to a push rod which extends through the frame. Ample ventilation is afforded by pushing in rod which causes the shutter to fall back. The shutter may be closed from the outside by simply pulling out the push rod and allowing it to hang down, its leverage and weight providing an efficient fastener.



Showing Method of Victor Vent Installation in Brick Wall

Installation—The Victor Vent has been designed for neat and speedy installation. No unsightly seams, joints or cracks mar the appearance of your brick wall when installed. The top arch bar and two bottom lugs extending from the frame are the same thickness as the mortar joint. They are over an inch in width, of very strong construction and will support all necessary brickwork above.

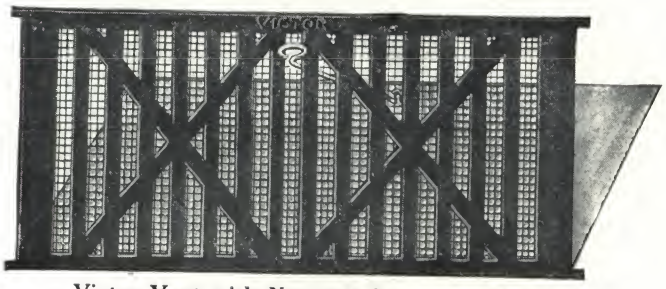
The width and height of the ventilator frame have been carefully calculated by a practical architect and will permit its insertion into new buildings without any unnecessary brickwork.

Specification for the Victor Vent

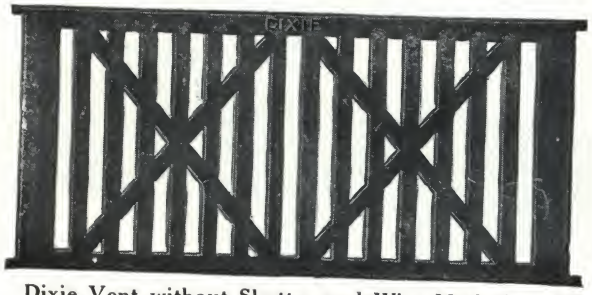
All ventilators used below buildings shall be Victor Vents of the standard construction of the Victor Vent Company, Anderson, S. C.

Dixie Vent

The Dixie Vent is built along the same practical lines of the Victor. Made of cast iron in one piece with arch bar extended from mortar joint insertion. Has all the advantages of the ventilator described above, except the shutter and wire-mesh guard.



Victor Vent with Non-rust Screen and Shutter



Dixie Vent without Shutter and Wire Mesh Guard

BENJAMIN RIESNER

Manufacturer of the Riesner Ventilating Brick

TELEPHONE
BUTTERFIELD 8580

353 East 78th Street
NEW YORK, N. Y.

Riesner Ventilating Brick

The Riesner Ventilating Brick is a hollow metal ventilating device which extends *through* the wall. It is the shape and size of one or two standard bricks and is constructed with a louvered face with waterdrip at top and bottom.

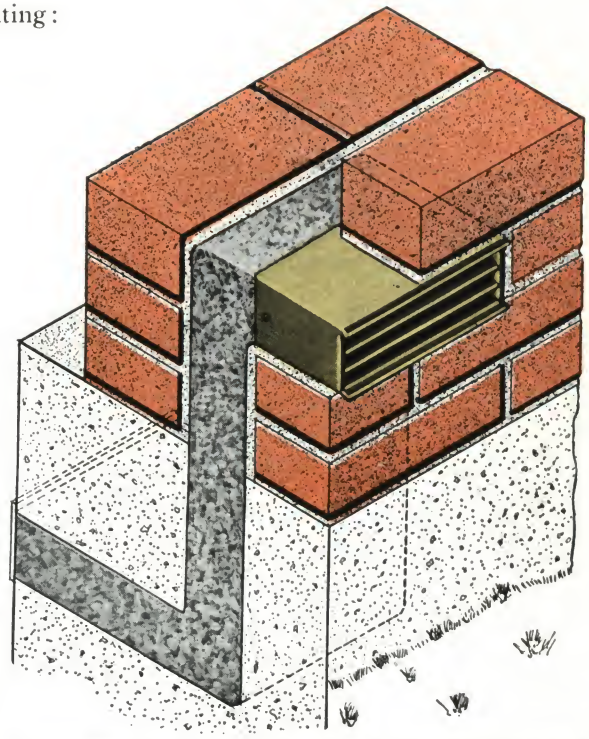
Where Used

It is suitable for ventilating:

- Kitchens
- Kitchenettes
- Closets
- Garbage receivers
- Air spaces
- Hung ceilings
- Transformer rooms
- Cellars
- Cellar rooms
- Cold rooms
- Attics
- Tunnels
- Mausoleums
- Utility rooms
- Vents from oil storage tanks
- Gas range hoods

How Installed

The Riesner Ventilating Bricks are "bricked in" by the mason when building up the wall, at a point 6 in. below the ceiling, with the louvered face to the outer air and duct or flue in the room.



Type "B" with Duct to Ventilate Under Buildings and Special Rooms in Cellars

Type "D" can also be used where more ventilation is required

Construction, Types and Sizes

Riesner Ventilating Bricks are made of cast iron, or cast bronze, with galvanized iron or copper pipe or duct. They extend clear through the wall from the louvered face at the outside, to the brass flange or register face at the inside of the wall.

Made in four types as follows:

Type "A"—This type is the width and height of *one* standard brick (2¼x8 in.) and transforms into a 3-in. diameter pipe which finishes with a brass flange at the inside of the wall.

Type "B"—Also the width and height of one standard brick (2¼x8 in.); extends through the wall with a 2x8-in. duct and finishes with a 3x8¼ in. register face at the inside of the wall.

Type "C"—The width of *one* brick and the height of *two* bricks (4¾x8 in.) and transforms into a 6-in. diameter pipe which finishes with a brass flange at inside of the wall.

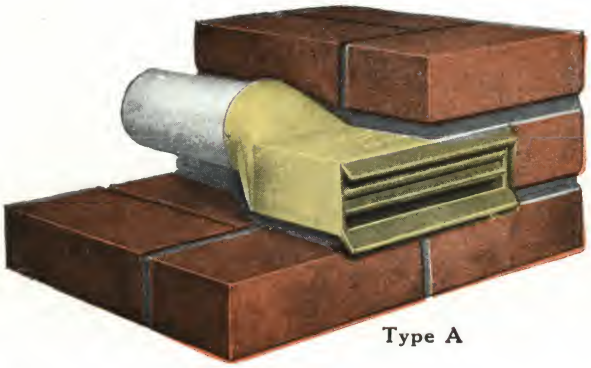
Type "D"—The width of *one* brick and height of *two* bricks (4¾x8 in.). Type "D" extends through the wall with a 4½x8-in. duct and finishes with a 5⅞x9¼-in. register face at the inside of the wall.

Further Details—Types "B" and "D" are furnished with bronze insect screen to prevent flies and insects from coming into the ventilated areas.

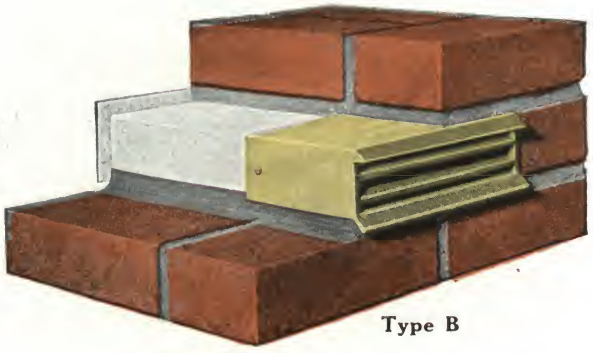
Ventilating bricks are carried in stock for 12-in. walls and measure 13 in. from exterior louvered face to pipe flange or register face at inside of wall. They can, however, be made up for 8-in. walls or any other wall thickness required.

Ventilating bricks can also be made up with elbows for ducts to meet special conditions.

Color—Cast iron ventilating bricks are painted a buff color.



Type A



Type B

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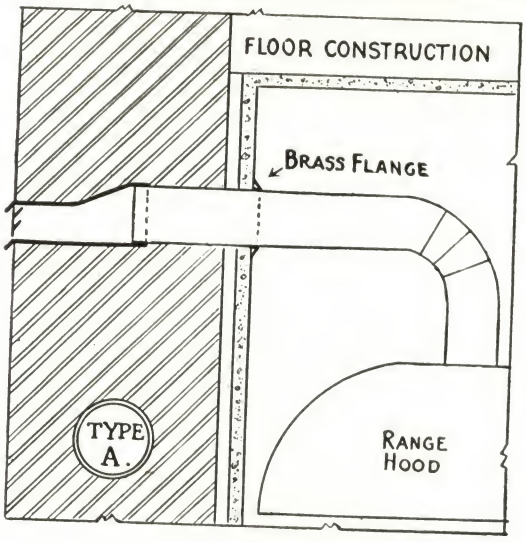
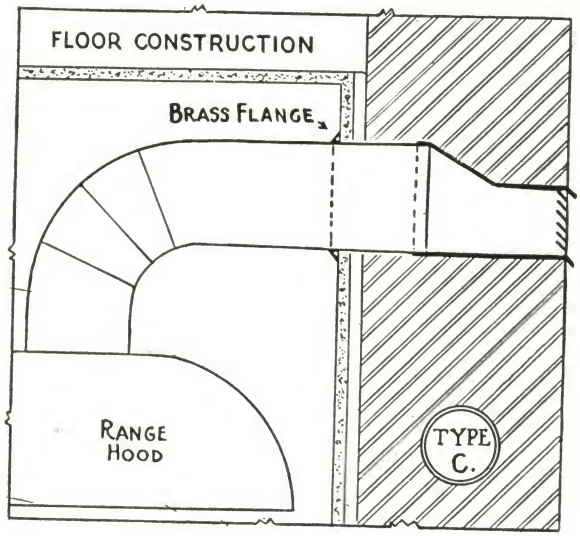
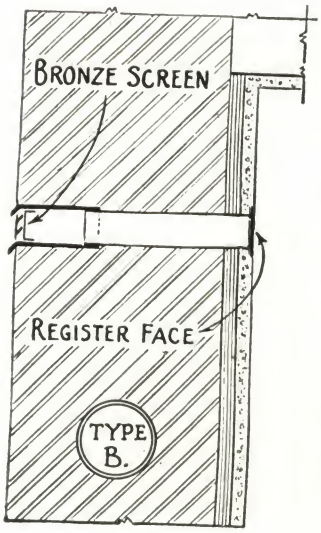






Advantages

Riesner Ventilating Bricks do not take up any space. *They are bricked into and become a part of the wall.*

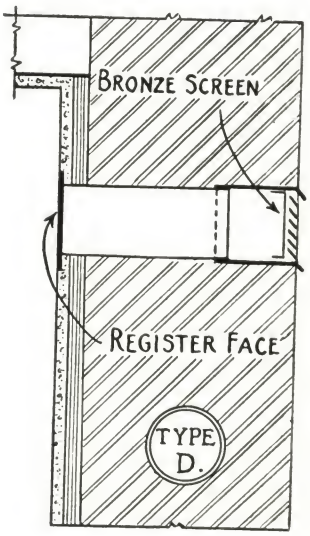
Ventilating bricks can be built into frame construction, brick walls and concrete forms.

They are used to ventilate air spaces under buildings and special rooms in cellars and attics and can be furnished with elbows and offsets where the area to be ventilated is below grade.

Types "A" and "C" can readily be connected to gas range hoods. Ventilating bricks are particularly useful in kitchens where there is no room for vertical vent shafts. *They constantly ventilate and remove gas fumes, steam and cooking odors from the room.*

Types "B" and "D" are designed to meet general ventilating requirements for cellars, air spaces and attics, etc., to allow a circulation of air and prevent dry rot.

Ventilating bricks prevent discoloration of the walls and obviate the necessity of frequent repainting. They are designed to be absolutely weatherproof, and economical because they do not deteriorate—the first cost is the *only* cost.



Prices, Cast Iron, for 12-in. Walls

Type "A" with a brass wall flange.....$ 5.50 each
Type "B" with 3x8¼-in. register face..... 6.50 each
Type "C" with a brass wall flange..... 11.50 each
Type "D" with 5⅞x9¼-in. register..... 12.50 each
Type "D" can be supplied with sliding damper at $1.00 additional.

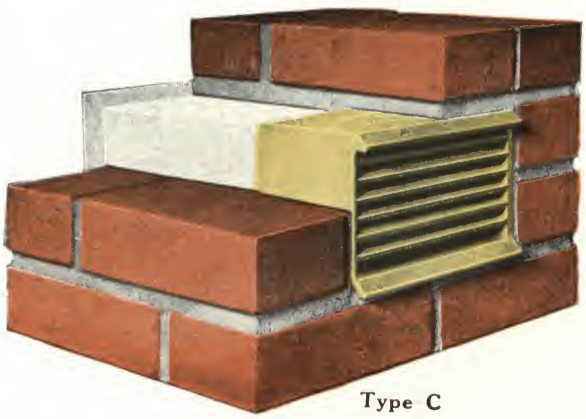
Cast bronze prices on application.
All prices net, f.o.b. New York, N. Y.

Estimates furnished promptly for special duct and elbow work.

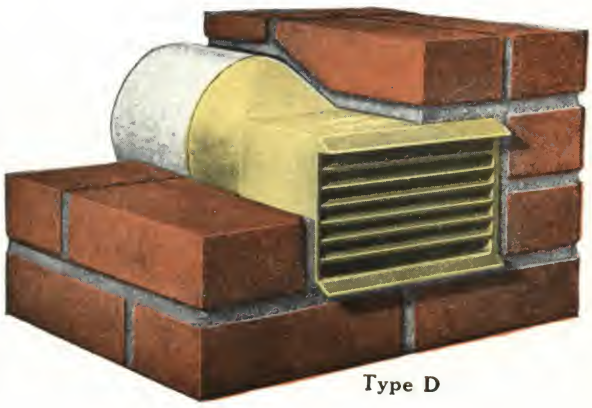
Specifications

Specify under masonry heading:

Install Ventilating Bricks as manufactured by BENJAMIN RIESNER, 353 East 78th Street, New York, N. Y., in the walls 6 in. below finished ceiling. (Specify type, location and whether cast iron or bronze.)



Type C



Type D

METAL STAIRS
TREADS
GRATINGS

Alberene Stone Co. B1885
American Abrasive Metals Co. B1889–1900
American Blue Stone Co. B1886–1888
American Mason Safety Tread Co. B1901–1912
American Pressed Steel Co. B1934
Babcock-Davis Corp. B1862–1863
Bates, Walter, Steel Corp. B1922–1923
Bessler Disappearing Stairway Co. B1884
Blaw-Knox Co.—
Floor Armoring B1932
Steel Grating and Flooring B1924–1925
Bois, N. B1864–1865
Duvinage Spiral Stair Co. B1882–1883
Hendrick Mfg. Co. B1921
Hughes-Keenan Co. B1866–1867
Irving Iron Works Co. B1926–1927
Jones & Laughlin Steel Corp. B1868
Kerlow Steel Flooring Co. B1928
Klemp, William F., Co., Inc. B1929
Logan Co. B1936–1937
McNeill Ornamental Iron & Construction Co. B1881
Mesker Bros. Iron Co. B1869
Morton Mfg. Co. B1913
Ornamental Iron Work Co. B1870
Potter Mfg. Corp. B1935
Riester & Thesmacher Co. B1871
Schreiber, L., & Sons Co. B1880
Snead & Co. B1933
Standard Safety Tread Co. B1914–1915
Tri-Lok Co. B1930
Universal Mfg. Co. B1931
Universal Safety Tread Co. B1916–1917
Watt Mfg. Co. B1872–1873
Western Architectural Iron Co. B1874–1875
Woodbridge Ornamental Iron Co. B1876–1879
Wooster Products Inc. B1918–1920

BABCOCK-DAVIS CORPORATION

474 Dorchester Avenue
BOSTON, MASS.

For Easy Access Flagpoles, Mortuary Slides and Hospital and Refrigerator Equipment, see Manufacturers' Index

BABCOCK-DAVIS PRE-CAST CONCRETE TREADS AND RISERS (Patented)

Pre-cast Concrete Tread and Riser

Strength (Factor of Safety, 10)—At the Massachusetts Institute of Technology tests were made by Professor Irving H. Cowdrey on four units. Each unit consisted of a pre-cast concrete tread, 4 ft. long by 11¼ in. wide, and 8-in. riser mounted on steel channel iron stringers. The average of these tests shows:

First hair crack in riser at 2300 lb. total load. Maximum load, 3575 lb.

Construction—"Pre-cast concrete tread and riser" construction is economical to install and maintain, and is made from a scientifically prepared formula which makes the stair practically indestructible. The Babcock-Davis "Pre-cast Tread and Riser" stair marks a decided advancement in stair construction for either inside or outside installation. As the name suggests, it is a combined reinforced concrete tread with *steel nosing* and riser cast in one interlocking unit in our own plant and shipped to the building under construction, where they are applied to the steel stringers furnished by us.

Advantages

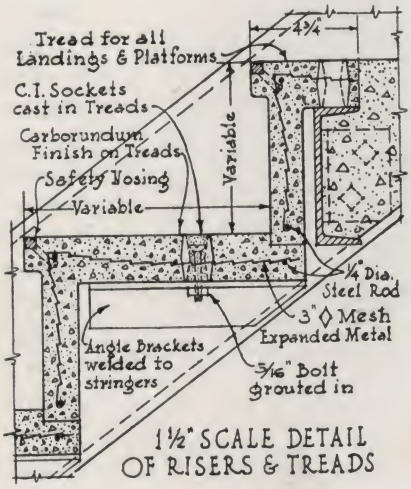
Its very practical principle of interlocking units has many advantages:

It is of lighter construction than stairs made entirely of concrete; is installed more quickly; has a *steel nosing* and *stringer buttress* as required by insurance engineers.

Wood forms and shores which delay building operations while the cement is hardening in all concrete stair construction are done away with.

There is no ringing sound or vibration to Babcock-Davis "Pre-cast Concrete Stairs" when in use. They are attractive in appearance. Their upkeep is reduced to a minimum as steps need not be painted and they are easily kept clean.

Babcock-Davis "Pre-cast Concrete Treads and Risers" treated with our Non-slipping Formula and with our steel nosing cast into the tread is a safety step with no opportunity to chip the nosing.



Specifications

Stairs shall be Pre-cast Concrete Treads and Risers with Steel Safety Nosing and Steel Stringers. Treads to be treated with Non-slipping Formula as made by BABCOCK-DAVIS CORPORATION, 474 Dorchester Avenue, Boston, Mass., patentee.

Installations of Babcock-Davis Pre-cast Concrete Stairs

National Manufacturing Co., Cambridge, Mass.
Suffolk Engraving Co., Cambridge, Mass.
Simplex Electric Co., Cambridge, Mass.
(1 Building in 1923—1 Building in 1925)
Workingmen's Co-op. Bank, Boston, Mass.
Tileson Estate, Boston, Mass.
Talbot Mills, North Billerica, Mass.
Berlin, N. H. (2 High Schools)
Deering High School, Portland, Me.
High School, Presque Isle, Me.
High School, Bristol, Conn.
Needham High School, Needham, Mass.
Orphanage Home, Jackson, Miss.
Masonic Home, Charlton, Mass.
Masonic Home, Medford, Mass.
Ginn & Company, Cambridge, Mass.
Boston & Maine Office Building, Cambridge, Mass.
204 Essex Street, Boston, Mass.
Gaston Building, Warrenton
N. Y., N. H. & H. Station, North Adams
Malden Auditorium, Malden, Mass.
Laboratory Building, Lever Bros., Cambridge, Mass.
Merchants Trust Co., Lawrence, Mass.
Cambridge Salvage Building, Cambridge, Mass.
Hawkins Street Station, Boston, Mass.
Arch Street Station, Boston, Mass.
Municipal Airport, East Boston
Edison Office Building, Boston, Mass.
Edison Sub-Station, Woburn, Mass.
Field House, Boston, Mass.
Edison Steam Plant, Boston, Mass.

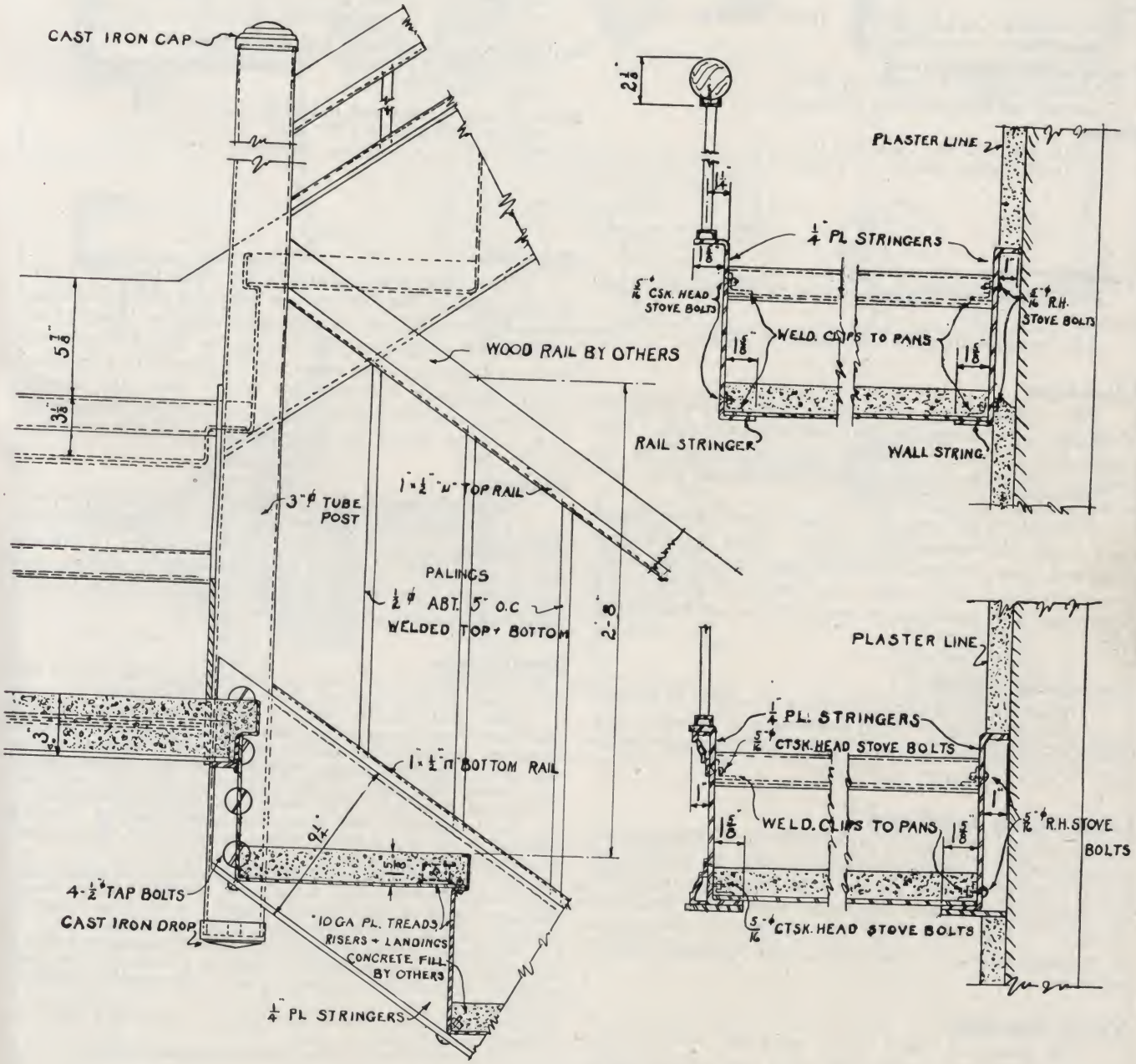
Continued on next page

BABCOCK-DAVIS ECONOMY TYPE STEEL STAIRS

The details below show the construction of the Babcock-Davis Economy Stairs; but their ability to withstand overloads is best described by a synopsis of the following test conducted for the Boston Building Department:

The stairs were loaded uniformly with 30151 lb. of pig iron which gave an average of 600 lb. per sq. ft. The maximum vertical deflection at the center of stringers was 0.65 in. or $\frac{11}{16}$ in. and recovered to $\frac{1}{16}$ in. when load was removed. The maximum lateral deflection of the stringer was slightly over $\frac{1}{8}$ in. outward, which was virtually all recovered when load was removed. No evidence of overstrain on any part; the result was entirely satisfactory.

A test load of 600 lb. per sq. ft. is eight times the load required by the Boston Building Department. The load also provided a very severe test on the welded splices of the stringers and the connections to the end posts which were of standard design and construction.



Typical Details Babcock-Davis Economy Type Steel Stairs

BOIS PATENTED INTERLOCKING STEEL STAIRS

(N. BOIS, PATENTEE, 2848 California Street, SAN FRANCISCO, CAL.)

MANUFACTURED IN THE UNITED STATES, CANADA AND EUROPE BY THE FOLLOWING COMPANIES

New England States
E. VAN NOORDEN & CO.,
100 Magazine Street, Boston, Mass.

Georgia, Tennessee, Florida, North and South Carolina
DOWMAN-DOZIER MFG. CO.,
Campleton Road, Atlanta, Ga.

Ohio, Michigan and Indiana
THE RIESTER & THESMACHER CO.,
1512 West 25th Street, Cleveland, Ohio

Nebraska, Kansas and Western Iowa
PAXTON & VIERLING IRON WORKS,
So. 17th Street and Union Pacific Railway, Omaha, Neb.

Texas
SOUTHERN ORNAMENTAL IRON WORKS,
Dallas, Tex.

Wisconsin and Eastern Iowa
BADGER WIRE & IRON WORKS,
Cleveland and 25th Avenues, Milwaukee, Wis.

Missouri
LASAR MANUFACTURING CO.,
16th and O'Fallon Streets, St. Louis, Mo.

Northern California
PEERLESS ORNAMENTAL IRON CO., INC.,
1528 Folsom Street, San Francisco, Cal.

Southern California, Washington, Oregon, Colorado, New Mexico, Utah, Wyoming, Nevada, Arizona and Hawaiian Islands
A. J. BAYER CO.,
Slauson and Santa Fe Avenues, Los Angeles, Cal.

Alabama, Louisiana, Mississippi and Arkansas
DECATUR IRON & STEEL CO.,
Decatur, Ala.

Kentucky and Virginia
LOGAN CO. (formerly The Dow Co.),
1025 Franklin Street, Louisville, Ky.

British Columbia, Alberta and Saskatchewan
WESTMINSTER IRON WORKS,
New Westminster, B. C.

Great Britain, France and Belgium
FREDK. BRABY & CO., Ltd.,
Petershill Road, Glasgow, Scotland

Products

BOIS PATENTED INTERLOCKING STEEL TREADS and RISERS.

Also manufacturers of Sheet Steel Stairs.

Advantages

Bois interlocking tread and riser offers distinct advantages of economy, rigidity and rapid erection. The *interlocking* feature eliminates the labor of bolting or riveting, and makes rapid installation possible with unskilled labor.

Heretofore the nosing on sheet metal stairs broke away from the composition steps. Bois interlocking tread and riser prevents breaking away the nosing from the composition step under the heaviest traffic. Its superiority and economy in construction can be readily seen.

Interlocking Feature

The interlocking tread and riser combined is formed from a single sheet of steel with flanged member that interlocks at the nosing line. The metal becomes double thick which reinforces the steps.

Labor Saving Installation

A tie rod is inserted under each tread through the stringer. The installation consists only of setting the tread, bolting up the tie rod and inserting two bolts for each tread where the tread meets the flange of stringer, doing away with the bolting or riveting as in ordinary types of stair work, and speeding up the erection.

Varied Standards

The gauge of metal varies with the width of the stairs and weight to be carried. The interlocking treads and risers can be used with any type of stringer, such as sheet steel construction or concrete.

The treads are adaptable to any kind of composition fill, slate, marble, asphalt or concrete, also for any desired safety tread.

Deliveries

When sheet steel stringers are used, the stairs can be assembled at the factory and delivered at the building ready for installation. Each section can be installed as the building progresses, eliminating the use of temporary stairs or ladders, doing away with unnecessary expenses.

If concrete stringers are to be used, the treads and risers are interlocked and put in position from floor to floor, after which the stringers are moulded as usual.

Inquiries

Make all inquiries for estimates to *the Manufacturer (list in heading) controlling the territory in which the building is to be erected.* State number of treads and risers, width of stairs, type of stringers, and nature of tread. Include sketch or drawing on which all dimensions and quantities are indicated.

Specifications

All metal stairs throughout the building shall be of the Bois Interlocking Tread and Riser construction type.

Each tread and riser shall be of one continuous piece of No. 12 or No. 14 gauge sheet steel. The tread metal shall be continued up and bent into an inner nosing, around which the outer (wearing) nosing shall be bent and secured by an interlocking, depending flange, reinforcing the step and preventing the nosing from breaking away from the concrete.

The junction of the treads and risers shall be securely fastened to the lower flange of the stringers with $\frac{5}{16}$-in. diameter round machine bolts.

The face and wall stringers shall be of No. 10 gauge sheet steel, with outward top flange and inward bottom flange. Stringers shall be securely tied together with $\frac{7}{16}$-in. diameter tie rods, placed under each tread, near the nosing.

Platforms or landings shall be of No. 14 gauge corrugated steel plates, with interlocking nosing for connection with riser and shall be securely fastened to angle iron supports connected to stringers.

Newels, railings and balustrades to be of design and construction as indicated on plans.

All work to have 1 shop coat of approved paint.

Information and Catalogue

For full information and illustrated catalogues and detail drawings apply to Manufacturer (list in heading) controlling territory in which stairs are to be installed.

Continued on next page

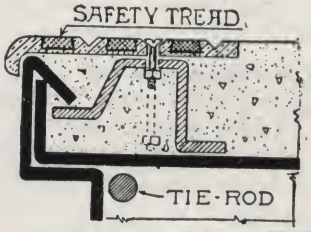
FEATURE OF THE BOIS PATENT INTERLOCKING TREADS AND RISERS FOR STAIR CONSTRUCTION;

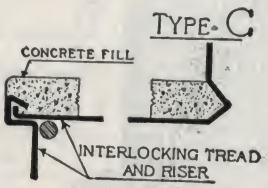
It eliminates all bolting and riveting thus saving considerable labor when assembling the stairs. Where the tread interlocks at the nosing the metal becomes double thick, reinforcing the step and preventing the metal breaking away from the concrete.

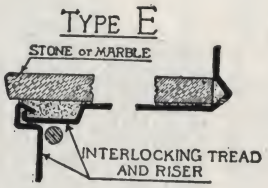
It is the most practical, economical, superior stair construction.

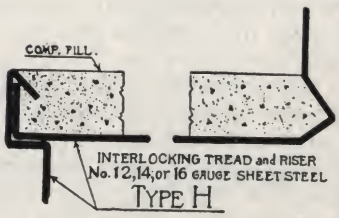
BOIS STAIRS

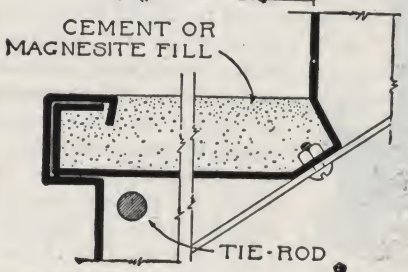
Trade Mark

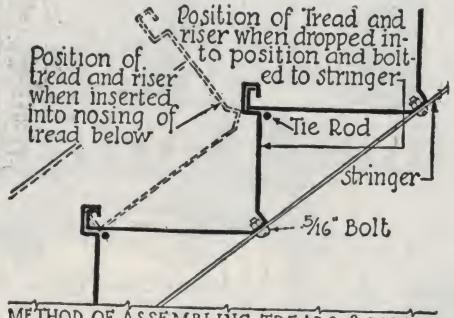




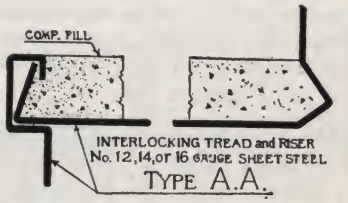


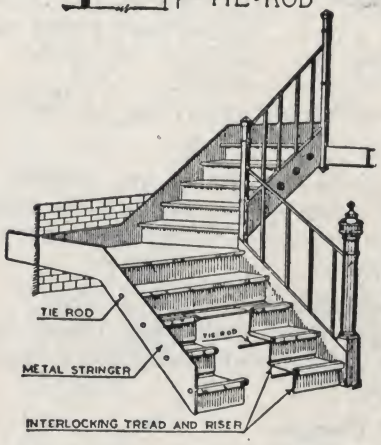


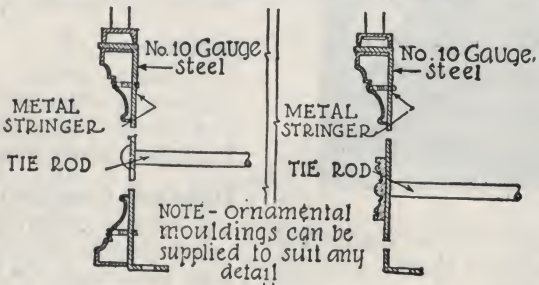




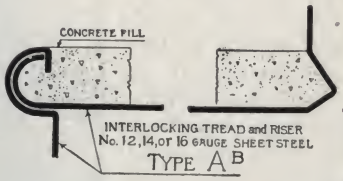
METHOD OF ASSEMBLING TREADS & RISERS







DETAILS OF METAL STRINGERS



U. S. Patent No. 1,244,021
U. S. Patent No. 1,304,533
U. S. Patent No. 1,353,377
Canadian Patent No. 194,134
Canadian Patent No. 194,135
Canadian Patent No. 213,306
France Patent No. 501,494
Belgian Patent No. 281,657
Great Britain Patent No. 145,251

APPROXIMATE WEIGHT OF BOIS INTERLOCKING TREADS AND RISERS

WIDTH OF STAIRS	SQ. FT. OF METAL IN ONE INTERLOCKING TR. & RISER	WEIGHT OF ONE INTERLOCKING TREAD AND RISER		
		NO. 12 GA.	NO. 14 GA.	NO. 16 GA.
2'-0"	4 SQ. feet	18.0 lbs	12.8 lbs.	10.4 lbs.
2'-6"	5 " "	22.5 "	16.0 "	13.0 "
3'-0"	6 " "	27.0 "	19.2 "	15.6 "
3'-6"	7 " "	31.5 "	22.4 "	
4'-0"	8 " "	36.0 "	25.6 "	
4'-6"	9 " "	40.5 "	28.8 "	
5'-0"	10 " "	45.0 "	32.0 "	
5'-6"	11 " "	49.5 "		
6'-0"	12 " "	54 0 "		

TYPICAL SECTIONS SHOWING CONSTRUCTION OF BOIS PATENTED INTERLOCKING TREADS AND RISERS

TEST OF BOIS PATENTED INTERLOCKING SHEET STEEL STAIR MADE BY E. VAN NOORDEN CO., BOSTON, MASS.

December 9, 1924

In order to determine accurately the safe loading for the Bois Interlocking Sheet Steel stair, a test was conducted by Professor H. W. Hayward of the Massachusetts Institute of Technology, Cambridge, Mass. A summary of this test is as follows:

"The full load of 600 pounds per square foot was allowed to remain upon the stairs for two weeks. The load was then removed and after four days the inspection was made.

"The slight distortion in channel header (at top) straightened out when the load was removed. The deflection in the top flange of runner was reduced to a negligible amount upon removal of the load. The general appearance of the stairs was good. No indications of overstrain could be noted either as regards lateral or vertical deflections.

"It should be noted that during the time the load was on the stairs the temperature varied approximately from 0° to 50° F. This variation in temperature would cause additional indeterminate stresses on the stairs."

Full report of test will be sent on request.

THE HUGHES-KEENAN CO.

Pressed Steel Stairs and Spiral Steel Stairs

MANSFIELD, OHIO

Products

SAFETY-LOCK and SAFETY-NOSE INSERT PRESSED STEEL STAIRS; SPIRAL STEEL STAIRS.

General

Both types of pressed steel stairs and the spiral steel stairs are the result of many years of practical experience in the design, manufacture and installation of steel stairs for all types of buildings and for all purposes.

They combine great strength with minimum weight, can be easily adapted to any requirements of the architect or builder and made plain or highly ornamental as desired. They meet the requirements of all State and city building codes.

All special features, such as our safety-lock tread and riser, safety-nose insert and spiral stairs are covered by patents allowed and applied for.

Albany State Office Building

Safety-Lock Pressed Steel Stairs

Made with a continuous steel plate tread and riser firmly interlocked at nosing, each tread bolted rigidly to the lower flange of a Z-shaped stringer and all tied together with a tie rod running under the angle of each nosing from stringer to stringer.

With channel shaped stringers light steel carriage angles are used with tread bolted to carriage angle. See following page for construction details.

Safety-Nose Insert Pressed Steel Stairs

These eliminate exposed sheet metal on treads, providing a safety tread as a part of the stair at a cost considerably below that of special safety treads. Tread and riser is a continuous steel plate formed at nosing into a channel or trough section in which a metal insert is firmly bolted, providing a safety nosing in edge of the tread where most needed. This insert is easily and quickly installed. Can be renewed when worn at very low cost and does not affect the tread filler when replacing. Cement, composition or asphalt filler can be used. Tie rods with Z-shaped stringers or carriage angles with channel shaped stringers may be used. See following page for construction details.

Write for our special folder describing these stairs.

Spiral Steel Stairs

The extreme lightness and simplicity of design of the spiral stairs makes one-man erection practical. The lightness comes through a special construction of steel which is decidedly lighter than old-style cast iron yet carries an equal live load.

These stairs are furnished with checkered steel plate treads and plain steel plate risers of open or closed type. They are fastened to steel sleeves which slip over the central supporting column. An erection simplicity that means a decided saving of time and labor.

The finished assembly is decidedly compact and appealingly neat.

Complete details are given in a special folder sent on request.

Pre-built Erection Method

The Hughes-Keenan Pre-built Erection Method reduces the cost of the stairs installed in building 25% below usual cost. There is no reduction in quality of stairs —the saving resulting only from low engineering and erection costs and shop standardization. Stairs are on the job to be installed as building progresses, giving contractor use of them instead of requiring erection of temporary ladders or stairs. Cutting and fitting and patching of plaster is avoided.

Write for our special folder describing this method.

Installation

Stairs, except spiral steel stairs, are shipped in completely assembled units so that they can be easily and quickly installed at low cost. Experienced erectors furnished when desired.

Standard Construction Details

Standard stringer, tread and riser, railing and newel details, drawn to large scale, furnished to architects upon application.

Stairs to Architects' Designs

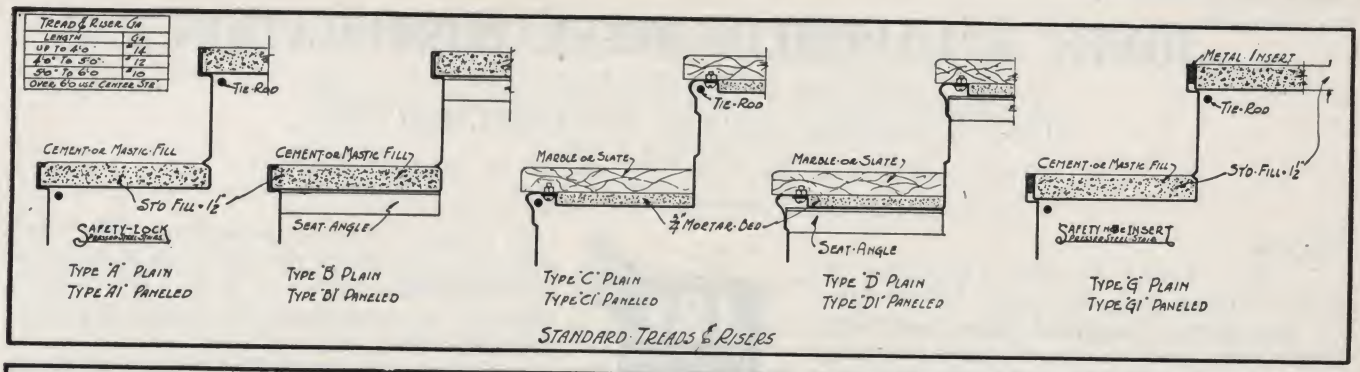
In addition to our patented pressed steel stairs, we can furnish steel stairs of any design and to meet all architects' requirements. We can also furnish the Bois Interlocking Steel Stairs in the states of Maryland, Delaware, District of Columbia, Colorado, Wyoming, Utah.

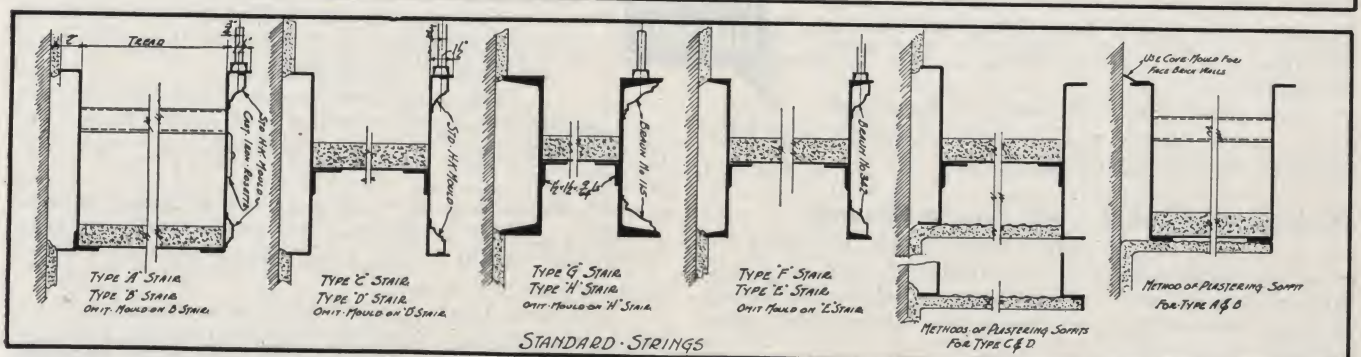
Information and Estimates

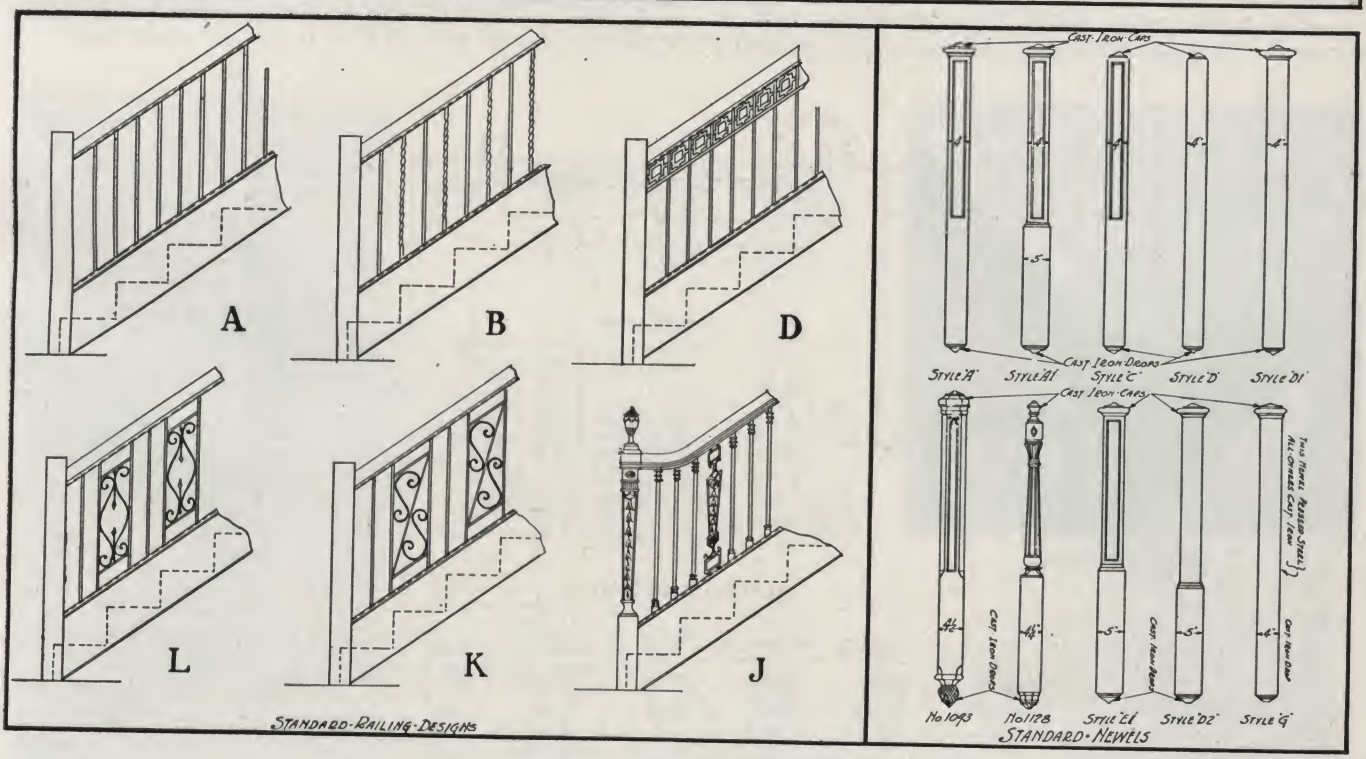
For catalogue, complete information regarding construction and typical installations and estimates, write THE HUGHES-KEENAN CO., Mansfield, Ohio.

Neil Hall Dormitory, Ohio State University

Continued on next page







Construction Details

Treads and Risers—Illustrated above are standard Safety-Lock and Safety-Nose insert treads and risers. Treads are made to receive cement, composition or asphalt filler. Risers are made either plain or with sunken panel and have sanitary cove.

Standard tread and riser for slate or marble treads are also shown with risers plain or paneled and sanitary cove omitted. The tread and riser is continuous and the gauge of metal used is determined by the width of the stair.

Stringers—Sections of various types of standard stringers are illustrated above. Z-shaped, pressed steel stringers are used for both Safety-Lock and Safety-Nose insert stairs when tie rods are used. Pressed steel or light structural channels are used with carriage angle construction.

The gauge of plate and depth of stringer or size of structural channels is determined by span and width of stair, using a high factor of safety.

Newels and Railings—Newels and railings are furnished to any design to suit architects' requirements. A few standard railing designs are illustrated above. Pipe railings or railings of any other design can be furnished.

The cast iron and pressed steel newels shown are stock designs with square shaft and base. Newels of any design can be furnished. Pressed steel newels are either 3 or 4 in. square, have perfectly smooth surfaces and are very rigid and strong.

FOUNDED 1850

JONES & LAUGHLIN STEEL CORPORATION

AMERICAN IRON AND STEEL WORKS

Jones & Laughlin Building, PITTSBURGH, PA.

For District Sales Offices and Warehouses, see pages on Tubular Products

Products

J & L Light Weight Channels for Stair Stringers and other uses.

Also J & L Structural Shapes and Fabricated Structural Work, Columns, Girders, Trusses, Plate Work, Tanks, Mill and Factory Buildings; J & L Steel Piling; J & L Wire Products.

For J & L Bars for Concrete Reinforcement, Junior Beams and Tubular Products, see page numbers in Manufacturers' Index.

Description of J & L Light Weight Channels

J & L Light Weight Channels are produced on modern rolling mills and are similar in type to standard channel sections. They have constant dimensions, making fabricating and fitting to other work economical.

Due to the rolled shape, the material is ready, as received, for fabrication into various uses, including stair stringers, thereby saving time. The rolled shape also reduces to the minimum shop equipment for fabrication. J & L Light Weight Channels are economical in weight and form a strong structure.

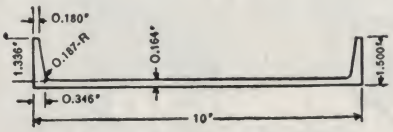
The lines are straight and true, resulting in proper fitting at the joints, thus making a well-finished installation.

These sections are now available in two sizes and three weights as follows: 10 in. 8.0 lb. per ft., 10 in. 8.8 lb. per ft. and 12 in. 10.6 lb. per ft.

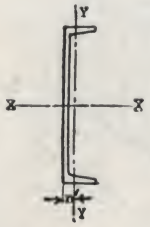
An illustration showing typical installation, as well as tables giving dimensions, allowable loads on both 16,000 and 18,000 lb. per sq. in. stress and other properties are shown below.

The new light weight channels are available for immediate shipment from the following points: Chicago, Cincinnati, Pittsburgh and Detroit. Carried in lengths of 20, 25, 30, 40 and 50 ft.

Typical Installation



Dimensions above are for C-751
See table below for C-750 and C-700



DIMENSIONS

Section index	Depth of channel, in.	Wt. per ft., lb.	Flange width: In. and decimal parts	Flange width: In. and fractional parts	Web thickness: Decimal parts of in.	Web thickness: Fractional parts of in.
C-750	10	8.8	1.523	$1\frac{33}{64}$	0.187	$\frac{3}{16}$
C-751	10	8.0	1.5	$1\frac{1}{2}$	0.164	$\frac{11}{64}$
C-700	12	10.6	1.5	$1\frac{1}{2}$	0.19	$\frac{3}{16}$

PROPERTIES OF SECTION

Area sq.in.	Axis X-X (perpendicular to web): I	r	S	Axis Y-Y (parallel to web): I'	r'	S'	n'
2.57	32.3	3.54	6.4	0.35	0.37	0.28	0.28
2.34	30.3	3.60	6.1	0.33	0.38	0.27	0.29
3.12	55.8	4.23	9.3	0.39	0.35	0.32	0.27

ALLOWABLE LOADS

	Index No.	Depth of channel, in.	Wt. per ft., lb.	Bend mom., ft. lb.	Max. load	Span, feet: 2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Fiber Stress, 18,000 Lb. per Sq. In.																														
Total load in thousands of pounds	C-750	10	8.8	9660	44.9	38.6	25.8	19.3	15.5	12.9	11.0	9.7	8.6	7.7	7.0	6.4	5.9	5.5	5.2	4.8	4.5	4.3	4.1	3.9	3.7	3.5	3.4	3.2	3.1	3.0
	C-751	10	8.0	9090	39.4	36.4	24.2	18.2	14.5	12.1	10.4	9.1	8.1	7.3	6.6	6.1	5.6	5.2	4.8	4.5	4.3	4.0	3.8	3.6	3.5	3.3	3.2	3.0	2.9	2.8
Total deflection, in.						.007	.017	.030	.047	.067	.091	.119	.151	.186	.225	.268	.315	.365	.419	.477	.538	.603	.672	.745	.821	.901	.985	1.073	1.164	1.259
Total load in thousands of pounds	C-700	12	10.6	13947	54.7		37.2	27.9	22.3	18.6	15.9	13.9	12.4	11.2	10.1	9.3	8.6	8.0	7.4	7.0	6.6	6.2	5.9	5.6	5.3	5.1	4.9	4.6	4.5	4.3
Total deflection, in.						.006	.014	.025	.039	.056	.076	.099	.126	.155	.188	.223	.262	.304	.349	.397	.449	.503	.560	.621	.684	.751	.821	.894	.970	1.05
Load in lb. per lin. ft. of channel	C-750	10	8.8			19320	8587	4830	3091	2147	1577	1208	954	773	639	537	457	394	343	302	267	239	214	193	175	160	146	134	124	114
	C-751	10	8.0			18180	8080	4545	2909	2020	1484	1136	898	727	601	505	430	371	323	284	252	224	201	182	165	150	137	126	116	108
	C-700	12	10.6				12398	6974	4463	3100	2277	1743	1378	1116	922	775	660	569	496	436	386	344	309	279	253	231	211	194	179	165
Fiber Stress, 16,000 Lb. per Sq. In.																														
Total load in thousands of pounds	C-750	10	8.8	8587	37.5	34.3	22.9	17.2	13.7	11.4	9.8	8.6	7.6	6.9	6.2	5.7	5.3	4.9	4.6	4.3	4.0	3.8	3.6	3.4	3.3	3.1	3.0	2.9	2.7	2.6
	C-751	10	8.0	8080	32.8	32.3	21.5	16.2	12.9	10.8	9.2	8.1	7.2	6.5	5.9	5.4	5.0	4.6	4.3	4.0	3.8	3.6	3.4	3.2	3.1	2.9	2.8	2.7	2.6	2.5
Total deflection, in.						.007	.015	.026	.041	.060	.081	.106	.134	.165	.200	.238	.280	.324	.372	.424	.478	.536	.597	.662	.730	.801	.875	.953	1.034	1.119
Total load in thousands of pounds	C-700	12	10.6	12398	45.6		33.1	24.8	19.8	16.5	14.2	12.4	11.0	9.9	9.0	8.3	7.6	7.1	6.6	6.2	5.8	5.5	5.2	5.0	4.7	4.5	4.3	4.1	4.0	3.8
Total deflection, in.						.006	.012	.022	.034	.050	.068	.088	.112	.138	.167	.199	.233	.270	.310	.353	.399	.447	.498	.552	.608	.667	.729	.794	.862	.932
Load in lb. per lin. ft. of channel	C-750	10	8.8			17173	7633	4293	2748	1908	1402	1073	848	687	568	477	406	350	305	268	238	212	190	172	156	142	130	119	110	102
	C-751	10	8.0			16160	7182	4040	2586	1796	1319	1010	798	646	534	449	382	330	287	253	224	200	179	162	147	134	122	112	103	96
	C-700	12	10.6				11020	6199	3967	2755	2024	1550	1224	992	820	689	587	506	441	387	343	306	275	248	225	205	187	172	159	147

Note: Loads above lines at left will produce maximum allowable shear in webs; loads above lines at right will produce excessive deflections.

ESTABLISHED 1879

MESKER BROS. IRON CO.

Manufacturers of Stairs and Ornamental Iron

ST. LOUIS, MO.

For Mesker Windows and Doors, see Manufacturers' Index

MESKER STAIRWAYS—SPECIFICATIONS

All stairs, where indicated on plans and listed in specifications as metal, shall be of the continuous tread and riser construction as made by MESKER BROS. IRON CO., St. Louis, Mo.

Stringers to be made of not less than $\frac{3}{16}$-in. thick plates, bent into channel form of proper width. Exposed stringers to have ornamental mouldings attached.

Each tread and riser shall be one continuous piece of blue annealed steel of proper thickness to safely sustain live load in excess of 125 lb. per sq. ft. and shall be pressed into proper shape to receive tread filling of concrete, mastic, slate, marble or any type of fill desired. Treads and risers must be securely bolted together to make a rigid and noiseless finished product. Treads to be bolted to angles securely riveted to stringers with countersunk rivets. No bolt or rivet heads to be exposed to mar smooth, flat appearance.

Railings to be of design as shown of ½-in. square bars, 3 in. on centers, mortised, tenoned and riveted into top and bottom channels. Top channels punched for fastening wood hand rail (wood furnished by others). Newel posts of steel with cast iron ornamental cap and drop.

Platforms to be built of steel with subpan to receive filling as specified for treads. Platform pans to be supported and bolted to continuous angles around platform and tee iron stiffeners spaced not more than 2 ft. apart.

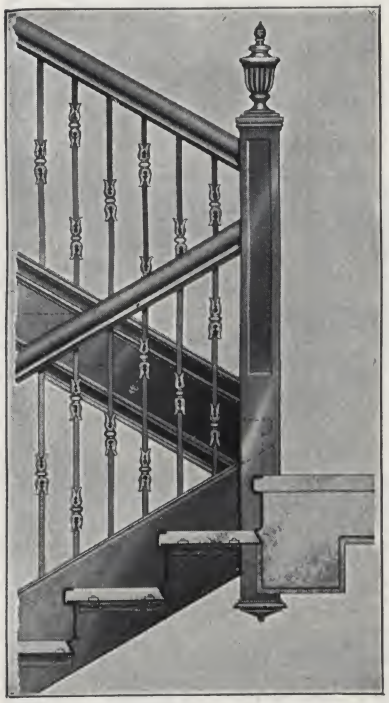
Detail drawings of stairs must be submitted to engineers or architects for approval before any work is fabricated.

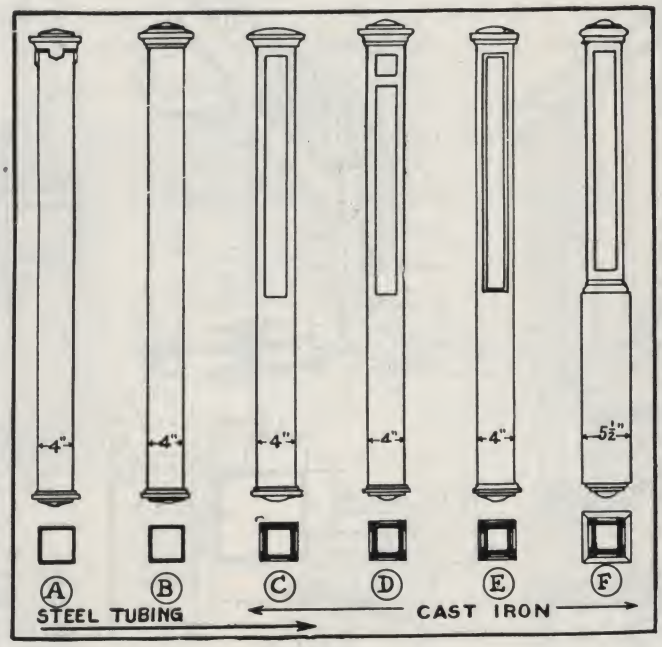
All stairs must be completely manufactured, assembled and checked at shop to insure proper fit when material arrives at building for erection.

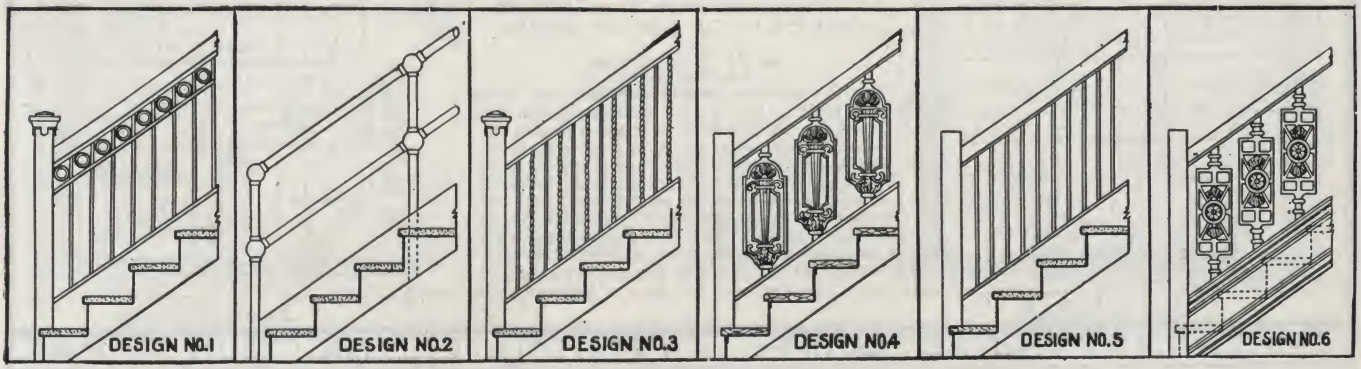
Notes: The above specifications are for our standard construction which is the most economical type in accordance with good practice. The accompanying sketches and drawings show standard as well as special details. A few variations from the above are as follows:

Stringers may be made of steel plates or special rolled channels ornamented with Mesker's special pressed steel modling or any other moulding specified. Paneled steel newels, similar to Type C or cast iron, may be had and railings other than our standard type will be made according to the architect's design.

A few of our standard designs are shown. Treads may be equipped with a sanitary cove and risers paneled.





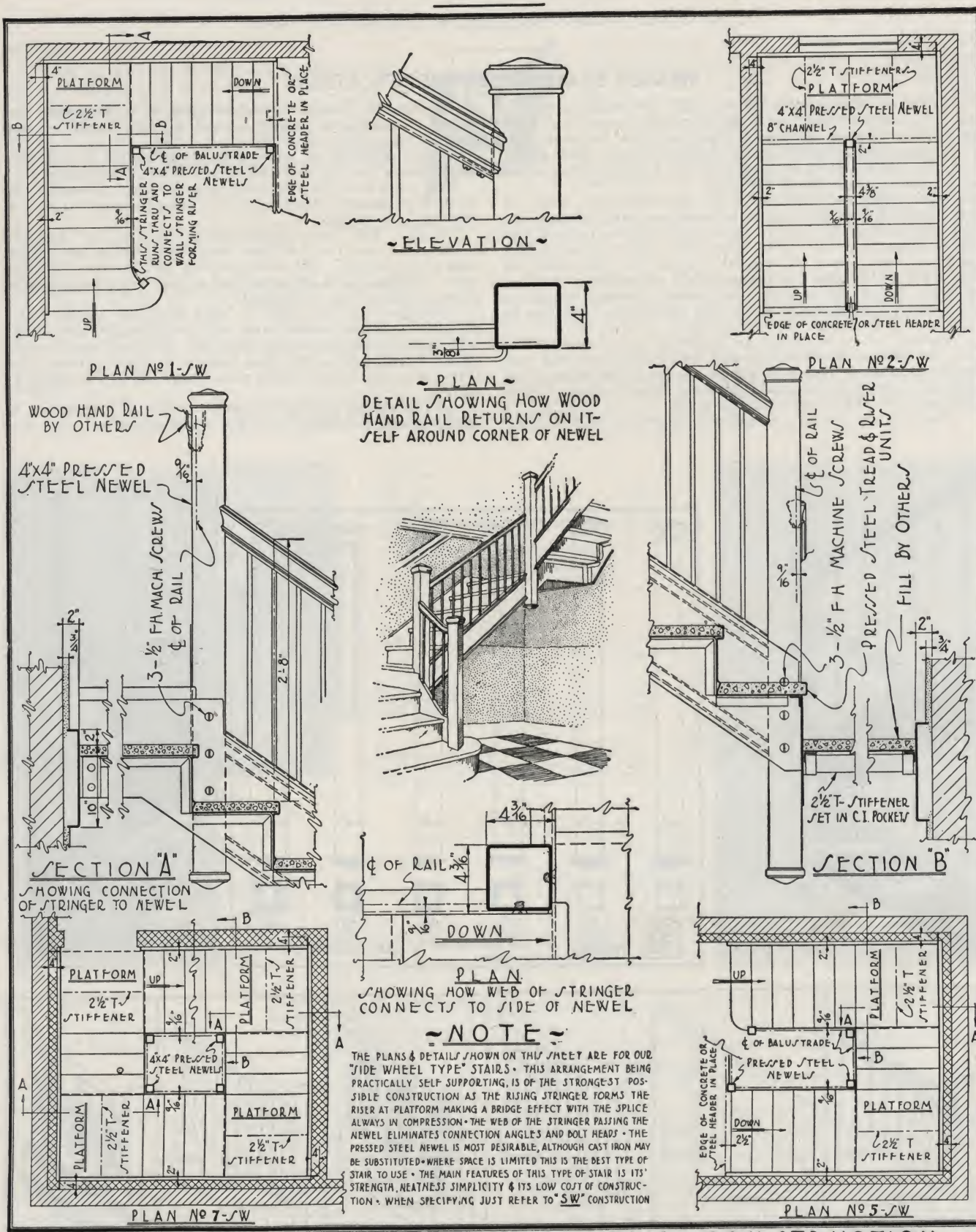


THE ORNAMENTAL IRON WORK COMPANY

Stairs of Every Description and of Any Construction for Every Purpose

Sweitzer Avenue and East Crosier Street

AKRON, OHIO



NOTE

THE PLANS & DETAILS SHOWN ON THIS SHEET ARE FOR OUR "SIDE WHEEL TYPE" STAIRS. THIS ARRANGEMENT BEING PRACTICALLY SELF SUPPORTING, IS OF THE STRONGEST POSSIBLE CONSTRUCTION AS THE RISING STRINGER FORMS THE RISER AT PLATFORM MAKING A BRIDGE EFFECT WITH THE SPLICE ALWAYS IN COMPRESSION. THE WEB OF THE STRINGER PASSING THE NEWEL ELIMINATES CONNECTION ANGLES AND BOLT HEADS. THE PRESSED STEEL NEWEL IS MOST DESIRABLE, ALTHOUGH CAST IRON MAY BE SUBSTITUTED. WHERE SPACE IS LIMITED THIS IS THE BEST TYPE OF STAIR TO USE. THE MAIN FEATURES OF THIS TYPE OF STAIR IS ITS' STRENGTH, NEATNESS SIMPLICITY & ITS LOW COST OF CONSTRUCTION. WHEN SPECIFYING JUST REFER TO "SW" CONSTRUCTION

STANDARD SIDE WHEEL TYPE STAIR CONSTRUCTION

THE RIESTER & THESMACHER COMPANY

Manufacturers of Bois Patented Steel Stairs

1514-1526 West 25th Street
CLEVELAND, OHIO

Products

Bois Interlocking Pressed Steel Stairs.
For Hollow metal Doors, see List of Manufacturers.

Service

A modern plant with complete equipment and an efficient organization qualified to give service. We have a thoroughly efficient estimating and draughting department and are glad to assist in construction details. Typical stair details, estimates and suggestions submitted upon request.

Description

The simple interlocking feature of the tread and riser in this stair, offers distinctive advantages in economy, rigidity, strength and rapid erection. It is also easily adapted to any desired tread material. The treads and risers are formed from one single sheet of steel with flanges that interlock at the nosing line, producing a reinforced edge that is always straight horizontally. This feature of double strength material prevents the nosing breaking away from tread filler. The stringers are tied together with a tie rod running under the angle of each nosing from stringer to stringer. The gauge of metal used is governed by the width of stair and weight to be carried. The entire construction makes for a very strong and rigid stair and the light gauge steel is not used to reduce cost with a proportionate reduction in strength. Tests of a standard Bois stair have been successfully made carrying a dead weight of 600 lb. per square foot.

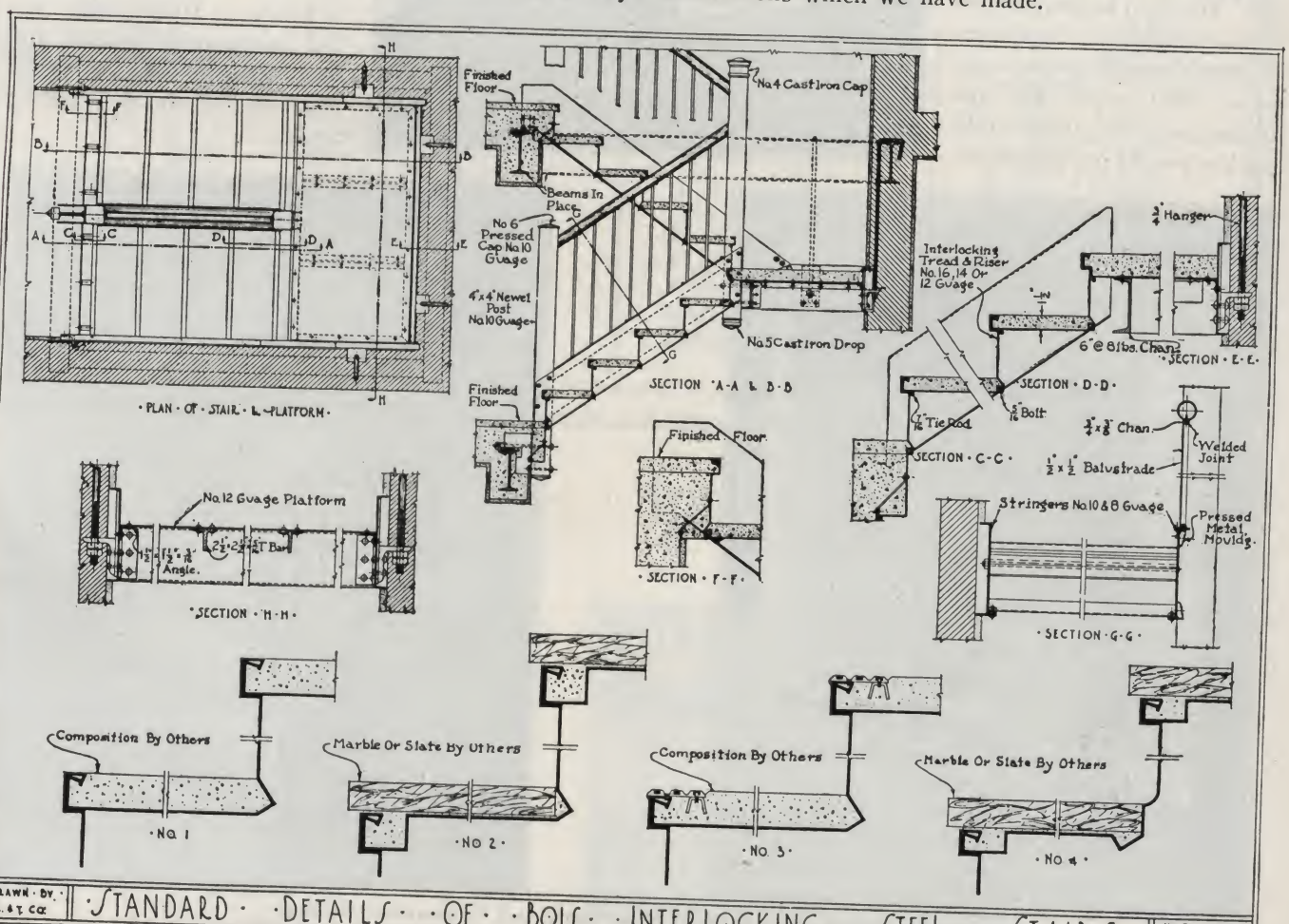
Design

This stair meets the requirements of all State and city building codes and while very simple in design is attractive in appearance and can be readily adapted to the requirements of the architect or builder. Construction may be modified or embellished by ornamenting newel posts, ends of tie rods and stringers, or using cast iron newel posts.

Installation

The interlocking feature dispenses with all riveting and makes for rapid assembling. Each flight of stairs is assembled in a complete unit in the factory and is, therefore, economically erected at the building. This also permits of the stairs being erected with the frame work of the building, giving immediate service before the installation of tread fillers.

For reference we will be glad to furnish names of architects who have specified this product or typical installations which we have made.



WATT MANUFACTURING CO., INC.

Manufacturers and Erectors of Steel Stairs, Plain and Ornamental

PITTSBURGH, PA.

Product

STEEL and CAST IRON STAIRS, Ornamental, Plain and Commercial; SIDEWALK DOORS.

For "Pittsburgh" Rolling Bleachers, see Manufacturers' Index.

General Stair Construction

We manufacture stairs of every type and construction, employing only skilled mechanics. We aim to maintain the highest standard and quality of workmanship at a reasonable cost. Our stairs meet the requirements of all State and city building codes.

Our standard stairs are attractive in appearance and can be readily modified to meet the requirements of the architect. They can be ornamented by applying plain or ornamental mouldings on strings and facias, cast iron caps and drops on newel posts, scrolls and leaf motifs on railings, etc.

Service

We maintain a modern plant fully equipped to execute any size order, and an efficient organization qualified to give complete service.

We have an estimating and draughting department and are glad to assist the architect or engineer in the construction and designing of stairs.

Typical stair details, estimates and suggestions submitted on request.

Erection

We are equipped to erect our products anywhere in the United States. We especially plan to erect all stairs in tall buildings along with the structural steel in proper sequence, resulting in considerable saving in the erection cost, and also making them available for the use of all building trades.

Typical Installations of Watt Steel Stairs and Ornamental Railings

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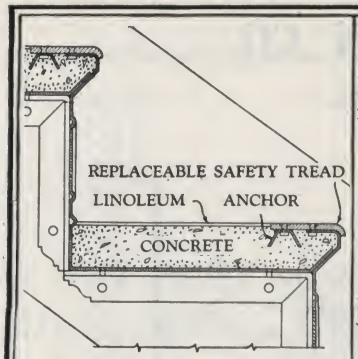
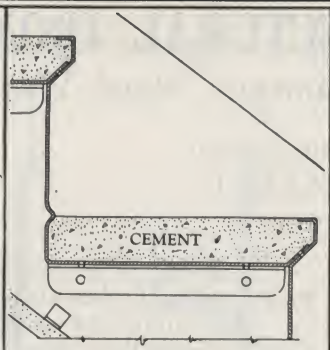
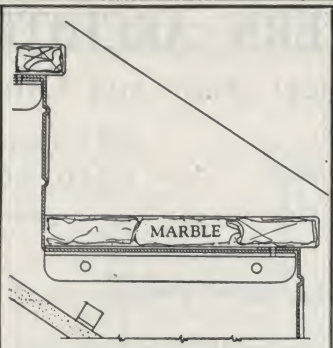


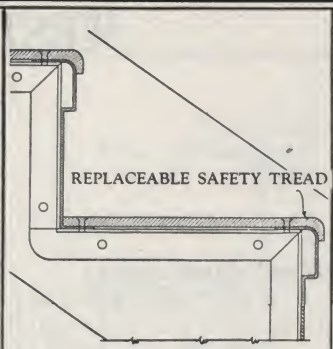
TREAD AND RISER
TYPE A-1



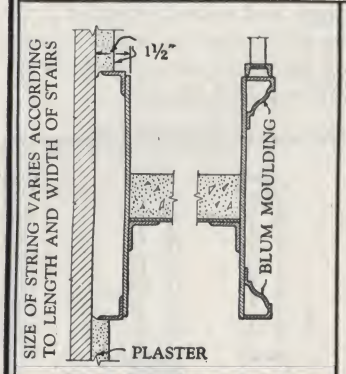
TREAD AND RISER
TYPE A-2



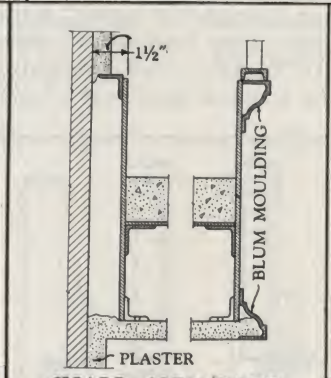
TREAD AND RISER
TYPE C-1



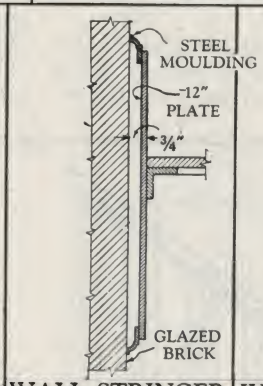
TREAD AND RISER
TYPE D



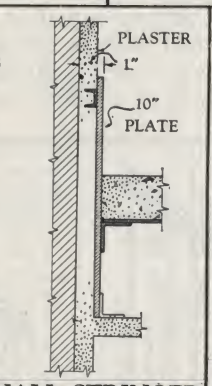
WALL AND FACE
STRINGER TYPE A-3



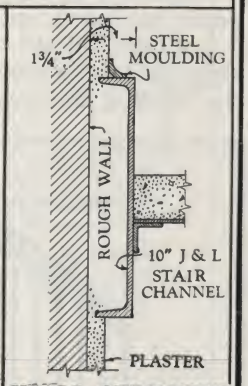
WALL AND FACE
STRINGER TYPE A-4



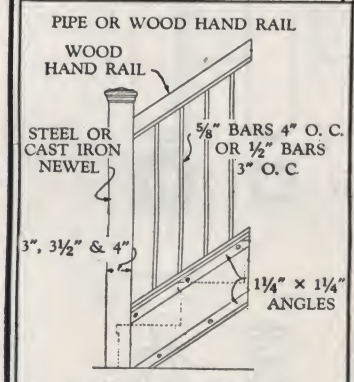
WALL STRINGER
TYPE A-6



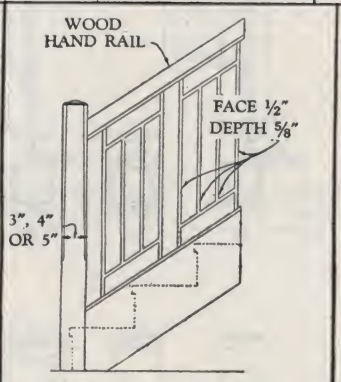
WALL STRINGER
TYPE A-7



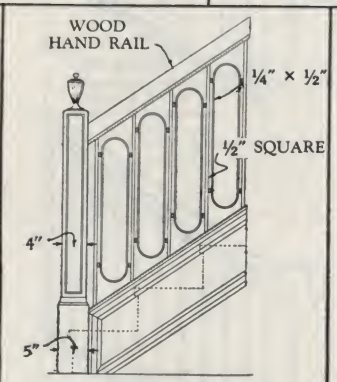
WALL STRINGER
TYPE B



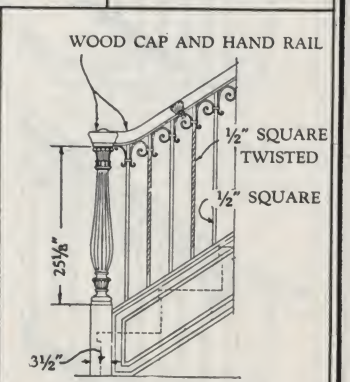
RAILING TYPE A
NEWEL TYPE A



RAILING TYPE F
NEWEL TYPE E

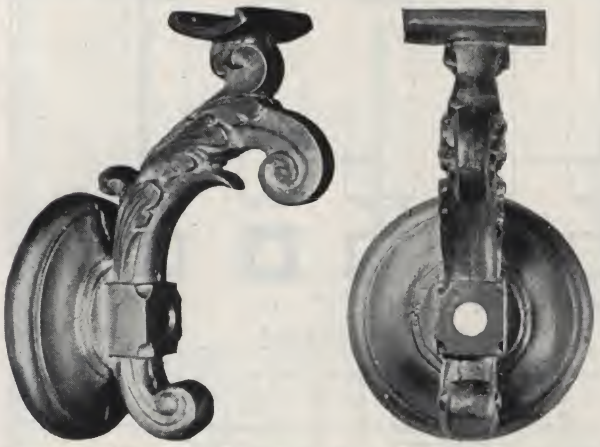


RAILING TYPE K
NEWEL TYPE C-1



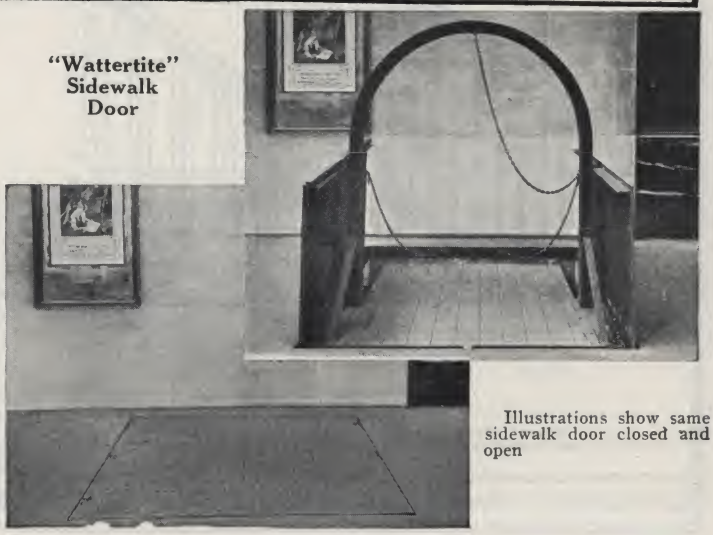
RAILING TYPE L
NEWEL TYPE I-1

FULL SIZE BLUE PRINTS OF ANY DESIGNS MAILED TO ARCHITECTS ON APPLICATION



Type "A" Wall Rail Bracket in Cast Iron, Aluminum and Bronze
Prices on application

"Wattertite" Sidewalk Door



Illustrations show same sidewalk door closed and open

WESTERN ARCHITECTURAL IRON CO.

Steel Stairs and Ornamental Metal Work

TELEPHONE
INDEPENDENCE 1500

3455 Elston Avenue
CHICAGO, ILL.

"Ideal" Steel Stairs

"Ideal" steel stairs are the result of twenty years of experience in stair building.

They are fabricated by experts in a modern shop with modern facilities of every description.

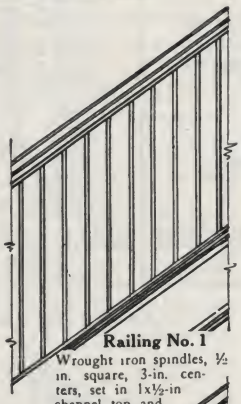
Quality of workmanship in "Ideal" steel stairs is never surpassed and seldom equalled.

Every "Ideal" steel stair is set up complete in the shop before shipment, which insures a perfect fit at the building and results in economy of erection labor.

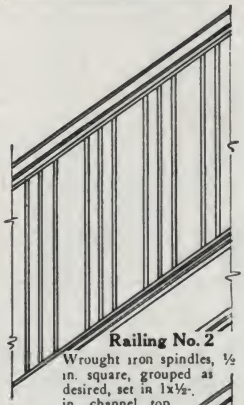
It is for these reasons they are endorsed by all prominent architects and builders.

Write to us and we will be pleased to furnish additional information and estimates.

We have only attempted to show a few simple designs of railings and newels most commonly used. We can furnish any special railings and newels desired and have many patterns of elaborate design in stock which can be used when something better is desired, without the original high cost of patterns and models.

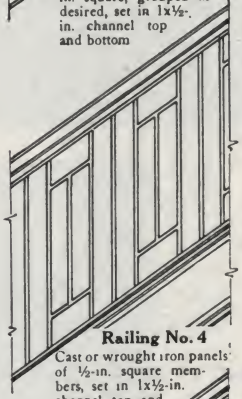


Railing No. 1
Wrought iron spindles, ½ in. square, 3-in. centers, set in 1x½-in channel top and bottom

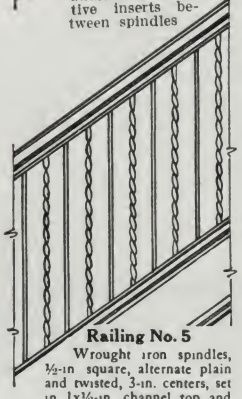


Railing No. 2
Wrought iron spindles, ½ in. square, grouped as desired, set in 1x½-in. channel top and bottom

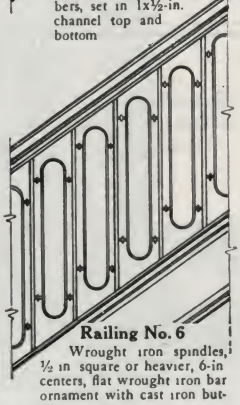
Railing No. 3
Same as No. 1 with addition of decorative inserts between spindles



Railing No. 4
Cast or wrought iron panels of ½-in. square members, set in 1x½-in. channel top and bottom



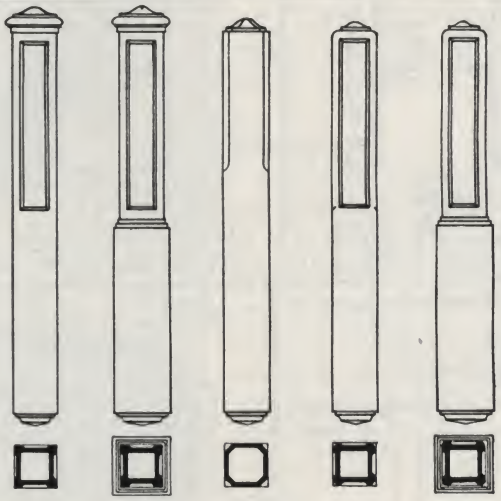
Railing No. 5
Wrought iron spindles, ½-in square, alternate plain and twisted, 3-in. centers, set in 1x½-in channel top and bottom

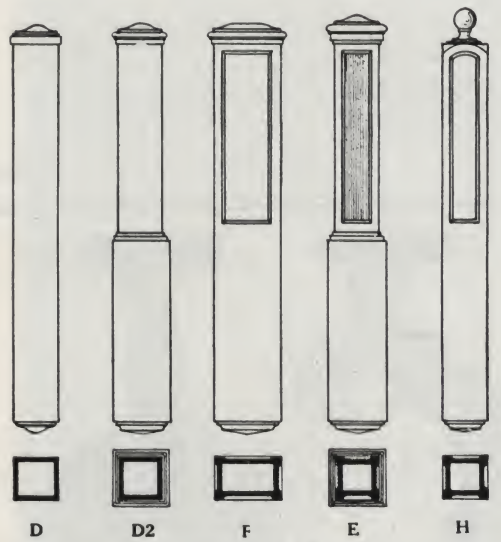


Railing No. 6
Wrought iron spindles, ½ in square or heavier, 6-in centers, flat wrought iron bar ornament with cast iron buttons

Standard Railings

Note. In all cases handrail can be of wood or metal. Any special railing and newel designs can be furnished.



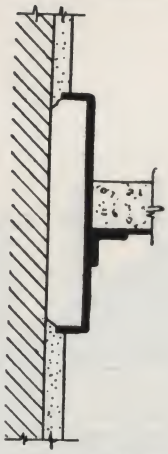


STANDARD NEWELS

Style	Shaft	Style	Shaft
A	3, 4 and 5-in. square	D	3, 4 and 5-in. square
A1	3, 4 and 5-in. square	D2	3, 4 and 5-in. square
B	4 and 5-in. square	F	6x4 in. rectangular
C	4 and 5-in. square	E	4-in. square
C1	4 and 5-in. square	H	4-in. square

DETAILS OF "IDEAL" STEEL STAIRS

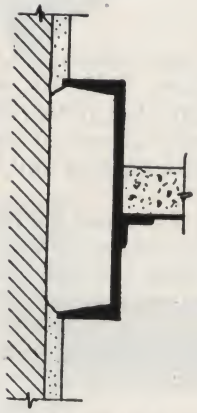
Continued on next page



Wall String No. 1
10x1½ channel

Face String No. 1
10x1½ channel

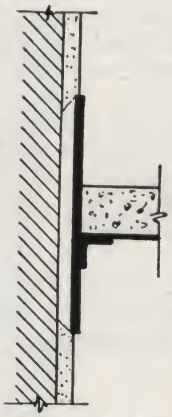
Face String No. 2
10x1½ channel with moulding



Wall String No. 2
10x15.3-lb channel

Face String No. 3
10x15.3-lb channel

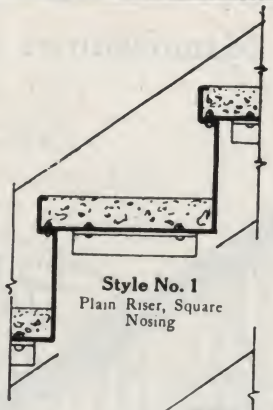
Face String No. 4
10x15.3-lb. channel with moulding



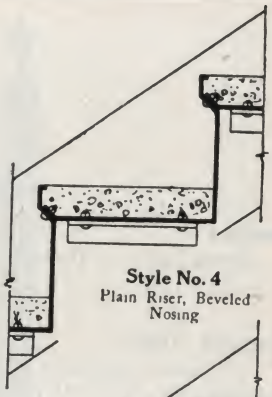
Wall String No. 3
10x¼ plate

Face String No. 5
10x¼ plate for stair with pipe rail

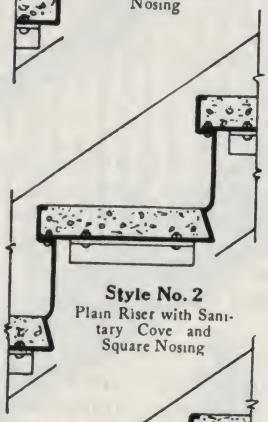
Face String No. 6
10x¼ plate with moulding



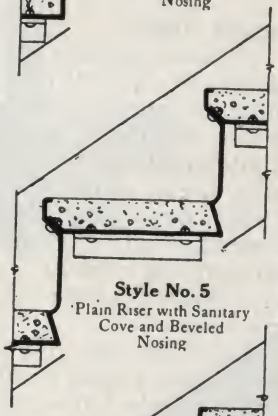
Style No. 1
Plain Riser, Square Nosing



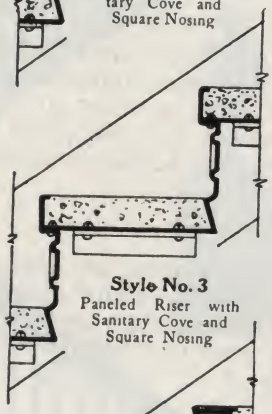
Style No. 4
Plain Riser, Beveled Nosing



Style No. 2
Plain Riser with Sanitary Cove and Square Nosing

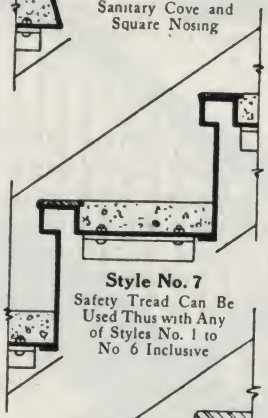


Style No. 5
Plain Riser with Sanitary Cove and Beveled Nosing



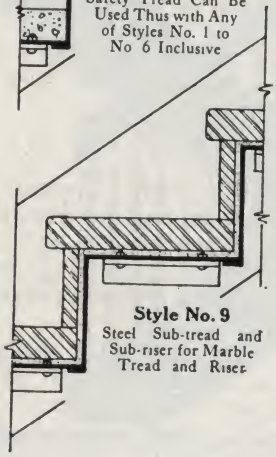
Style No. 3
Paneled Riser with Sanitary Cove and Square Nosing

Style No. 6
Paneled Riser with Sanitary Cove and Beveled Nosing

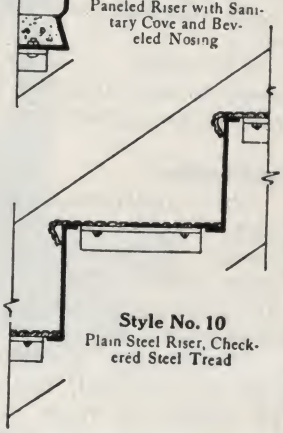


Style No. 7
Safety Tread Can Be Used Thus with Any of Styles No. 1 to No 6 Inclusive

Style No. 8
Paneled Riser with Sanitary Cove and Beveled Nosing



Style No. 9
Steel Sub-tread and Sub-riser for Marble Tread and Riser



Style No. 10
Plain Steel Riser, Checkered Steel Tread

DETAILS OF "IDEAL" STEEL STAIRS

WOODBRIDGE ORNAMENTAL IRON CO.

Incorporated

Manufacturers of PresTeel Stairways

1521 Altgeld Street

CHICAGO, ILL.

REPRESENTATIVES IN PRINCIPAL CITIES

Product

PRESTEEL—"Tested for Strength" —STAIRWAYS.

Strength Tests

Armour Institute of Technology, Chicago, Ill., was selected by our consulting engineers as the best place to conduct exhaustive strength tests of Woodbridge PresTeel Stairways. Separately, stringers, treads, risers, platform channels, tees, hanger rod connections, newel post connections and other parts and connections were subjected to various tests to determine their carrying capacity. Also various designs of completed stairways were subjected to applications of ultimate loads.

From this data, our engineers were enabled to design stairways equal to all requirements, not only in the stringers or platforms, but in all of the component parts.

Exhaustive research has given us a set of tables that definitely eliminate guesswork as to the actual live load that can be carried when using varying weights of metal.

Guarantee

We unequivocally guarantee, without any exception whatever, the satisfactory completion of any work with which we are intrusted; and, without reservation, guarantee all workmanship and materials against defects and to be exactly as represented.

Design

The Woodbridge Standardized PresTeel Stairways can be furnished plain or ornamental to suit any architectural design, with railings and newel posts to match. The risers may be plain or paneled, the treads can be arranged for marble, slate, cement, terrazzo, rezilite, alberene, asphalt, mosaic, cork, carpet, wood, linoleum, or any composition filling, with or without sanitary cove.

The soffits of stairs are usually left open and present a neat finished appearance, but can also be arranged for plastering if desired.

Construction

Our construction provides a light, inexpensive, strong, durable, non-combustible and easily assembled stairway. It is adaptable to office, hotel, warehouse, factory, school, church, lodge hall and hospital construction; in fact, any building where fire-resistant construction is required.

Woodbridge Stairways are built with stringers made of PresTeel, thickness not lighter than $\frac{3}{16}$ in. The treads and risers are made of one piece of blue annealed steel pressed into the form required, platform plates are made of blue annealed steel properly reinforced. Our construction is so designed and planned as to form a permanent rigid and therefore noiseless stairway. The thickness of metal used for the treads and risers as well as stringers depends upon the safe live load requirements and the length of span.

The Woodbridge Patented Standardized PresTeel Construction is reinforced at nosing, which prevents the nosing from breaking away from the tread filling. This stair tread will absolutely stand up at this point under the constant wear and tear the tread nosing must withstand.

The stair assembled forms a solid mass which is free from vibration under loading stress, both vertically and laterally. The strength of our construction insures the maximum of efficiency against damage or failure in case of fire.

Manufacturing Details

Special attention is called to the details of the Woodbridge standardized manufacture. Only the best of materials and workmanship go into the construction with a view to making these stairs last forever—if such a thing were possible—and thus reducing cost and upkeep to a minimum.

Our product is made to last—to withstand the hardest usage—to embody all the necessary requirements and to give the greatest value possible for the money expended.

Cheap material and construction only increase the cost of an article, in added repair and replacement charges.

Installation

Woodbridge Stairways are exceedingly easy to erect. Each flight is erected, inspected and marked in our factory, then knocked down for shipment. If contractor desires to do his own erecting, we furnish shop details and printed erection instructions when shipment is made. A good man and helper can erect two flights of stairs per day, unless stair is extremely complicated. This company will be glad to handle the erection for those unable to take care of this work.

We often erect these stairs with the framework of the building, thus putting the stairs into immediate service, The tread filling is afterwards put in when the structure is nearing completion.

Painting

All Woodbridge Stairways are given one shop coat of battleship gray rust inhibitive metal coating, applied by the air brush process. We do no painting in the field.

Service to Architects

Our thoroughly organized Engineering, Estimating and Sales Departments are at the service of architects, engineers and builders. For those interested in designing and detailing stairway construction, our standardized construction in ¾-in. scale drawings for use in the drafting room, will be furnished upon request.

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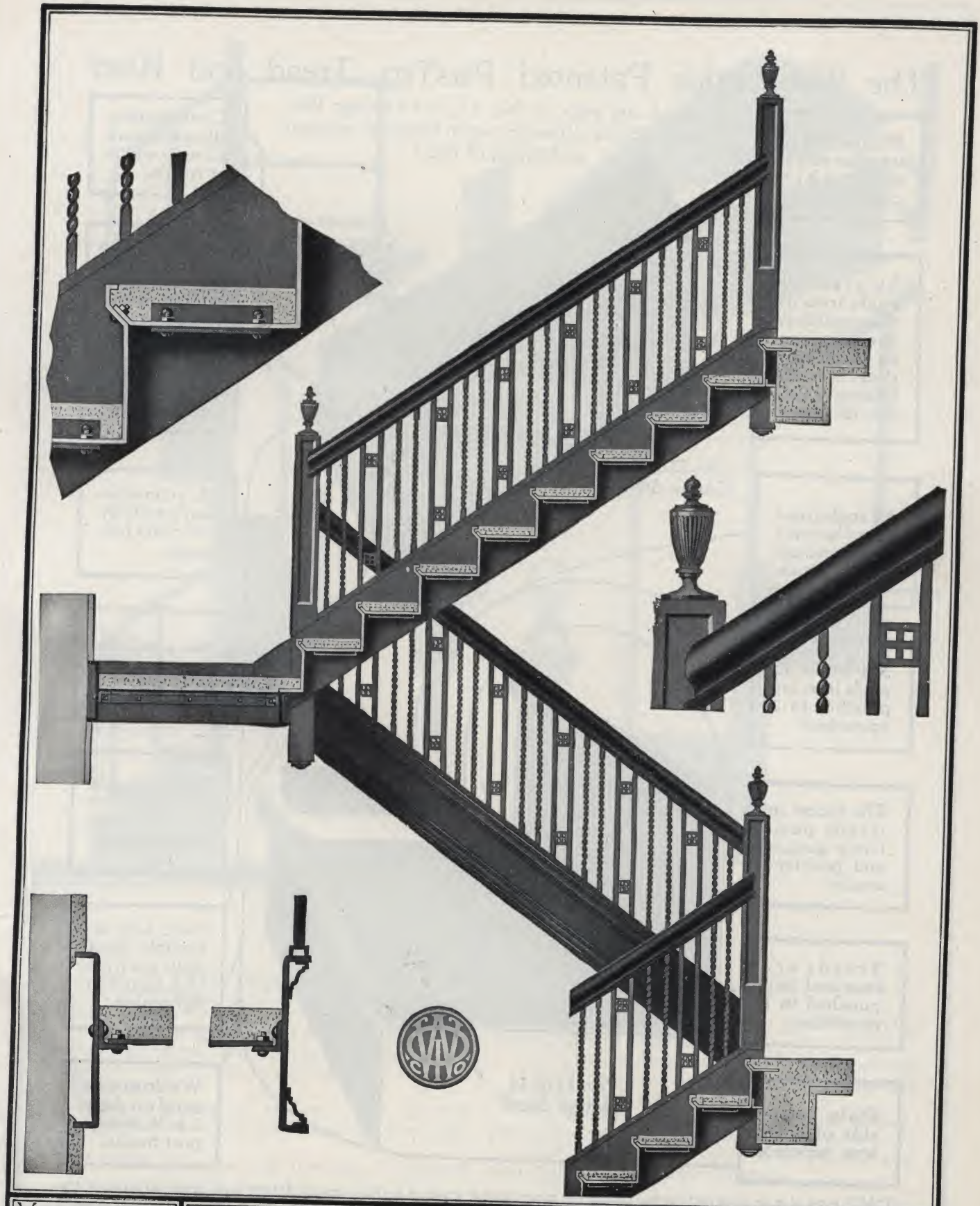


WOODBRIDGE ORNAMENTAL IRON CO.	STANDARD DESIGN NO. 28 PRESTEEL STAIRS	DRAWING No. 1

Continued on next page

The Woodbridge Patented PresTeel Tread and Riser

Made of one piece of No. 12 or 14 Gauge Blue Annealed Steel, depending upon safe load required and length of tread

Plaster Soffits unnecessary with this construction.

By placing angle iron in this position one man can set treads and risers. No scaffolding or ladders necessary

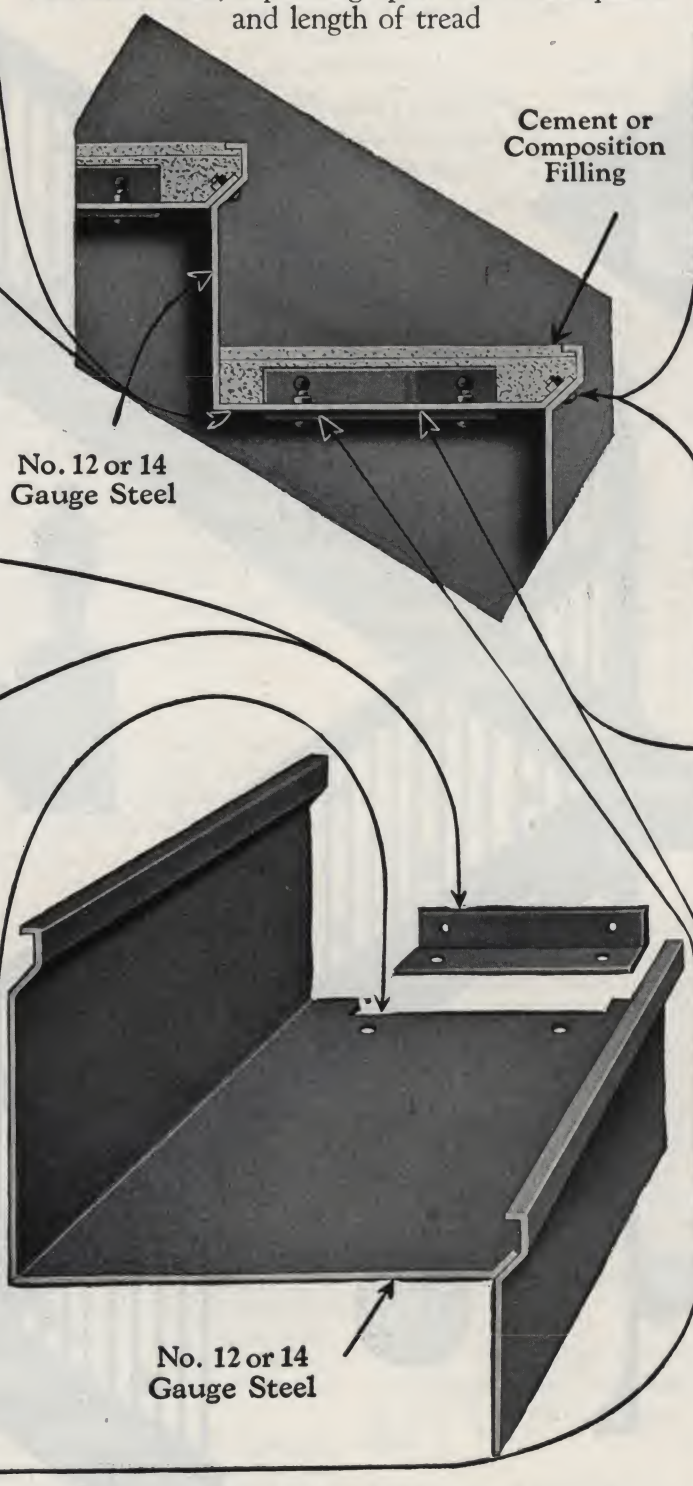
All angle irons cut to the same length and carried in stock.

All holes in angle iron are punched in 2 operations.

The recess in treads positively gauges and positions treads.

Treads are recessed and punched in 1 operation.

Only lower side of angle iron exposed.



Construction allows for variation in width of treads.

Construction strengthens risers, making braces or anchors unnecessary. Nosing positively will not break away from concrete or other fill.

This construction partially conceals bolt heads.

No unsightly construction from below.

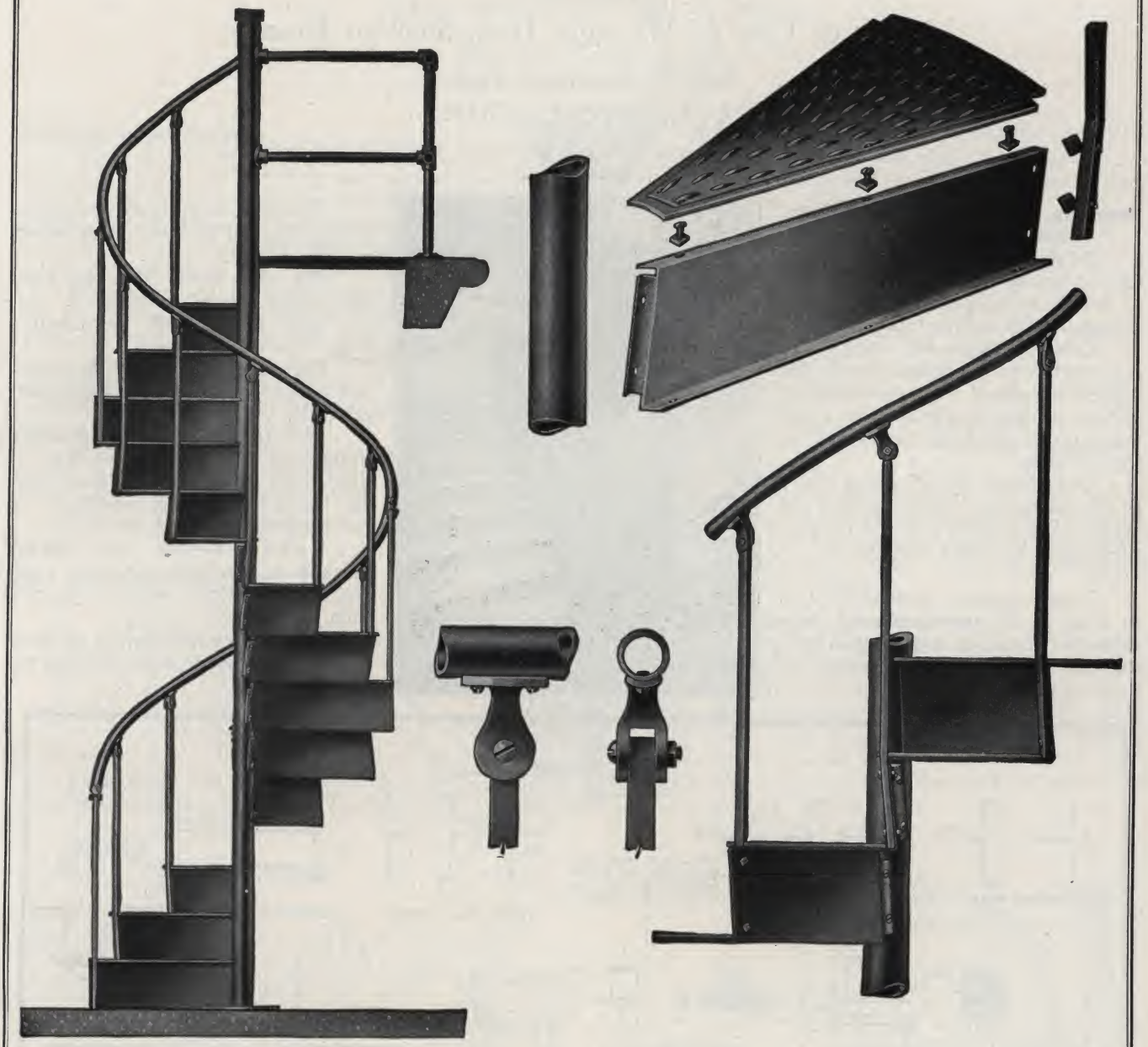
Full strength of angle iron utilized in supporting tread.

Note how accessible these bolts are from the top for tightening.

We do not depend on these 2 bolts to support treads.

THIS type of stair construction has passed the experimental stage as we have installed them in all principal cities of the United States. It meets all the requirements of the building and fire ordinances, and is recommended by leading Architects and Engineers.

Continued on next page



Woodbridge Spiral Stairway Design No. 20B

Notice the greater beauty of this latest design. Compare it with other spiral stairways that are on the market.

This new spiral, like all Woodbridge Stairways, is exceedingly easy to erect. All parts are marked and treads and risers are interchangeable.

Description—

Treads are made of cast iron with diamond pattern surface to match steel diamond plate platform.

The same casting is used for right or left-hand treads. All treads are interchangeable and easily removed.

The risers are made of No. 12 or 14 United States Standard gauge steel.

Each riser is flanged and bolts to the center pipe.

The uprights are made of ¾-in. square bars and are bolted to each riser.

The handrail is made of 1½-in. inside diameter pipe and is rolled to exact radius required.

Platform is made of $\frac{3}{16}$ or ¼-in. diamond plate steel which matches surface of treads.

The New Woodbridge Spiral Stairway

THE L. SCHREIBER & SONS CO.

ESTABLISHED 1854

Stairs of Cast or Wrought Iron, Steel or Bronze

Box 18, Evanston Station
CINCINNATI, OHIO

For our page on Ornamental Iron and Bronze, see Manufacturers' Index

Stairs in Cast or Wrought Iron, Steel or Bronze

Design—Stairs of any type in cast or wrought iron, steel or bronze, in either the plain standard type or the highly decorative type.

Construction—All stairs are constructed in accordance with the highest standard of workmanship and are erected in our shops to avoid inaccuracies before being shipped to the building.

Our sketch detail covers many of the questions arising during the layout of the stairs and will be supplemented by other details on request.

Newel posts are without limit as to design, although economy often dictates the use of square steel tubing varying from 2½ in. square to 4 in. square.

Erection—Our erection men are all experienced and are continuously in our employ.

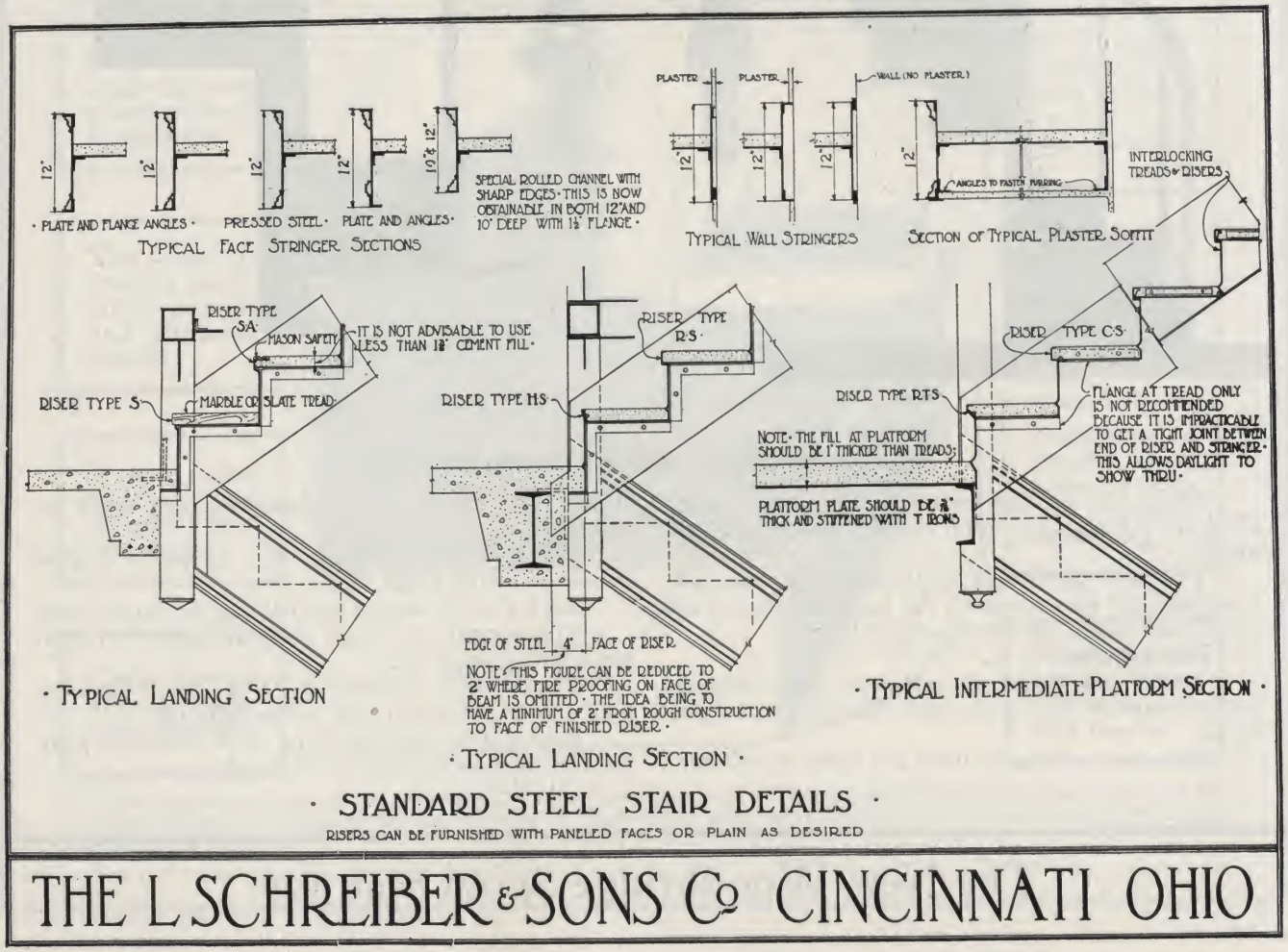
We can send them to erect our work thus keeping it under one head until its completion.

Painting—We give the work one shop coat of preservative paint generally.

We find, however, a growing preference for a protective coat of linseed oil which leaves a good base for the field painting, which we do not undertake.

Service—We are always pleased to furnish estimates and any consultation service at any time.

Our shop organization is thoroughly equipped to make prompt deliveries.



THE L. SCHREIBER & SONS Co CINCINNATI OHIO

THE McNEILL ORNAMENTAL IRON & CONSTRUCTION CO.

Manufacturers of Spiral Stairs

460 East Cross Street
BALTIMORE, MD.

McNeill Spiral Stairs

These stairs are easily assembled on the job, are inexpensive and their neat appearance makes them ideal for use in factories, power plants, office buildings, stores, schools, churches, warehouses, armories and many other places where the saving of floor space is essential.

Construction—McNeill standard construction consists of 3 or 4-in. center pipe, cast iron treads with 1-in. pipe hand rail and ¾-in. pipe uprights, one to a tread. Note our *adjustable fitting* on balusters leaving hand rail smooth, also the ornamental design of risers in center illustration.

Safety Feature—Our treads have diamond surface raised above border which adds greatly to their non-slip value.

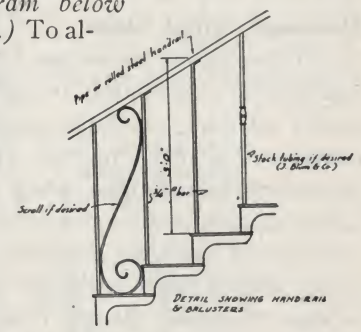
Special Design Railings—Can be furnished at an additional cost.

McNEILL SPIRAL STAIRS

Diam. of stair, in.	Center pipe, in.	Treads to circle	Platform, size of square or radius, in.	Openings, size of square or diameter, in.
42	3	12	22	44
48	3	12-16	25	50
54	4	12-16	28	56
60	4	12-16	31	62
66	4	12-16	34	68
72	4	12-16	37	74
84	4	12-16	43	86

Directions for Ordering—Give height from floor to floor. State kind of floor and if center pipe rests on floor or distance below floor and whether stairs are right or left hand.

(The illustration in the center is a left-hand stairs, the diagram below shows right hand.) To allow clearance for hand rail, the opening in the floor at top of stairs should be 2 in. larger than the stairs' diameter.

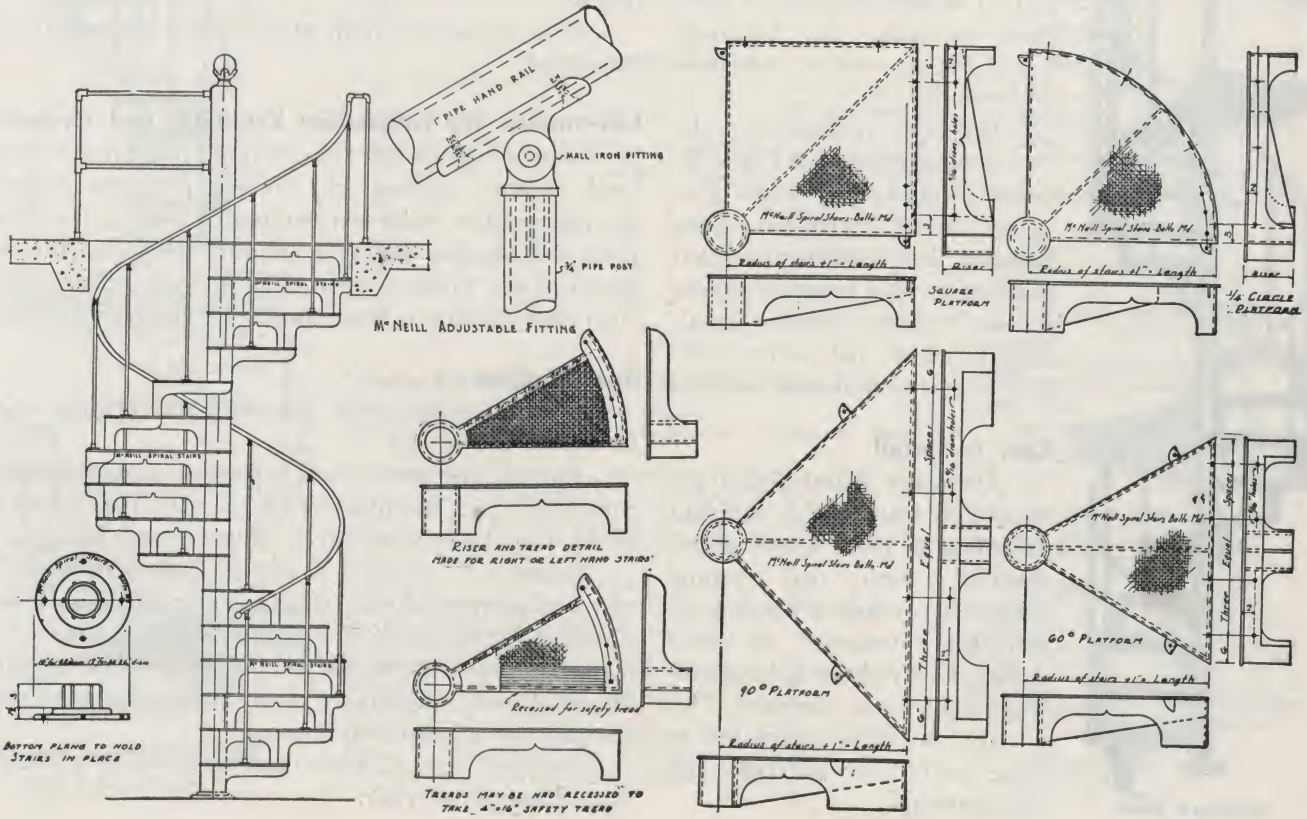


DETAIL SHOWING HAND RAIL & BALUSTERS

To allow sufficient headroom the risers should be from 8 (not less) to 9 in. each and 12 or 16 treads to a turn. The starting and landing points are then determined and whether a right or left-hand stairs best suits the conditions.

Architects' Specifications

Spiral Stairs—Furnish and erect where shown on plans, spiral stairs .... diameter, as manufactured by THE McNEILL ORNAMENTAL IRON & CONSTRUCTION CO., Baltimore, Md., of cast iron treads with diamond surface raised above borders at least ⅛ in., and hand rail of 1-in. pipe on stairs and around well opening.



DUVINAGE SPIRAL STAIR CO.

Manufacturer of Spiral Stairs

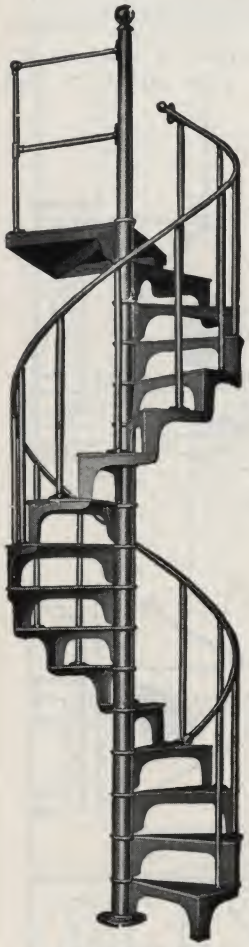
89 West Lee Street, HAGERSTOWN, MD.

Duvinage Spiral Stairs

The distinct advantage for utilizing a spiral stair has become so definitely recognized that its inclusion in nearly all major building projects is now a matter of course. The field for the Duvinage Spiral Stair is unlimited, installations being specified constantly for airports, apartments, banks, churches, clubs, colleges, commercial buildings, hospitals, hotels, industrial plants, power plants, public buildings, pumping stations, schools, sewage disposal plants, theaters, warehouses, water works, and a recent trend for installations in modern residences has become evident.

Used and Endorsed by Nation's Architects

The Duvinage Spiral Stair is considered the standard by many of leading architects, engineers and contractors, evidenced as being economical in cost without the sacrifice of quality, simple but rigid in construction, neat in appearance, and easy to erect in the field. In fact, it can be rightly said that the highest quality materials, modern manufacturing methods, and most careful workmanship have combined to make the Duvinage Spiral Stair a modern structural achievement.



Standard Stair

Reference is directed to the representative list of a few well-known buildings in which Duvinage Spiral Stairs have been installed. It is needless to say that Duvinage would never have been chosen for these extensive installations had we not survived the stiff competition of rival bidders.

Easy to Install

Duvinage Spiral Stairs are completely assembled in our plant according to exact specifications required, each part plainly marked according to blue prints, and then dismantled for shipment. This reduces field assemblage labor to the minimum. Duvinage Stairs are warranted as being perfect in materials and workmanship.

Consulting Service

You are invited to make inquiry for any information desired. It will be a pleasure to have our Engineering Department extend you every co-operation in planning for this modern stair.

Ornamental Stair

Illustrations

The stair shown in the lower left hand corner is our standard Riser Design, and the stair shown in the upper right hand corner is our Ornamental Design. The Ornamental Design is the same as standard Riser Design except the rail construction is substituted by square bar uprights with ornamental fittings, Blum moulded handrail and scrolls under the treads.

Note deviations from above under "Special Construction."

Information for Requesting Estimates and Ordering

State exact diameter and height from floor to floor level. Sketch starting and landing positions desired, showing relative walls or partitions, if near stairs; illustrate well opening and give accurate measurements for platform and railing construction around well opening. Also state deviations from standard construction, if any.

Specifications

For convenience, the following specifications may be copied bodily:

Furnish and erect where shown on plans, Duvinage Spiral Stairs, as manufactured by the DUVINAGE SPIRAL STAIR CO., West Lee Street, Hagerstown, Md.

Stairs (....) in. in diameter, (....) ft. high, of cast iron diamond surface treads, center pipe 3-in. inside diameter for 42 and 48-in. diameter stair, or 4-in. inside diameter for 54, 60, 66, 72, 84, and 96-in. diameter stair. Handrail and uprights of 1-in. inside diameter pipe on stair and around well opening.

Finished size of floor opening to be 2 in. larger than diameter of stair.

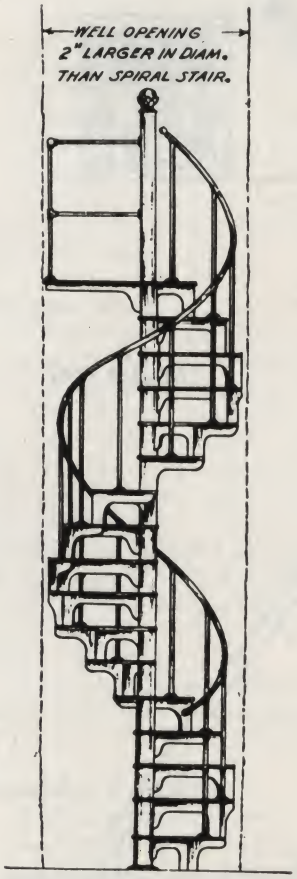
Continued on next page

Construction

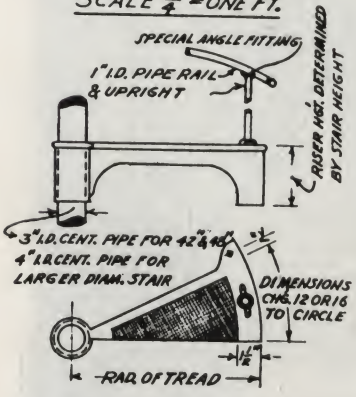
Duvinage Standard Riser Design Spiral Stair

Duvinage Riser Design Spiral Stair is shown on the left. The treads and platforms are of cast iron with diamond surface, mounted on a center column of steel pipe. The treads are made either right or left hand (right-hand shown), twelve to the circle in 42 to 96-in. diameter stairs, and sixteen to the circle in 48 to 96-in. diameter stairs. Platforms are made square, quarter circular, 60 and 90°, with their respective dimensions given in the specification of stair table below. Note the well opening should be 2 in. larger than the diameter of stair. The winged hub and bottom flange are of cast iron; the winged hub attached to rolled diamond steel plate when large or irregularly shaped platforms are necessary, and the bottom flange serving to hold the stair in place at the base. The platform is attached to the well opening construction with expansion bolts, and no additional bracing is necessary unless the stair is unusually high, in which case intermediate bracing is required, and supplied to meet the existing conditions. The railing construction on stair and around well opening is of 1-in. inside diameter iron pipe, single on stair and double around well opening, one upright to each tread. The height of the railing is 37 in. from the tread surface to center of handrail. Riser heights and number of treads to the circle are affected by the height between floors. To provide sufficient headroom under the platform, the riser height should not be less than 8½ in. on a stair of 12 treads to the circle and the platform of not more than 90°. When a stair of 16 treads to the circle is required, riser height as low as 7 in. may be used, as well as a special platform of more than 90°.

By calculating the number of risers required, 12 or 16 treads to the circle, the relative positions of starting and landing can be determined, and a right or left hand stair decided upon.



STANDARD RISER DESIGN
SCALE 1" = ONE FT.



PLAN & ELEVATION OF TREAD
SCALE 1" = ONE FT.

For Special Construction

Deviations from the standard specifications of the Riser Design stair to meet the user's requirements may be made at proportionate increase in cost. Larger or irregularly shaped platforms of cast iron or steel plate not listed in the specification of stair table may be furnished when necessary. Abrasive treads and platforms may also be furnished. Treads and platforms may be recessed for composition flooring or feralun nosings. Risers may be closed by steel inserts, or treads and platforms may be cast with solid risers. Single or double railing of larger diameter may be supplied; also square bar or round iron uprights with railing of brass pipe, wrought iron, architectural brass or iron moulding.

Duvinage Cantilever Design Spiral Stair

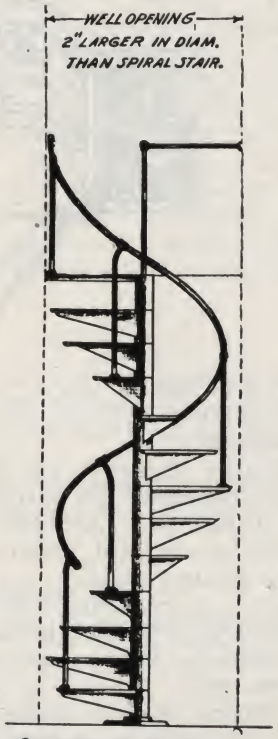
Duvinage Cantilever Spiral Stair, shown on the right, is correctly designed upon the cantilever principle, and the treads so constructed that they may be used either right or left hand (left-hand shown), 12 to the circle in 42 to 60-in. diameter stairs and 16 to the circle in 48 to 60-in. diameter stairs. A dominant superiority of these treads is that they are wider at the hub, allowing ample space over the entire surface of the tread, a feature fully protected by patent. Otherwise the construction of this stair is the same as our Riser Design, excepting there is only one upright to every third tread in the railing construction, and single railing around well opening. The platforms are the same as those used in our Riser Design stair.

STAIR SPECIFICATIONS

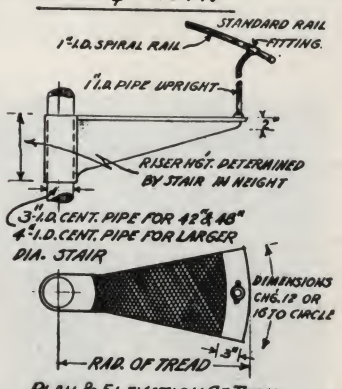
Diam. of stair, in.	Center pipe, in.	Platform, in.			Floor opening, in.	
		Square	¼ Circle (radius)	Triangular 60° & 90° (altitude)	Square	Round (diameter)
42	3	22x22	22	22	44x44	44
48	3	25x25	25	25	50x50	50
54	4	28x28	28	28	56x56	56
60	4	31x31	31	31	62x62	62
66	4	34x34	34	34	68x68	68
72	4	37x37	37	37	74x74	74
84	4	43x43	43	43	86x86	86
96	4	49x49	49	49	98x98	96

Where Duvinage Stairs Have Been Installed

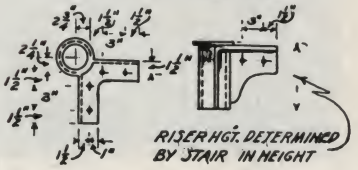
Chevrolet Motor Co., Flint, Mich.
Seybold Bakeries, Miami, Tampa and Daytona Beach, Fla.
City National Bank of Commerce, Columbus, Ohio
New York Life Building, New York, N. Y.
Hearst Publications Building, New York, N. Y.
Church of Ascension, Philadelphia, Pa.
Century Club, New York, N. Y.
Thompson Dairy, Washington, D. C.
New Jersey State Home for Boys, Jamesburg, N. J.
St. Elizabeth's Hospital, Elizabeth, N. J.
Woodstock Hotel, New York, N. Y.
Atlantic Delicatessen Warehouse, Atlantic City, N. J.
Baltimore City College, Baltimore, Md.
Roxy Theater, New York, N. Y.
Industrial Drive Pumping Station, East Chicago, Ind.
Dunn Sulphite Paper Co., Port Huron, Mich.
Montgomery Ward & Co., Baltimore, Md.
And many others.



CANTILEVER DESIGN
SCALE 1" = ONE FT.



PLAN & ELEVATION OF TREAD



WINGED HUB
SCALE 1" = ONE FT.

THE BESSLER DISAPPEARING STAIRWAY CO.

AKRON, OHIO

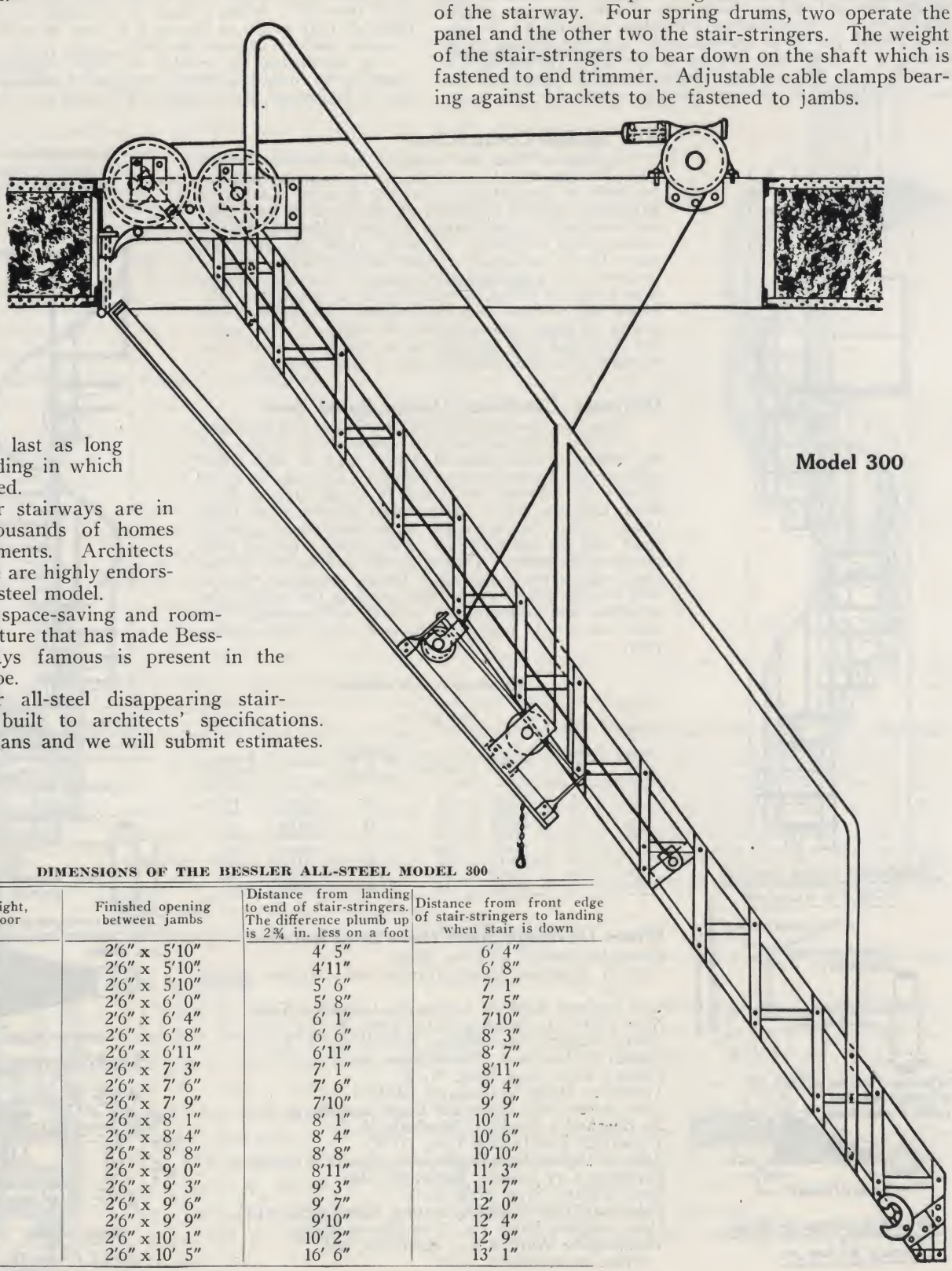
For Bessler Wood Models, see Manufacturers' Index

Bessler All-steel Disappearing Stairway, Model 300

The all-steel stairway is fireproof and burglarproof, and is suitable for use where every hazard must be eliminated and every possible feature of safety must be provided.

Specifications

Stairway to be all-steel mounted on panel to slide on rollers. Panel to have adjustable hinges permitting edge to come to bottom of ceiling. Hand rail for right or left side. One equalizing bar is to be on each side of the stairway. Four spring drums, two operate the panel and the other two the stair-stringers. The weight of the stair-stringers to bear down on the shaft which is fastened to end trimmer. Adjustable cable clamps bearing against brackets to be fastened to jambs.



Model 300

It will last as long as the building in which it is installed.

Bessler stairways are in use in thousands of homes and apartments. Architects everywhere are highly endorsing the all-steel model.

Every space-saving and room-making feature that has made Bessler stairways famous is present in the all-steel type.

Bessler all-steel disappearing stairways are built to architects' specifications. Send us plans and we will submit estimates.

DIMENSIONS OF THE BESSLER ALL-STEEL MODEL 300

Ceiling height, floor to floor	Finished opening between jambs	Distance from landing to end of stair-stringers. The difference plumb up is 2¾ in. less on a foot	Distance from front edge of stair-stringers to landing when stair is down
7′7″	2′6″ x 5′10″	4′ 5″	6′ 4″
8′1″	2′6″ x 5′10″	4′11″	6′ 8″
8′7″	2′6″ x 5′10″	5′ 6″	7′ 1″
9′1″	2′6″ x 6′ 0″	5′ 8″	7′ 5″
9′7″	2′6″ x 6′ 4″	6′ 1″	7′10″
10′1″	2′6″ x 6′ 8″	6′ 6″	8′ 3″
10′7″	2′6″ x 6′11″	6′11″	8′ 7″
11′1″	2′6″ x 7′ 3″	7′ 1″	8′11″
11′7″	2′6″ x 7′ 6″	7′ 6″	9′ 4″
12′1″	2′6″ x 7′ 9″	7′10″	9′ 9″
12′7″	2′6″ x 8′ 1″	8′ 1″	10′ 1″
13′1″	2′6″ x 8′ 4″	8′ 4″	10′ 6″
13′7″	2′6″ x 8′ 8″	8′ 8″	10′10″
14′1″	2′6″ x 9′ 0″	8′11″	11′ 3″
14′7″	2′6″ x 9′ 3″	9′ 3″	11′ 7″
15′1″	2′6″ x 9′ 6″	9′ 7″	12′ 0″
15′7″	2′6″ x 9′ 9″	9′10″	12′ 4″
16′1″	2′6″ x 10′ 1″	10′ 2″	12′ 9″
16′7″	2′6″ x 10′ 5″	16′ 6″	13′ 1″

ALBERENE STONE COMPANY

Interior and Exterior Architectural Uses

153 West Twenty-third Street
NEW YORK, N. Y.

BRANCH OFFICES

BOSTON, MASS., 35 Stilling Street
PITTSBURGH, PA., 506 Commonwealth Annex Building
ROCHESTER, N. Y., 29 Strathallan Park
PHILADELPHIA, PA., 913 Liberty Trust Building
RICHMOND, VA., 203 Builders' Exchange Building
CLEVELAND, OHIO, 425 Schofield Building
CHICAGO, ILL., 1700 Elston Avenue
NEWARK, N. J., 17 Academy Street
WASHINGTON, D. C., 1757 K Street, N. W.
LOS ANGELES, CAL., HILGARTNER MARBLE CO.

QUARRIES AND MILLS AT SCHUYLER, VA.

Products

ALBERENE STONE, the natural quarried stone, is produced and fabricated for:

Stair Treads and Landings
Flooring and Base Border
Door and Window Sills
Window Stools, Interior Trim
Plinths, Trim and Wainscoting
Spandrels, Exterior Trim
Fireplace Linings, Hearths and Mantels

For our pages on Sanitary Equipment, Tubs and Kitchen Sinks, and Laboratory Equipment, see Manufacturers' Index.

Alberene Stone

"Alberene Stone" is the trade-name of the ALBERENE STONE COMPANY for the natural stone produced at their quarries and mills at Schuyler, Va.

This stone is blue-gray in color, non-stratified and free from cleavage lines, dense and close grained, uniform in texture and hardness, practically non-absorbent, easily cleaned and kept clean. It is weatherproof and moisture-resisting. It is chemically inert and highly resistant to acids and alkalis. It is flame-resistant and non-conducting. It is fireproof and not affected even by the highest temperatures. It is easily machined—bored, slotted, grooved, tongued, turned—without splitting or chipping.

This unusual combination of qualities has won for Alberene Stone, for the purposes listed above, its leading place in the architectural and industrial world.

Production Facilities

This company's quarries and mills at Schuyler, Va., are the largest in the world devoted exclusively to the production of stone products of this character. Developed quarries have a capacity for 40 years' supply, while undeveloped properties indicate a reserve ample for 200 years. Both quarries and mills have the most up-to-date machine equipment and are connected by a standard gauge railway to the main lines of the Chesapeake & Ohio R. R. Co. and the Southern Railway Co. Systems. These resources are facilities, coupled with the company's specialized experience of more than 40 years, assure a uniform high grade of material and workmanship and prompt deliveries.

Architectural Service

The technical department of the company is prepared and qualified to draw specifications, plans and details on all construction problems involving the use of Alberene Stone.

The experienced counsel of the company's specialists is freely offered to all who may wish to avail themselves of it—without obligation.

Stair Treads, Landings, Floorings, etc.

A selected hard stone is used for this purpose, a stone which has a pronounced "toothed," non-slipping surface. This material reduces the fire hazard, because it will not crack or break under heat, or even when cold water is turned upon it when the stone is at a high temperature. This makes Alberene Stone a superior material for stair treads, landings and flooring where safety and durability are factors. Many instances are known where these treads have been in hard service for more than 25 years. Our mill capacity and supply of uncut stone enable us to make reasonable deliveries in any quantity.

A Flight of the 6000 Alberene Stone Stair Treads in the Equitable Life Assurance Co.'s Building, New York, N. Y.
STARRETT & VAN VLECK, Architects

Spandrels, Mullions, etc.

Aside from beauty of texture and color and construction economies due to thinness when used as a wall veil, Alberene Stone exterior trim is free from upkeep cost of any kind, as proven by its performance for 200 years on Independence Hall, Philadelphia, Pa.

Alberene Has Color Value

Send for "Architectural Alberene" which contains plates in full color showing how perfectly Alberene and heat-treated Alberene blend with various stones used in building construction.

Alberene Stone Spandrels on the School of Education Building, New York University, New York, N. Y.
JAMES GAMBLE ROGERS, Architect

AMBLUCO NON-SLIP BLUE STONE STAIR TREADS AND FLOORING

QUARRIES AND MILLS
AMBLUCO, WYOMING CO., N. Y.

Produced by
AMERICAN BLUE STONE COMPANY
101 Park Avenue, NEW YORK, N. Y.

Products

AMBLUCO NON-SLIP STAIR TREADS and LANDINGS for interior steel and concrete stairways; AMBLUCO FLOORING, THRESHOLDS and WALL BASE for interior and semi-interior uses.

For Genesee Valley Blue Stone for exterior uses, and Naturcleft Flagging, see Manufacturers' Index.

Reg. U. S. Pat. Off.

Facilities

This company has well developed quarries on its own property of about 200 acres, located at Ambluco, Wyoming County, N. Y. The mills and yards are equipped with the most modern machinery so that large volumes of business can be handled without delay.

One building 150 ft. long, devoted exclusively to the storing and finishing of AMBLUCO Products is heated during the cold weather so that orders can also be filled in the winter.

Ambluco Non-slip Stair Treads and Landings

These treads and landings have established themselves wholly on their own merits, with practically no introduction on our part. By those who have studied their qualifications or used them, they are declared to be superior to and more economical than any other type.

Attractive Color and Texture—Uniform color, even grained texture and standard sand sawed finish (free from saw marks and imperfections) give a splendid appearance. The distinctive light-blue shade blends well with adjacent light color surfaces or gives a sharp clean contrast with dark material. It is a fine, close grained blue stone, made up mostly of pure, hard quartz as shown below:

MINERALOGICALLY CONSIDERED	
Fine, hard sand, mostly quartz	70%
Clay, as binding material	28%
Water	2%

Non-slip—The non-slip property, due to the fine grained quartz, does not grip the foot to cause tripping, but gives ample security against slipping at all times, whether wet or dry, without requiring resurfacing or replacing. These quartz particles are always uniformly distributed throughout the entire stone, a condition that is only produced by nature and prevents the surface from ever wearing smooth.

Durable—The extreme durability of the AMBLUCO Treads comes from the character of the material and the steadily increasing hardness of the stone brought on by the heat of the building, causing the treads to resist wear as they age. The density of the stone's structure which helps to give the remarkable wearing quality is revealed comparatively in the following table:

CRUSHING STRENGTH	
Rockport granite (Kidder's Hand Book)	17,750 lb. per sq. in.
Vermont marble	13,500 lb. per sq. in.
Genesee Valley blue stone	19,970 lb. per sq. in.

This blue stone weighs only, approximately, 150 lb. per cu. ft. (or 25 lb. per sq. ft. 2 in. thick) when cut ready to set.

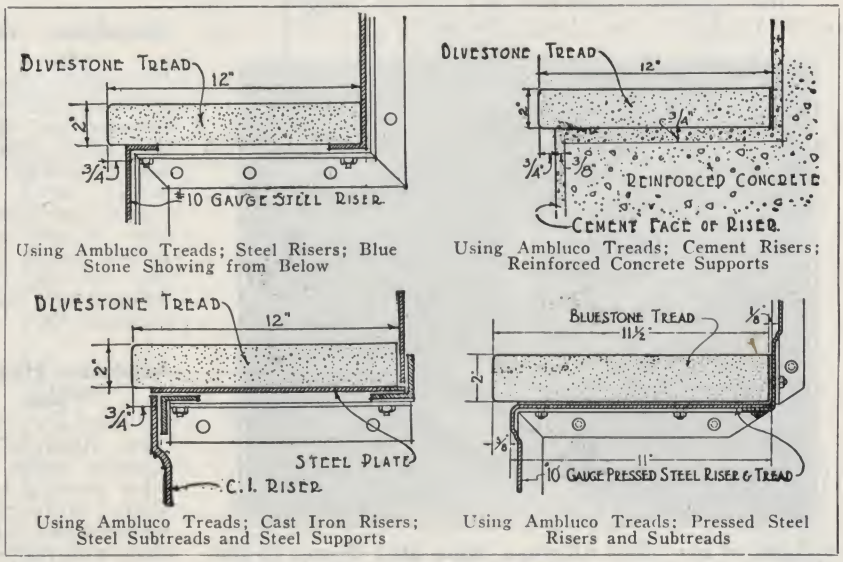
Sanitary—AMBLUCO Non-slip Treads and Landings are easily kept sanitary. Their great hardness prevents generation of dust and permits clean sweeping and mopping. The flat, non-porous surface has no grooves or pores to collect filth and disease germs. The soffits may be painted without danger of the stain coming through the stone to the top surface.

Ambluco Stair Treads, Hartford (Conn.) Fire Insurance Co. Building
PARKER, THOMAS & RICE, Architects
MARC EIDLITZ & SON, Contractors

Quiet—They are practically noiseless and do not resound from footsteps nor become loose and rattle. This quiet feature is a truly essential quality for most buildings, and especially for hospitals where many human beings are undergoing great suffering, and for schools where it is so important that the pupils' minds are not distracted from their work.

Fire Resisting and Rust-proof—The AMBLUCO Treads and Landings offer great resistance to extreme heat and are of inestimable value in fireproof construction. In contrast to many other treads these AMBLUCO treads do not become rusty themselves nor stain other adjacent materials.

Permanent and Economical—"Lasts the life of a school" is a fitting slogan, for, as indicated by tests and



Using Ambluco Treads; Steel Risers; Blue Stone Showing from Below

Using Ambluco Treads; Cement Risers; Reinforced Concrete Supports

Using Ambluco Treads; Cast Iron Risers; Steel Subtreads and Steel Supports

Using Ambluco Treads; Pressed Steel Risers and Subtreads

Details of Ambluco Stair Treads

Continued on next page

reputed records, AMBLUCO Non-slip Treads give satisfactory service in an average school for 50 to 60 years, while observance shows that at the existing rate of advancements in scientific design and construction, a school is considered obsolete in that length of time and is frequently replaced by a new building. In fact, there are records where these blue stone treads have been removed in the wrecking of a school and the same treads later installed in a new school.

The initial cost of the AMBLUCO Treads (1½ in. to 2 in. thick) is about the same or less than other natural stone treads and the ultimate cost much less even than the cheap metal and composition treads.

The facility with which they can be set on the regular types of fabricated or pressed steel stair construction eliminates the great expense of specially designed steel members.

No maintenance cost is necessary after these blue stone treads are properly installed.

As a matter of fact, the AMBLUCO Treads and Landings can be safely adopted without first experimenting.

Specification Suggestions—AMBLUCO Non-slip Treads and Landings should be called by their trade-name, and although in many localities this name is well known, we suggest (to avoid substitution of inferior material) giving the additional information that they are produced by the AMERICAN BLUE STONE COMPANY, New York, N. Y.

The sand sawed or wet sand rubbed are the only two finishes which should be allowed. The former has proved entirely satisfactory and we endorse it as a standard. Planed and axed surfaces should be avoided.

AMBLUCO Treads and Landings are universally used 2 in. thick, but can be furnished down to 1½ in. Complete specifications will be supplied upon application.

Ambluco Flooring, Base, Treads and Risers, Alumnae Hall, Vassar College, Poughkeepsie, N. Y.
HUNT & HUNT, Architects

Accepted as Standard by Prominent Users—Subsequently to the standardizing on the AMBLUCO Blue Stone Treads by the City of Boston and its many suburbs in their schools and other public buildings, nearly all the rest of New England, recognizing the superior features of these treads, did likewise. Many of the leading school architects in the Eastern, Southern and Middle Western States specify them. The use has not been confined to schools, but has also been extended to other public buildings, such as hospitals, museums, colleges, churches, clubs, railroad stations and high class commercial buildings.

Also AMBLUCO installations are frequently made to replace worn-out treads of other kinds.

AMBLUCO Treads and Landings are used, for the most part, by architects and engineers long accustomed to incorporating in their specifications the best material for their work.

A Few Ambluco Tread and Landing Installations

Girls' Continuation School, Boston, Mass., Joseph J. Driscoll, Architect
Essex County Sanitarium Buildings, Verona, N. J., Sutton & Sutton, Architects
Taft Upper School, Watertown, Conn., James G. Rogers, Architect
New York State Teachers' College, Buffalo, N. Y., William E. Haugaard, Architect
Cook Dormitory, University of Michigan, Ann Arbor, Mich., York & Sawyer, Architects
St. Joseph's Normal Institute, Barrytown, N. Y., James W. O'Connor, Architect
Brookline High School, Boston, Mass., Kilham, Hopkins & Greeley, Architects
Columbia High School, South Orange, N. J., Guilbert & Betelle, Architects
St. Boniface R. C. School, Sea Cliff, L. I., N. Y., Jas. W. O'Connor, Architect
Homeopathic Hospital, Providence, R. I., Kendall Taylor & Co., Architects
Lehigh Valley Railroad Station, Easton, Pa., J. J. McCleece, Architect
Federal Reserve Bank, Boston, Mass., R. Clipston Sturgis, Architect
Liberty Telephone Exchange, Boston, Mass., Parker, Thomas & Rice, Architects

Ambluco Blue Stone Flooring, Thresholds, Wall Base, and Swimming Pool Coping

In these days of the exacting of high liability for accidents to mankind, the fundamental requirement in flooring is that it does not become slippery under any conditions. In this blue stone flooring, quartz, the essential constituent, being harder than the accessory minerals, is pre-eminent on the wearing surface at all times and makes the floor slip-proof and very durable. Besides the rust-proof, non-porous, dustless and sanitary qualifications of this flooring, it is quiet to walk on.

AMBLUCO Flooring is either 1½ or 2 in. thick and is especially suitable for interior and porch floors in both regular and irregular designs, suggestions of which are shown on the following page. In case of an irregular pattern, it is advisable for economy to limit the number of sizes to about seven. If, however, a greater variety of sizes and shapes is desired, random sawed slabs may be shipped from the quarries, and then fitted and jointed by local cutters on the job. Joints of ⅛ to ¼ in. are usually used for the regular styles and ¼ to ½-in. joints are more in keeping for the irregular style floors.

Its sawed or rubbed finish gives a level surface on which chairs and other furniture do not rock, a feature so annoying with natural split stone.

Other delightfully artistic effects are gained by several methods. One, by varying the finishes—having some pieces sawed with sand and some with steel shot. Another, by omitting the washing of the stone after sawing, which gives a variegated coloring from the rust stain of the saws.

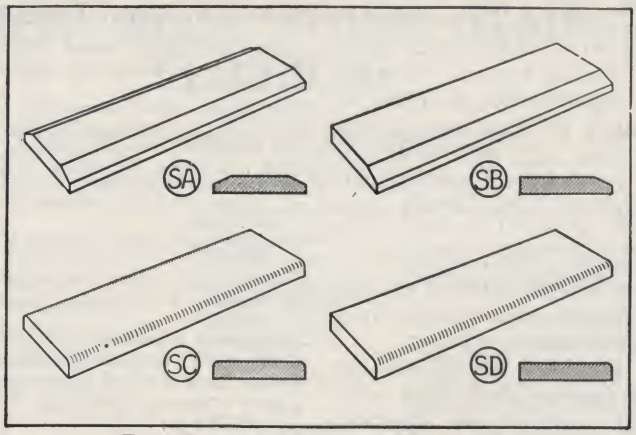
For interior swimming pools it is claimed to be in a class by itself for the border flooring and coping, for it is not dangerously slippery, does not injure the bare feet, and does not deteriorate and necessitate frequent replacements as do some manufactured floorings.

AMBLUCO Flooring is especially appropriate for,

Continued on next page

and is being used extensively in churches, cathedrals, museums, libraries, clubs, hotels, railroad stations, residences, high class commercial buildings, and the vestibules and stair halls of hospitals, schools and college buildings.

Perhaps in no place is there greater and more noticeable wear than in thresholds or saddles, and therefore, for this purpose, this AMBLUCO non-slip sand rubbed product is unapproached. These are furnished 1¼ to 2 in. thick by the desired widths, and with a choice of bevels.



Four Types of Standard Thresholds

The AMBLUCO Wall Base and Plinths should be used to match the flooring and thresholds, landings and treads. The base and plinths are 1¼ to 2 in. thick by 7 to 14 in. high. A ⅛-in. radius round on the top front arris is usually given or a slight bevel is occasionally applied.

A fine sand rubbed finish is most appropriate, although the sand sawed finish frequently harmonizes better with certain styles of wall.

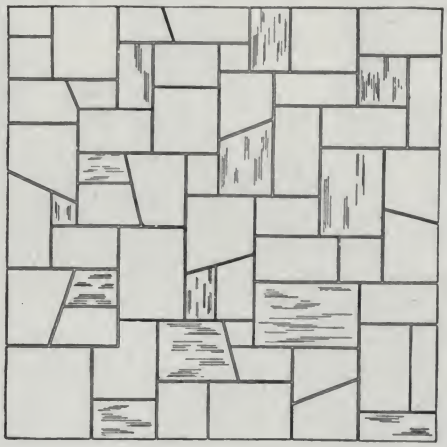
Specification Suggestions—It is important that this flooring, thresholds and base are specified by trade-name as described under the AMBLUCO Non-slip Treads.

For Flooring—The vestibules, lobbies, lounges (or whatever places desired) shall be of AMBLUCO Blue Stone, 2 in. [1½ in.] thick laid in regular [semi-irregular] [irregular] design (if irregular describe idea) with ¼-in. [½-in.] joints. It shall be set over a concrete fill and set in, at least 1 in. of mortar composed of 2 parts sand and 1 part portland cement. The joints shall be neatly pointed flush with surface of floor with same mortar, to which shall be mixed enough lamp black or other coloring to produce the desired effect.

For Thresholds or Saddles—All interior doorways for (.....) floors where cement, terrazzo or tile floor is used on either side, shall have AMBLUCO Non-slip Blue Stone saddles 2 in. [1¼ in. to 3 in.] thick by the full thickness of the partition wall in width, and the full width of the opening in length, with sand rubbed finish and 1x¼ in. deep bevel on each side. Joiner strips of AMBLUCO Blue Stone 1½ in. thick by 8 to 10 in. wide shall be used wherever different types of floor meet.

Typical Ambluco Flooring, Base and Threshold Installations

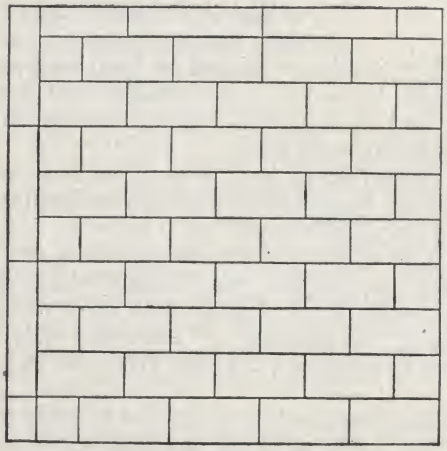
Museum of Fine Arts, Boston, Mass., Guy Lowell, Architect
Cathedral of Incarnation, Baltimore, Md., Bertram G. Goodhue, Architect
Christ Church, Bronxville, N. Y., Bertram Goodhue Associates, Architects
University of Maine Arts & Science Building, Orono, Me., Crowell & Lancaster, Architects
Baker Chocolate Co., Dorchester, Mass.
Dr. Walter Timme's Art Wing, Cold Spring, N. Y., John W. Ingle, Architect.
Carl Weeks Residence, Des Moines, Iowa, Rasmussen & Wayland, Architects.
Church of the Redeemer, Morristown, N. J., Parish & Schroeder, Architects



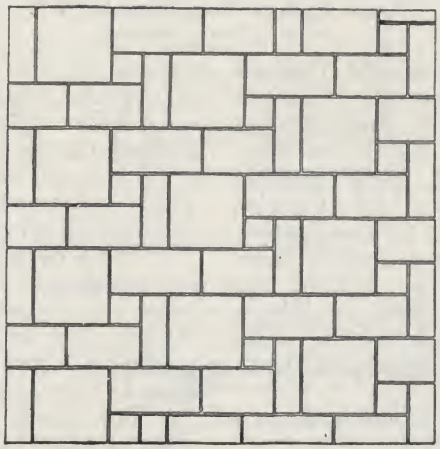
Irregular Design—FD
Random size blue stone slabs, showing variegated effect by combining sand sawed and shot sawed finishes. Laid with broken ½-in. joints

Suggestions for Care of Ambluco Products

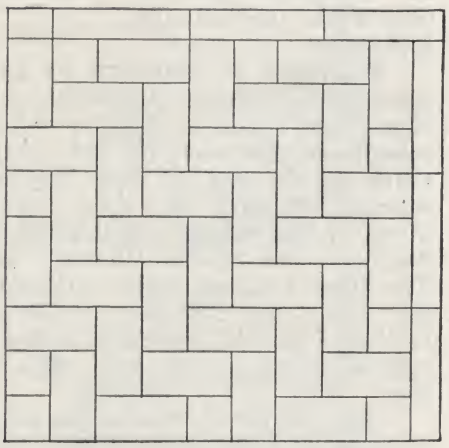
After AMBLUCO Treads, Landings, Flooring, etc., have been installed they should be thoroughly scrubbed with sand and water until clean. No acid or other damaging substances should be used. If the light blue color is desired, coat with one or two applications of Truscon's Super Por-Seal. Repeat this six to eight times a year if needed. If it is preferred to have a darker shade, scrub and then paint with raw linseed oil. This can be done as often as will give the best results.



Regular Design—FA
Oblong blue stone slabs 24x12 in. laid with straight joints and transverse joints uniformly broken. Border of blue stone 8 in. wide



Semi-irregular Design—FC
Five different size blue stone slabs laid to a pattern with broken ¼-in. joints



Semi-regular Design—FB
Oblong blue stone slabs laid herringbone. Border of blue stone 8 in. wide

Suggested Designs for Ambluco Flooring

Make Walkways Safe!

Trade Names Are Registered in the U. S. Patent Office

AMERICAN ABRASIVE METALS CO.

50 CHURCH STREET
NEW YORK, N. Y.

BOSTON
BUFFALO
CHICAGO
PITTSBURGH
PHILADELPHIA
SAN FRANCISCO

BRONZALUN

Anti-Slip Treads

Bronzalun is made the same as Feralun
See page 2 for description

The illustration at the left shows a Bronzalun Elevator Door Saddle, V-Fluted Surface

The illustration below shows a Bronzalun Tread, Hatched Surface

AMERICAN ABRASIVE METALS CO.

The illustration above shows a Bronzalun Door Saddle, V-Fluted Surface

Continued on next page

ABRASIVE METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS

The Description, Uses, Forms, etc., of Feralun, as Outlined Below, Apply also to Alumalun, Bronzalun and Nicalun Except for the Metal Matrix

General Description

Composition — Feralun Treads are made of a special iron in which is incorporated, at the time of casting, the hardest known electric furnace abrasive product. This abrasive grain is concentrated in and completely covers the wearing surface, assuring not only long wear but greatest non-slip qualities.

Durability — Non-corrosive and weather-resistant even when placed in exposed positions. Feralun is standard in the New York subways where the traffic is the heaviest in the world and it requires years to destroy the efficiency of these treads. Under average traffic in a building, they will last the life of the structure. The abrasive grains are a protection against wear of the metal matrix in which they are cast. This assures extreme durability and freedom from maintenance.

The Cast Iron with the Abrasive Surface

Safety—The abrasive projects slightly above the surface and "bites" or provides a good frictional surface, so that slipping is impossible even when wet. There are no heel-catching or toe-tripping parallel grooves. Furthermore, the treads are fully protected on the nosing edge by the abrasive grains carried over the nosing. This eliminates the greatest danger of the edge becoming slippery or jagged through wear.

Safety and Fireproof Approvals—Feralun and sister products are universally approved by the State Industrial Boards of New York and other states, as well as insurance carriers in general and the Underwriters' Laboratories, Inc. Feralun also holds the Grand Prize of the American Museum of Safety.

The Uses of Feralun

The Company has devoted 19 years of experience almost exclusively to the production and improvement of walkway surfaces. Over 50,000 installations include such representative hazardous locations as: Stair treads and landings, floor plates, drain and trench covers, elevator and fire door thresholds, freight elevator landings, drainage gratings, entrance door saddles, coal-hole covers and frames, ramps, inclines, shipping platforms, etc.

Feralun for Repair Service

Stair steps of concrete, wood or iron may be repaired and made safe with Feralun. The repairs are made easily and quickly at a cost far lower than complete stairway renewal. They are screwed to wood treads and expansion bolted to old concrete or stone stairs. See page 7, plate 12 for details.

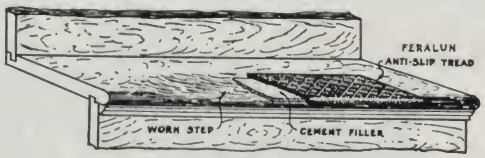
Designs in Which Feralun Is Made

All of the standard and many special designs in which Feralun is made are shown in detail on pages 5 to 7, plates 1 to 12.

Other special forms can also be made to specification. They are foundry cast to order, according to dimensions desired.

Surfaces—*Stair Treads*—Feralun is made in plain, hatch or fluted surfaces, all anti-slip. (See illustrations below.)

Advantages of Structural Tread Over Concrete Stairs, Pan-filled Type—No steel pan, no sub-tread. Less labor; all work done by iron contractors. Less time for erection. No waiting for concrete to dry. Stairs ready for immediate use to upper stories. Non-slip surface extends from nosing to riser. Avoids later repairs to worn concrete back of nosing. Lighter in weight.

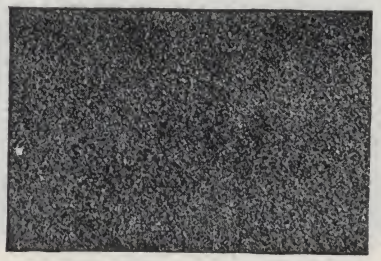


Detail of Repair

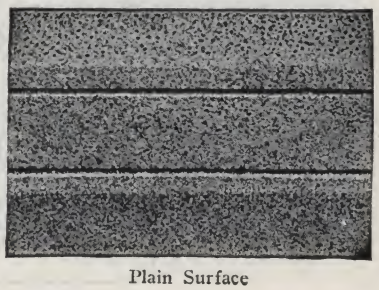
Quality, the First Consideration

It has always been the aim of the company to make quality products, and in no case has quality been sacrificed for expense. Results have justified this policy as architects continue to specify them.

Hatch Surface



Fluted Surface in Saddle



Plain Surface

Three Surface Designs, Hatch, Plain or Fluted, Each Metal, All Anti-slip

Continued on next page

SPECIFICATIONS FOR ANTI-SLIP SAFETY TREADS

(1) Scope—Furnish and install where shown on accompanying drawings and herein specified Feralun Anti-Slip Treads for stairs, landings, floor plates, trench covers, elevator door thresholds, drainage gratings, coal hole covers and frames, entrance door saddles, ramps, shipping platforms, etc.

(2) Manufacture—All Anti-Slip Treads shall be of cast metal having an abrasive grain incorporated in the wearing surface at the time of casting and shall be manufactured by the AMERICAN ABRASIVE METALS Co., 50 Church Street, New York, N. Y.

(3) Kind of Metal—All Safety Treads shall be furnished as follows: (1) Feralun for all stair treads, floor plates, trench covers, passenger and freight elevator thresholds, and landings, (2) [Bronzalun, Alumalun, Nicalun], for all entrance door saddles, passenger elevator and swing door thresholds.

(4) Anchorage—All treads, nosings, thresholds, etc., shall be securely anchored with standard anchors, expansion bolts, screws or bolts in accordance with manufacturer's recommended standard practice.

(5) Treads for Concrete—All reinforced concrete steps, including nosing edges of platforms and landings, shall be equipped with Feralun [Style A, C or D] as made by the AMERICAN ABRASIVE METALS Co. Style A shall extend continuously along the step to within [3 or 4 in.] of stringers. (On pan-filled concrete steps, treads shall extend from string to string.) Style C and D shall extend from string to string and shall be [4, 4½, 5, 6, 7½ in.] wide. Treads shall be set flush with the cement surface and firmly secured with standard anchors supplied with treads by the manufacturer. Surface treads shall be kept free from all cement finish.

(6) Floor Plates for Concrete Platforms and Landings—All concrete platforms and landings shall be provided with Feralun Nosings and Strips, not less than 4 in. wide, extending to within 4 in. of stringers. Strips may be placed not over 4 in. apart. Surface of treads shall be set flush with the cement surface and shall be kept free from all cement finish.

(7) Floor Plates for Concrete Ramps, Elevator Landings, etc.—All concrete ramps, elevator landings, fire door saddles and runways, store entrance vestibules and revolving door vestibules shall be provided with Feralun Floor Plates as made by the AMERICAN ABRASIVE METALS Co.

(8) Structural Treads without Risers—All iron stairs in boiler room, pent house and unfinished portions of building where risers are not required shall be equipped with Feralun [Style R, R-K, O-O], as made by the AMERICAN ABRASIVE METALS Co. Treads shall be [5, 6, 7, 8 or 9 in.] wide. Style R and R-K shall be cast with lugs to be bolted to stringers. Style O-O shall be bolted to angle bracket furnished by others. (Where drainage is required specify that treads shall be perforated.)

(9) Structural Treads with Risers—All iron stairs, where steel risers are required, shall be equipped with Feralun Style O, S or K as made by the AMERICAN ABRASIVE METALS Co.

(10) Platforms and Landings—Platforms and landings shall be constructed with Feralun Plates with cast truss ribs and ground joints.

(11) Structural Treads for Spiral Stairs—All structural treads for spiral stairs shall be Feralun Standard Spiral Treads, made not less than $\frac{7}{16}$ in. thick.

(12) Door Saddles, Exterior and Interior—All exterior entrance doors, interior doors, and fire doors shall be provided with [Feralun, Bronzalun or Alumalun] Door Saddles as manufactured by the AMERICAN ABRASIVE METALS Co. Saddles shall be Style [T, L, W or M]. Width shall be [4, 5, 6, 7, 8 or 9 in.] as indicated on drawings. Saddles shall be secured with standard anchors furnished by the manufacturer and attached by contractor when saddles are set in new concrete, or secured by expansion bolts furnished by others when saddles are set in old concrete, marble, stone, etc.

(13) Elevator Door Sills—All first floor passenger elevator doors shall be provided with [Bronzalun, Nicalun, Alumalun or Feralun] Elevator Door Sills. Basement and all upper floors shall be provided with [Feralun, Bronzalun or Alumalun] Elevator Door Sills [Styles V-I or V-II]. All shall have machine planed grooves and fluted surface as manufactured by the AMERICAN ABRASIVE METALS Co. All freight elevator doors shall be provided with Feralun Thresholds, Style W, hatch surface as manufactured by AMERICAN ABRASIVE METALS Co.

(14) Miscellaneous Walkway Surfaces—All boiler room floors, floors around machining, inclines, ramps, elevator floors, vestibules, freight corridors, trench covers, drainage gratings, coal hole covers, etc., shall be Feralun as manufactured by AMERICAN ABRASIVE METALS Co., as herein specified and shown on drawings.

(15) Safety Coal Hole Covers and Frames—Where indicated on drawings furnish Feralun Safety Coal Hole Covers and Frames, as manufactured by the AMERICAN ABRASIVE METALS Co. Covers and frames shall be set flush with sidewalk, hinges shall be concealed. When open, three sides and the top shall be enclosed. Size shall be [18, 20 or 24 in.].

(16) Treads for Repair Work—All worn treads of [wood, slate, stone, marble, concrete, terrazzo or iron] shall be equipped with Feralun Style A Treads [with 1-in. deep lip if required to cover worn nosing] as manufactured by AMERICAN ABRASIVE METALS Co. The treads shall extend continuously across the old treads to within [3 or 4 in.] of stringers and the distance between riser and Feralun Tread shall be not greater than 2½ in. Superimposed treads shall have back edge and both ends beveled. Recessed treads shall have back edge and both ends square. All worn surfaces of original treads shall be leveled up with magnesite cement. Treads shall be firmly secured with wood screws, bolts or expansion bolts in accordance with the recommended standard practice of the manufacturer.

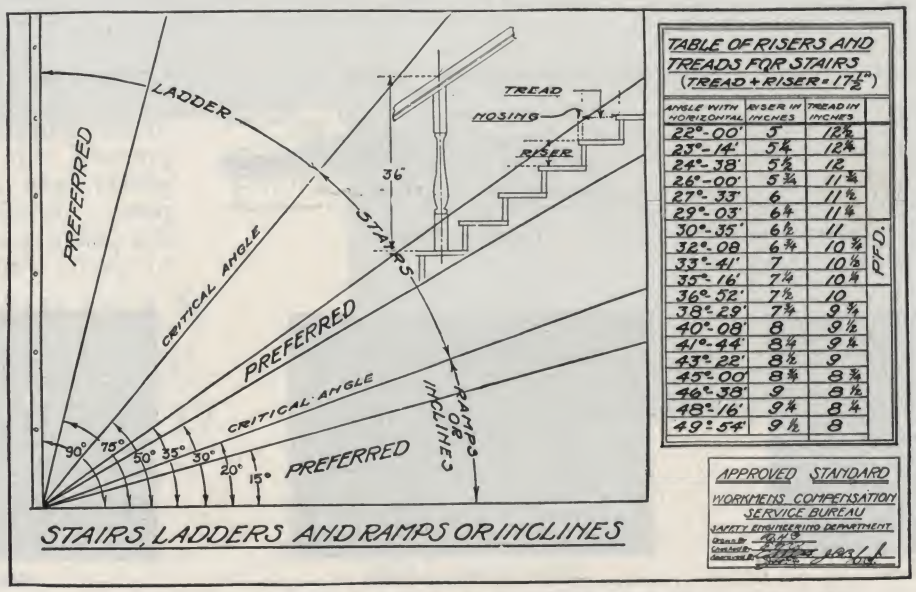


TABLE OF RISERS AND TREADS FOR STAIRS
(TREAD + RISER = 17½")

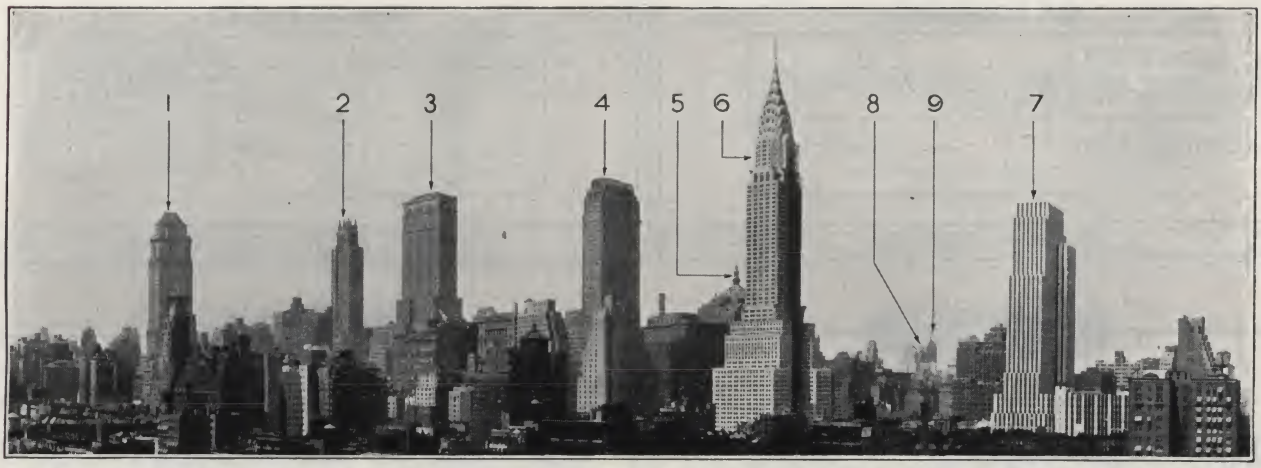
ANGLE WITH HORIZONTAL	RISER IN INCHES	TREAD IN INCHES	
22°-00'	5	12⅞	
23°-14'	5⅛	12¾	
24°-38'	5¼	12	
26°-00'	5¾	11¾	
27°-33'	6	11½	
29°-03'	6¼	11¼	
30°-35'	6½	11	
32°-08'	6¾	10⅞	PFD.
33°-41'	7	10⅝	
35°-16'	7¼	10⅜	
36°-52'	7½	10	
38°-29'	7¾	9¾	
40°-08'	8	9½	
41°-44'	8¼	9¼	
43°-22'	8½	9	
45°-00'	8¾	8¾	
46°-38'	9	8½	
48°-16'	9¼	8¼	
49°-54'	9½	8	

APPROVED STANDARD
WORKMENS COMPENSATION SERVICE BUREAU
SAFETY ENGINEERING DEPARTMENT

Correct Angles for Ladders, Stairs and Ramps

Continued on next page

Composite Illustration of New York Telephone Co. Buildings Which Have Feralun Installations

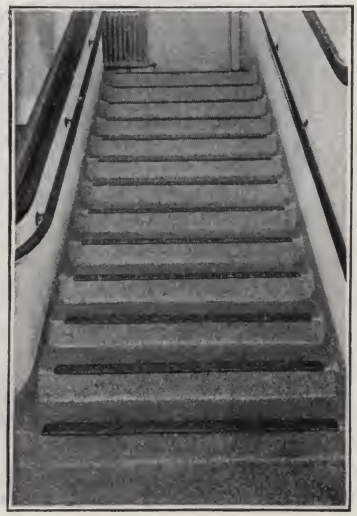


Buildings in Mid-town New York Equipped with American Abrasive Anti-slip Walkway Surfaces ©Wm. Frange

(1) 10 East 40th Street Building—48 stories; 700 ft. high—Ludlow and Peabody, Architects
(2) Lefcourt Colonial Building—46 stories; 539 ft. high—Ely Jacques Kahn, Architect
(3) Lincoln Building—53 stories; 736 ft. high—J. E. R. Carpenter, Architect
(4) Chanin Building—56 stories; 685 ft. high; Sloan & Robertson, Architects
(5) New York Central Building—34 stories; 565 ft. high—Warren and Wetmore, Architects
(6) Chrysler Building—77 stories; 1046 ft. high—Wm. Van Alen, Architect
(7) Daily News Building—35 stories; 476 ft. high—Raymond M. Hood and John Meade Howells, Architects
(8) Savoy-Plaza Hotel—33 stories; 467 ft. high—McKim, Mead & White, Architects
(9) Sherry-Netherlands Hotel—38 stories; 507 ft. high—Schultze & Weaver, Architects

Newspaper Reel Room

Feralun Style O Treads and Platforms



Feralun Style A in Terrazzo

Feralun in Use as Floor Plates and Stair Treads

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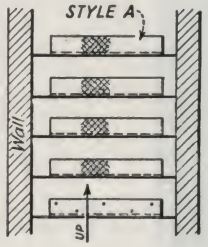
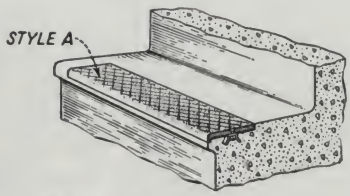
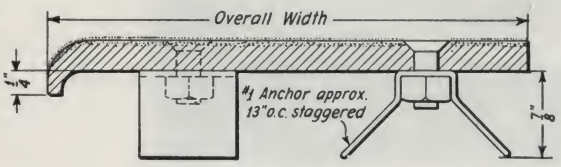
ABRASIVE-METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS





STYLE A
treads are usually 6" or 8" shorter than distance between walls or stringers.



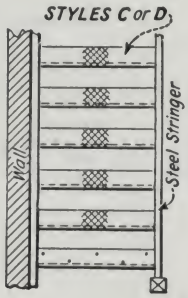
STYLE A

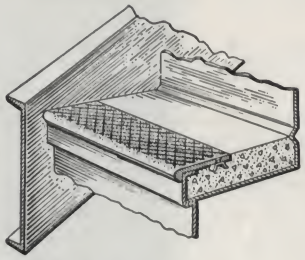
Recommended practice

Thickness		Length
Up to 4" wide	1/4"	Up to 5/16" thick not over 6'-0"
" " 9" "	5/16"	Over 5/16" " " " 9'-0"
" " 15" "	3/8"	Over 9'-0" made in sections
" " 20" "	7/16"	
" " 24" "	1/2"	

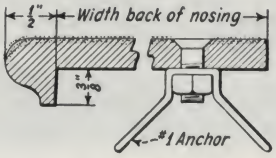
Treads for Concrete PLATE 1

ABRASIVE-METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS

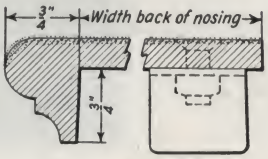




STYLES C & D
extend from stringer to stringer



STYLE C



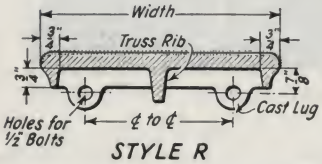
STYLE D

Recommended practice

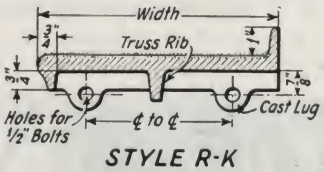
Thickness		Length
Up to 4" wide	1/4"	Up to 5/16" thick not over 6'-0"
" " 9"	5/16"	Over 5/16" " " " 9'-0"
" " 15"	3/8"	Over 9'-0" made in sections
" " 20"	7/16"	
" " 24"	1/2"	

Treads for Pan-Filled Construction PLATE 2

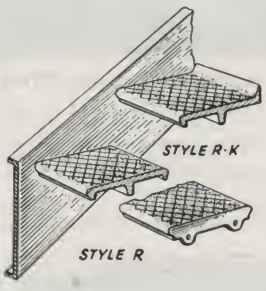
ABRASIVE-METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS



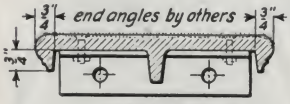
STYLE R



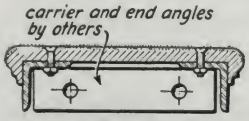
STYLE R-K



STYLES R & R-K
with cast lugs for bolting treads direct to stringers.



STYLE 0-0



STYLE 0-0
When supported by longitudinal carrier angles Style 0-0 may be 3/8"

Recommended practice
STYLES R, R-K & 0-0

Thickness
Not over 42" long... 7/16"
" " 57" " ... 1/2"
For extra heavy loads submit inquiry.

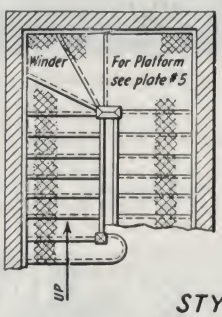
Hole Spacing R & R-K

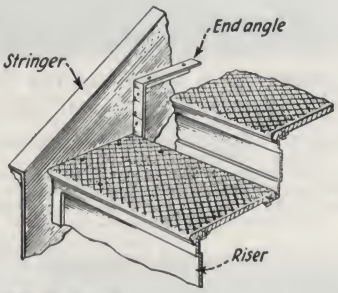
Width	5"	6"	7"	8"	9"	10"
¢ to ¢	2"	3"	3 1/2"	4"	5"	6"

Above styles also made with perforations for drainage. For details see plate #11 or submit inquiry.

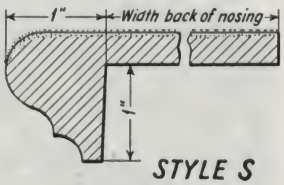
Structural Treads (no risers required) PLATE 3

ABRASIVE-METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS

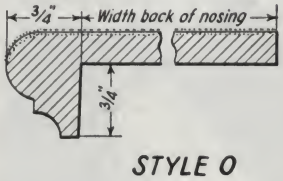




STYLES O & S
with bent risers



STYLE S



STYLE O

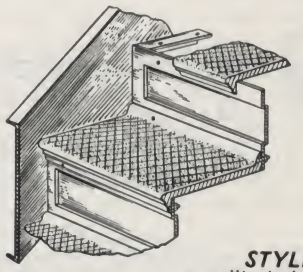
Recommended practice

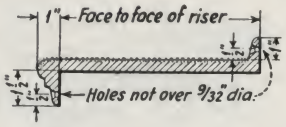
Thickness		Length
Up to 9" wide	3/8"	Up to 3/8" thick not over 6'-0"
" " 15" "	7/16"	" " 1/2" " " " 9'-0"
" " 24" "	1/2"	Over 9'-0" made in sections.

Structural Treads (risers required) PLATE 4

Continued on next page

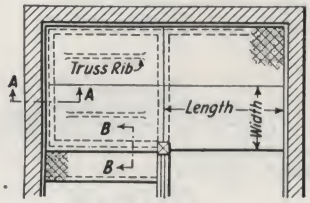
ABRASIVE-METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS





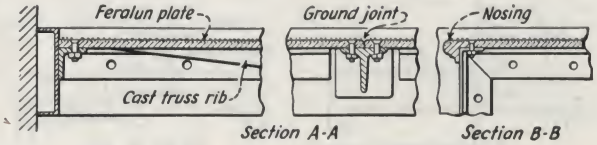
Note:
Thicknesses as on plate #4 but minimum is 7/16"

STYLE K
with straight risers



Recommended practice

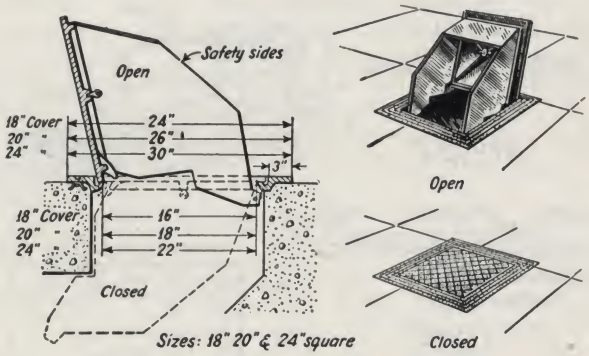
Up to 24" wide 1/2" thick
" " 42" " 5/8" "
Plates not to exceed 42"x54"
For extra heavy loads submit inquiry.



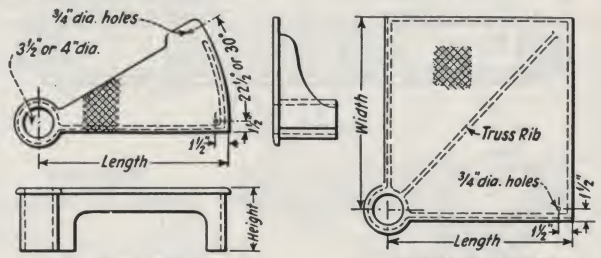
PLATFORMS

Structural Treads (risers required) - Platforms PLATE 5

ABRASIVE-METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS



SAFETY COAL HOLE COVER
Also round covers in 18", 20" & 24" diameter.

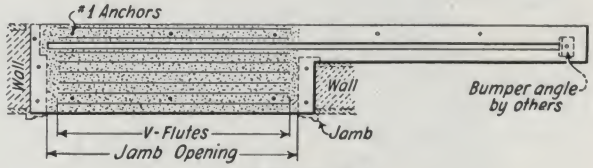


SPIRAL TREAD **SPIRAL PLATFORM**

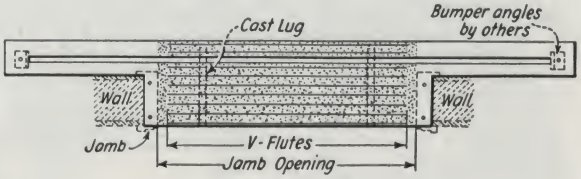
Length 22" to 48"
Minimum height 8 1/4" to allow sufficient headroom.

Coal Hole Covers - Spiral Treads PLATE 6

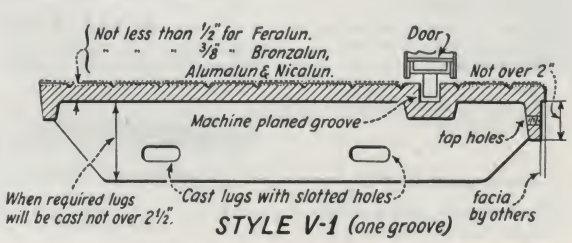
ABRASIVE-METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS



STYLE V-1
for single speed type elevator enclosure



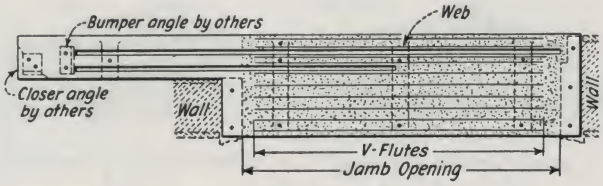
STYLE V-1
for biparting type elevator enclosure



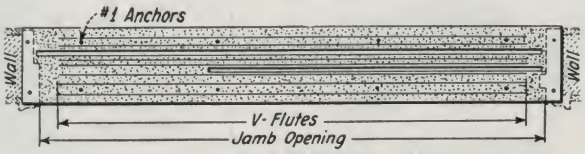
STYLE V-1 (one groove)
Sills over 9'-6" made in sections

Elevator Door Sills PLATE 7

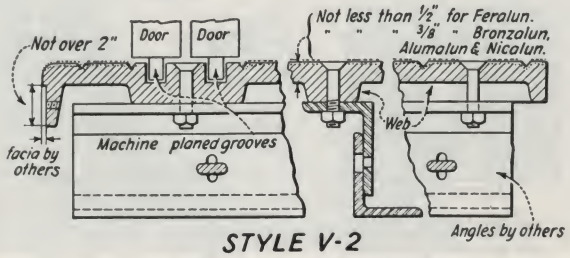
ABRASIVE-METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS



STYLE V-2
for two speed type elevator enclosures



STYLE V-2
for two speed and swing type elevator enclosures

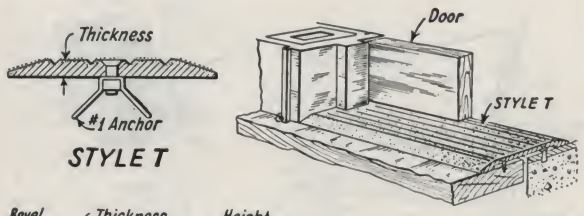


STYLE V-2
Sills over 9'-6" made in sections.

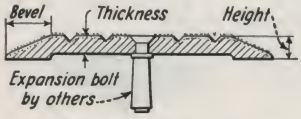
Elevator Door Sills PLATE 8

Continued on next page

ABRASIVE-METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS



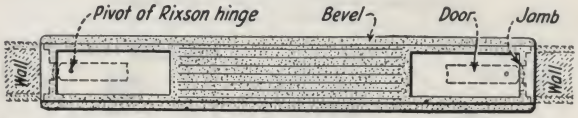
STYLE T



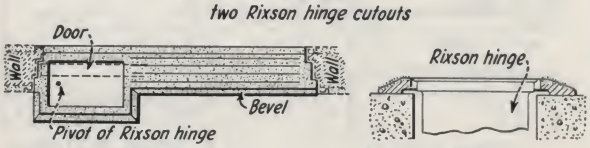
STYLE T
with recess

Recommended practice

Up to 12" wide	3/8" thick
" " 15" "	7/16" "
Over 9'-0" made in sections	



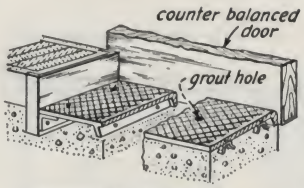
STYLE T
two Rixson hinge cutouts



STYLE T
one Rixson hinge cutout.

Door Saddles PLATE 9

ABRASIVE-METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS

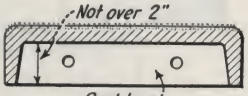


STYLE W
for service elevator opening

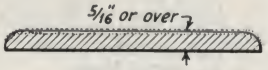
STYLE W

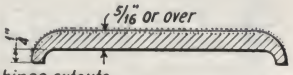
Recommended practice

1/2" thick for Feralun	
3/8" " "	Bronzalun, Alumalun & Nicalun.
Over 9'-0" made in sections	



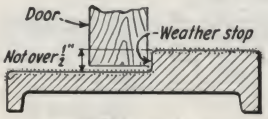
STYLE W-W



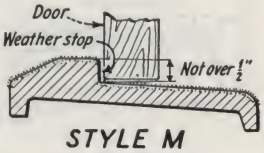


With Rixson hinge cutouts refer to detail on plate #9

STYLE L STYLE A-A



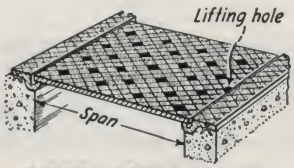
STYLE M
Standard



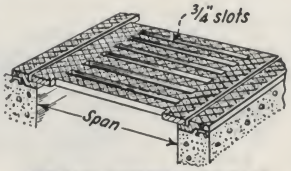
STYLE M
Special

Door Saddles PLATE 10

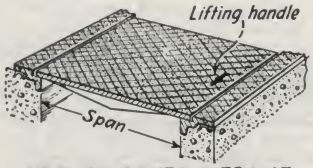
ABRASIVE-METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS



DRAIN COVER & FRAME
with perforations



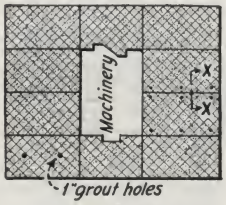
DRAIN COVER & FRAME
with slots



TRENCH COVER & FRAME

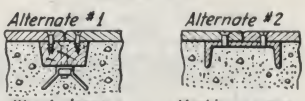
Recommended practice

Span up to 24"	1/2" thick
" " " 42"	5/8" "
" " " 54"	3/4" "
Plates not to exceed 42"x54" For extra heavy loads submit inquiry.	



FLOOR PLATES
for use on any flooring
(concrete, wood, steel, etc.)

Section X-X

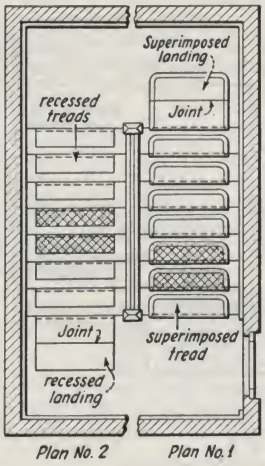


Recommended practice

1/2" thick up to	24"x36"
5/8" " " "	42"x48"
3/4" " " "	42"x54"

Floor Plates - Trench Covers PLATE 11

ABRASIVE-METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS



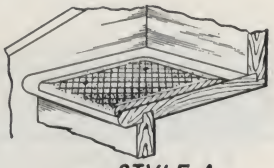
Notes:-

Plan No. 1 shows superimposed treads with back edge and ends bevelled.

Plan No. 2 shows recessed treads with back edge and ends squared.

Recommended Practice:-

Treads should extend to within 2 1/2" of riser and stringers.



STYLE A
for new or slightly used treads

STYLE A
recessed in treads

STYLE A long lip
for worn wood or marble treads maximum depth of lip 2" from underside of tread.

STYLE A
for worn iron treads.

Treads for Repair Work PLATE 12

Continued on next page

FERALUN IN SCHOOLS

Feralun is universally specified by supervising architects for school building installations. During the year 1929, 387 schools in 36 states were equipped with Feralun, while over a 5-year period nearly 2000 schools have been so equipped. This anti-slip product has proved its value in schools on account of its safety and durability.

Stairs in schools are in more constant use than in most public buildings. When made of some materials, these stairs will wear down, chip on the nosing edge and become smoother and more slippery the longer they are used. Feralun is proof against all these defects and when once installed will last the life of the building and will be slip-proof.

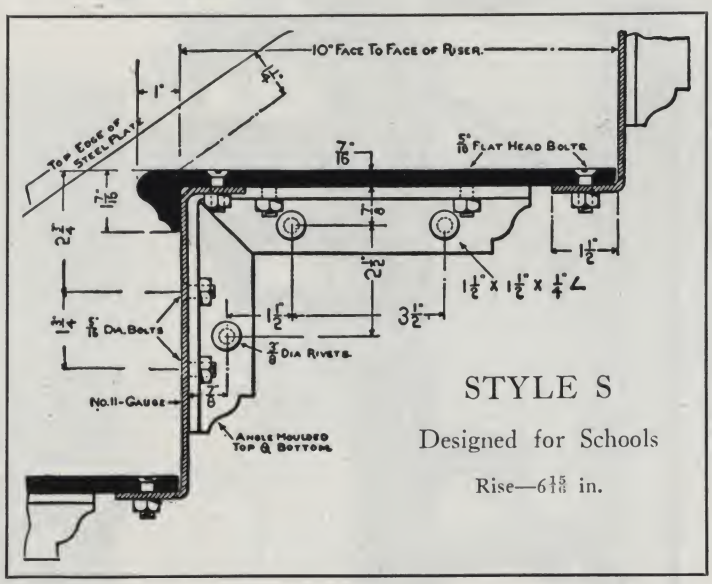
Feralun Anti-slip Treads were installed in the Washington Irving High School in 1913. To date no accident has been reported and no repairs have been necessary. The qualities claimed for Feralun are easily proven by such an extended use as that in this school. Inspection of the condition of these treads is invited.

Treads Approved by New York Board of Education—The Style "S" Feralun Anti-Slip Tread illustrated below was especially designed for and approved by the architects of the New York Board of Education. In a single year over 20,000 were installed in new school buildings in the City of New York alone.

This style has proven highly satisfactory and is gaining great favor in many localities other than New York.

The detail and installation views below show the simplicity, sturdiness and neat appearance of this type of construction. No sub-tread is required as the Feralun Tread is fastened both at the front and back to risers and angles.

Repair of Worn Steps—Worn steps of any material and quickly and easily repaired with Feralun Treads. Style "A," shown on page 7, plate 12 in several types, is adaptable to repair conditions of any kind. Worn steps repaired with Feralun Treads have the same efficiency as a new installation.



STYLE S

Designed for Schools

Rise—6 15/16 in.

Feralun Anti-slip Treads in Use on These Steel Stairs

View Looking Up of Underside, Showing Simple Construction and Neat Appearance

Typical Views of Feralun School Stair Installations According to Detail Shown Above

Continued on next page

FERALUN ANTI-SLIP SPIRAL STAIRS

Feralun Treads and Platforms for spiral staircases are furnished by the American Abrasive Metals Co. They are easily assembled on the job, are inexpensive and have the highest factor of safety. They are neat in appearance and make an ideal installation in schools, churches, office buildings, banks, warehouses, etc., where the saving of floor space is essential.

Feralun Spiral Treads and Platforms are cast complete in one piece with collar and flange or riser, according to architects' or contractors' details. The thickness of the tread is usually $\frac{7}{16}$ to $\frac{3}{4}$ in. according to requirements. The hole in the collar is made for a 3½ or 4-in. O. D. pipe. The length of treads vary from 22 to 48 in.

The riser of each tread rests on the tread of the step below; from 12 to 16 treads to the circle. Riser heights and the number of treads to the circle are dependent upon the height between floors.

In order that sufficient headroom be provided under the top platform, risers should have a minimum height of 8 in.

Hand rail spindles and center pipe furnished by others.

Spiral Staircase with Feralun Treads
For details, see page 6, plate 6

Architects' Specification

Spiral Stair Treads — Furnish where shown on plans, Feralun Safety Spiral Stair Treads as manufactured by the American Abrasive Metals Co., 50 Church Street, New York, N. Y.

DESCRIPTION OF MATRIX METALS

Feralun

Special Iron Base

Is particularly desirable for heavy duty where performance is of first importance. Used as standard on New York subway station stairs.

Alumalun

Aluminum Silicon Alloy Base

Silvery color, for marble stairs, door sills, deck plates, ladder treads, etc. Was developed for U. S. Navy and is used on battleships, destroyers and airplane carriers, is light in weight, anti-slip and not affected by salt water.

Bronzalun

85% Copper Bronze Base

Has the bronze coloring much used in modern architecture. Compares in cost with cast brass, is durable and anti-slip, for stair treads, elevator door sills, etc.

Nicalun

Nickel Copper Alloy Base

A new product, has the bright attractive color desirable for highest types of architecture, will harmonize with white metal or stainless steel. For use as elevator door sills, swing door saddles, stair treads, etc.

Continued on next page

BRONZALUN
OR
NICALUN
Anti-Slip Treads

Nicalun—Style V—Two Speed Door

Bronzalun—Style T—With Rixson Hinge Cut Out

Bronzalun and Nicalun are extensively used for treads, elevator door sills and saddles where appearance is a factor to be considered. They are made in the same manner and of the same grade of materials as Feralun except for the matrix. They have the same durability, safety, uses and quality as Feralun, and are made in the same forms and with the same approvals. Both have the same electric furnace product embedded in the surface and nosing to produce the same anti-slip, non-wearing quality of Feralun.

Products made from these materials are manufactured to specification. Two suggested styles are given above to show usual forms which have been produced to fulfill certain requirements. These and many others are made and have proven highly satisfactory. (See detail sheets, pages 5, 6 and 7.)

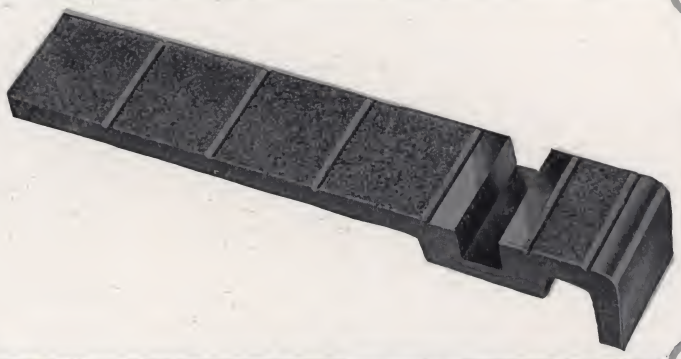
Bronzalun is used generally where there is a desire for such a shade to be in keeping with the general decorative scheme. It has been found very satisfactory where trim, fixtures or the general decorative scheme is in black, bronze, brass or gold.

Nicalun provides architectural beauty as well as anti-slip effectiveness and durability. It has a bright appearance and resists corrosion. It is particularly desirable for use with marble trim and in highly modern ornamental locations where a silver-white color harmonizes.

ALUMALUN

Anti-Slip Treads

+ +
STAIR TREADS
ELEVATOR DOOR SILLS
SWING DOOR SADDLES
+ +



+ +
CAR STEPS
(Railway and Bus)
LADDER TREADS
+ +

ALUMALUN TREADS ON MARBLE STEPS

AMERICAN ABRASIVE METALS CO.

50 CHURCH STREET — NEW YORK, N. Y.

BOSTON
BUFFALO
CHICAGO
PITTSBURGH
PHILADELPHIA
SAN FRANCISCO

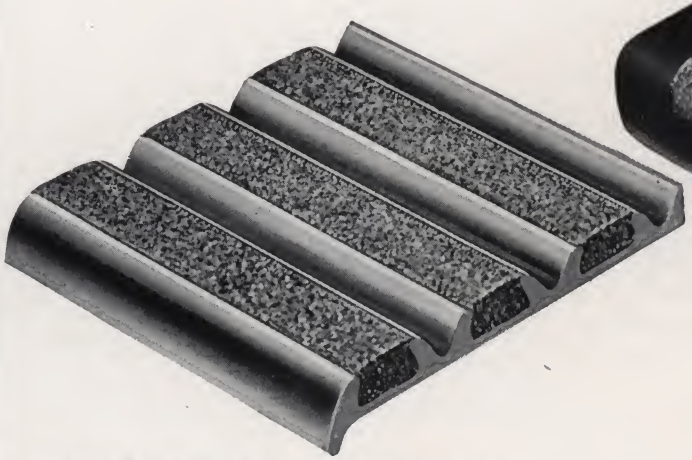
MASON
SAFETY TREADS
FOR UNDERFOOT SURETY

MANUFACTURED BY

AMERICAN MASON SAFETY TREAD CO.

Lowell, Massachusetts

A TYPE OF MASON SAFETY TREAD FOR ANY UNDERFOOT SAFETY SERVICE

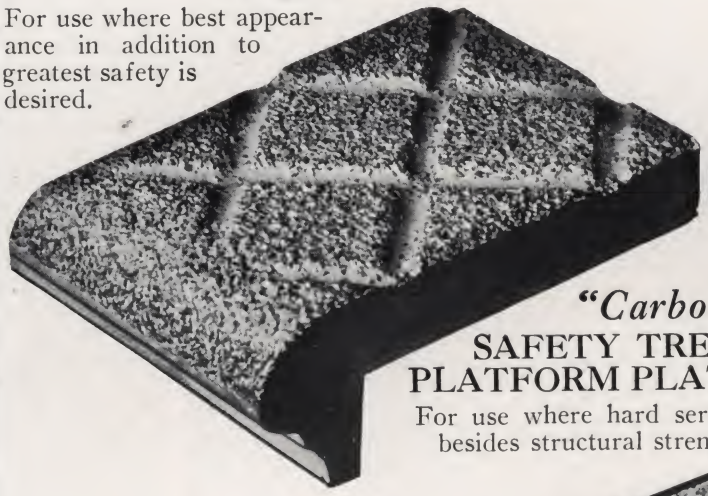


MASON SAFETY TREAD—Page 1

For use where best appearance in addition to greatest safety is desired.

MASON STRUCTURAL TREAD—Page 6

For use where self-supporting structural safety tread is desired



***"Carbo-Cast"* SAFETY TREAD AND PLATFORM PLATES—Page 4**

For use where hard service and utility besides structural strength is desired

SAFETY NOSINGS AND EDGINGS—Page 8

NON-SLIP LADDER SHOES Page 10

MASONCO SAFTRED—Page 8

For use wherever a solid carborundum tread and metal base is desired

ROLLED STEEL AND EXTRUDED BRASS DOOR SADDLES—Page 10

Continued on next page

MASON SAFETY TREAD

With Rolled Steel or Extruded Hard Brass Base—Carborundum or Lead Filled

For Use Where Good Appearance in Addition to Safety Is Required

Preventing Accidents with Mason Safety Treads

Of all the devices designed to provide protection against injuries caused by falls, American Mason Safety Treads are recognized by architects, engineers, casualty companies and users as being unsurpassed. Mason Safety Treads provide what is practically positive immunity from slipping.

Mason Safety Treads insure greater durability for stairs of any type and on concrete steps they protect the edge against fracture or chipping and prevent the steps from wearing hollow. In addition, Mason Safety Treads minimize the tracking of dirt into buildings.

Section of Mason Safety Tread
(Actual size)

In United States Government Buildings

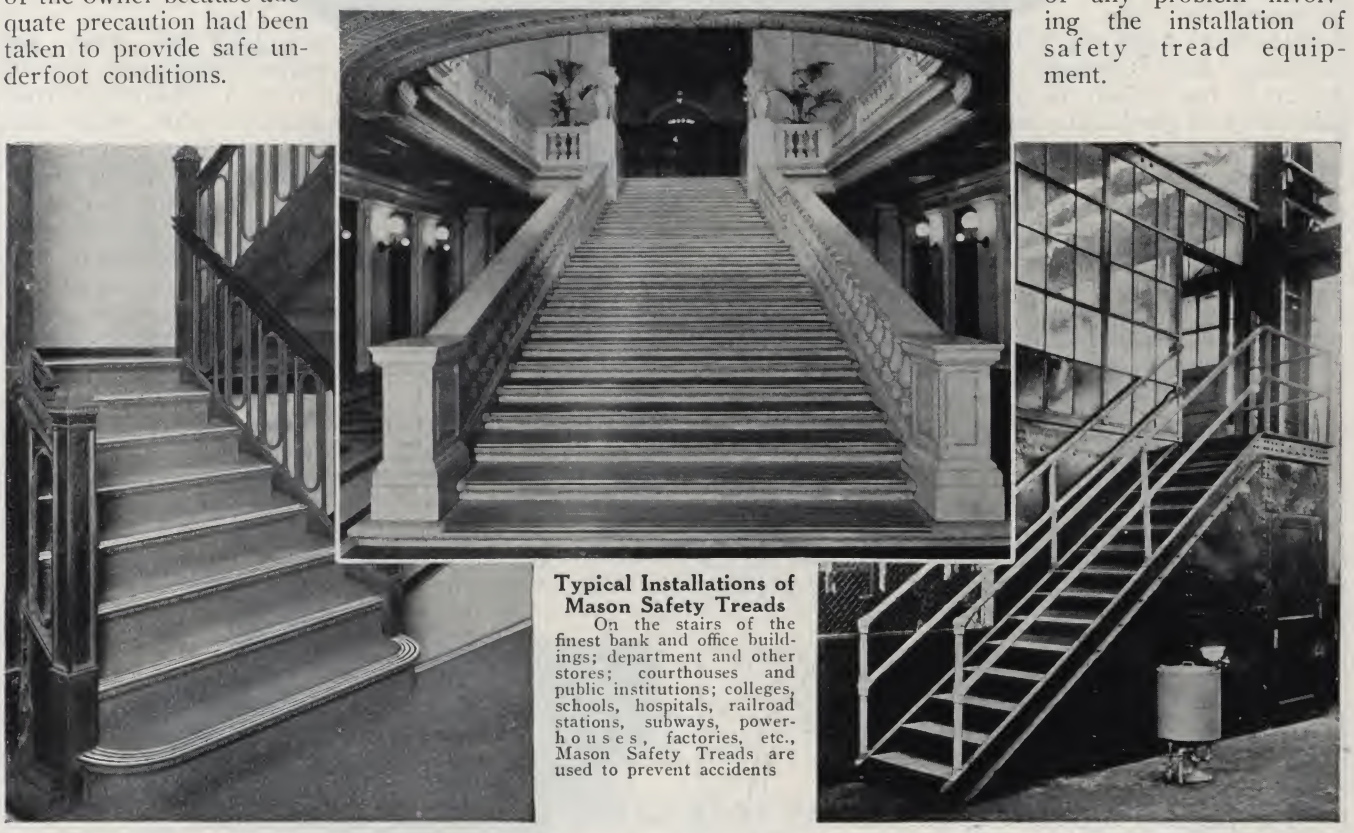
Mason Safety Treads have been used by the United States Government for many years. It is indicative of their reliability that the decks and ladders of many vessels of the U. S. Navy are equipped with Mason Safety Treads and that they are used in all the larger Governmental buildings in Washington — the Congressional Library, the Government Printing Office, etc. The Capitol is equipped with Mason Safety Treads from basement to dome and they are installed on steps of hundreds of post office buildings throughout the country.

Mason Safety Treads Prevent Litigation

Not only do Mason Safety Treads protect the pedestrian, they also protect the owner from accident litigation. It has been repeatedly recognized by judges and juries alike that if a person is injured by a fall on a stair thus equipped it is not the fault of the owner because adequate precaution had been taken to provide safe underfoot conditions.

Service and Co-operation

Any desired information regarding Mason Safety Treads will gladly be furnished and we will co-operate in the solution of any problem involving the installation of safety tread equipment.



Typical Installations of Mason Safety Treads

On the stairs of the finest bank and office buildings; department and other stores; courthouses and public institutions; colleges, schools, hospitals, railroad stations, subways, power-houses, factories, etc., Mason Safety Treads are used to prevent accidents

Continued on next page

For Interior and Exterior Use on Granite, Marble, Slate, Cement, Iron or Wood Steps

Mason Safety Treads are adaptable to all situations *inside or outside* of a building, where the surface is liable to become slippery or where steps have worn to an uneven surface.

They are especially desirable for stairs in public buildings, stores, industrial plants, factories and wherever traffic is heavy. For use on thresholds of doors, elevator openings and fire doors; for ramps and floors around machinery, etc.

Carborundum Filled

Lead Filled

Tested and Approved by Underwriters' Laboratories

Mason Safety Treads have been tested and are fully approved by the Underwriters' Laboratories, Inc., Chicago, which is the official testing laboratory of the leading accident insurance companies of America.

Advantages of the Corrugated Surface

The corrugation of Mason Safety Treads furnish maximum protection from falls caused by waste substances on stairways such as match-sticks, fruit skins, etc., because these naturally roll into the grooves when stepped upon, leaving the non-slip metal surfaces clean. The corrugations also provide for the drainage of water presenting a dry contact surface for the foot at all times.

The Non-slip Fillings

The U-shaped corrugations of Mason Safety Treads alternate with dove-tailed grooves, the latter being filled with a non-slip substance—either *lead* or *carborundum.*

Lead Filling—Lead is sometimes preferred because of its clear gray appearance. It is an excellent non-slip substance and forms a contrast with the metal base of the tread which is very pleasing. Lead filling, however, is not recommended where oily conditions exist. Under this condition use carborundum filling.

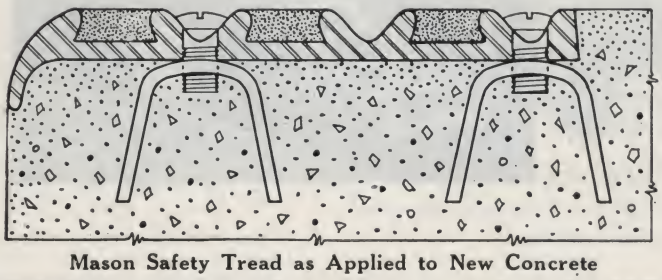
Carborundum Filling—Carborundum is combined with other elements which serve as a binder and is cured by improved methods. Under this process it furnishes a perfectly reliable foothold under every condition while the intense hardness of the combination assures wear for a long period of time even under the heaviest traffic. It has the additional advantage of being slightly lower in price than the lead filling.

Steel, Brass and White Brass (Aluminum) Base

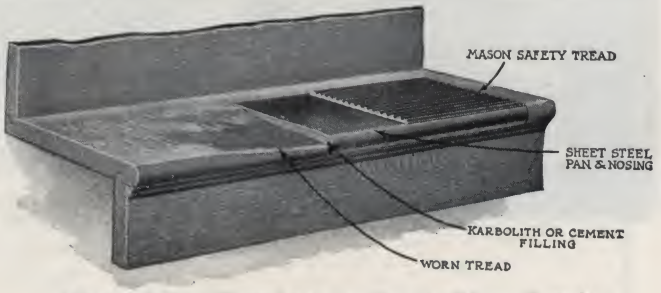
Mason Safety Treads are of superior type of construction having heavy continuous ribs which, together with the base, are either rolled from a solid bar of steel or extruded from yellow brass or white brass (aluminum), to suit various preferences. The ribs, which form the backbone of the tread, wear evenly with the lead or carborundum filling and have a material effect in sustaining the non-slip qualities of the Tread throughout its life. The ribs being continuous lead is never pushed over into the U-shaped corrugation by wear. There are no jagged edges for the retention of dirt and, as the tread wears, it leaves no polished, dangerous slip-inviting surface.

For Old as Well as New Work

Mason Safety Treads are particularly adapted for repair purposes. Very badly worn stair treads are easily repaired by the method shown below. The worn portion is built up to the proper level with Karbolith, or cement fillings, on which the Tread rests and all evidences of wear and repair are concealed by the heavy nosing.



Mason Safety Tread as Applied to New Concrete



Mason Safety Tread as Applied to Worn Treads

Continued on next page

FIG. 1, Steel Base, 6 in Wide, 7 Ribs.

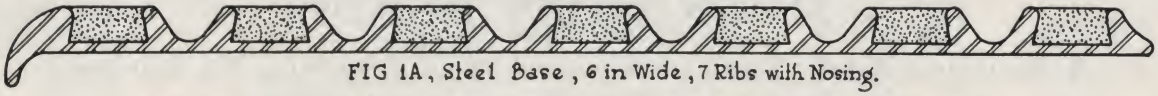


FIG 1A, Steel Base, 6 in Wide, 7 Ribs with Nosing.

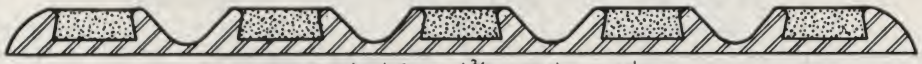


FIG. 2, Steel Base 4¾ in. Wide, 5 Ribs.

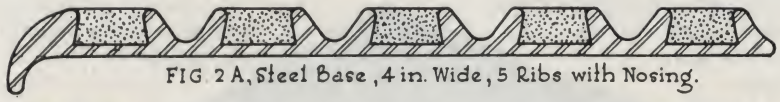


FIG. 2A, Steel Base, 4 in. Wide, 5 Ribs with Nosing.

FIG. 3, Steel Base, 4 in. Wide, 5 Ribs.

FIG. 3A. Steel Base 3¾ in. Wide, 4 Ribs.

FIG. 6, Steel Base 2½ in. Wide, 3 Ribs.

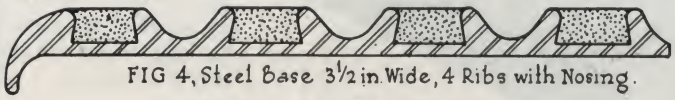


FIG 4, Steel Base 3½ in. Wide, 4 Ribs with Nosing.

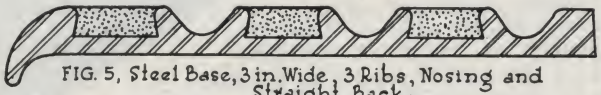


FIG. 5, Steel Base, 3 in. Wide, 3 Ribs, Nosing and Straight Back.
Especially made for granolithic work or for use with cork backing.

MASON SAFETY TREADS WITH STEEL BASE

Base is rolled, unperforated steel with alternate U-shaped and dovetailed grooves filled with lead or carborundum.

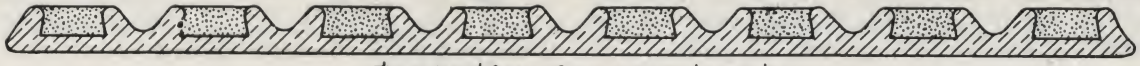


Fig. 7, Hard Brass Base, 6 in. Wide, 8 Ribs.

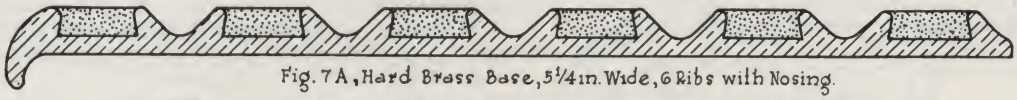


Fig. 7A, Hard Brass Base, 5¼ in. Wide, 6 Ribs with Nosing.

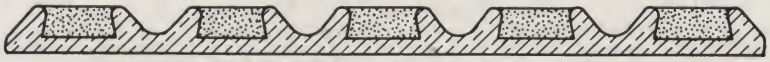


FIG. 8, Hard Brass Base, 4 in. Wide, 5 Ribs.

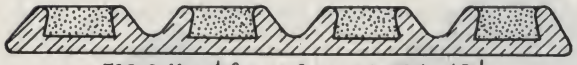


FIG. 9, Hard Brass Base, 3 in. Wide, 4 Ribs.

FIG. 10, Hard Brass Base 2¼ in. Wide, 3 Ribs.

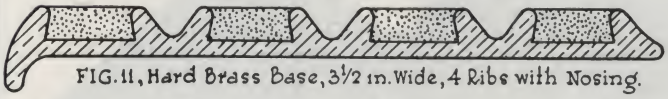


FIG. 11, Hard Brass Base, 3½ in. Wide, 4 Ribs with Nosing.

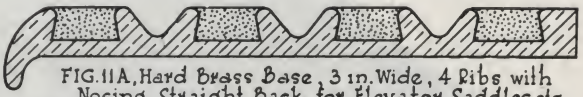


FIG. 11A, Hard Brass Base, 3 in. Wide, 4 Ribs with Nosing, Straight Back for Elevator Saddles etc.

FIG. 12, Hard Brass Base, 2⅛ in. Wide 3 Ribs with Nosing.

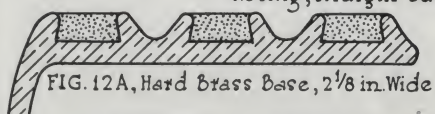


FIG. 12A, Hard Brass Base, 2⅛ in. Wide, 3 Ribs with Nosing.

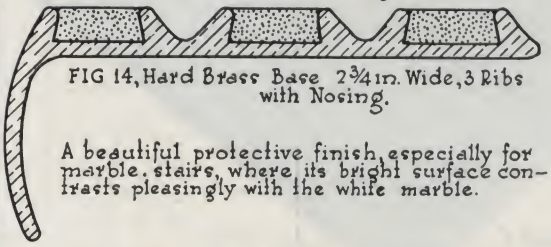
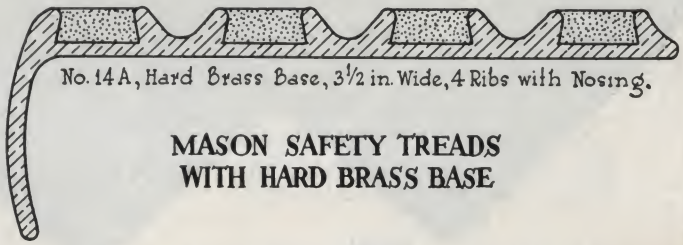


FIG 14, Hard Brass Base 2¾ in. Wide, 3 Ribs with Nosing.

A beautiful protective finish, especially for marble stairs, where its bright surface contrasts pleasingly with the white marble.



No. 14A, Hard Brass Base, 3½ in. Wide, 4 Ribs with Nosing.

MASON SAFETY TREADS WITH HARD BRASS BASE

Base of hard extruded brass (delta metal) with alternate U-shaped and dovetailed grooves filled with lead or carborundum.

SWEETS CATALOGUE SERVICE	DETAILS OF STANDARD SIZES OF MASON SAFETY TREAD	SCALE FULL SIZE	DR'WG. 1

Continued on next page

Carbo-Cast

MASON SAFETY TREADS

A Structural Safety Tread of Abrasive Metal Requiring No Sub-tread
Made of Iron, Brass, Bronze or Aluminum

Carbo-Cast

Carbo-Cast is the trade-name of our treads in which the abrasive is an integral part of the body metal. They require no sub-tread and can be used with or without a riser and can also be used for repair work as shown on details.

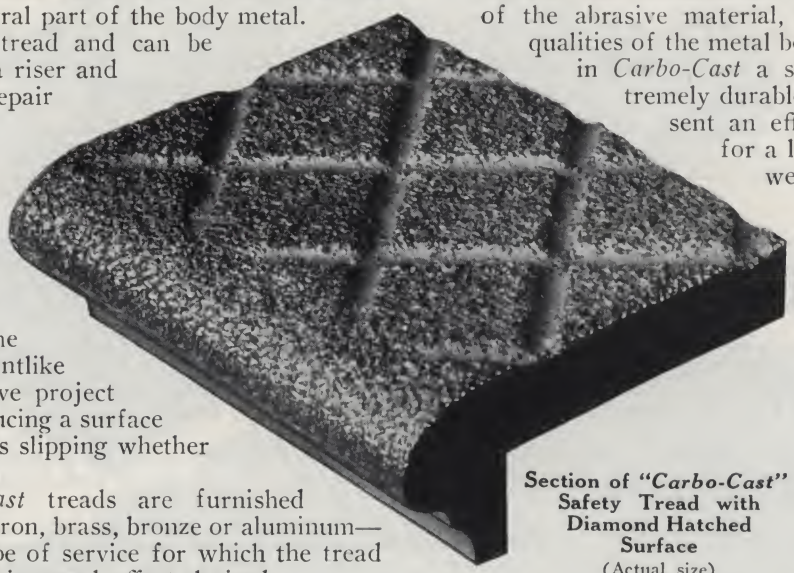
Description

When the tread is cast, a carborundum or aluminous abrasive is embedded in the wearing surface of the molten metal. The flintlike particles of the abrasive project above the surface producing a surface that effectively prevents slipping whether wet or dry.

Metals—*Carbo-Cast* treads are furnished with the body metal of iron, brass, bronze or aluminum—depending upon the type of service for which the tread is required or the architectural effect desired.

Surfaces—*Carbo-Cast* treads are furnished in the three surfaces illustrated below, namely:

Fluted
Diamond Hatched
Plain



Section of "*Carbo-Cast*" Safety Tread with Diamond Hatched Surface
(Actual size)

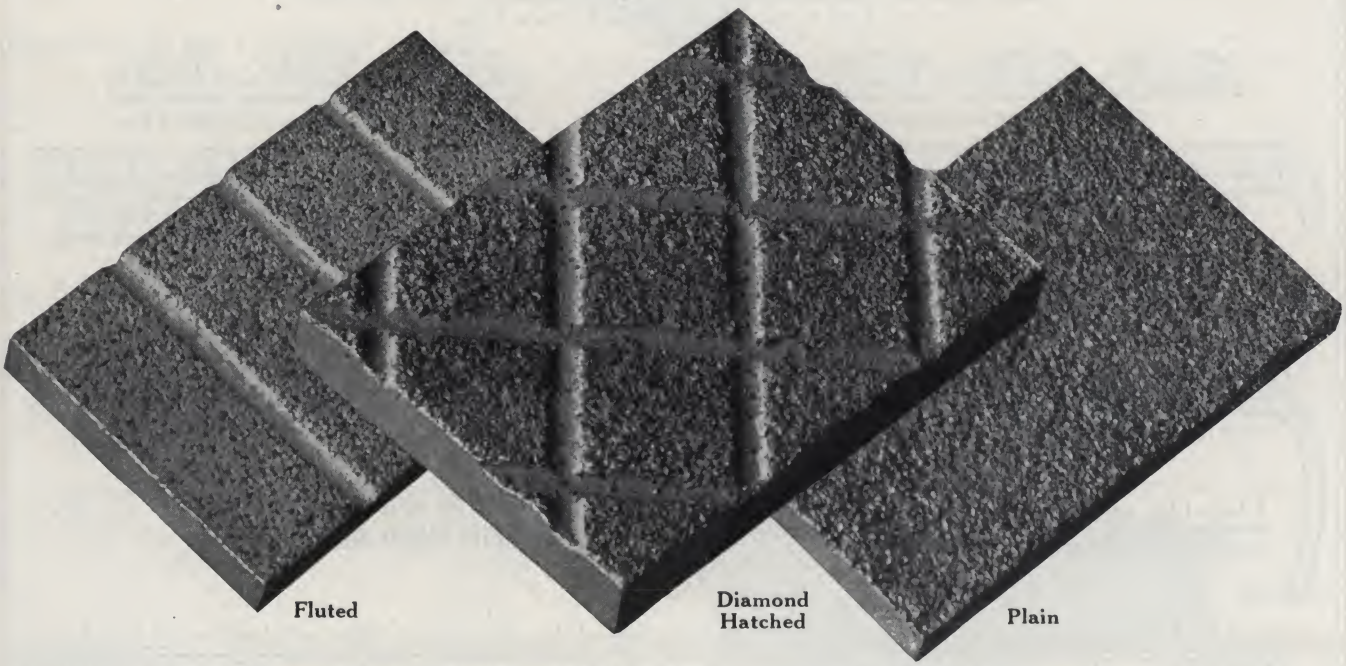
Wearing Qualities

The extreme hardness and wear resisting qualities of the abrasive material, combined with similar qualities of the metal body, combine to produce in *Carbo-Cast* a safety tread that is extremely durable and one that will present an effective non-slip surface for a long period despite hard wear.

Carbo-Cast Safety Treads possess a high resistance to corrosion due to the fact that the addition of carborundum or aluminous abrasive at the time of casting tends to densify the metal.

Installation

Carbo-Cast Safety Treads are easily and quickly installed on new or old work. On new concrete the treads are fastened by means of screws and metal anchors embedded in the concrete. For old concrete, marble, slate, etc., the use of expansion bolts is recommended. Only wood screws are needed to hold the treads securely in place on wood stairs.



VARIOUS SURFACES OF "*Carbo-Cast*" IN ACTUAL SIZE

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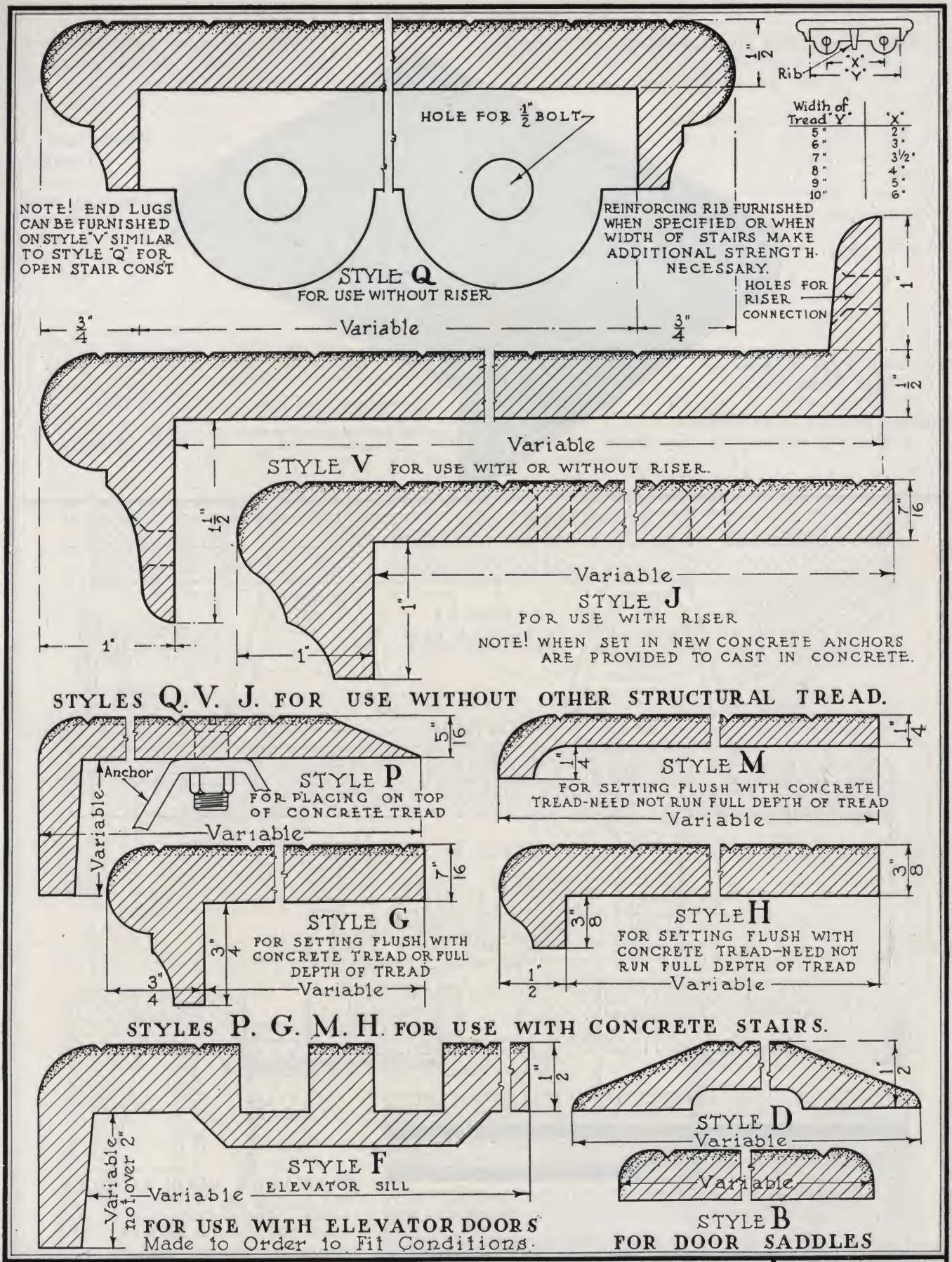


SWEETS CATALOGUE SERVICE	DETAILS OF MASON *Carbo-Cast* SAFETY TREADS	SCALE FULL SIZE	DRW'G 2

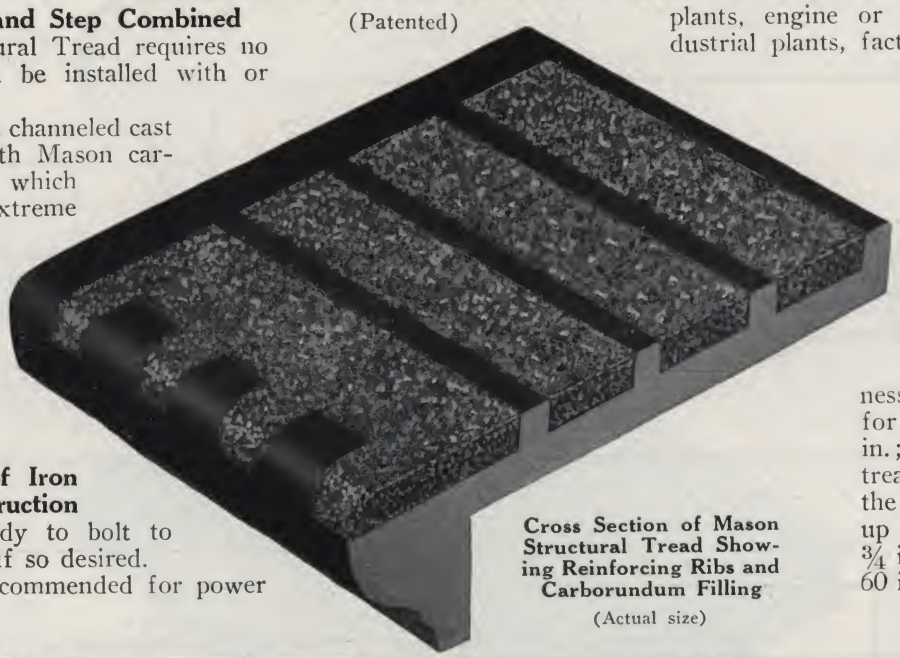
Continued on next page

MASON STRUCTURAL TREAD

A Safety Tread and Step Combined (Patented)

Mason Structural Tread requires no sub-tread and can be installed with or without a riser.

It consists of a channeled cast iron base filled with Mason carborundum filling which extends to the extreme edge with additional reinforcing of cast iron on the front edge.



Cross Section of Mason Structural Tread Showing Reinforcing Ribs and Carborundum Filling
(Actual size)

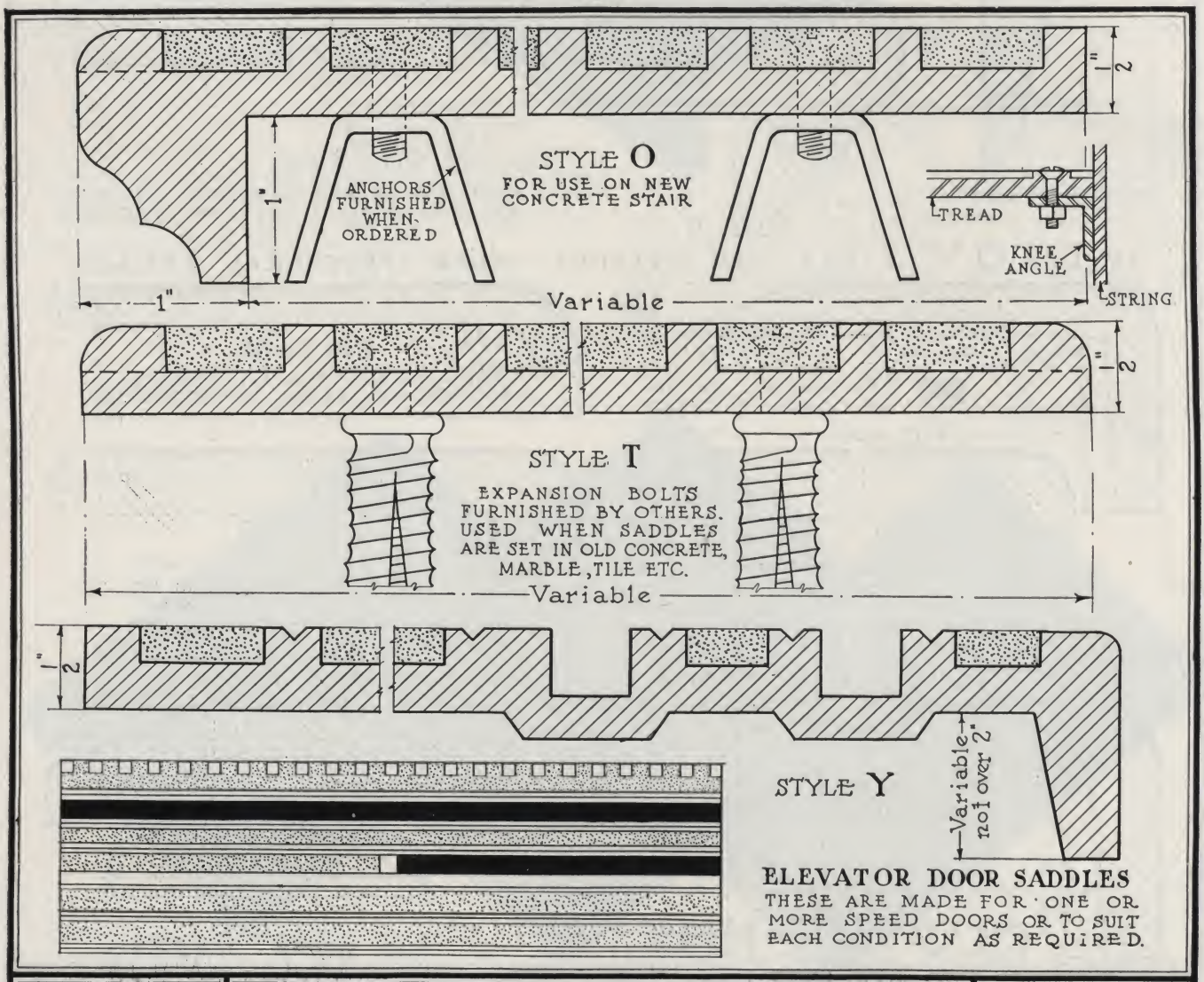
For Any Type of Iron Stair Construction

Furnished ready to bolt to staircase stringers if so desired.

Particularly recommended for power plants, engine or boiler rooms, industrial plants, factories, schools and for heavy traffic conditions.

Widths and Lengths

Furnished in any tread width; in lengths up to 50 in.; and in thicknesses of ½, 9/16, ⅝ and ¾ in. The ½ in. thickness is recommended for treads up to 36 in.; the 9/16 in. for treads up to 40 in.; the ⅝ in. for treads up to 48 in.; and the ¾ in. for treads up to 60 in. in length.



SWEETS CATALOGUE SERVICE	DETAILS OF MASON STRUCTURAL TREADS	SCALE FULL SIZE	DRWG. 3

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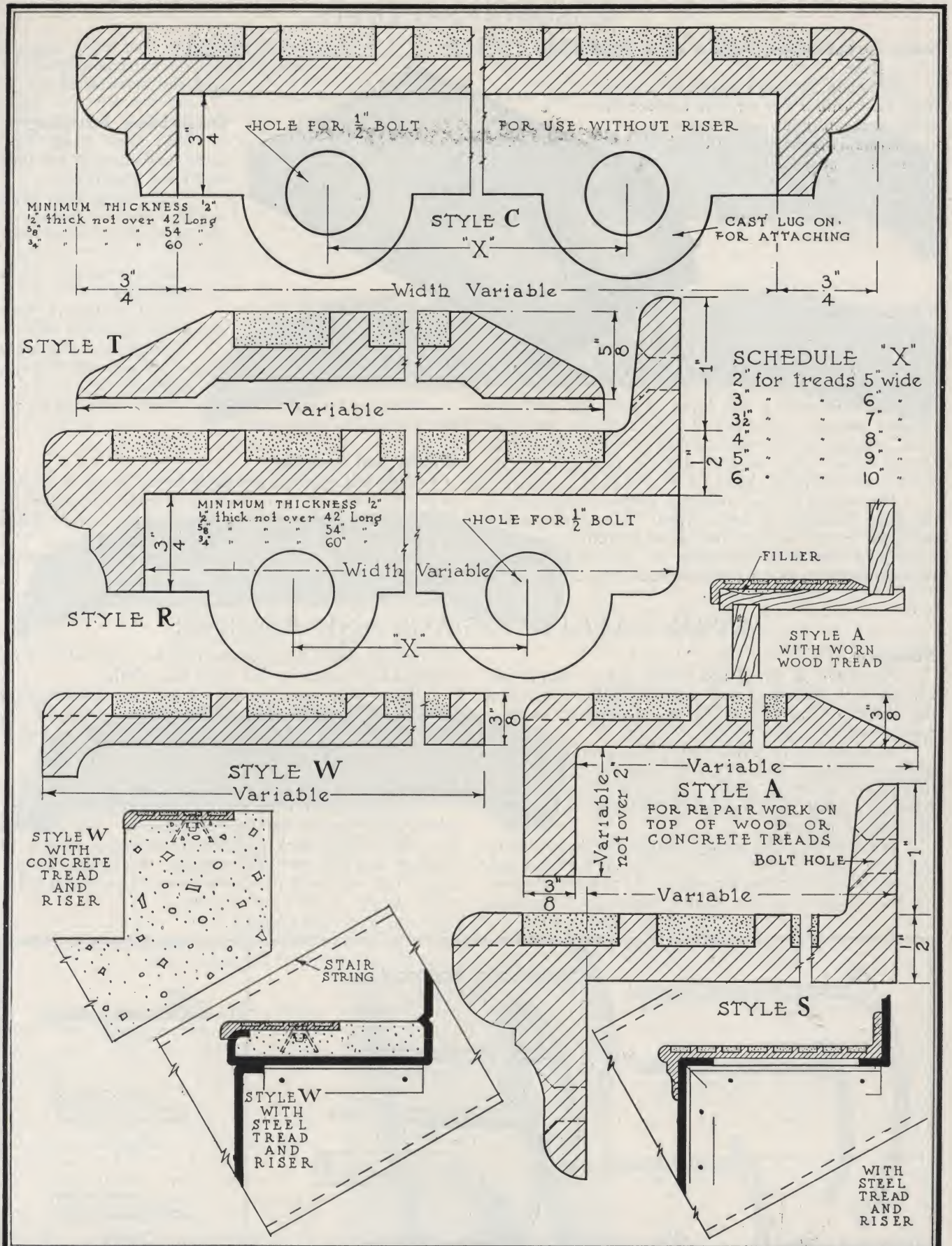


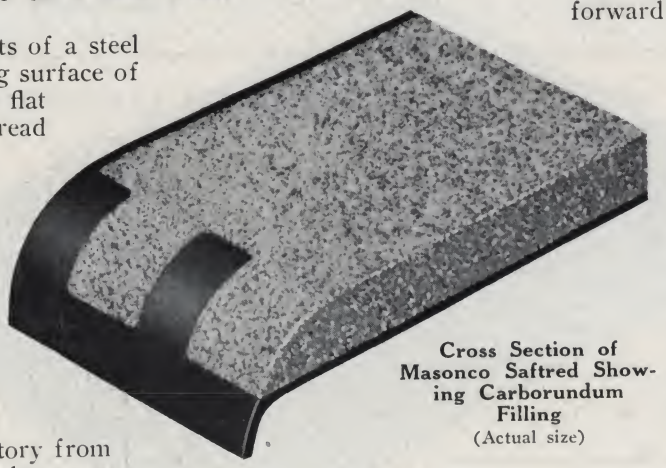
SWEETS CATALOGUE SERVICE	DETAILS OF MASON STRUCTURAL TREADS	SCALE FULL SIZE	DRWG. 4

Continued on next page

MASONCO SAFTRED

Solid Carborundum Surface on a Steel Plate Base (Patented)

Masonco Saftred consists of a steel plate base with a flat wearing surface of solid carborundum. This flat carborundum bed gives the tread an exceptionally clean-cut appearance and presents an abrasive wearing surface that extends clear through to the metal base.



Cross Section of Masonco Saftred Showing Carborundum Filling
(Actual size)

Saftred Nosing

Plain nosings of cast iron, steel or other hard materials may prove satisfactory from the standpoint of durability, but even though coated with a thin layer of abrasive, they soon become polished, smooth and slippery. On the other hand, nosings which consist solely of tile or other non-slip materials may prevent slipping but they do not possess durability.

The nosing of the Masonco Saftred embodies the desirable features of both types. The carborundum and steel in the nosing dovetail in toothlike formation combining the wear resistance of the steel with the non-slip qualities of the carborundum. The Saftred Nosing prevents the foot from slipping forward over the extreme edge of the step and sidewise as well.

Outstanding Advantages

Any size tread furnished complete in one unit ready for installation.

A flat tread with plain surface—no corrugations; no projections; no depressions.

Light in weight—built for durability.

Tread remains slipproof for its entire life.

Nosing is absolutely slipproof approached from any angle.

Provides an economical and durable method of repairing old and worn stairs.

Widths and Lengths

Masonco Saftreds are made in one piece, in widths to fit any tread up to 12 in. and in lengths up to 60 in. Nosings are regularly ½ in. deep, but any size or shape will be furnished to meet special requirements.

The treads are shipped with screw holes countersunk, ready for installation.

MASON SAFETY NOSINGS AND EDGINGS

Nosings

Furnished in brass and white brass (aluminum) for use with linoleum, cork carpet, rubber, interlocking tile, carpet or any other form of covering on stairs of wood, concrete, slate, marble, iron, etc.

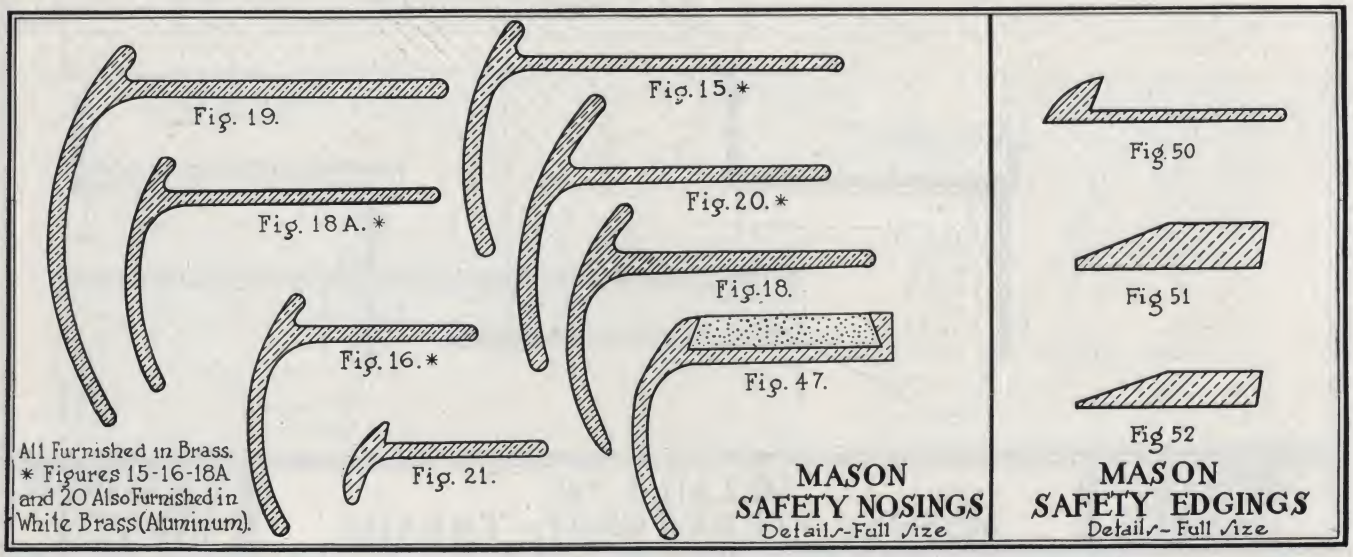
All types are provided with a deep sturdy lip which protects the stair, and with a vertical top so beveled as to lock the covering securely in place. Mason Safety Nosings protect the covering at the front edge where the wear is greatest.

White brass (aluminum) nosings are preferable for use where light is poor as they reflect the available light thereby clearly defining the edge of the step and eliminating the hazard of poorly lighted stairways. Aluminum nosings are non-corrosive and may be restored to their original high luster by the wipe of a cloth.

Sizes—Furnished in any of the sizes shown below in solid highly polished extruded brass. Figs 15, 16, 18A and 20 also furnished in aluminum, either highly polished or clear satin finish.

Edgings

For use with linoleum, cork carpet, rubber, tile, etc. where only part of the floor is covered. They protect the edge of the floor covering from being broken by scuffing and also prevent tripping. Furnished according to full size sections shown below in extruded brass, cut to length, drilled and polished.



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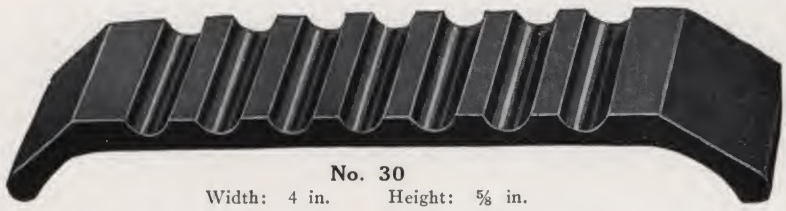
MASON ROLLED STEEL DOOR SADDLES

Mason Rolled Steel Door Saddles are lower in cost than cast iron saddles, yet they are exceptionally strong. The surface is deeply grooved. While the parallel grooves afford a certain immunity to slipping, where an absolute slipproof threshold is desired, the use of Mason *Carbo-Cast* Saddles is recommended.

Mason Rolled Steel Door Saddles are designed for use at fire doors, elevator shafts and wherever service conditions are severe. They are particularly adapted to withstand, without breaking, the heavy pounding of traffic and trucks in industrial plants, warehouses, railroad freight terminals and similar establishments.

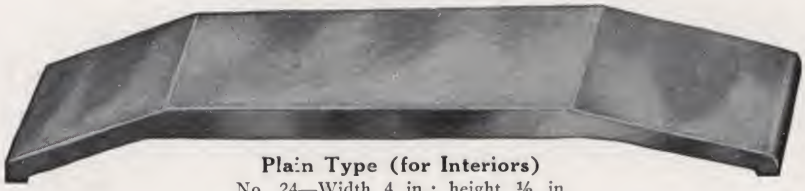
Made in two widths, 4 and 5½ in., and are furnished from stock cut and drilled in any length up to 16 ft.



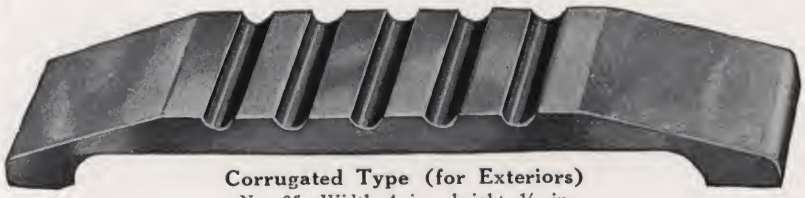
No. 30
Width: 4 in. Height: ⅝ in.

No. 31
Width: 5½ in. Height: ⅝ in.

MASON EXTRUDED BRASS DOOR SADDLES



Plain Type (for Interiors)
No. 24—Width 4 in.; height ½ in.
No. 26—Width 5 in.; height ½ in.
No. 28—Width 6 in.; height ½ in.



Corrugated Type (for Exteriors)
No. 25—Width 4 in.; height ½ in.
No. 27—Width 5 in.; height ½ in.
No. 29—Width 6 in.; height ½ in.

Mason Extruded Brass Door Saddles are suitable for use in any type of building. They are recommended where appearance, combined with protection against wear and slipping, is a factor. Brass door saddles are very attractive and harmonize readily with the finest interiors or exteriors where the use of a metal threshold is practical.

The extruding process used in the manufacture of Mason saddles results in a product of great strength and durability together with absolute uniformity.

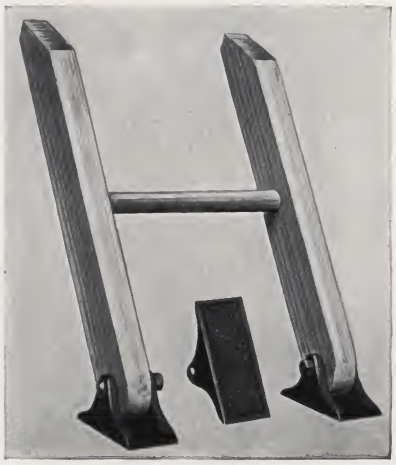
Mason Extruded Brass Door Saddles are furnished in two types—*plain* which is adapted for interior use, and the *corrugated* recommended for exterior use. Both types are available in standard widths of 4, 5, and 6 in., and furnished from stock in any length up to and including 12 ft.

MASON NON-SLIP LADDER SHOES

For Use in Industrial Plants, Stockrooms and Similar Locations

Mason Non-Slip Ladder Shoes hold the ladder securely to floors of iron, steel, wood or concrete. They provide an effective and inexpensive method of preventing falls caused by the slipping of a ladder on a smooth floor. The use of ladder shoes also obviates the necessity of having a second man to hold the ladder, resulting in saving of time and expense.

The swivel method of attaching the shoes to the ladder permits them to lie flat on the floor regardless of the angle at which the ladder is placed. The abrasive tread is long wearing and will retain its effectiveness indefinitely.



Shoes are fastened to the ladder with heavy bolts as shown in the illustration and are quickly and easily installed on new or old ladders or transferred from one ladder to another.

SIZES OF NON-SLIP LADDER SHOES

Size No.	Contact base, in.	Width of clevis, in.
1	5¼ x 1½	1¼
3	5¼ x 1⅝	1½
5	5¼ x 2	2

MASON
SAFETY TREADS

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Robert Vail Cole Jr, AIA
1962 – 2011

MASON
SAFETY TREADS

MORTON MANUFACTURING COMPANY

Manufacturers of Railway Appliances and Industrial Steel Products

5107-5177 West Lake Street

CHICAGO, ILL.

For our pages on Steel Cabinets, see Manufacturers' Index

MORTON "KASS" SAFETY TREADS

Safety and Long Wear

Morton "Kass" Safety Treads (patented) are expressly designed to prevent slipping.

The perforations in the top of the raised buttons prevent them from ever wearing smooth and give long years of service.

Uses

Morton "Kass" Safety Treads are used extensively by practically all steam and electric railways in the United States, in large industrial plants for use on stairways, platforms, fire escapes, etc.

During the world war they were adopted as standard by the Ordnance Department of the United States Government.

This Construction Means Safety and Service

Construction

They are made of copper bearing, rust resisting sheet steel in various gauges up to 10 ft. long and 3 ft. wide, in any shape with or without flanges or curved to suit any condition.

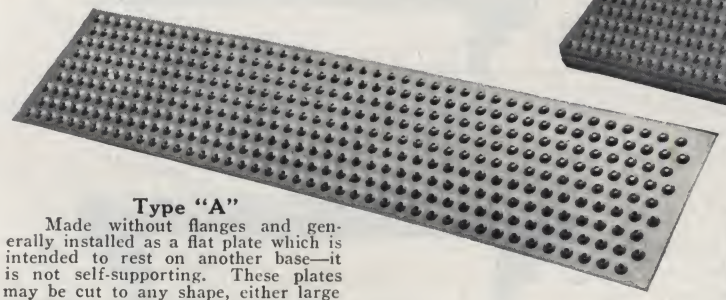
All treads shipped with substantial coat of gray priming paint. Holes for fastening punched at the factory or on the job.

Estimating

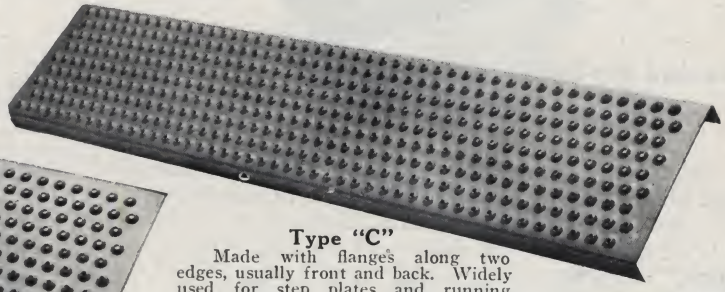
For estimating purposes on treads illustrated, it is only necessary to fill in dimension requirements on Sketch No. 205-C, copies of which are furnished on request.

For complete information, write for Section A of General Insert Catalogue.

Four Types of Morton "Kass" Treads

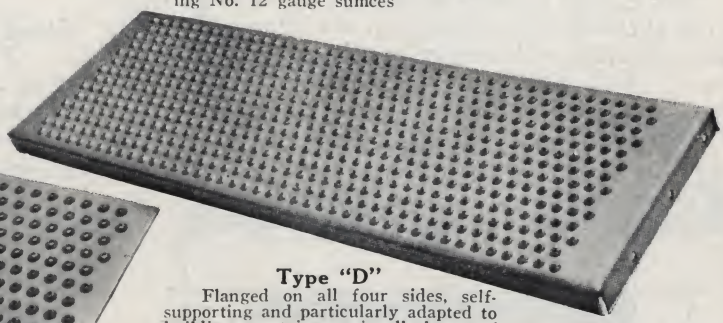


Type "A"
Made without flanges and generally installed as a flat plate which is intended to rest on another base—it is not self-supporting. These plates may be cut to any shape, either large or small sizes, and the application holes punched or drilled at the factory or on the job. As light as No. 18 gauge may be used



Type "C"
Made with flanges along two edges, usually front and back. Widely used for step plates and running boards on autos, heavy duty trucks, buses, tractors, etc. Where bracketed to other members of framework and made self-supporting, No. 10 gauge should be used, but if not self-supporting No. 12 gauge suffices

Type "B"
Designed with flange along front edge. Used chiefly for reconditioning worn steps of wood or other material. Provides both a new and perfectly level step top and nosing, easily and quickly installed without interrupting normal use of stairs. No. 10, 12 or 14 gauge recommended



Type "D"
Flanged on all four sides, self-supporting and particularly adapted to building up stairways in all classes of buildings, etc. Also recommended for platforms and, where unusually large sizes are required, strength and rigidity are obtained by welding or riveting supporting angle iron or channels to underside. No. 10 gauge preferable, though No. 12 gauge is satisfactory

STANDARD SAFETY TREAD CORP.

Manufacturers of Standard Safety Treads, Stair Nosings and Floor Edgings

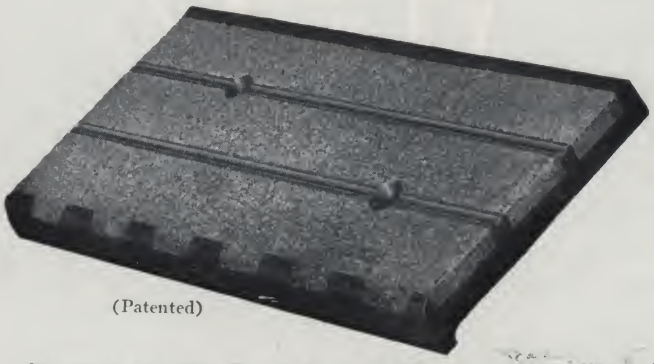
One Madison Avenue
NEW YORK, N. Y.
REPRESENTATIVES IN ALL PRINCIPAL CITIES

Products

STANDARD NON-SLIP TREADS.
STANDARD ELEVATOR DOOR SADDLES.
STANDARD NON-SLIP SADDLES.
STANDARD "PROTECTIVE" STAIR NOSINGS.
STANDARD "SURE-GRIP" STAIR NOSINGS.
STANDARD "SURE-GRIP" TREAD.
STANDARD "PROTECTIVE" FLOOR EDGINGS.

Standard Stair Treads

Standard Non-Slip Treads consist of cast iron or bronze with a flat wearing surface of a hard abrasive mixture. They have three outstanding and distinctive features, viz.: the depth of the wearing surface, the absence of deep grooves and the design of the nosing.



(Patented)

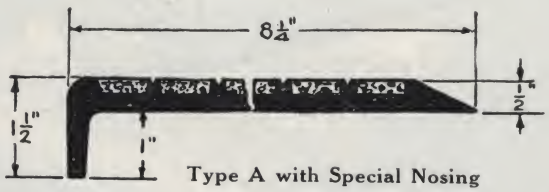
Standard Non-Slip Tread Showing Nosing with Abrasive Carried Down to a Substantial Depth
Absolute protection against slipping where the wear is greatest

The wearing surface is not superficial, but extends down almost to the base. The absence of deep grooves and corrugations gives more non-slip surface and eliminates all chances of the shoe catching and tripping the wearer.

In the nosing the abrasive is likewise carried down to a *considerable depth which affords absolute protection against slipping where the wear is the greatest.* This nosing feature, as well as the unusual depth of the abrasive, has resulted in the Standard Safety Tread receiving wide recognition in the profession.

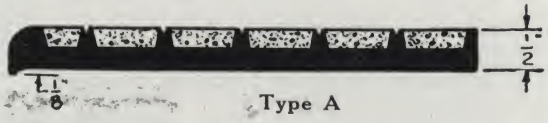
Types

Type "A," with Special Nosing 1 in. Deep—For badly worn wood, slate or marble steps. This style can also be furnished with square instead of beveled back edges, when safety treads are to be rabbetted.



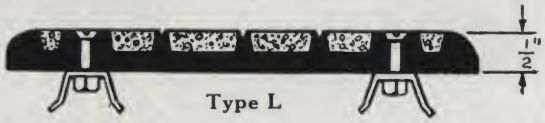
Type A with Special Nosing

Type "A"—Furnished either with lip nosing as shown or flat and with either square or beveled back, in widths from 4 to 12 in.



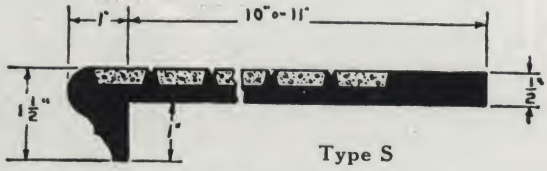
Type A

Type "L"—Furnished 3¾, 4¾ and 6 in. wide with full rounded nosing edges, reversible. Anchors attached complete when treads are to be used in new concrete.



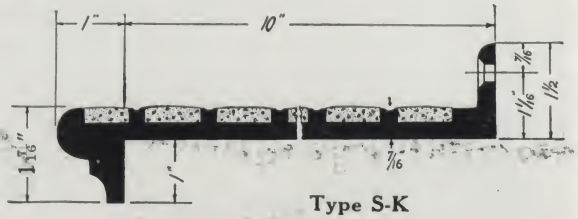
Type L

Type "S"—School tread, structural type, holes drilled ready to attach to either riser, or stringer brackets.



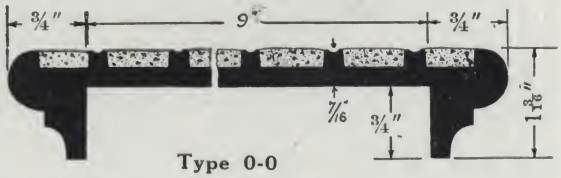
Type S

Type "S-K"—Same as Type "S" but with kick plate or end lugs.



Type S-K

Type 0-0—Reversible double nosing tread for use without risers.

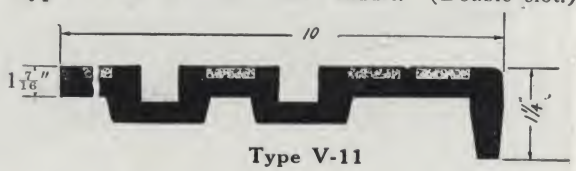


Type 0-0

Standard Elevator Door Saddles

Furnished in any size in iron or bronze with a deep abrasion surface. The slots for the door guide are machine-planed insuring smooth door action. See Type V-11 below.

Type "V-1"—Elevator door saddle. (Single slot.)
Type "V-11"—Elevator door saddle. (Double slot.)



Type V-11

Non-Slip Saddles

For entrance doors. This is our Type "L" shown above under "Types."

Continued on next page

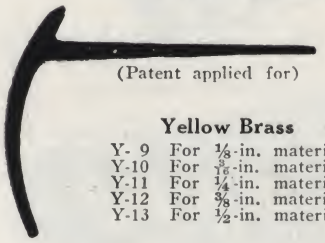
Standard "Protective" Stair Nosing

Designed to protect the front edges of steps and platforms, used in conjunction with linoleum, cork, rubber tile, mastic and similar floor coverings.

The tapered flanges permit the flooring material to lie flat, making rabbeting of the steps unnecessary, thus reducing installing costs to a minimum.

The extreme wide flanges also insure successful installation not only on wood but also on marble, slate or stone steps as well, without danger of breaking the front edges in drilling screwholes.

Furnished in both polished yellow brass and white metal aluminum with hardening alloy, cut to size or in stock lengths, drilled and countersunk for screws or provided with anchors for new concrete.

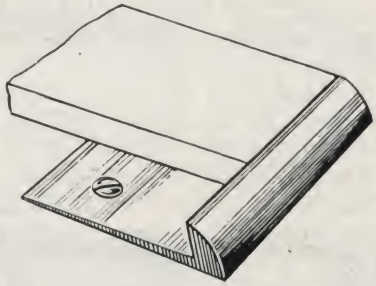


(Patent applied for)

Yellow Brass		White Metal	
Y- 9	For ⅛-in. material	W-14	For $\frac{3}{16}$-in. material
Y-10	For $\frac{3}{16}$-in. material	W-15	For ¼-in. material
Y-11	For ¼-in. material	W-16	For ⅜-in. material
Y-12	For ⅜-in. material	W-17	For ½-in. material
Y-13	For ½-in. material		

Standard "Protective" Floor Edgings

Designed to protect the edges of linoleum, rubber tile and similar flooring materials at door entrances, aisle passageways, table and desk tops, etc.



The flanges reinforce the edging in such a manner that it lies level at all stages of wear and all unsightly screws are concealed by the flooring material.

Yellow Brass

E-20 For ⅛-in. material
E-21 For $\frac{3}{16}$-in. material
E-22 For ¼-in. material
E-23 For ½-in. material

Furnished in polished yellow brass only

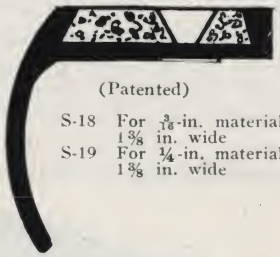
Stocks Carried

All types of nosings and edgings carried in stock, thus insuring prompt service, furnished, cut to size, holes drilled and countersunk, the yellow brass with highly polished finish and the white metal with brush finish.

Standard "Sure Grip" Stair Nosing and Tread

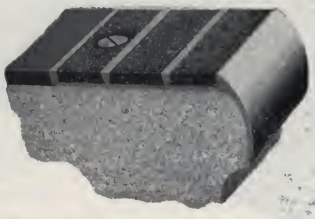
Standard "Sure Grip" Stair Nosing not only protects the front edges of steps where wear is greatest, but also provides a firm foothold against slipping. Used in conjunction with floor covering materials, such as linoleum, rubber or cork tile, terrazzo, concrete, composition, etc.

Furnished in two thicknesses, $\frac{3}{16}$ and ¼ in., 1⅛ and 3 in. wide by 1¼ in. deep on face of nosing in heavy extruded polished brass, cut to length, with countersunk holes properly spaced through metal sleeves in the carborundum abrasive surface. Can also be furnished with anchors for concrete.

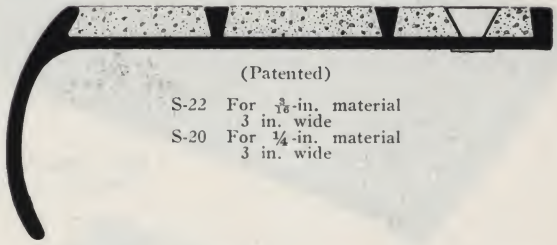


(Patented)

S-18 For $\frac{3}{16}$-in. material 1⅜ in. wide
S-19 For ¼-in. material 1⅜ in. wide



S-20 Anchored to concrete step with flooring material behind



(Patented)

S-22 For $\frac{3}{16}$-in. material 3 in. wide
S-20 For ¼-in. material 3 in. wide

(Patented)

S-23 For ¼-in. material 3 in. wide

S-21 For ¼-in. material 3 in. wide

UNIVERSAL SAFETY TREAD COMPANY

111 Perry Street
LOWELL, MASS.

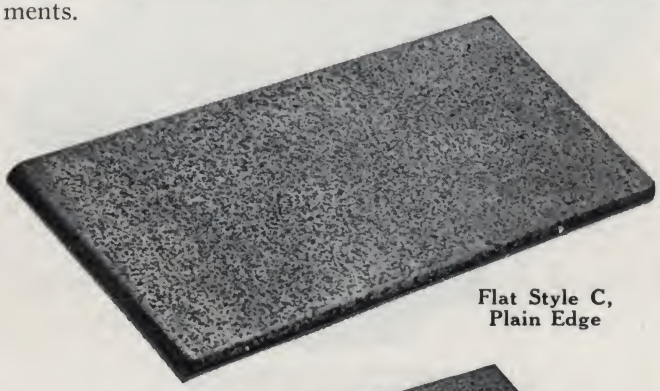
Products

UNIVERSAL ANTI-SLIP METAL TREAD (Abrasive) Type I.
UNIVERSAL SAFETY TREAD (Lead filled) Type II.
UNIVERSAL GRIT METAL TREAD in color.
UNIVERSAL BRASS and ALUMINUM NOSINGS.
UNIVERSAL BRASS DOOR SADDLES.
UNIVERSAL STEEL DOOR SADDLES.

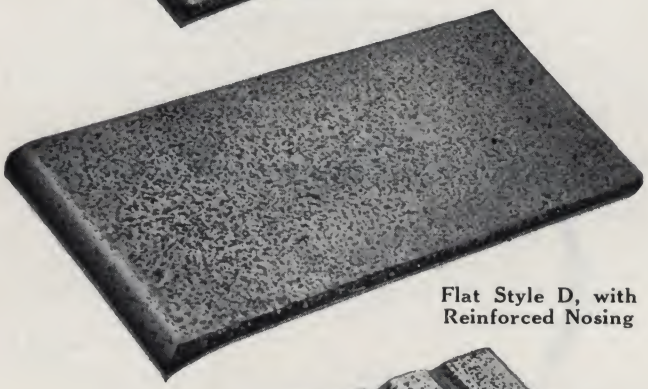
Universal Anti-Slip Metal Tread, Type I

Universal Anti-Slip Metal Tread, Type I, is constructed of a tinned steel baseplate to which is attached the hardest known abrasive with a soft lead binder. The diamond hard grains being embedded throughout the entire thickness of the tread to the baseplate not only makes it slip-proof for its entire life but prevents the foot from being exposed to any hard metal surface. The lead is simply used as a binder and filler between all the voids around the abrasive grains.

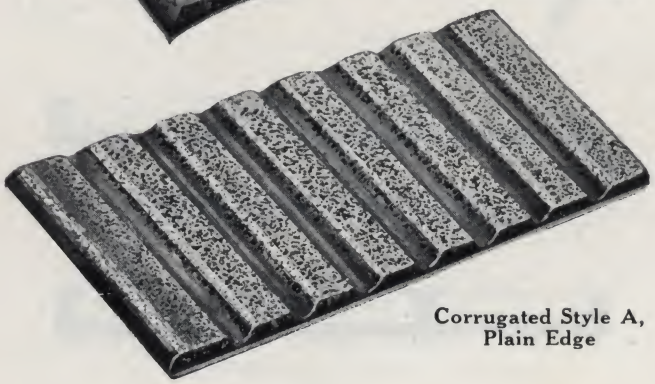
It is Fireproof, Scuffproof, Non-porous, Noiseless, neat in appearance and affords practically positive immunity from slipping. Anti-slip treads can be furnished in a flat or corrugated form to meet specified requirements.



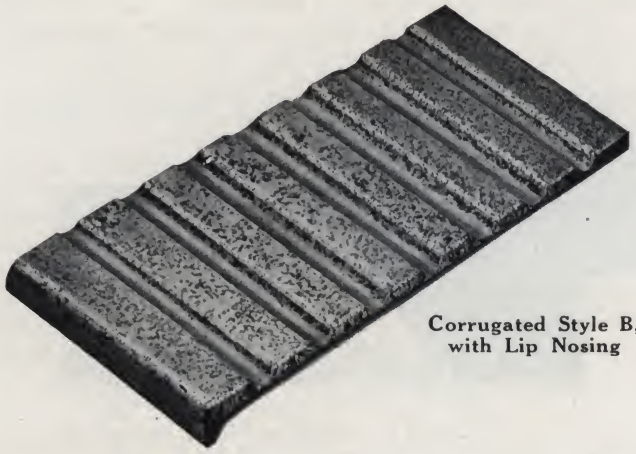
Flat Style C, Plain Edge



Flat Style D, with Reinforced Nosing

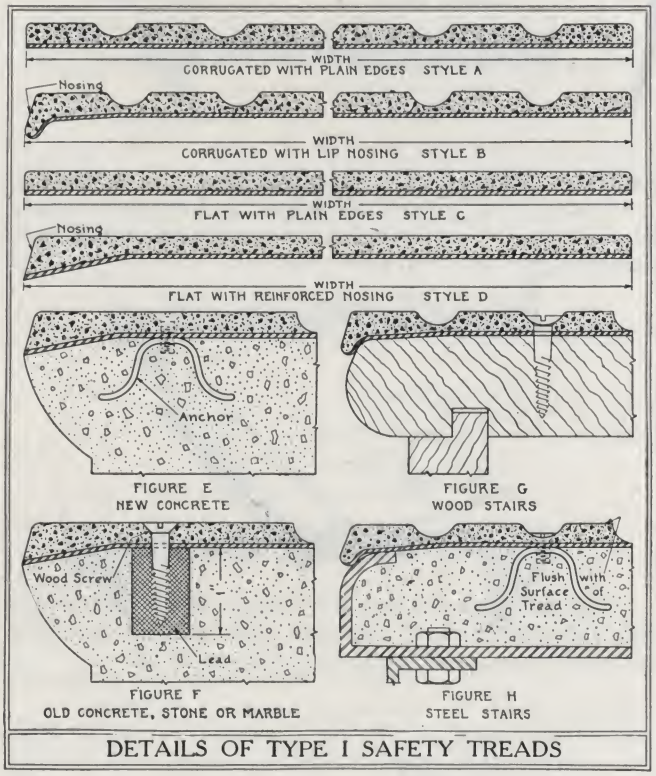


Corrugated Style A, Plain Edge



Corrugated Style B, with Lip Nosing

Sizes—Universal Anti-Slip Tread, Type I, can be furnished in any standard width up to 8 in. and in any specified length either with or without nosing.



DETAILS OF TYPE I SAFETY TREADS

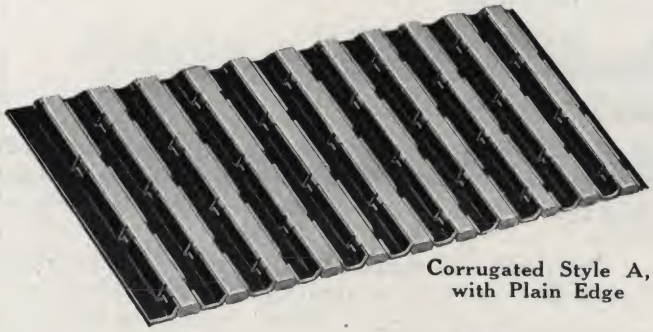
Universal Safety Tread, Type II

Universal Safety Tread, Type II, is constructed of a steel, brass or aluminum baseplate, punched to receive the non-slip lead inserts which are rolled in and firmly clamped. The lead fills the perforations and a non-slip surface is presented for its full thickness. There are no continuous metal ribs on the outer edge, which is the danger point on all stairs, but the lead, being exposed between the steel or brass teeth, presents a non-slip edge at all times. This is especially important in descending stairways. A minimum of hard supporting metal and the maximum of non-slip lead form the wearing surface.

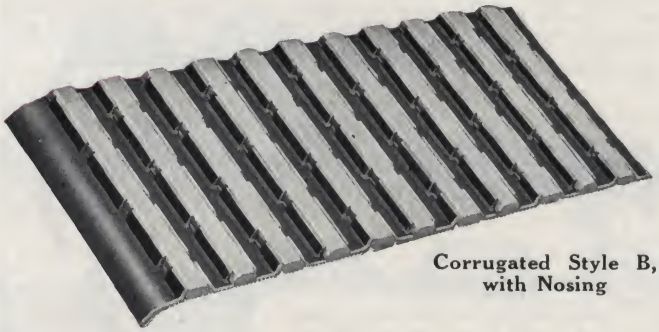
Continued on next page

Baseplate can be extended to form a nosing of any depth required which is especially desirable where evidences of repair are to be covered. We can furnish alloy-coated or galvanized steel to resist the action of salt water or dampness. Our brass treads are also recommended where it is necessary to have a rustproof and safe surface.

Sizes—Universal Safety Tread, Type II, can be furnished in almost any standard width and in any specified lengths, either with or without nosing according to the requirements of the stairs or landings.



Corrugated Style A, with Plain Edge



Corrugated Style B, with Nosing

Universal Grit-Metal Tread in Color

Universal Grit-Metal Tread is constructed of a metal baseplate to which the hard abrasive with the grit-metal binder is attached. The baseplate being offset at the nosing allows the abrasive grain to be present at the very edge of the stair where the wear is greatest. Complete harmony may now be secured between diversified materials by the use of Grit-Metal Tread in color.

Universal Brass Door Saddles

Universal Brass Door Saddles are made by the extrusion process of the highest quality brass. Furnished in either a plain or grooved surface in 4, 5 and 6-in. widths and cut to any required length up to 12 ft. Polished or brush (satin) finish as specified. All brass door saddles are ½ in. high.

Universal Brass Door Saddle, Plain

Universal Brass Door Saddle, Grooved

Universal Rolled Steel Door Saddles

Universal Rolled Steel Door Saddles are furnished in the corrugated type only. They are especially recommended for exterior use or in any place where a heavy duty saddle is required. Cut and drilled in any length up to sixteen feet.

Universal Rolled Steel Door Saddles

Universal Brass and Aluminum Nosings

Universal Nosings are made of highly polished yellow brass and silvery white non-corrosive aluminum and are designed to safeguard the front edge of steps and platforms when used in combination with other floor coverings. Furnished in any lengths up to 14 ft.

Styles of Universal Brass and Aluminum Nosings

Fig. 1. Yellow Brass Nosing

Fig. 2. Aluminum Nosing

Fig. 3. Yellow Brass Nosing

Fig. 4. Aluminum Nosing

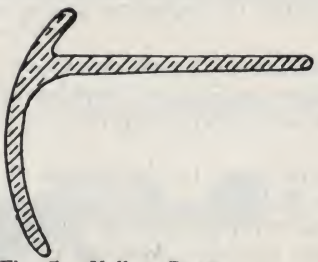


Fig. 5. Yellow Brass Nosing

Fig. 6. Aluminum Nosing

Fig. 7. Yellow Brass Nosing

Fig. 8. Aluminum Nosing

WOOSTER PRODUCTS INC.

SUCCESSORS TO THE SAFETY STAIR TREAD COMPANY

Wooster Safe-Groove Stair Treads; Wooster Security Nosings and Edgings; Wooster Combination Tread and Nosing

WOOSTER, OHIO

NEW YORK OFFICE: 1133 Broadway

CHICAGO OFFICE: 803 Transportation Building

REPRESENTATIVES IN PRINCIPAL CITIES

WOOSTER SAFE-GROOVE TREADS

Wooster Safe-Groove Treads are scientifically designed and proportioned in two metal bases to prevent stairs, saddles, thresholds and ramps, or any walking surface, from becoming worn or dangerously smooth. They also protect stair steps from disfiguring wear under heavy traffic conditions.

Section of Wooster Safe-Groove Stair Tread

Material—Wooster Safe-Groove Treads are fabricated in black steel and highly polished yellow brass base.

For the steel and yellow brass base treads the anti-slip filler may be of either abrasive grits or lead. Abrasive grits is recommended because of its superior wearing qualities.

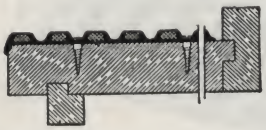
Design—Wooster Safe-Groove Treads are so designed as to present a walking surface of broad ribs of wear-resisting, abrasive material alternating with deep narrow grooves.

These anti-slip ribs extend clear to the bottom of the treads and the recess in which they are held is so shaped as to be wider at the bottom than at the top. This increases the area of the anti-slip material as the tread wears down after years of use, and increases the safety factor in proportion to the rate of wear.

Specifications—All stairs, platforms and landings to be provided with Wooster Safe-Groove, Abrasive Grits or Lead Anti-slip Filled Treads, to be 6 in. shorter than the entire length of the steps and to be installed according to manufacturer's specifications.

Each step shall be covered according to the amount of wear to which it will be subjected. For lightly used stairs, 3, 3½ or 4-in. width with lip nosing is sufficient provided the tread is set flush into the step. Where the tread is not rabbeted or set flush, at least two-thirds of the depth of the step shall be covered. On stairs subjected to heavy traffic the treads shall be 6 to 9½ in. wide.

Methods of Application—Cross section details below show methods of applying Wooster Safe-Groove Treads to various types of stairs. Wherever the treads are to be set in new concrete they are shipped with anchors riveted on, so that after the concrete has set, the treads become an integral part of the steps.

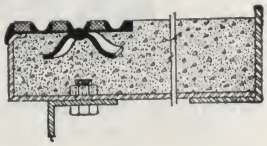


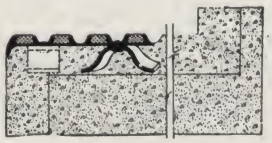
Wood, Slate, Marble, etc. Stairs

Treads shall be fastened to wood subtreads by means of No. 10 1-in. wood screws. For marble, slate or stone stairs, treads are attached with wood screws in lead shield

Pressed Steel

Treads shall be set flush with cement surface to extend from stringer to stringer. Anchors are riveted on for pressed steel installations when required for setting in concrete fill



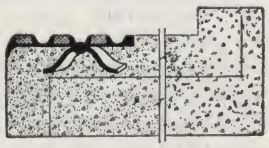


Concrete

Detail shows standard section 3½ in. with lip nosing. To give a wide walking surface 6 to 10 in. wide for stairs subjected to heavy traffic, this should be combined with one or more standard sections. Treads with anchors attached are centered between stringers and even with finish line of step

Concrete

Detail shows tread installation on concrete for stairs subjected to normal traffic. Single tread section with nosing is used to make a walking surface 3 in. wide. Anchors are attached



STANDARD SIZES WOOSTER SAFE-GROOVE STAIR TREADS

Section No.	Number of ribs	Width, in.	With or without nosing
Yellow Brass Base, Narrow Groove Type			
20	3	2⅛	long nosing
21	3	2¾	long nosing
22	4	3	lip nosing and sq. bk.
23	4	3½	lip nosing
24	4	3½	long nosing
25	5	4	without nosing
26	8	6	without nosing
27	4	3	without nosing
28	6	5¼	with lip nosing

Section No.	Number of ribs	Width, in.	With or without nosing
Steel Base			
33	4	3½	with lip nosing
32	3	3	with lip nosing and sq. bk.
31	3	2½	without nosing
36	5	4	with lip nosing
34	5	4	without nosing
35	7	6	without nosing

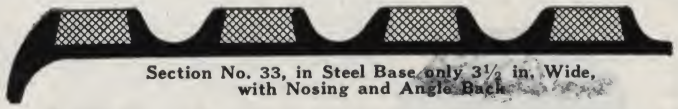
White alloy furnished on special order only

All sections (except the square back ones—No. 32 in steel base and No. 22 in yellow brass base—which are especially used in concrete construction) are made with angle back and can be combined with other sections to make any width desired.

Continued on next page

ACTUAL SIZE CROSS SECTIONS WOOSTER SAFE-GROOVE STAIR TREADS

Steel Base



Section No. 33, in Steel Base only 3½ in. Wide, with Nosing and Angle Back

Section No. 32, in Steel Base only, 3 in. Wide, with Nosing and Square Back

Section No. 36, in Steel Base only, 4 in. Wide, with Nosing and Angle Back

Section No. 31, in Steel Base only, 2½ in. Wide, without Nosing

Steel Base cut to any desired length up to 17 ft.

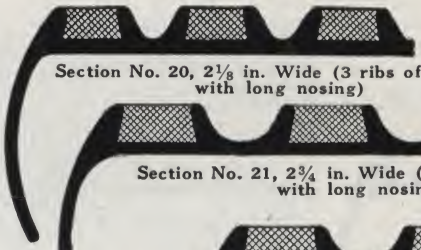
Section No. 34, in Steel Base only, 4 in. Wide, without Nosing

Steel Base with abrasive grits or lead filler

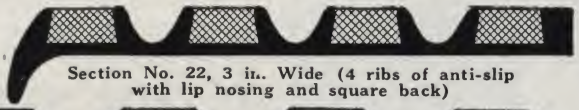
Section No. 35, in Steel Base only, 6 in. Wide, without Nosing

Yellow Brass Base

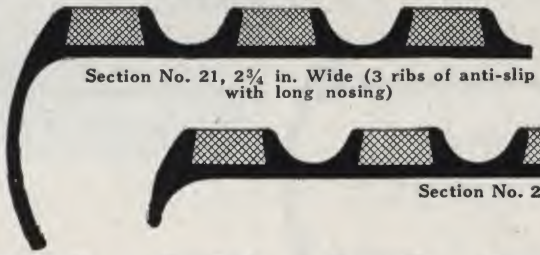
(Abrasive Grits or Lead Filler)



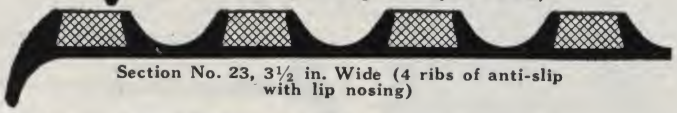
Section No. 20, 2⅛ in. Wide (3 ribs of anti-slip with long nosing)



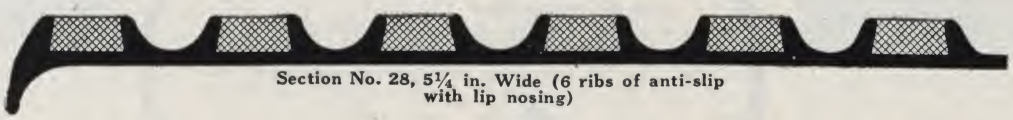
Section No. 22, 3 in. Wide (4 ribs of anti-slip with lip nosing and square back)



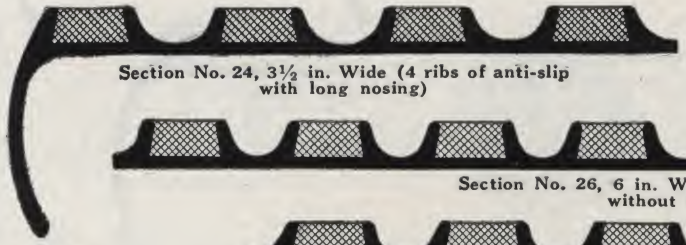
Section No. 21, 2¾ in. Wide (3 ribs of anti-slip with long nosing)



Section No. 23, 3½ in. Wide (4 ribs of anti-slip with lip nosing)



Section No. 28, 5¼ in. Wide (6 ribs of anti-slip with lip nosing)



Section No. 24, 3½ in. Wide (4 ribs of anti-slip with long nosing)

Section No. 27, 3 in. Wide (4 ribs of anti-slip without nosing)

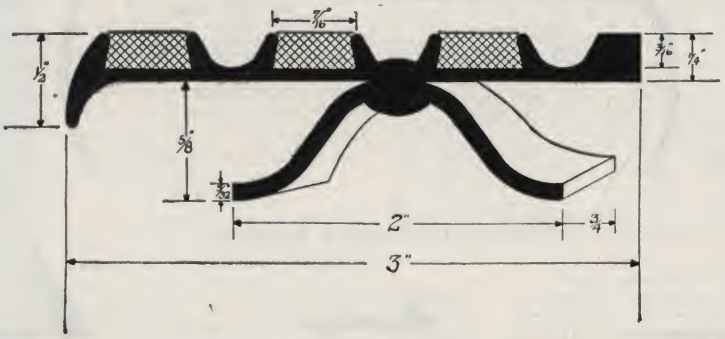
Section No. 26, 6 in. Wide (8 ribs of anti-slip without nosing)

Section No. 25, 4 in. Wide (5 ribs of anti-slip without nosing)

DIMENSION DETAIL OF WOOSTER SAFE-GROOVE STAIR TREAD

Construction

Wooster Safe-Groove Treads are made of the best quality wear-resisting materials. Base furnished in black steel or yellow brass, anti-slip filler of abrasive grits or lead.



Anchors Are Riveted On

The anchors come riveted on Wooster Safe-Groove Treads for concrete and pressed steel installations. There are no anchors or time lost attaching anchors.

Wooster Safe-Groove Treads when required for concrete are shipped with the necessary Anchors securely attached

Continued on next page

WOOSTER SECURITY NOSINGS AND EDGINGS—COMBINATION TREAD AND NOSING

Wooster Security Nosings

Wooster Security Nosings are designed to protect from the scuffing wear of traffic the edges of linoleum, composition, cork tile, rubber tile, asphalt tile, or other flooring material when used on stairs, platforms or landings.

Material—Wooster Security Nosings are made of highly polished yellow brass and silvery white non-rusting and non-tarnishing heat treated aluminum alloy.

Design—Wooster Security Nosing is of sturdy design and retains its smooth even surface for many years. The body of the nosing which extends down over the front edge of the step cannot be bent or dented by the ordinary shock of traffic. The nearly vertical lip securely locks the covering material in place, and the horizontal flange holds the nosing rigidly to the step. Flanges are feather-edged, an exclusive Wooster feature.

Sizes—Wooster Security Nosings are made in sections of different thickness for use with any flooring material from ⅛ to ½ in. thick. Full size cross sections are shown below.

Method of Application—All nosings are delivered cut to desired length, polished and drilled with proper number of countersunk screw holes for attachment. Wooster Security Nosings are fastened by means of screws through the countersunk holes in the horizontal flange. This flange is completely covered by flooring material, leaving nothing to show but attractive face of the nosing. Detailed drawings above show methods of application to stairs of various material.

Wooster Security Edgings

Wooster Security Edgings are designed to protect the edges of linoleum, composition, cork tile, rubber tile, asphalt tile or any flooring material from wear when laid on floors of any kind.

Material—Wooster Security Edgings are made in highly polished yellow brass in ⅛ to ½ in. thicknesses to match flooring material.

Design—Wooster Security Edgings have a slanting lip which locks the flooring material securely in place. The edging is fastened securely to the floor by screws through the feather-edged flange, which is covered by the flooring material when the installation is completed.

This feather-edged flange is an exclusive feature in Wooster Security Edging.

Combination Tread and Nosing

Combination tread and nosing designed for the protection of floor materials, and a safety tread combined. Extra heavy construction and deep abrasive grits combine to make the combination nosing and tread particularly resistive to heavy traffic.

The two-ribbed type of nosing is independent of the flooring material and can be renewed without taking up the floor covering.

Combination tread and nosing of two-rib type is particularly adapted for use with asphalt tile flooring materials.

FULL SIZE CROSS SECTIONS NOSINGS AND EDGINGS

Wooster Security Nosings

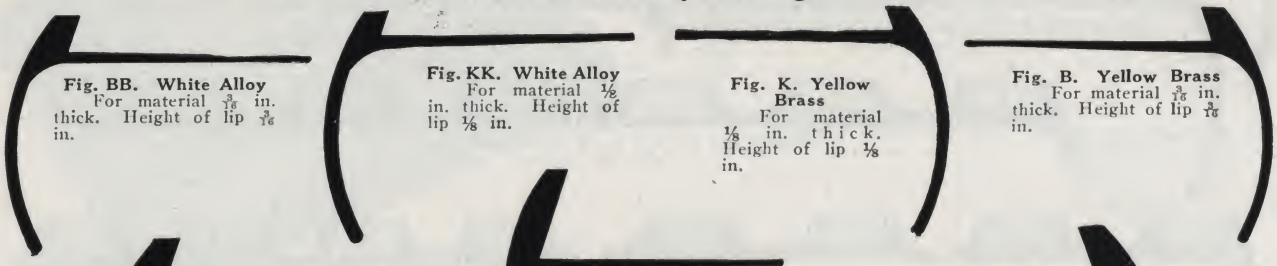


Fig. BB. White Alloy For material 3/16 in. thick. Height of lip 3/16 in.

Fig. KK. White Alloy For material ⅛ in. thick. Height of lip ⅛ in.

Fig. K. Yellow Brass For material ⅛ in. thick. Height of lip ⅛ in.

Fig. B. Yellow Brass For material 3/16 in. thick. Height of lip 3/16 in.

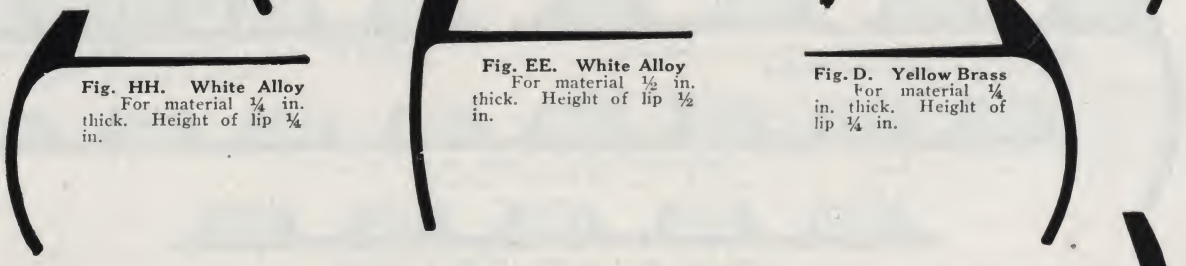


Fig. HH. White Alloy For material ¼ in. thick. Height of lip ¼ in.

Fig. EE. White Alloy For material ½ in. thick. Height of lip ½ in.

Fig. D. Yellow Brass For material ¼ in. thick. Height of lip ¼ in.

Combination Tread and Nosing

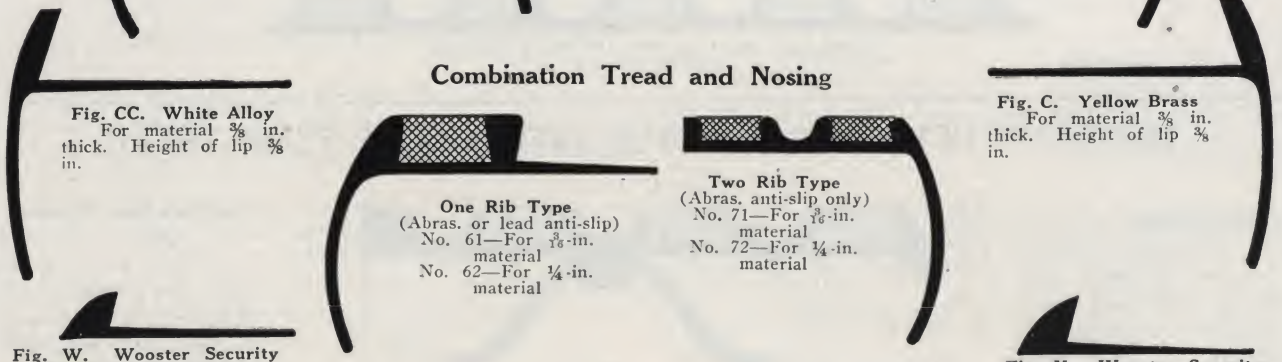


Fig. CC. White Alloy For material ⅜ in. thick. Height of lip ⅜ in.

One Rib Type (Abras. or lead anti-slip) No. 61—For 3/16-in. material No. 62—For ¼-in. material

Two Rib Type (Abras. anti-slip only) No. 71—For 3/16-in. material No. 72—For ¼-in. material

Fig. C. Yellow Brass For material ⅜ in. thick. Height of lip ⅜ in.

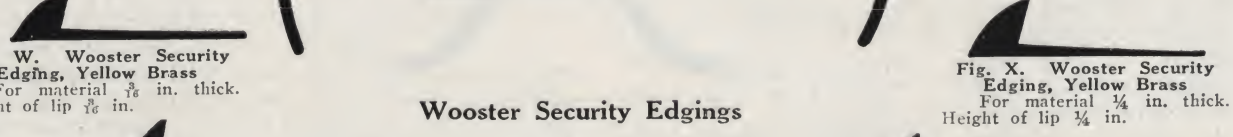


Fig. W. Wooster Security Edging, Yellow Brass For material 3/16 in. thick. Height of lip 3/16 in.

Fig. X. Wooster Security Edging, Yellow Brass For material ¼ in. thick. Height of lip ¼ in.

Wooster Security Edgings

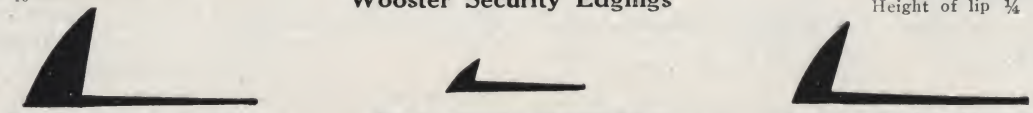


Fig. Z. Wooster Security Edging, Yellow Brass For material ½ in. thick. Height of lip ½ in.

Fig. V. Wooster Security Edging, Yellow Brass For material ⅛ in. thick. Height of lip ⅛ in.

Fig. Y. Wooster Security Edging, Yellow Brass For material ⅜ in. thick. Height of lip ⅜ in.

HENDRICK MANUFACTURING COMPANY

37 Dundaff Street, CARBONDALE, PA.

SALES OFFICES AND REPRESENTATIVES

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DENVER, COLO., Uquhart Service
DETROIT, MICH., H. W. Reindel
ERIE, PA., Henry Althof's Sons Co.
HAZLETON, PA., Hendrick Manufacturing Company
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SAN FRANCISCO, CAL., Price Building Specialties
SEATTLE, WASH., F. T. Crowe
TULSA, OKLA., Circle Corporation

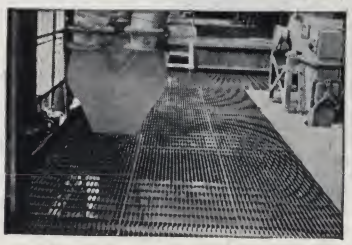
For Hendrick Perforated Metal Grilles, see Manufacturers' Index

Mitco Interlocked Steel Grating, Armorgrids and Shur-Site Treads

Mitco Interlocked Steel Grating

Wherever open steel flooring is required, Mitco is the ideal selection. It is made of square edge steel bars (high in tensile strength) which are firmly locked in position under hundreds of tons' hydraulic pressure. The bars never loosen, no matter how severe the vibration, shock or abuse. In Mitco there are no bolts, rivets or welding to loosen or permit development of weakness. Panels of Mitco are high in strength and rigidity.

MITCO Reg. Trade Mark

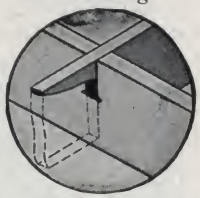


Mitco Grating and Mitco Treads were selected by Hunt, Mirk & Co. of San Francisco, for installation in the plant of Riverside Cement Company, Riverside, Cal.

Mitco has rectangular openings—an important factor in preventing clogging. Mitco has no acute angles to catch and hold dirt. Moreover, Mitco's rectangular openings are 90% of panel area, thus assuring maximum light and ventilation.

As only square-edge bars are used in Mitco, panels of Mitco are always even and flush under foot. Feet get a sure, firm grip. Trucking is not impeded. Greater safety is assured in both walking and trucking.

Mitco is furnished in 5 types with varying sizes of rectangular openings. Panels come in sizes to fit openings of all dimensions and shapes. Our engineers will gladly assist in the selection of the proper type of Mitco and in developing the most efficient layout for each installation. Write for a copy of the Mitco bulletin.



Mitco Joints, produced under hundreds of tons' hydraulic pressure, insure permanently locked panels always free from loose or rattling bars.

Mitco Armorgrids

For armoring (or reinforcing) floors, platforms, ramps, driveways and similar structures poured of concrete, cement or other plastics. Mitco Armorgrids are merely laid on the rough base of the structure, leveled up, and the finishing fill of flooring material poured into the mesh of the Armorgrids.

Mitco Armorgrids reinforce this floor in the plant of Briggs Mfg. Co., Detroit, Mich.

Of all floor armorings, Mitco Armorgrids are simplest to install and most economical. They require no bolting of panels, no tie rods, no fitting, fastening or assembly of any kind.

By providing a rail-like steel mesh which bears the brunt of shocks and abuse, Mitco Armorgrids prevent development of cracks and wear, prolong the life of the structure and minimize maintenance. Write for a copy of the Mitco Armorgrid bulletin.

Mitco Shur-Site Treads

Light in weight yet strong and durable, non-slipping and non-clogging, with highly-visible front edges, Mitco Shur-Site Treads are ideal for stair, ladder, fire escapes.

The front edge of every Mitco Tread is very clearly defined by means of a deep nosing bar, bent back at an angle under the front edge of the Tread. This bar makes the front edge of the Tread stand out clearly, and prevents falls caused by overstepping the edge. The nosing bar is self-clearing and has no pocket to collect refuse, snow or ice. Mitco Shur-Site Treads are made in widths and lengths as required, and come with carrier plates ready for attachment to stair stringers. Write for bulletin.

Mitco Shur-Site Treads and Mitco Interlocked Steel Grating were selected by Sanderson & Porter for installation in the Williamsport station of the Potomac Edison Co.

TABLE OF SAFE LOADS AND DEFLECTIONS FOR "MITCO" GRATING
SAFE LOADS IN POUNDS BASED ON FIBRE STRESS OF 16,000 POUNDS PER SQ. INCH.
Loads can be safely increased approximately 50% without permanent deformation or undesirable deflection.

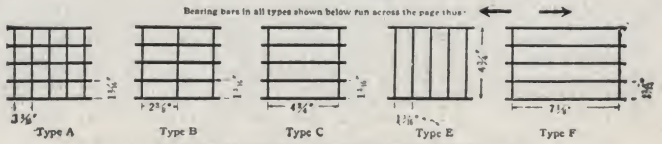
Depth and Type	Bearing Bars Size Inches	Bearing Bars Spacing C to C	Cross Bars Size Inches	Cross Bars Spacing C to C	Weight Sq. Foot	SPAN IN FEET 2'0"	2'6"	3'0"	3'6"	4'0"	5'0"	6'0"	7'0"	8'0"	9'0"	10'0"
1" Light C "D"	1 x 1/8	1 1/16"	3/16 x 1/8	4 3/4"	5.5 lbs.	560 .06	360 .09	250 .14	186 .19	140 .24						
1" C	1 x 1/4	1 1/16"	3/16 x 1/8	4 3/4"	7.8 lbs.	835	534	370	273	208	133	93				
1" E "D"	1 x 1/4	4 3/4"	3/16 x 1/8	1 1/16"	6.3 lbs.	208 .06	133 .11	93 .17	68 .24	52 .31	.48	.69				
1 1/4" C	1 1/4 x 1/8	1 1/16"	1	x 1/8	4 3/4"	9.5 lbs.	1410	900	627	445	352	225	157	111			
1 1/4" E "D"	1 1/4 x 1/4	4 3/4"	1	x 1/8	1 1/16"	6.7 lbs.	352 .05	225 .10	156 .14	111 .18	88 .25	56 .36	.56	.75			
1 1/2" C	1 1/2 x 1/8	1 1/16"	1	x 1/8	4 3/4"	11.0 lbs.	1875	1200	834	612	468	300	208	153	117	93	
1 1/2" E "D"	1 1/2 x 1/4	4 3/4"	1	x 1/8	1 1/16"	7.1 lbs.	468 .04	300 .08	208 .11	153 .15	117 .21	75 .32	52 .46	.63	.82	1.04	
1 3/4" C	1 3/4 x 1/8	1 1/16"	1	x 1/8	4 3/4"	12.5 lbs.	2560	1640	1140	838	640	410	285	210	160	127	103
1 3/4" E "D"	1 3/4 x 1/4	4 3/4"	1	x 1/8	1 1/16"	7.5 lbs.	640 .03	410 .07	285 .10	210 .13	160 .18	103 .25	71 .40	52 .54	.70	.90	1.10
2" C	2 x 1/8	1 1/16"	1	x 1/8	4 3/4"	14.0 lbs.	3340	2140	1480	1090	834	534	371	272	208	165	133
2" E "D"	2 x 1/4	4 3/4"	1	x 1/8	1 1/16"	7.9 lbs.	835 .03	535 .06	370 .09	272 .11	209 .15	134 .24	93 .35	68 .47	52 .59	.78	.96
2 1/4" C	2 1/4 x 1/8	1 1/16"	1	x 1/8	4 3/4"	15.5 lbs.	4220	2700	1875	1380	1055	675	470	345	264	208	169
2 1/4" E "D"	2 1/4 x 1/4	4 3/4"	1	x 1/8	1 1/16"	8.2 lbs.	1055 .02	675 .05	470 .08	345 .10	264 .14	169 .21	117 .31	86 .42	66 .54	.70	.86

"MITCO" DRIVEWAY GRATINGS (For Heavy Traffic, Coal "Grizzlies", Etc.)

2 1/4" C	2 1/4 x 3/8	1 1/16"	2	x 1/8	4 3/4"	36.8 lbs.	8440	5400	3750	2760	2100	1350	940	690	528	416	338
2 3/4" C	2 3/4 x 3/8	1 1/16"	2 1/4	x 1/8	4 3/4"	44.6 lbs.	13900	8880	5640	4530	3470	2220	1540	1130	865	685	555
3 1/4" C	3 1/4 x 3/8	1 1/16"	2 1/4	x 1/8	4 3/4"	51.7 lbs.		12400	7850	6310	4840	3100	2150	1580	1210	955	775
3 3/4" C	3 3/4 x 3/8	1 1/16"	2 1/4	x 1/8	4 3/4"	58.7 lbs.		16500	10470	8410	6440	4120	2862	2100	1610	1272	1031

"D"—Deflection in inches for uniform live load.
Types C and E have same deflection for same spans.
Driveway can also be furnished in Type B having same strength as Type C and weighing approximately six lbs. per sq. ft. more.
For safe concentrated load at center of span multiply tabulated load by span and divide by two. This applies to both tables above.

Bearing bars in all types shown below run across the page thus: ← →



Types A, B, C, and F have the same strength for the same size bearing bars

WALTER BATES STEEL CORPORATION

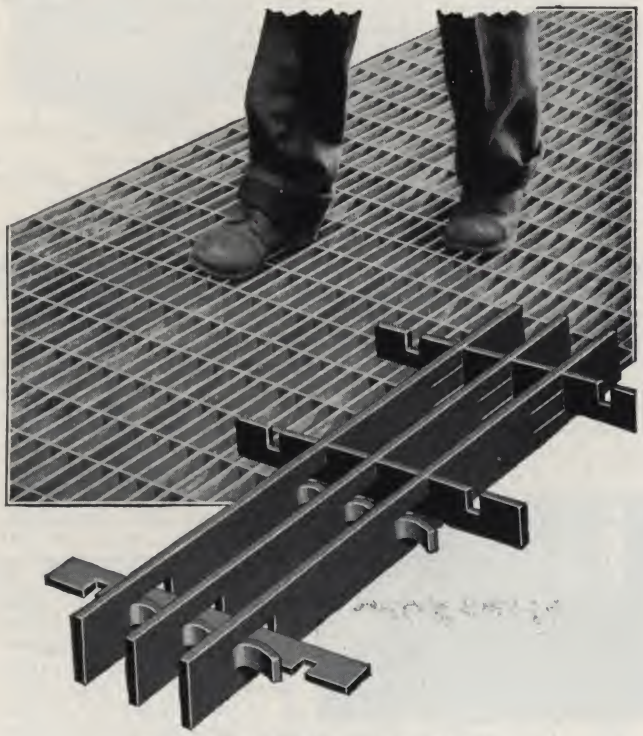
Manufacturers of Steel Floor Grating, Stair Treads, Railway Structures, Towers, Substations and Poles

GARY, INDIANA

Products

STEEL FLOOR GRATING; STEEL STEP GRATING.

Also Railway Structures, Substations, Galvanizing, Steel Towers, Steel Poles.



The Perfect Mechanical Lock Joint

Walter Bates Steel "Copperquad" Floor Grating

Safe and Slip-proof—The even surface of this grating makes it safe and pleasant to walk on. It does not look harsh; no steel other than straight bars is used. Maximum panels, 36 in. wide and 25 ft. long.

Permanent Strength—The perfect mechanical *lock joint* is the positive assurance of strength, permanence and service. No amount of jarring can shake the grating loose. It is rattle-proof. The edges of the main bar are not cut, either on top or bottom, thus a maximum safe load is assured. Every joint is a positive lock, ready to withstand the greatest strains.

Sanitary and Serviceable—There are no crevices where dirt can collect. It permits full air circulation. Requires no maintenance. It takes the protective coating of zinc or paint perfectly. The grating is fully as safe when accidentally installed upside down.

Maximum Light Penetration—The clear openings in this grating afford maximum light penetration and air circulation.

Uses—Central stations, power plants, water works, walkways, safety isles, loading platforms, fire escapes, ventilation shaft covers, armored flooring, etc.

The Perfect Mechanical Lock Joint—The main-bars have a tongue and slot arrangement. The tongues are curled back, the crossbars inserted, turned into position and then—by means of hydraulic pressure—the tongue is locked into its original position. This arrangement eliminates the use of rivets or welding and gives the grating the effect of a single unit.

Copperquad—Copper bearing steel quadrangular mesh.

SAFE LOADS AND DEFLECTIONS WALTER BATES STEEL FLOOR GRATING

Explanation of Numerals in Column "X"

(1) Maximum Safe Uniform Load per square foot
(2) Deflection Under Maximum Safe Uniform Load in inches
(3) Maximum Safe Concentrated Load per foot of width
(4) Deflection Under Maximum Safe Concentrated Load

Code word and No.	Size of bars, in.		X	2 ft.	2½ ft.	3 ft.	3½ ft.	4 ft.	4½ ft.	5 ft.	5½ ft.	6 ft.	6½ ft.	7 ft.	8 ft.	9 ft.	10 ft.	11 ft.	12 ft.
	Main	Cross																	
Floid 75	¾x3/16	½x⅛	1	633	405	281	207	158	125	101									
			2	.100	.156	.225	.306	.401	.506	.626									
			3	633	506	422	361	316	281	253									
			4	.080	.125	.180	.245	.320	.405	.499									
Flora 100	1 x3/16	11/16x⅛	1	1125	720	500	368	281	223	180	149								
			2	.075	.117	.169	.230	.300	.380	.469	.567								
			3	1125	900	750	642	563	500	450	410								
			4	.060	.093	.135	.183	.240	.304	.375	.453								
Floer 125	1¼x3/16	11/16x⅛	1	1758	1125	781	574	440	348	281	233	196	167	144					
			2	.060	.093	.135	.183	.240	.304	.375	.453	.540	.633	.735					
			3	1758	1406	1172	1005	879	780	703	639	586	541	502					
			4	.048	.075	.108	.147	.192	.243	.300	.363	.432	.507	.588					
Floak 150	1½x3/16	11/16x⅛	1	2531	1620	1125	827	633	499	405	335	281	240	207	159	125			
			2	.049	.078	.113	.153	.200	.253	.313	.378	.450	.528	.612	.799	1.012			
			3	2531	2025	1688	1446	1266	1125	1013	920	844	779	723	633	563			
			4	.041	.063	.090	.123	.160	.203	.250	.303	.360	.423	.491	.640	.810			
Flout 175	1¾x3/16	11/16x⅛	1	3446	2205	1531	1125	862	680	551	456	383	326	281	215	170	138		
			2	.043	.066	.097	.132	.171	.217	.268	.324	.386	.452	.525	.685	.867	1.071		
			3	3446	2756	2297	1969	1722	1531	1378	1253	1149	1060	984	862	766	690		
			4	.034	.053	.078	.103	.137	.173	.214	.259	.308	.362	.420	.549	.694	.857		
Floze 200	2 x3/16	11/16x⅛	1	4500	2880	2000	1469	1125	889	720	595	499	426	368	281	223	180	149	125
			2	.037	.059	.084	.115	.150	.190	.234	.283	.338	.396	.459	.599	.759	.937	1.134	1.350
			3	4500	3600	3000	2572	2250	2000	1800	1637	1499	1385	1286	1125	1000	900	818	750
			4	.030	.047	.068	.092	.120	.152	.188	.227	.270	.317	.368	.480	.608	.750	.908	1.080
Flong 225	2¼x3/16	11/16x⅛	1	5696	3645	2531	1860	1424	1125	911	753	632	539	465	356	281	228	188	159
			2	.034	.052	.075	.102	.133	.169	.208	.252	.300	.352	.408	.533	.685	.834	1.008	1.200
			3	5696	4556	3797	3255	2847	2531	2278	2071	1899	1753	1627	1424	1266	1140	1035	950
			4	.027	.042	.060	.083	.107	.135	.167	.201	.240	.281	.326	.426	.540	.666	.807	.960

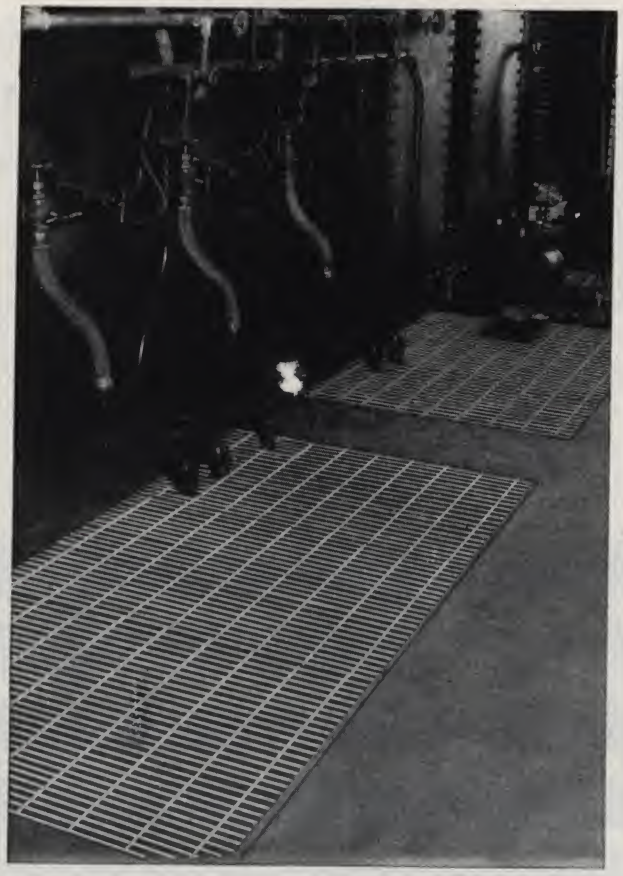
Weight per sq. ft., lb.*				
Finish	WBA	WBB	WBC	WBD
Black	6.00	6.07	6.25	6.77
Galvanized	6.36	6.43	6.62	7.18
Black	7.97	8.08	8.31	9.00
Galvanized	8.45	8.58	8.80	9.54
Black	9.97	10.11	10.40	11.27
Galvanized	10.57	10.72	11.02	11.95
Black	11.96	12.13	12.48	13.51
Galvanized	12.67	12.86	13.23	14.32
Black	13.87	14.04	14.39	15.42
Galvanized	14.70	14.88	15.25	16.34
Black	15.78	15.95	16.30	17.33
Galvanized	16.73	16.91	17.28	18.37
Black	17.70	17.87	18.22	19.25
Galvanized	18.76	18.94	19.31	20.40

*Cross bars are spaced as follows: WBA, 6 in.; WBB, 4½ in.; WBC, 3 in.; WBD, 1½ in.

Note: If ⅛-in. bars are desired instead of 3/16-in., the safe load will be 67% and the weight 70% of the results shown in the table.

Continued on next page

Test Data—In a transverse test of grating by the testing laboratories of Columbia University Walter Bates Grating was listed in the Table of Safe Loads and Deflection to carry a safe, concentrated load of 5062 lb. for a 24-in. width. This piece of grating actually failed at 18,620 lb., 3.67 times the listed strength. The strongest competitive grating of this type tested under the same conditions failed at 12,960 lb.



Ten Advantages of "Copperquad" Floor Grating

(1) Ours is the only grating made from copper bearing rust-resisting steel, which is adapted for all conditions, and particularly where there is an excessive amount of steam or moisture. The inherent rust-resisting quality of the steel, together with a coat of black paint, will give extremely long life without being galvanized or having any other preservative added.

(2) No two pieces of metal come in contact with each other for a space greater than $\frac{3}{16}$ in. Thus reducing rust possibilities.

(3) The mesh is quadrangular. The object in using floor grating is to obtain the maximum amount of light and ventilation; obviously this can be obtained with right angle corners. Hence, the quadrangular mesh.

(4) It can be shipped in sections up to 3 ft. wide, 25 ft. long, which makes low handling installation cost.

(5) Top and bottom edges of the main bars are never severed, consequently the grating is safely reversible, and the bars retain their original beam strength. Cross bars cannot work out or work loose.

(6) The tongue is slightly longer than the space into which it is forced, making the joint very tight.

(7) The groove in the cross bars is slightly smaller than the thickness of the main bar, and is turned up at right angles into permanent position, under great pressure.

(8) Twelve bars per foot of width. The strength is twelve times that of one bar. A $1\frac{1}{4} \times \frac{3}{16}$-in. bar 5 ft. long is good for 23.4 lb. uniform load. Multiply this by number of bars per foot. Walter Bates has 12 bars per ft., 1-in. centers, and is good for 281 lb. See table on opposite page.

(9) Tongue and groove lock joint is absolutely permanent. The grating cannot be taken apart without completely destroying it.

(10) "Copperquad" steel floor grating is copper bearing steel, quadrangular mesh, tongue and groove lock joint, safely reversible, non-slip.

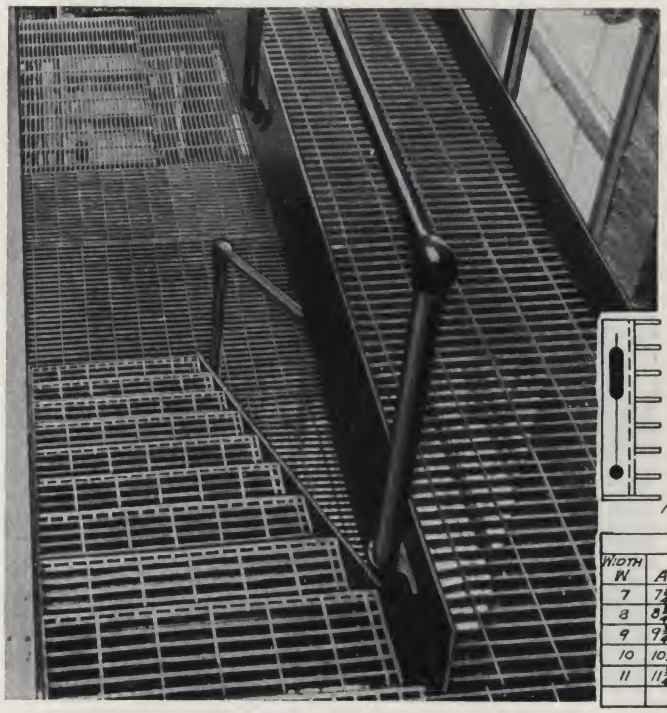
Literature and Inquiries

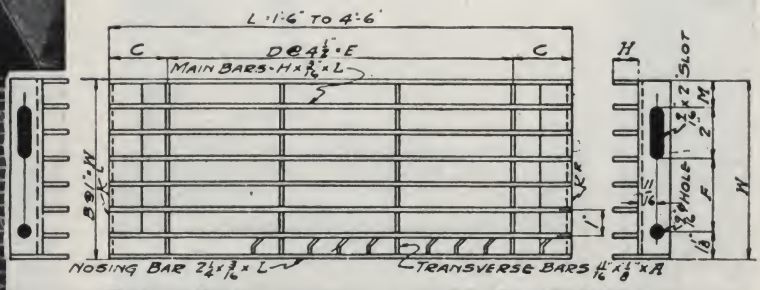
Catalogues on steel floor grating will be mailed upon request. We will quote on grating either painted or galvanized. Your inquiry will receive prompt attention.

Walter Bates Steel Stair Treads

These are made of the same high quality copper bearing steel as used in the steel floor grating. The accompanying illustration clearly shows the distinctly visible nosing—no danger of overstepping the edge of the tread.

Walter Bates Steel Stair Treads have the same characteristics as the Bates Floor Grating and, further, the advantages of the latter when used with it in industrial installations.





TYPE WBB100

WIDTH W	A	B	K_L^R	H	F	M
7	7⅜	7	L-1½ × 1¼ × ⅜ × 0'-7" K_L^R	1	2⅛	1
8	8⅜	8	L-1½ × 1¼ × ⅜ × 0'-8" K_L^R	1	3⅛	1
9	9⅜	9	L-1½ × 1¼ × ⅜ × 0'-9" K_L^R	1	4⅛	1
10	10⅜	10	L-1½ × 1¼ × ⅜ × 0'-10" K_L^R	1	4⅞	2
11	11⅜	11	L-1½ × 1¼ × ⅜ × 0'-11" K_L^R	1	4⅞	3

TYPE WBB125

WIDTH W	A	B	K_L^R	H	F	M
7	7⅜	7	L-1½ × 1¼ × ⅜ × 0'-7" K_L^R	1¼	2⅛	1
8	8⅜	8	L-1½ × 1¼ × ⅜ × 0'-8" K_L^R	1¼	3⅛	1
9	9⅜	9	L-1½ × 1¼ × ⅜ × 0'-9" K_L^R	1¼	4⅛	1
10	10⅜	10	L-1½ × 1¼ × ⅜ × 0'-10" K_L^R	1¼	4⅞	2
11	11⅜	11	L-1½ × 1¼ × ⅜ × 0'-11" K_L^R	1¼	4⅞	3
12	12⅜	12	L-1½ × 1¼ × ⅜ × 1'-0" K_L^R	1¼	4⅞	4

Dimensions of Walter Bates Steel Stair Treads

BLAW-KNOX COMPANY

Steel Grating, Steel Steps and Steel Armoring for Concrete

2074 Farmers Bank Building, PITTSBURGH, PA.

For Sales Offices, see Steel Roof Sheathing Page
For Other Products, see Manufacturers' Index

Blaw-Knox Electroforged Steel Grating and Open Flooring

The advantages of actual (not theoretical) one-piece construction presented exclusively by Blaw-Knox Electroforged Steel Grating will be especially apparent to those who have used, or are using today, ordinary grating which is mechanically assembled. It is a simple structure, electroforged for strength and permanence, marked by an entire absence of loose parts and characterized by an extremely low maintenance cost.

Exclusive Features of Blaw-Knox Electroforged Steel Grating

Non-slip — Perfect traction is afforded by the slightly rough edges of the twisted cross bars which protrude slightly above the surface of the bearing bars.

Greatest Strength—The electroforged one-piece construction—made without rivets, slots, or cuts in the metal—utilizes full strength of the gross amount of metal. The resulting one-piece section has maximum loading capacity per pound.

Longest Life—Because of its design and exclusive method of fabrication Electroforged Grating presents a one-piece construction free from cracks, joints, or crevices of any kind. This also enables Electroforged Grating to be 100% protected by paint or galvanizing, leaving no part exposed to corrosive action.

One-piece Grating—Blaw-Knox Electroforged Grating is manufactured by laying the twisted bars across the top of the bearing bars without slotting or cutting the metal.

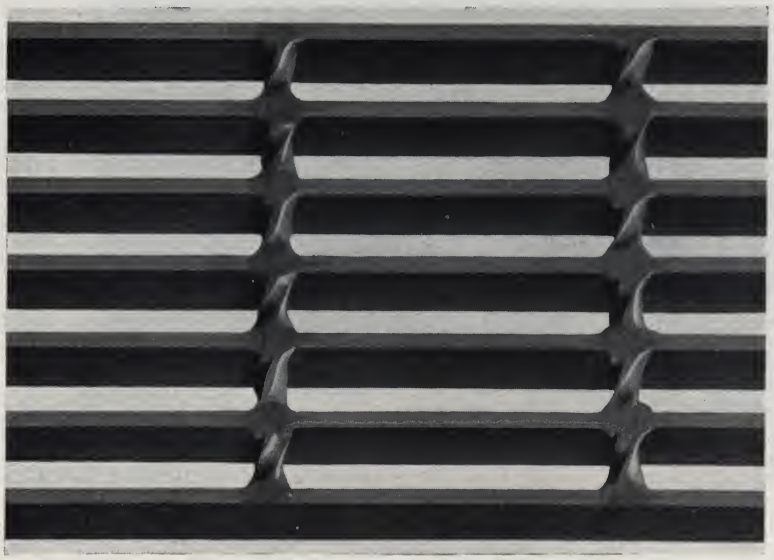
Enormous pressure and resistance welding electroforges the bar into one piece where the metals cross.

Self-cleaning — No acute angles or projections to collect debris.

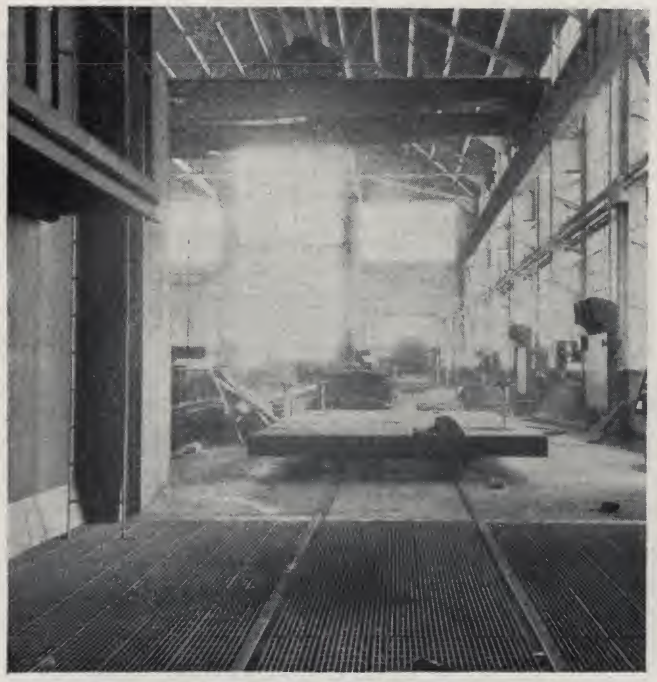
Better Light and Ventilation — The construction of Blaw-Knox Electroforged Grating permits clean-cut rectangular openings.

Maximum lighting and ventilation are assured.

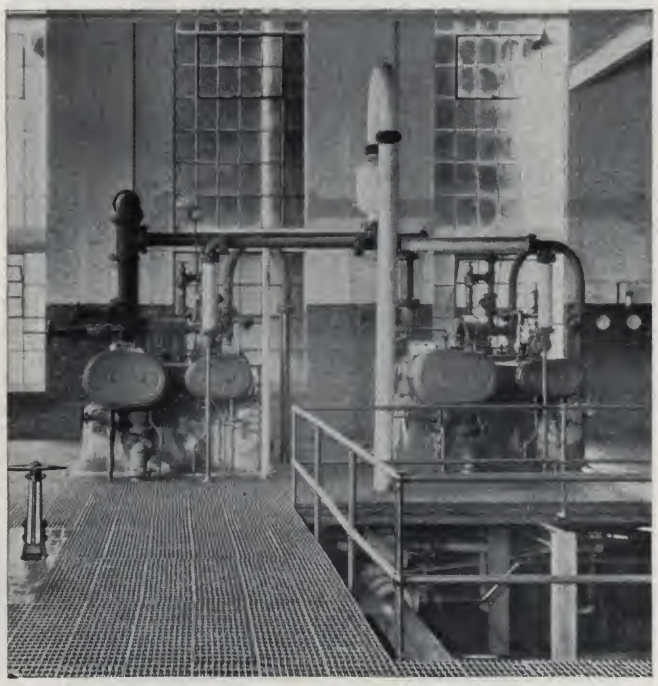
Easily Installed — Installation cost of Blaw-Knox Grating is reduced to a minimum by a very simple and secure method of fastening the grating.



Section of Electroforged Steel Grating
Showing rigid welding and sharp, flat topped bars



Room for Cleaning Castings in Large Plant
Dirt and scale fall through openings to bin below



Floor of Electroforged Grating in Power Station
Non-slip even when oil soaked

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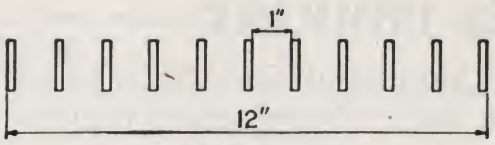
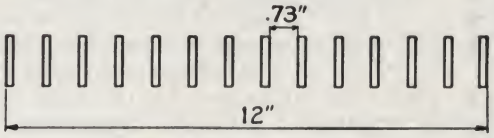


Single Letter Type

11 bars per foot of width. Opening 1x3.75 in.



Double Letter Type

Used where close spacing of bearing bars is desired. 14 bars per foot of width. Opening, .73x3.75 in.

Sizes of Electroforged Gratings

Blaw-Knox grating panels are 12 in. wide. Maximum length of panels 20 ft.

Lengths of stair treads furnished to suit your requirements.

Odd widths of panels as shown in table supplied to fill out necessary dimensions.

Standard cross-bar spacing 4 in. center to center. Spacings of 3, 2½, 2 and 1¾ in. can also be furnished.

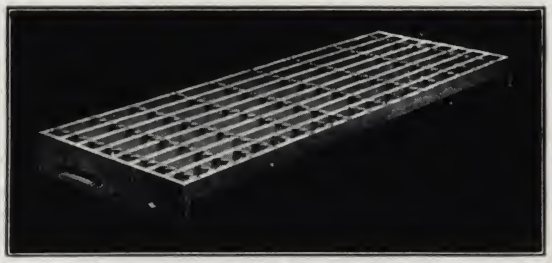
Grating Samples

The most convincing argument for the superior features of Blaw-Knox Electroforged Grating is the grating itself. An actual sample is yours for the asking.

Blaw-Knox Steel Steps

Blaw-Knox Steel Steps are made in accordance with the same principle as Blaw-Knox Electroforged Grating.

The outer edges of these steps are made doubly visible by means of an additional set of cross bars placed between the two outer bearing bars as shown below.



Blaw-Knox Steel Steps

SIZES OF BLAW-KNOX STEEL STEPS

Width	Minimum Length	Sug. Max. Length	A
Type "J"—1x3/16-in. Bars			
6″	1′ 6″	3′ 0″	2½″
7 3/16″	1′ 6″	3′ 0″	4½″
8 3/8″	1′ 6″	3′ 6″	4½″
9 9/16″	1′ 6″	3′ 6″	7″
10 11/16″	1′ 6″	3′ 6″	7″
Type "L"—1¼ x 3/16-in. Bars			
7 3/16″	2′	4′ 0″	4½″
8 3/8″	2′	4′ 0″	4½″
9 9/16″	2′	4′ 0″	7″
10 11/16″	2′	4′ 6″	7″
11 7/8″	2′	4′ 6″	7″

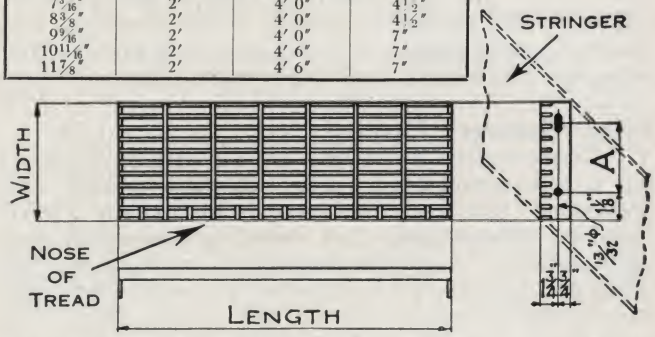


TABLE OF SAFE LOADS, BLAW-KNOX ELECTROFORGED GRATING

Maximum allowable fiber stress 16,000 lb. per sq. in.

"L" = Safe uniform load in lb. per sq. ft. "W" = Safe concentrated load in lb. per ft. of width. "C" = Deflection constant.

Type	Size of Bars		SPACING OF SUPPORTS 2′-0″	2′-6″	3′-0″	3′-6″	4′-0″	4′-6″	5′-0″	5′-6″	6′-0″	6′-6″	7′-0″	8′-0″	9′-0″	Weight Per Sq. Ft.	Type
G	¾″ x 3/16″ Bars	L	516	330	229	168	128	102								5.92	G
		C	.000171	.000418	.000867	.001607	.002762	.004382									
		W	515	412	343	294	258	229									
GG	¾″ x 3/16″ Bars	L	656	420	292	214	163	130								7.35	GG
		C	.000134	.000328	.000672	.001261	.002168	.003438									
		W	656	525	437	375	328	292									
J	1″ x 3/16″ Bars	L	917	587	407	292	229	181	147	121	102					7.68	J
		C	.000072	.000172	.000357	.000677	.001127	.001872	.002755	.004033	.005696						
		W	917	733	611	524	459	408	367	334	306						
JJ	1″ x 3/16″ Bars	L	1163	748	518	372	292	230	187	154	130					9.59	JJ
		C	.000056	.000134	.000280	.000532	.000884	.001526	.002166	.003169	.004469						
		W	1167	934	778	666	584	519	466	425	389						
L	1¼″ x 3/16″ Bars	L	1432	917	637	468	358	283	229	189	159	136	117			9.43	L
		C	.000036	.000089	.000181	.000344	.000587	.000933	.001424	.002085	.002940	.004081	.005444				
		W	1432	1145	956	819	717	636	574	521	478	440	410				
LL	1¼″ x 3/16″ Bars	L	1820	1162	812	597	456	360	292	241	203	173	149			11.82	LL
		C	.000029	.000070	.000142	.000270	.000461	.000733	.001160	.001634	.002305	.003208	.004275				
		W	1820	1456	1213	1040	910	810	726	661	606	560	520				
N	1½″ x 3/16″ Bars	L	2069	1324	920	676	518	409	331	274	229	196	169	129	102	11.18	N
		C	.000021	.000052	.000108	.000200	.000343	.000543	.000834	.001208	.001731	.002359	.003130	.005458	.008750		
		W	2060	1650	1375	1180	1030	916	825	750	687	635	590	515	459		
NN	1½″ x 3/16″ Bars	L	2632	1680	1169	862	660	520	421	350	292	250	212	164	130	14.04	NN
		C	.000017	.000041	.000085	.000157	.000266	.000427	.000656	.000946	.001361	.001850	.002542	.004293	.006865		
		W	2620	2100	1750	1500	1310	1166	1050	953	874	806	749	655	582		
O	1¾″ x 3/16″ Bars	L	2807	1797	1247	917	702	555	449	371	312	266	229	175	139	12.94	O
		C	.000013	.000033	.000068	.000126	.000213	.000343	.000525	.000766	.001087	.001496	.002004	.003443	.005482		
		W	2800	2240	1870	1600	1400	1245	1120	1020	935	862	800	700	624		
OO	1¾″ x 3/16″ Bars	L	3570	2282	1582	1162	893	706	572	473	397	339	291	223	177	16.28	OO
		C	.000011	.000026	.000054	.000099	.000169	.000270	.000412	.000601	.000854	.001174	.001577	.002702	.004305		
		W	3570	2855	2380	2040	1785	1585	1430	1300	1190	1100	1020	892	793		
P	2″ x 3/16″ Bars	L	3668	2348	1628	1195	916	724	588	484	408	347	300	228	180	14.69	P
		C	.000009	.000020	.000046	.000087	.000145	.000231	.000350	.000527	.000730	.001018	.001350	.002315	.003722		
		W	3670	2930	2440	2100	1835	1630	1468	1335	1220	1127	1048	916	815		
PP	2″ x 3/16″ Bars	L	4668	2988	2072	1526	1162	922	749	616	520	442	382	290	230	18.51	PP
		C	.000007	.000017	.000036	.000068	.000114	.000181	.000275	.000414	.000569	.000799	.001060	.001821	.002913		
		W	4660	3730	3105	2665	2330	2060	1866	1696	1555	1434	1332	1166	1037		
Q	2¼″ x 3/16″ Bars	L	4655	2979	2069	1520	1164	920	745	615	517	441	380	291	230	16.43	Q
		C	.000006	.000015	.000038	.000059	.000101	.000161	.000246	.000359	.000510	.000714	.000945	.001607	.002591		
		W	4650	3710	3100	2655	2320	2065	1860	1690	1550	1430	1330	1163	1033		
QQ	2¼″ x 3/16″ Bars	L	5922	3780	2632	1932	1481	1166	948	782	658	562	484	370	293	20.74	QQ
		C	.000005	.000012	.000030	.000046	.000079	.000127	.000193	.000282	.000401	.000560	.000742	.001263	.002004		
		W	5910	4740	3940	3380	2960	2630	2365	2150	1970	1820	1690	1480	1315		

NOTE—Spans to right of heavy line not recommended.

Deflections: To obtain the deflection under any uniform load per square foot on a given span, multiply the load per square foot by the deflection constant "C" from the table for the given span. The result will be the deflection in inches at center of span under the actual load.

ESTABLISHED IN 1902

IRVING IRON WORKS COMPANY

Manufacturers of Open Steel Flooring in Continuous and Paneled Types, Continuous Floor Armoring, Walkways, Safety Steps, and Gratings

Dutchkill Creek and Third Street, LONG ISLAND CITY, N. Y.

Products

IRVING "SUBWAY" CONTINUOUS OPEN STEEL FLOORING; IRVING "SUBWAY" PANELED OPEN STEEL FLOORING; IRVING CONTINUOUS FLOOR ARMORING; "VIZABLEDG SAFSTEPS"; "SAFKAR" CAR STEPS; "SUNWAY," "SUBLIT," "EGGCRATE," "HONEYCOMB," and other forms of steel flooring and grating.

Trade-marks

The trade-mark names "Irvico," "Subway," "Reticuline," "Vizabledg," "Safstep," "Safkar," "Sunway" and "Sublit" are registered in the United States Patent Office, are the exclusive property of this company, and cannot be used legally in connection with any flooring or safety step made by any other manufacturer.

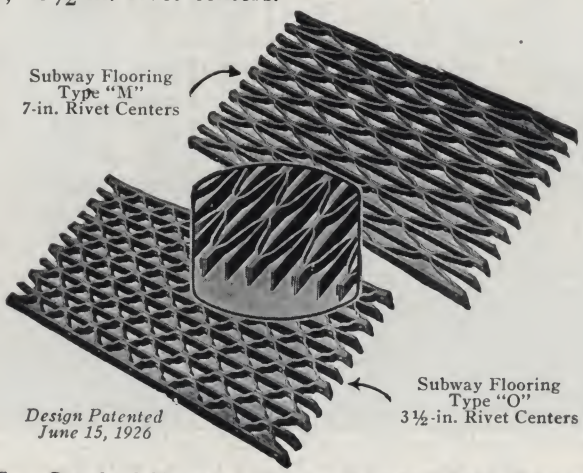
Irving "Subway" Flooring

Construction Features—Irving "Subway" Flooring is a structure made up of alternate straight and "reticuline" bars assembled edge-on and solidly riveted together. The straight bars are of greater depth than the "reticuline" bars; the latter have an elongated "S" crimp and meet the straight bars at almost a right angle. Rivet holes are punched above the neutral axis in the straight bars, each of which is thus supported in the upper chord (where the buckling stress is greatest) by the adjoining "reticuline" bars on either side. Thus the full tensile strength of each member is usefully employed and a trussed structure is formed in which a load concentrated at any point is distributed over a wide area.

Distinctive Irving Advantages—

(1) Maximum load capacity per unit of weight.
(2) Maximum effective lighting and ventilating area.
(3) Minimum opportunity for lodgment of dirt, ash, snow, etc.
(4) All bars absolutely flush on the working face of unit.
(5) All units or panels absolutely flat.
(6) A permanently non-slipping surface.
(7) A superior all-directional traffic surface for trucks, tractors and trailers.
(8) A pleasing pattern of straight and curved lines.

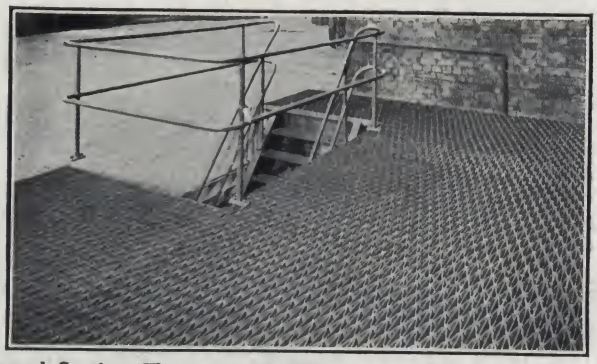
Types—Irving "Subway" Flooring is made in two different types distinguished by the size of the mesh as indicated below—Type "M," 7-in. rivet centers—Type "O," 3½-in. rivet centers.



Two Standard Types of "Irving Subway" Steel Flooring

Irving Continuous Steel Flooring

This is a unified structure, fabricated in unit sections which are assembled on the job by means of rivets in a trussed steel structure made continuous in every direction by means of a patented invisible "Streamline" splice. There are no joints, no division lines, no surface irregularities, no protruding panel edges—a perfect traction surface in every direction, a perfect safety surface for foot traffic and workmen. (Bulletin G-16.)



Central Station Floored with "Continuous" Subway Flooring

Irving Continuous Floor Armoring

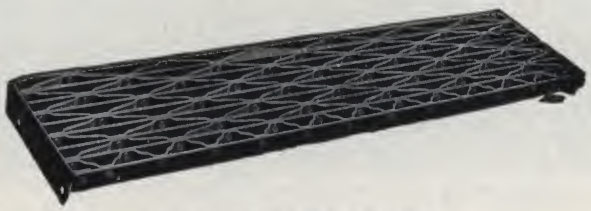
Here Irving Continuous Flooring, in light weight, is anchored in, and bedded flush with, the surface of a floor of concrete, mastic, asphalt or composition—the mesh being filled with the flooring material troweled or rolled flush with the bars. This makes a floor proof against shock, traffic and wear, with a steel armoring continuous in every direction, a perfect traction surface, and no opportunity for breaks or cracks to develop and magnify. (Bulletin K-16.)

Irving Paneled Steel Flooring

This consists of panels or units, in certain standard sizes adapted to cover the required area, assembled on the steel structure of the building and held in place by special fasteners. The panels are not joined together sidewise or endwise. (Bulletin H-16.)

"Vizabledg Safsteps"

These are light all-steel units of standard Type "M" mesh, except that the "reticuline" bar next to the nosing bar has the Type "O" crimp. This abrupt change in mesh forms a visible edge which makes the "Safstep" miss-proof—while the standard Irving mesh makes it slip-proof as well, under all conditions. Made in 24 standard sizes, each self-contained with punched carrier plates for mounting. (Bulletin H-16.)



Irving "Vizabledg Safstep"

Continued on next page

Standard Construction Details of Irving "Subway" Flooring

Material Sizes—Irving standard construction is limited to certain depths and thicknesses of straight and "reticuline" bars on account of standardized fabrication. Deviation from these causes delay and increases the price.

Spacing—Irving standard construction, produced by complicated precision dies and gauges, is necessarily restricted to certain standard patterns and meshes, fixing the spacing between rivets and the spacing between bars. These limitations necessarily fix definitely the widths of panels, etc.

Thus in Irving "M" and Irving "O" the spacing is 1⅛ in. between faces of straight bars, hence panel widths will vary with the thickness of straight bars, the 1⅛ in. between faces remaining constant.

Type "M" 7-in. Center to Center

Type "O" 3½-in. Center to Center

Sizes of Panels—*Widths*—For convenience in fabricating, handling, shipping and installing Irving Flooring, panels are standardized as follows:

¾ and 1-in. depths—maximum width about 24 in.

1¼ to 2¼-in. depths—maximum width about 14 in.

The table below gives the over-all widths of all possible panels from 3⅞ in. up for Irving "M" and "O."

PANEL SIZES USING STRAIGHT BARS

Size of bar, in.	Width of panel, in.																		
⅛	3⅞	5⅛	6⅜	7⅝	8⅞	10⅛	11⅜	12⅝	13⅞	15⅛	16⅜	17⅝	18⅞	20⅛	21⅜	22⅝	23⅞		
3/16	4⅛	5 7/16	6¾	8 1/16	9⅜	10 11/16	12	13 3/16											

Note: Add ⅛ in. to above widths to allow for rivet heads on side of panels.

Lengths—Lengths can be anything up to 12 ft. but for convenience to all should preferably be kept 6 ft. or under so far as possible. Maximum length for "Continuity" panels is 7 ft. 11¼ in. center to center of "Streamline" splice.

Paint—One shop coat black graphite paint of high quality is our only standard. Deviation from this causes delay and increases price.

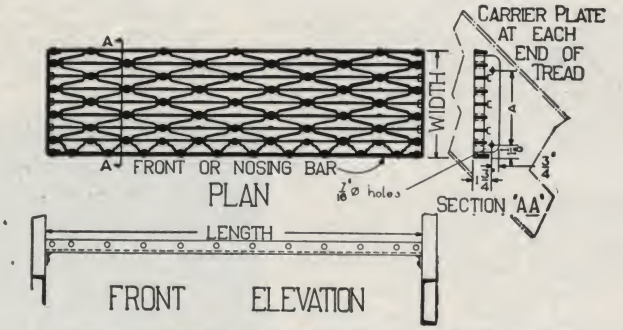
Fastening Devices—Standard quotations always include the necessary fastening devices according to our standard details.

Orders—All orders should designate the type, symbol and depth to avoid mistake; thus Irving "Subway" Flooring, Type "M," 3S, 1¼ in. deep.

Layouts—We urge that in ordering you send in dimensioned layout of supporting structure and limiting outline of flooring area to be covered and let us make the "Irving Flooring Layout" for your approval.

Standard Sizes and Dimensions of Irving "Vizabledg Safsteps"

Type "M" mesh—7 in. center to center—is used in all sizes.



Irving "Vizabledg Safstep" Dimension Diagram

"VIZABLEDG SAFSTEP" NO. 1—SPECIFICATIONS

Straight bars.....in.	¾x⅛	Nosing bars.....in.	1 x¼
"Reticuline" bars.....in.	½x⅛	Carrier bars.....in.	2½x⅛

Width, in.	Length, ft.-in.			Distance A, in.
5⅜	1–7	1–10½	2–2	2½
7⅞	1–7	1–10½	2–2	4½
10⅜	1–7	1–10½	2–2	7

"VIZABLEDG SAFSTEP" NO. 2—SPECIFICATIONS

Straight bars.....in.	1 x⅛	Nosing bars.....in.	1¼x¼
"Reticuline" bars.....in.	¾x⅛	Carrier bars.....in.	2½x⅛

Width, in.	Length, ft.-in.		Distance A, in.
5⅜	2–5½	3–½	2½
7⅞	2–5½	3–½	4½
10⅜	2–5½	3–½	7

"VIZABLEDG SAFSTEP" NO. 3—SPECIFICATIONS

Straight bars.....in.	1¼x3/16	Nosing bars.....in.	1½x¼
"Reticuline" bars.....in.	1 x⅛	Carrier bars.....in.	2½x⅛

Width, in.	Length, ft.-in.			Distance, A in.
8¼	3–7½	3–11	4–6	4½
10⅞	3–7½	3–11	4–6	7
12 3/16	3–7½	3–11	4–6	7

TABLE OF SAFE LOADS (UNIFORMLY DISTRIBUTED) FOR IRVING "SUBWAY" RETICULINE FLOORING
Maximum allowable fibre stress 16,000 lb. per sq. in.

Type of mesh	Symbol and depth	Specification: Straight bars	Specification: "Reticuline" bars	Weight, per sq. ft., lb.	Safe Loads for Various Spans (Lb. per sq. ft.): *	1'6"	2'0"	2'6"	3'0"	3'6"	4'0"	4'6"	5'0"	5'6"	6'0"	7'0"	8'0"	9'0"
To be specified in ordering either Type "M" or "O" (See diagrams)	1S ¾"	¾"x⅛"	½"x⅛"	5.4	L C	695 .000045	390 .00011	250 .00069	173 .00143	127 .00265	97 .0040	77 .0055	63 .0083			NOTE: Spans to right of heavy line not recommended		
	2S 1"	1"x⅛"	¾"x⅛"	7.6	L C		695 .00012	445 .00029	308 .0006	227 .00112	173 .0019	138 .00305	112 .00465	93 .0068				
	2SA 1"	1"x3/16"	¾"x⅛"	9.4	L C		1040 .00008	665 .00019	460 .0004	340 .00075	260 .00127	206 .00204	167 .0031	140 .00454	116 .00645			
	2SA 1¼"	1¼"x⅛"	1"x⅛"	9.8	L C			700 .00015	480 .00031	358 .00057	273 .00097	215 .00155	175 .00235	143 .00348	120 .0049			
	3S 1¼"	1¼"x3/16"	1"x⅛"	11.9	L C			1100 .0001	730 .00021	535 .00038	401 .00065	325 .00105	265 .0016	215 .0024	185 .0033	135 .0062	100 .0105	80 .0169
	4SA 1½"	1½"x⅛"	1"x⅛"	10.9	L C			1020 .000087	707 .000178	516 .000333	396 .00057	314 .00091	253 .00138	210 .00203	173 .00287	130 .0053	100 .00903	77 .0145
	4S 1½"	1½"x3/16"	1"x⅛"	13.5	L C			1530 .00006	1050 .00012	775 .00023	595 .00038	470 .00061	380 .0009	315 .0014	265 .0019	202 .0036	150 .0061	115 .0097
	5S 1¾"	1¾"x3/16"	1"x⅛"	15.0	L C			2060 .00004	1435 .00008	1050 .00014	810 .00024	635 .00038	520 .00058	425 .00085	360 .0012	265 .0022	200 .0038	160 .0061
	6S 2"	2" x3/16"	1"x⅛"	16.8	L C			2700 .00003	1895 .00005	1375 .00009	1055 .00016	830 .00025	675 .00039	560 .00057	470 .0008	345 .0015	265 .0026	210 .0041
	7S 2¼"	2¼"x3/16"	1"x⅛"	18.3	L C			3460 .00002	2400 .00004	1765 .00007	1350 .00011	1065 .00018	865 .00027	715 .0004	600 .00057	440 .0011	340 .0018	265 .0029

*L—Safe uniform load in lbs. per sq. ft. C—Deflection constant.

Deflections—To obtain the deflection under any uniform load per square foot on a given span, multiply load per square foot by the deflection constant "C" from the table for given span. The result will be the deflection in inches at center of span under full load.

Concentrated loadings—Note that above table is for "uniformly distributed loads." Many cases of concentrated loads, wheel loads, etc., occur and it is vital that the flooring should be designed to carry these concentrations. Be sure and give us concentrated loadings in your inquiry.

Heavy loads—Occasionally there are open flooring requirements calling for very heavy loading, especially heavy wheel concentration. These, of course, call for heavy "special" designs and we are prepared to design and fabricate an Irving "Subway" flooring that will meet your requirements.

KERLOW STEEL FLOORING COMPANY

Manufacturers of Metal Products
Ventilating Metal Flooring

JERSEY CITY, N. J.

TELEPHONE
BERGEN 8932, 8933

CABLE ADDRESS
"KERLOW—JERSEY CITY"
CODES: Western Union and Bentleys

ALLENTOWN
ATLANTA
BALTIMORE
BINGHAMTON
BIRMINGHAM
BOSTON
BUFFALO
CHARLESTON
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SALT LAKE CITY
SAN FRANCISCO
SEATTLE
TOLEDO
TULSA
UTICA
OTTAWA, CANADA

Products

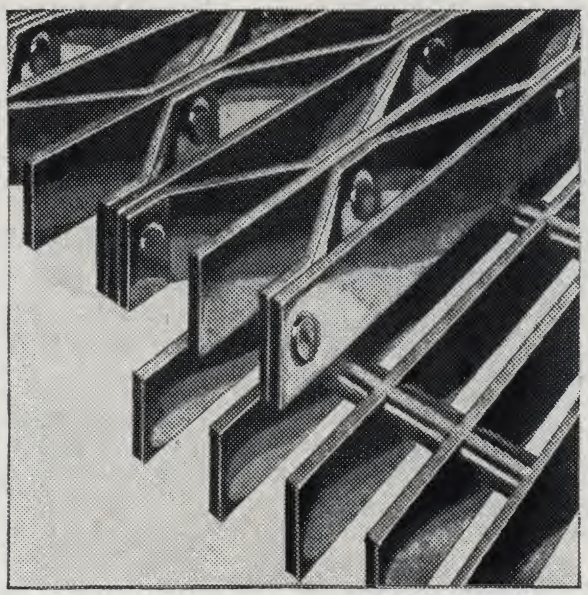
KERLOW METAL FLOORING (open) (both Reticulated and Rectangular Designs) for:

Industrial and Marine Gratings and Safety Steps; Tank, Freight, Refrigerator and Passenger Car Gratings; Ice and Coal Bunker Gratings; Dry Kiln Floors and Racks; Motor Truck Radiator Guards; Heavy Duty Manhole Covers; Steel Tower Platforms; Plate Floors and Steel Construction.

Also Floor and Highway Armoring, and Monolith Floor Slabs.

"KERLOW"

TRADE-MARK REG. U. S. PAT. OFFICE



Description

Kerlow Metal Flooring is a superior, all-purpose fabricated floor, fireproof, ventilating and comfortable to walk and work upon. This superiority is due to the following factors, i.e. economy (the first cost is less and the last), long life (outlasts many floors of other materials), strong (metal bars on edge permanently and closely united), clean (self-cleansing, need not be swept), and safe (slipproof in all directions).

There are two general types of Kerlow Floors, Series V (reticulated in design) having triangular openings and Series F (rectangular in design), having rectangular openings.

Both Series V and F types of grating flooring are standardized in thirteen different thicknesses, of several bar spacings according to the traffic and work conditions to be met.

Series V Floors—Include the double bearing bar reversible type of grating as well as the single bar non-reversible type.

Series F Floors—Have single bearing bars and while this type of grating has rectangular openings, it is second only to Kerlow Series V Floors.

Specifications

The following two alternate paragraphs will usually cover all conditions and one or the other should be included in all general specifications, under gratings:

All floor and stair step material shall be that manufactured by the Kerlow Steel Flooring Company, Jersey City, N. J.

Or as an alternate to the above.

All floor and stair step material shall be of reversible open metal flooring (bars on edge) having nineteen full depth bearing bars to the square foot, permanently secured to each other at 6¾-in. intervals.

It is often advisable to be explicit and to list under "Work Included" in the general grating flooring specifications, the various floor areas to be constructed of Kerlow Metal Flooring together with the prescribed live load. When more than one size of flooring is used, list the areas to be covered with each size, separately.

It is sometimes advisable to specify under "Steel Construction" that *all steel work for the support of the Kerlow Metal Floors shall be designed to carry the prescribed live and dead loads;* and that the steel contractor shall provide steel framing around all openings larger than 12 in. square.

Engineering Service

The KERLOW STEEL FLOORING COMPANY retains competent engineers, experienced in floor, stair and steel construction. To secure the most practical and economical type flooring for any particular project, we strongly recommend consultation with the home office or with our local sales office, at the time the project is under design.

A word to your local Kerlow representative will place our engineering department at your disposal, promptly and without obligation.

Kerlow Safety Steps

A strong, light, sanitary industrial stair and ladder tread. A rectangular section of Kerlow Open Flooring—provided with an oversize impact nosing bar and with the Kerlow (patented) Stair Step Carrier at each end. These step carriers are so designed, that the step can be bolted to the stair stringers, despite variations in the stringer hole spacing.

These steps are made to fit any and all stair conditions. They are also made in twenty-four standard sizes at slightly reduced cost.

Submit step size and quantities for prices.

Metals

The ramifications of modern industry have created diversified plant conditions, and where the use of chemicals having corrosive effects upon certain metals predominate, the use of such metals in grating flooring have been extremely hazardous. Obviously, such floors will not stand up nor have the life that should reasonably be expected.

These difficulties can easily be avoided by the use of the proper ferrous or non-ferrous alloy flooring as produced by the Kerlow Company. Suitable recommendations will gladly be made, upon request.

In Ordering

There is nothing complicated in the purchase of Kerlow, the real industrial floor. Give size and location of supports together with the anticipated loadings. Upon receipt of this information, prices and proper recommendations will promptly be made, together with suitable guarantees, to your satisfaction.

Cost and Ease of Setting

In the past, the cost of Kerlow Metal Floors have been slightly higher than that of some lighter types. This was to be expected due to the extra built-in life and strength of Kerlow Floors. However, due to manufacturing improvements, costs today are well within the general price range.

Kerlow Products are all exceedingly easy to set. The metal floors, for instance, are shipped in convenient sized panels, for installation as a sectional or continuous floor. Skilled labor is not needed; no tools are required other than wrench and screwdriver.

TELEPHONE
HEMLOCK 5300-1

WILLIAM F. KLEMP COMPANY, INC.

Manufacturers of Diamond Grating
6624-6638 South Melvina Avenue, CHICAGO, ILL.

AGENTS IN
LEADING CITIES

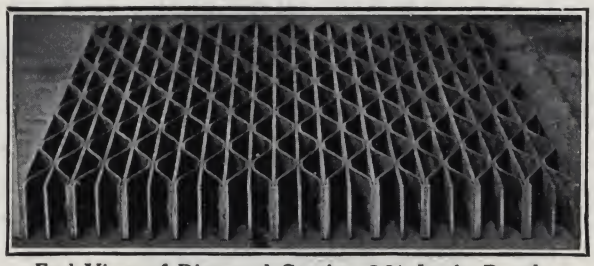
Diamond Grating

The highest quality "Machine-Made," Diamond Grating eliminates the uncertainties of the human element.

Materials—Made from flat, mild rolled steel bars ranging in size from ¾ to 3 in. in width, and ⅛ and $\frac{3}{16}$ in. in thickness.

Construction

Securely constructed by riveting together alternate straight and bent bars of equal depth making the grating reversible. The specially designed dies used in forming the bent bar make a long and perfect bearing at all riveted points. The $\frac{17}{64}$-in. holes punched in the neutral axis of both bent and straight bars leave a $\frac{1}{64}$-in. clearance for ¼-in. rivets. These are equally set up by machine, making a solid unit of unusual strength, built upon the truss principle—permanently rigid. Our method prevents inaccurate punching of rivet holes which often distorts the rivets.



End View of Diamond Grating 2¾ In. in Depth

Results of Our Modern Methods Permit $\frac{1}{64}$-in. Clearance for Our ¼-in. Rivets

No Loose Ends—Each piece of Diamond Grating is so constructed, regardless of its length, that all bars are flattened out and riveted at the ends.

Diamond Grating for Floors

Made up from the engineer's drawing to proper sizes for individual requirements.

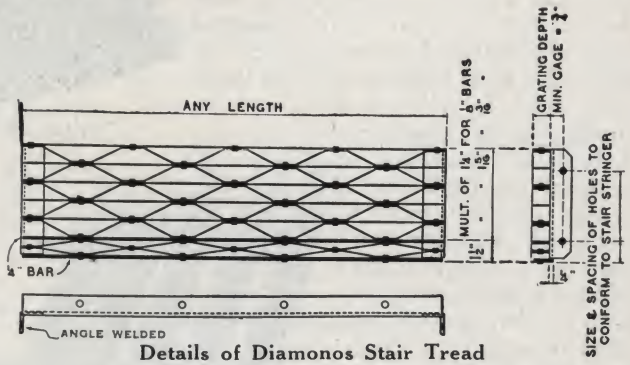
Cutouts made, where necessary to fit around pipes, columns, etc., insuring a perfect and complete job.

Diamonos Stair Treads

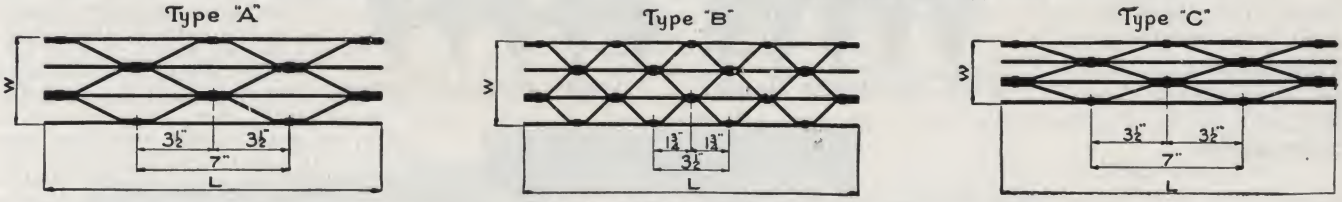
Meet the requirements of the most exacting engineers. Same high standard of quality as in Diamond Grating.

Nosing—Two ¼-in. bars spaced 1½ in. center to center. These are separated by ⅛ in. bent bars to form a diamond, and are machine riveted. The outside or toe bar is ¼ in. deeper than the grating in tread, while the second ¼-in. bar is same depth as grating.

Support angles are 1½x1½x$\frac{3}{16}$ in., punched to conform with holes in stair stringers. These angles are electrically welded to the grating in a jig.



Details of Diamonos Stair Tread
Made from either type and any depth of grating



Details of Diamond Grating

L varies to suit any length. W for type A and B in multiples of 1¼ in. for ⅛-in. straight bars and $1\frac{5}{16}$ in. for $\frac{3}{16}$-in. straight bars. For type C ⅞ in. for ⅛-in. straight bars, $\frac{15}{16}$ in. for $\frac{3}{16}$-in. straight bars, plus thickness end bar and rivet heads

TABLE OF SAFE LOADS*

Fiber stress allowed for straight bars 16,000 lb. per sq. in.—plus a conservative percentage for bent bars
W—Load in pounds per sq. ft. Dc—Deflection constant in inches

Type and Specification			2'6"	3'0"	3'6"	4'0"	4'6"	5'0"	5'6"	6'0"	6'6"	7'0"	7'6"	8'0"	8'6"	9'0"	9'6"	10'0"	11'0"	12'0"	Weight
A1	Str. Bar ¾"x1⅛"...	W	322	223	164	126	99	80													6.2
	Bent Bar ¾"x1⅛"...	Dc	.00043	.00089	.00164	.0028	0045	0069													
A2	Str. Bars 1" x1⅛"...	W	571	397	292	224	176	143	118	99	84	73									8.3
	Bent Bars 1" x1⅛"...	Dc	.00018	.00038	.0007	.00118	.00189	0029	.00424	.006	.00826	.00924									
A2X	Str. Bars 1" x$\frac{3}{16}$"...	W	704	489	359	275	216	176	146	122	104	90	78								10.3
	Bent Bars 1" x1⅛"...	Dc	.00015	.0003	.00056	.00096	.00154	.00235	.00344	.00486	.0067	.009	.0119								
A3X	Str. Bars 1¼"x1⅛"...	W	976	630	463	355	280	244	187	158	134	116	101	89	78						10.4
	Bent Bars 1¼"x1⅛"...	Dc	.00009	.000'9	.00035	.0006	.00095	.00145	.00213	.003	.00417	.0056	.00738	.00952	.01215						
A3	Str. Bars 1¼"x$\frac{3}{16}$"...	W	1114	774	514	436	344	279	230	186	165	142	124	109	97	86					12.9
	Bent Bars 1¼"x1⅛"...	Dc	.00007	.00015	.00028	.00048	.00078	.00119	.00174	.00246	.00339	.00456	.006	.00778	.00986	.01242					
A4X	Str. Bars 1½"x1⅛"...	W	1327	922	677	518	410	332	274	231	196	169	147	130	115	103	92	83			12.5
	Bent Bars 1½"x1⅛"...	Dc	.00005	.00011	.0002	.00034	.00054	.00083	.00122	.00172	.00237	.00319	.0042	.00539	.00694	.00872	.01083	.0133			
A4	Str. Bars 1½"x$\frac{3}{16}$"...	W	1625	1129	829	635	502	406	336	282	241	207	180	159	140	125	113	102	84		15.5
	Bent Bars 1½"x1⅛"...	Dc	.00004	.00009	.00016	.00024	.00045	.00068	.00099	.0014	.0019	.0026	.0034	.0044	.0057	.0071	.0088	.0108	.0157		
A5X	Str. Bars 1¾"x1⅛"...	W	1834	1274	935	717	566	459	379	319	271	234	203	179	159	142	127	115	95		14.5
	Bent Bars 1¾"x1⅛"...	Dc	.00003	.00007	.000'2	.0002	.00034	.00052	.00075	.00107	.00147	.00197	.00261	.00338	.0043	.0054	.0067	.0083	.012		
A5	Str. Bars 1¾"x$\frac{3}{16}$"...	W	2239	1556	1143	875	691	560	463	389	331	286	249	219	194	173	153	140	114	96	18.0
	Bent Bars 1¾"x1⅛"...	Dc	.00003	.00005	.0001	.000'7	.00028	.0004	.0006	.0009	.0012	.0016	.0022	.0028	.0035	.0044	.0055	.0067	.0099	.0139	
A6	Str. Bars 2" x$\frac{3}{16}$"...	W	2961	2057	1511	1157	914	740	612	514	438	378	329	289	256	228	205	185	153	126	20.6
	Bent Bars 2" x1⅛"...	Dc	.00002	.00004	.00007	.00011	.00018	.00028	.00041	.00059	.0008	.00106	.00142	.00183	.00234	.00293	.00365	.00448	.00656	.00929	
A7	Str. Bars 2¼"x$\frac{3}{16}$"...	W	3793	2634	1935	1482	1171	948	784	658	561	484	421	370	328	293	262	237	196	159	23.1
	Bent Bars 2¼"x1⅛"...	Dc	.00001	.00003	.00004	.00008	.00013	.00019	.00028	.0004	.00055	.0007	.00097	.00126	.00161	.00203	.00253	.0031	.00452	.00644	

Notes: The percentage of fiber stress, allowable for the bent bars was determined after extensive tests had been made by the Armour Institute of Technology upon the different types, depths and spans of grating.

To obtain the deflection, multiply the load per square foot by the constant Dc.

*On account of excessive deflections we do not recommend spans to right of heavy lines.

THE TRI-LOK COMPANY

Manufacturers of "Tri-Lok" Ventilated Steel Flooring and Tread

PITTSBURGH, PA.

NATIONAL DISTRIBUTORS

DRAVO-DOYLE COMPANY

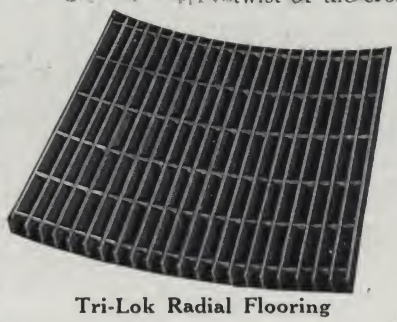
Dravo Building, PITTSBURGH, PA.

Products

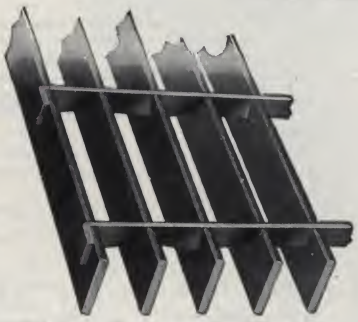
TRI-LOK OPEN STEEL FLOORING in rectangular, diagonal and radial designs; TRI-LOK SAFETY STEPS made with either rectangular or diagonal flooring; TRI-LOK CONCRETE ARMORING and TRI-ARMO; T-TRI-LOK—self-supporting heavy duty flooring.

Construction

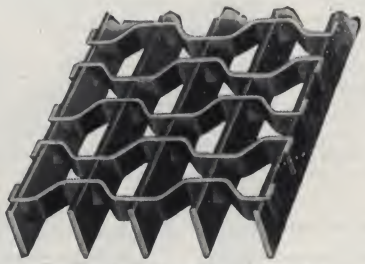
Only two parts are used—bearing bars which carry the load and have curved slots punched above the neutral axis, and cross bars pressed into these slots to distribute the load. In assembling, the bearing bars are set on edge with the slots uppermost and with these slots in adjacent bars curving alternately in opposite directions. Each bar is held in a rigid steel frame, insuring perfect alignment. Cross bars of the same depth and width as the bearing bar slots are then forced into these slots under a 1600-ton press. This completes the triple twist and turn lock, and the enormous pressure insures a perfectly smooth floor.



Tri-Lok Radial Flooring



Tri-Lok Rectangular Flooring



Tri-Lok Diagonal Flooring

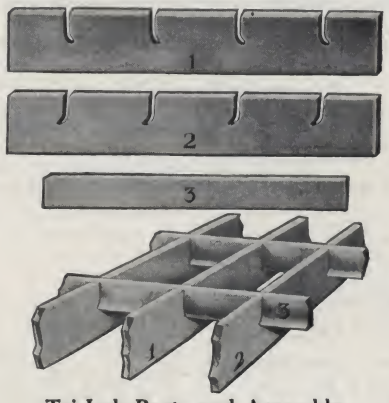
Advantages

No rivets, bolts or welds are required, thus eliminating the possibility of loose or defective joints. Laboratory tests have proved that the Tri-Lok joint remains unimpaired beyond the yield point, and is therefore stronger than the steel itself.

Tri-Lok joints have no acute angles or rivet heads to collect refuse and moisture, and consequently do not rust out.

The rigid lock at the joint permits the cross bars to act also as cross braces, giving perfect distribution of a concentrated load over a wide panel.

Tri-Lok panel size, 2 to 3 ft. wide, reduces installation costs to a minimum.



Tri-Lok Parts and Assembly

(1) Bearing bars slotted for friction lock in one direction.

(2) Alternate bearing bars slotted for friction lock in opposite direction.

(3) Cross bars locked by twist in both directions under enormous hydraulic pressure

Tri-Lok rectangular flooring is approximately 90% open, and remains so, an advantage in illumination and ventilation.

Tri-Lok Concrete Armoring and Tri-Armo

Tri-Lok Armoring consists of Tri-Lok flooring panels with bearing and cross bars projected to give a staggered effect, thereby interlocking with adjoining panels. The panels are treated with a hot lye wash to eliminate grease and provide complete adhesion with the concrete. After concrete or other surface material is poured, the armoring panels are placed side by side and sunk flush with the surface by walking over or tamping, resulting in minimum installation time and cost. No fasteners are required since the twist of the cross bars provides a positive anchor.

A wide variety of bar spacing can be furnished. All wear and impact is absorbed by the steel bars and cracks cannot pass from one rectangle to another. The surface is smooth and at the same time slipless because of the square edges of the steel bars.

Tri-Armo is an armoring of loose bars designed for field assembly. It can be furnished at a price below Tri-Lok Armoring.

T-Tri-Lok

T-Tri-Lok panels, filled with concrete or other material, are used for bridge or building floors, railroad crossings, loading platforms or where a self-supporting structure under heavy loads is required.

T-Tri-Lok is manufactured with the triple lock under a 1600-ton press exactly the same as other Tri-Lok products, except that the main bearing bars are tees instead of flat bars. The strength of these tees is increased by the wedge action from forcing the cross bars into place, and the load carrying capacity of the panel is further increased from two to five times by the short columns of concrete under compression between the T-bars.

The staggered bearing and cross bars make the floor integral and monolithic. No forms of any kind are required, consequently, the time and cost of installation are reduced to a minimum. The dead load on the entire structure is only one-fourth to one-third that of the ordinary floor construction, as the thickness is only one-fourth that of the usual floor.

Tri-Lok Safety Steps

The Tri-Lok Safety Step consists of a panel of rectangular or diagonal Tri-Lok Flooring, of any desired width, length, depth, and bar spacing, provided with a nosing bar and carriers attached at each end. These carriers have holes for bolting to the stringers, so that each step is complete, ready for installation. Kick plates or risers can be attached to the back of the step when desired. Being made from Tri-Lok Flooring, it has all the advantages resulting from the Tri-Lok Joint.

The Tri-Lok Safety Step is slipless, has a visible edge, is perfectly clogless, preventing the accumulation of rust and dirt, and is exceptionally strong.

Tri-Lok Continuity Bar

The Tri-Lok Continuity Bar consists of an angle threaded transversely through the bearing bars of adjacent sections of flooring, producing one continuous span, and resulting in a perfectly smooth floor, distribution of concentrated loads between adjoining panels, greater rigidity, and less need for weight in the supports.

ESTABLISHED 1926

UNIVERSAL MANUFACTURING COMPANY

Manufacturers of Open Steel Flooring, Grating and Grating Treads

TELEPHONE (DETROIT)
CHERRY 3747

NOVI, MICH.

Products

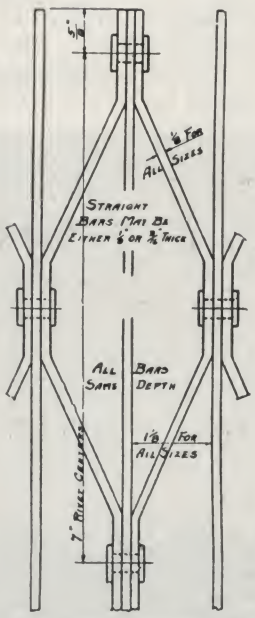
UNIVERSAL GRATING and TREADS, CONCRETE ARMORING, RADIATOR GUARDS and OPEN STEEL FLOORING for all purposes where heat, sunlight or air is required to pass either up or down through a surface that must be *strong* and yet not too thick.

Standard Construction of Universal Grating

Universal Grating is made of alternate straight and bent bars of equal depth riveted together every 7 in. along the straight bars. The straight bars are spaced 1¼ in. on centers when they are ⅛ in. thick and $1\frac{5}{16}$ in. on centers when they are $\frac{3}{16}$ in. thick. This leaves a maximum open space of 1 in. between any two bars and still gives approximately 80% open area for light and air to pass through.

The rivet holes are punched $\frac{1}{64}$ in. larger than the rivets and the rivets are driven by air hammers *while* the bars are being pressed together. This insures the rivet filling the hole and keeps the edges of the bars flush top and bottom, and does *not* allow the rivet to mushroom out between the bars and leave a space for moisture to collect and rust the grating.

Both straight and bent bars are made the same depth to keep the grating flush top and bottom so that the grating is reversible, or in other words, cannot be accidentally installed upside down, as is often the case where the bent bar is not as deep as the straight bar.



Sectional Drawing of Universal Grating Showing Construction and Dimensions

Universal Grating is always made to order to fit conditions, but sections of grating should not be made longer than 6 ft. nor wider than 2 ft., unless absolutely necessary, as the sections get too unwieldy to handle, both in the manufacture and installation.

Stock Sizes

We carry the following sizes of 1x⅛-in. (symbol U2) grating in stock at all times:

Sections 24 in. wide x 48 in. long
Sections 24 in. wide x 60 in. long
Sections 24 in. wide x 72 in. long

Bulletin

Send for Catalogue F-41 for full particulars or send us sketch showing size and location of supports and area to be covered together with loads to be carried, and we will make the layout for your approval and quote prices.

Endorsement

Universal Grating is endorsed by the Department of Labor and Industry of the State of Michigan.

Paint and Fastening Devices

Universal Grating is always shipped with one coat of shop paint and necessary fastening devices.

Extra Heavy Grating

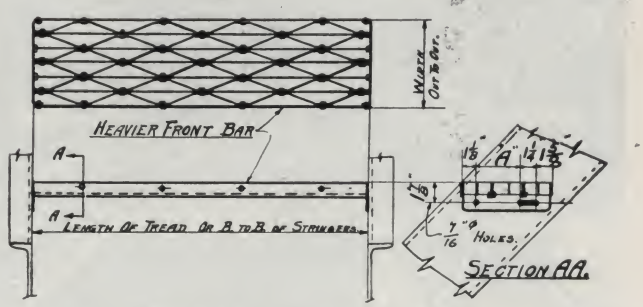
Grating can be made with straight bars thicker than $\frac{3}{16}$ in. so long as the bent bars are not more than ⅛ in.

Prices and carrying capacity on especially heavy grating are gladly sent you on request.

SAFE LOADS

Safe Load Uniformly Distributed in Pounds per Square Foot with 16,000 Pounds Allowable Fiber Stress

Weight Per sq.ft.	Symbol	SPECIFICATIONS		2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"	5'-0"	5'-6"	6'-0"	7'-0"	8'-0"
6½	U1	Straight Bar	⅛"x ½"	500	322	224	167	126	100	80	64	Spans to right of heavy line not recommended		
		Formed Bar	⅛"x ¾"											
8½	U2	Straight Bar	⅛"x1 "	886	566	390	286	220	175	145	115	100		
		Formed Bar	⅛"x1 "											
10½	U3	Straight Bar	⅛"x1¼"		890	616	455	346	275	220	185	155	112	
		Formed Bar	⅛"x1¼"											
13½	U4	Straight Bar	⅛"x1½"		1130	786	580	446	350	283	235	195	145	112
		Formed Bar	⅛"x1½"											
12½	U5	Straight Bar	⅛"x1½"		1350	936	690	530	420	340	280	234	175	132
		Formed Bar	⅛"x1½"											
16	U6	Straight Bar	⅛"x1½"		1730	1190	882	675	535	432	358	300	220	165
		Formed Bar	⅛"x1½"											
21½	U7	Straight Bar	⅛"x2 "		2900	2000	1480	1130	898	725	600	500	370	285
		Formed Bar	⅛"x2 "											



Details of Universal Treads

Universal Treads can be made in practically any lengths and widths, and are always shipped complete with punched carrier plates on the ends ready for fastening to stringers

BLAW-KNOX COMPANY

Manufacturers of Floorgard—Steel Armoring for Concrete Floors and Pavements

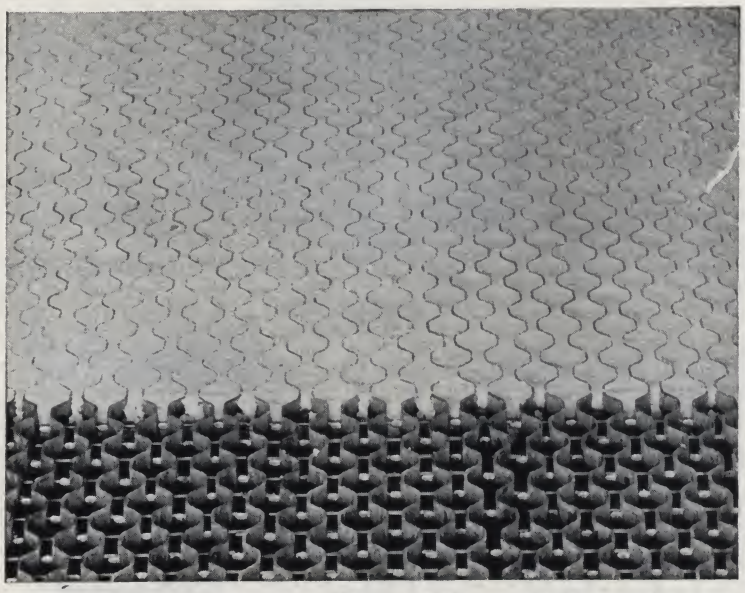
2074 Farmers Bank Building, PITTSBURGH, PA.

For Sales Offices, see Steel Roof Sheathing Page
For Other Products, see Manufacturers' Index

Floorgard—Steel Armoring for Concrete Floors and Pavements

Floorgard or Blaw-Knox floor armoring is a strengthening and protecting mat of steel mesh, put together easily, quickly and cheaply, without the use of tools, reinforcing the surface of the floor by taking the entire wear, and furnishing a really satisfactory surface which will last indefinitely.

Floorgard is made up of steel strips carefully formed into a regular pattern, which when placed together, form a series of separate rectangles of proper size to meet the conditions under which a given floor must work. These steel strips are set on edge as shown in accompanying illustrations. Small, short, circular tie rods are inserted in a horizontal position, through holes in the middle of the strips. These tie rods act as carrying members carrying one strip to another strip, as well as tying the entire structure into one steel mat.



Floorgard Partly Concreted—Used in Reflooring a Modern Factory

Floorgard Makes a Smooth and True Surface—An industrial floor armored with Blaw-Knox Floorgard has a smooth and true surface. The entire area of steel mesh is one unbroken unit, perfectly level at all points, making one of the strongest and best industrial floors ever developed.

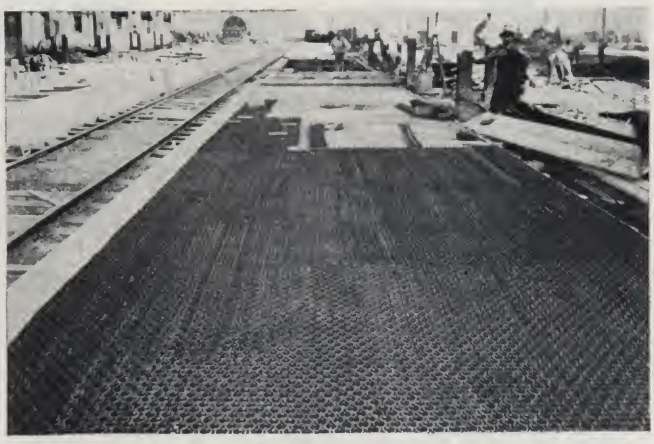
It must be realized that Blaw-Knox Floorgard is not a system for reinforcing concrete, but is actually a means for making a floor having all the wearing qualities of steel, plus the smoothness, elasticity, resiliency and foot ease of softer materials. Here we have a floor laid out in steel squares, but so arranged that pressure or impact applied to one square is transmitted to all surrounding parts of the floor. There is no question of individual weakness or of little individual blocks of concrete in any part of a Blaw-Knox Floor, because when the Floorgard is filled, the floor is monolithic in character and each square or rectangle is part and parcel of the entire floor body. In addition, the concrete is reinforced and securely anchored to the armoring by the horizontal rods passing through the steel strips.

No Tools—No Drawings Required—The construction is of such a nature that it can be formed to meet any possible floor requirement. It will be noted in the illustration that there are small steel lugs between adjacent strips of Floorgard at the points where the tie rods go through the steel strips. These lugs act as anchors to keep the steel strips in the plastic material, and also as separators between the strips avoiding any possibility of rust due to contact of steel. There are no acute angles to cause the formation of thin, easily broken fins of concrete.

Pavegard (Flooring for Pavements)

Pavegard is another name identifying Blaw-Knox steel armoring with its use in connection with strengthening roads, streets, alleys, courtyards, bridges, bridge approaches and other forms of pavement which are ordinarily subject to extremely heavy wear.

Typical Blaw-Knox Floorgard Installation



Blaw-Knox Floorgard—Steel Backbone

FOUNDED 1849

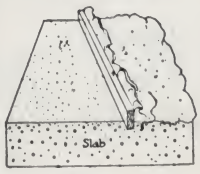
SNEAD & COMPANY

Self-anchoring ArmorGrids for Concrete and Asphalt Floors (Snead Patents)

TELEPHONE
MONTGOMERY 5-6200

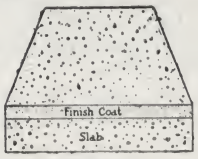
92 Pine Street
JERSEY CITY, N. J.

How to Install in Concrete



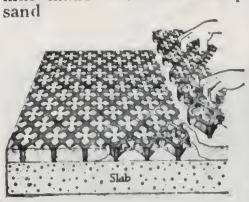
First

Screed off slab to true level surface, exact depth of grid below finished floor level



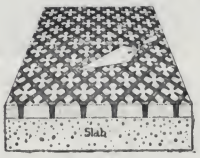
Second

When slab or leveling coat has partially set, flow on surface coat of rich 1:2 mix made with fine sharp sand



Third

Press grids into surface coat matching pattern and allowing ⅛-in. clearance between grids. Bottom grids firmly on slab



Fourth

Screed off excess grout, float in thoroughly to fill all voids and trowel smooth. Finished grout should be flush with, or about $\frac{1}{16}$ in. higher than, top surface of grid

Products

SNEAD SELF-ANCHORING ARMORGRIDS for FLOORS.

For pages on Library Bookstacks, Shelving and Steel Partitions, see Manufacturers' Index.

ArmorGrids Eliminate Floor Repairs

Under grinding truck wheels, banging boxes and trunks, rolling barrels and milk cans, the dropping of heavy castings and severe traffic conditions of every sort, the best floor surfaces are in need of constant repairs, which are expensive and necessitate costly delays to production.

Snead ARMORGRIDS eliminate the floor repair problem. Set in cement or asphalt, they armor the floor, carry the load and receive the shocks. They have been in wide use for 18 years, and *during this time no installation of Snead grids ever had to be renewed, even under the hardest service.*

Snead ARMORGRIDS do not break, work loose or wear slippery. They bond perfectly with the floor mass, hold it down and keep it intact. They distribute heat strains and keep asphalt from flowing. They prevent spalling and dusting of concrete. They present a smooth-running surface, and they wear forever.

Where Snead ArmorGrids Are Used

For railroad terminals, warehouses, paper mills, publishing houses, repair shops and service stations, dairies, foundries and industrial plants of every type; for platforms, driveways, receiving and heavy storage areas, traffic aisles, ramps, and for spaces around machines, furnaces, vats and elevators; in old buildings for all floor repair work.

Permanent Repair for Wood Floors—ARMORGRIDS in asphalt make an extremely satisfactory and permanent repair for wood floors.

How to Install in Asphalt Mastic—Prepare underflooring as above and use a hot mix not less than 350° F. with no particles of aggregate over ¼-in. diameter. Bring asphalt $\frac{1}{16}$ to ⅛ in. over grids and use a second rubber after filling with clean sharp sand.

Note—Any grid can be shaped for odd-dimensioned areas, drains, etc., with a hack saw, cold chisel and hammer.

A Few of Many Satisfied Users

Automobile Manufacturers
Buick Motor Car Co.
Durant Motor Co.
Ford Motor Co.
Mack International Motor Co.
Pierce Arrow Motor Car Co.

Chemical Industries
Colgate & Co.
Electric Storage Battery Co.
Solvay Process Co.
Viscose Company

Hardware and Metal Products
American Cable Co.
American Can Co.
American Hardware Corp.
Continental-Can Co.
General Electric Co.
Hyatt Roller Bearing Co.
Irvington Smelting & Refining Co.
National Lead Co.
A. Schrader's Sons, Inc.
U. S. Government Mint
Yale & Towne Mfg. Co.
Brown & Sharpe Mfg. Co.

Paper, Printing, Publishing
Art Gravure Corp.
Detroit Sulphite Pulp & Paper Co.
Doubleday, Page & Co.
Nelson Doubleday, Inc.
New York Telegram
New York World
Oxford Paper Co.

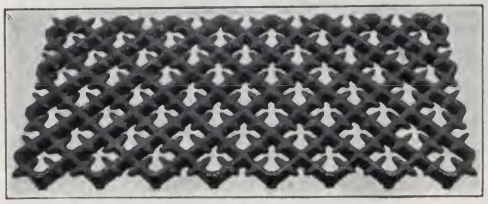
Warehouses, etc.
Frederick Loeser & Co.
H. W. Johns-Manville Co.

Dairies and Cold Storage Plants
Borden's Farm Products Co.
Brooklyn Bridge Freezing & Cold Storage Co.
Brown-Bailey Condensed Milk Co.
Collar City Creamery Co.
Consumers Dairy Co.
Dairymen's League Co-op. Assn.
J. M. Horton Ice Cream Co.
Keystone Dairy Co.
Merchants Refrigerating Co.
National Cold Storage Co.
M. H. Renken Dairy Co.
Sheffield Farms Co.
Walker Gordon Laboratories
Reid Ice Cream Co.

Food Products
Armour & Co.
Corn Products Refining Co.
Fleischmann Co.
General Baking Co.
C. F. Mueller (Macaroni)
Runkel Bros.
Schaeffer Brewing Co.
Wm. Wrigley, Jr.

Railroads, Public Service, etc.
Brooklyn-Manhattan Transit Co.
Brooklyn Union Gas Co.
Pennsylvania Hotel (Service Dept.)
Pennsylvania R. R.
U. S. Government Post Office, N. Y.

Rubber Products
B. F. Goodrich Rubber Co.
Goodyear Rubber Insulating Co.
Manhattan Rubber Co.



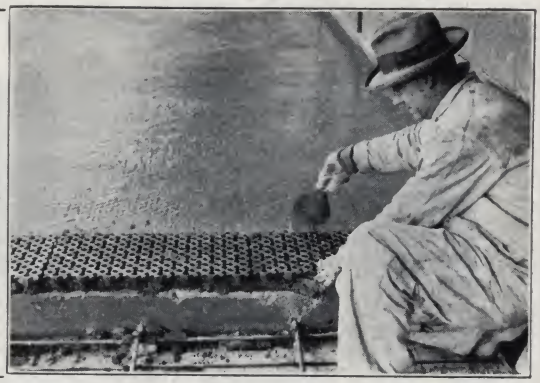
No. 20 General Purpose Armor

Right:

3350 sq. ft. No. 20 Snead ARMORGRID—Chas. R. Hedden Co., Newark, N. J., Contractor—installed in March 1929 for Merchants Refrigerating Co., Jersey City, N. J.

After testing many floor materials, No. 20 Snead Grids were selected as most economical per foot, per year, by the owner of this railroad platform, one of the largest refrigerating companies in the country.

All of this company's plants now have Snead Grid protection.



DIMENSIONS, WEIGHTS AND DISPLACEMENT

Grid No.	Length, in.	Width, in.	Area, sq. ft.	Effective armor, per cent total area	Openings, in.	Rib depth, in.	Over-all depth, in.	Rib thickness, surface, in.	Rib spacing, ctr. to ctr., in.	Weight approx., lb.	Finished floor aggregate displaced, per cent
10 Lightweight	24	12	2	41	¾	½	⅝	¼	2⅛	10	21
20 General purpose	24	12	2	41	¾	1	1¼	¼	2⅛	20	21
30 Heavy duty	24	12	2	41	1	1¼	1¾	⅜	2⅞	30	21

AMERICAN PRESSED STEEL CO.

Diamond Pattern Rolled Steel Floor Plates

Commercial Trust Building, PHILADELPHIA, PA.

AGENTS AND WAREHOUSE STOCKS IN VARIOUS CITIES

"The Original Floor Plate with Raised Diamonds"

NEVERSLIP floor plates are rolled from open hearth steel in two patterns—raised diamond pattern and straight corrugated (ribbed) pattern—under the original Linden patents. NEVERSLIP floor plates have been in use over 30 years.

Widely used for floors and stairways in buildings, boiler and engine rooms, powerhouses, factories and ships, also on bridges, fire escapes, cellar doors, trench covers, etc., where structural strength combined with lightness is required for a safe and durable surface.

NEVERSLIP floor plates are furnished in thickness ⅛ to ¾ in. Also especially light NEVERSLIP plates can be furnished Nos. 12 and 14 gauge. In these light plates the pattern is one-half the size of that on the standard pattern plate.

Catalogue and samples on request.

TRADE MARK

NEVERSLIP

The Floor Plate with "Perfect Diamonds"

NEVERSLIP floor plates have no pockets which will permit accumulation of dirt and water and they can be readily cleaned.

Great Structural Strength

NEVERSLIP floor plates have a tensile strength of 55,000 to 70,000 lb., an elastic limit of about 30,000 lb. and a reduction of area or percentage of ductility of 40% to 60%.

Non-slipping and Durable

The raised diamonds of NEVERSLIP floor plates are high and have four square edges.

The surface of the diamonds is approximately flat, providing an even non-slipping surface with maximum wear.

The corrugated pattern also has straight square edges which likewise provide safety and durability.

Application

Wood floors or planking—plates are fastened by lag screws or by ordinary wood screws (occasionally by carriage bolt with lock nuts and washers). On steel work, stairways, etc., by bolting through the supporting members. On new concrete floors, stairways, etc., arrangements should be made to lay floor plates flush, secured to screw anchors, to expansion bolts, or to wood blocks set flush in the concrete.

Protection for Bridge Flooring

The placing of two lanes of floor plates 24 in. wide, spaced normal gauge of vehicles for the entire length of the bridge directly over the planking, eliminates maintenance cost in reflooring and strengthens the entire bridge. The floor plates overcome vibration, chatter, rising spikes and planks so dangerous to automobile traffic.

Trench Cover and Ladder

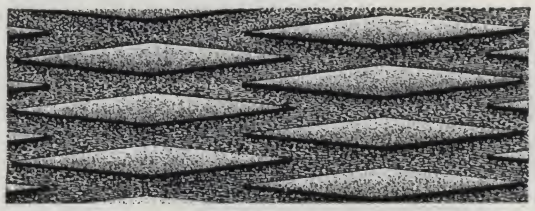
Bridge Traffic Lane

Tread and Walkway

STANDARD PATTERNS, SIZES AND WEIGHTS NEVERSLIP ROLLED STEEL FLOOR PLATES

Notes: Larger and thicker plates can be furnished if desired.
Thickness is measured through body of plate, exclusive of diamond or rib.
Weights are approximate and vary according to size of plate.

Diamond Pattern



Thickness, in.	Width, in. (Length, in.) 20	24	30	36	42	48	54	60	Weights per sq. ft., lb.
⅛	144	144	144	144	144	120	...	...	7.75
5/16	240	240	240	192	144	144	...	...	8.75
¼	240	240	240	240	240	192	180	144	11.25
5/16	240	240	240	240	240	192	192	144	13.75
⅜	240	240	240	240	240	192	192	144	16.25
7/16	240	240	240	240	240	192	192	144	19.00
½	240	240	240	240	192	192	144	144	21.50

Ribbed Pattern

Thickness, in.	Width, in. (Length, in.) 20	24	36	42	48	54	60	Weights per sq. ft., lb.
⅛	144	144	144	144	120	120	...	9.00
5/16	240	240	192	144	144	120	...	9.75
¼	240	240	240	240	192	180	144	12.25
5/16	240	240	240	240	240	192	180	14.75
⅜	240	240	240	192	192	192	180	17.25
7/16	240	240	240	240	192	180	144	20.00
½	240	240	240	240	192	160	144	22.50

POTTER MANUFACTURING CORPORATION

107 West Washington Street, CHICAGO, ILL.

Product

POTTER TUBULAR SLIDING TYPE FIRE ESCAPE—inspected by the Underwriters' Laboratories, Inc., and listed as standard.

Potter Tubular Fire Escape

Designed especially for schools, hospitals, orphanages, homes for aged, insane asylums, etc., also for various industrial purposes where quick exit is desired. It consists of a copper-bearing galvanized sheet steel straight tube with entrances from room through doors equipped with panic bolt hardware and exit from horizontal section at ground level. Supporting brackets every three or four sections. The incline of the tube for the school type escape is about 30° and for hospital type about 38° to horizontal.

The Potter Tubular Fire Escape is available for buildings up to five stories in height. Can be built inside of new buildings.

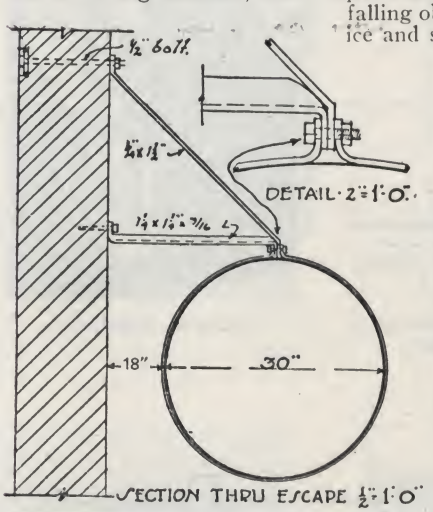
More than 3000 installations in the United States and Canada.

Advantages

It is safe, rapid, strong, durable and economical.

It is entered direct from the room, without the necessity of going out onto a platform, thus permitting quicker exit.

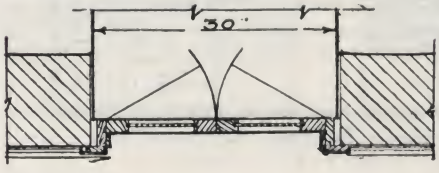
There is no possibility of any one who uses it getting hurt. Slipping, falling, stumbling, pushing and confusion are all eliminated. Being enclosed, the occupants are fully protected from falling obstacles, flames, smoke, ice and snow.

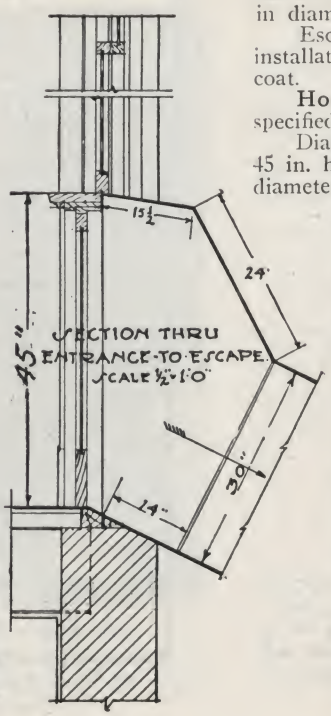


Sizes

The school type for two-story buildings is 30 in. in diameter; for three-story buildings it is 30 in. in diameter from the third floor and 36 in. in diameter from the second floor to the ground.

The hospital type is 36 in. in diameter. This size is recommended for hospitals, as it will accommodate bed-ridden patients on mattress.





Lower End of Hospital Type Escape

Specifications

School Type—Entrance to the escape to be 30 in. wide, 42 in. high; sections to be 30 in. in diameter and not more than 38 in. long and have 1¼x⅛-in. angle iron bands riveted to each end and be joined together by bolting the outside faces of the angle iron rings together with ¼x1-in. stove bolts. A channel iron band is placed over the top of the angle iron bands to make the joint watertight. The elbow shall have a sweep of 8 in. The easement or lower end breaks from the 30° angle to horizontal, is about 6 ft. long, flares from the 30 in. diameter to oval shape 36 in. high by 30 in. wide and rests on a concrete base 16 in. high. The incline of the tube is about 30°.

The lower entrance for the double opening escape is the same size as the upper entrance. The increase in diameter from 30 in. to 36 in. is made in the "Y" joint where the lower entrance connects into the main tube.

Escape is secured to the building with brackets, at least one set for every four sections or fraction thereof, exclusive of the entrance, elbow and easement. Entrance on inside of building to be closed with double doors 15 in. wide, 42 in. high, equipped with panic bolt hardware, operated with push bars on each door, door to swing into the entrance of the escape. An all-metal entrance unit—including doors, casing, threshold, etc.—can be furnished at a slight additional cost.

A horizontal swing bar shall be placed near the top of the entrance, just outside the door, for the occupants to grasp with hands when entering the escape. Swing bar to be ¾ in. in diameter.

Escapes shall be painted one coat in factory and, when installation has been completed, they shall be painted a second coat.

Hospital Type—Same as for school type, excepting as specified below.

Diameter of tube to be 36 in. Entrance shall be 40 in. wide, 45 in. high at inside wall line of building and flare to 36 in. diameter at the outer extremity. No increase in diameter is made where additional floors are connected into the tube. Elbow shall have a sweep of 40 in.

The easement, or lower end, breaks from 38° angle to horizontal and is about 9 ft. long. The easement rests on a concrete base about 4 in. high. The incline of the tube is about 38° to horizontal.

Complete detailed specifications on request.

LOGAN CO.

Spiral Slide Escapes

500 North Buchanan Street
LOUISVILLE, KY.

ATLANTA OFFICE, Bona-Allen Building MEMPHIS OFFICE, 63 South Third Street
REPRESENTATIVES IN PRINCIPAL CITIES

Products

LOGAN SPIRAL SLIDE ESCAPES for use on office buildings, apartments, hotels, schools, orphanages, hospitals and institutions.

Facilities

A long established firm, equipped to execute contracts in any part of the country. We erect the escape complete.

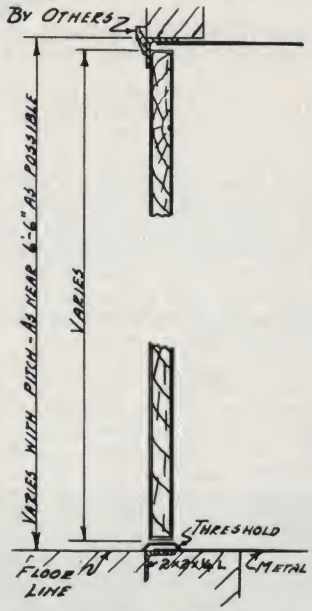
Advantages of the Spiral Slide Escape

Has an exit capacity three times greater than that of an ordinary stairway, but uses only 40% as much floor space.

The cost compares very favorably with pressed steel stairs. In many cases the spiral escape is much cheaper.

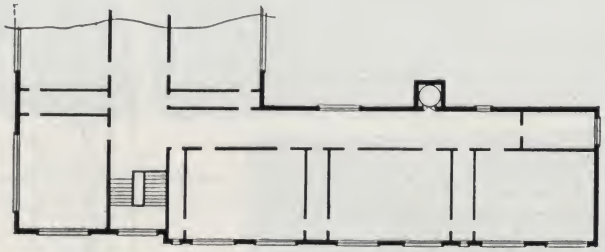
There are no steps, consequently there is no chance for stumbling or falling.

Escape can be entered from many floors at the same time. There is no acceleration, therefore escape can be used on thirty-story buildings just as safely as on one or two stories.

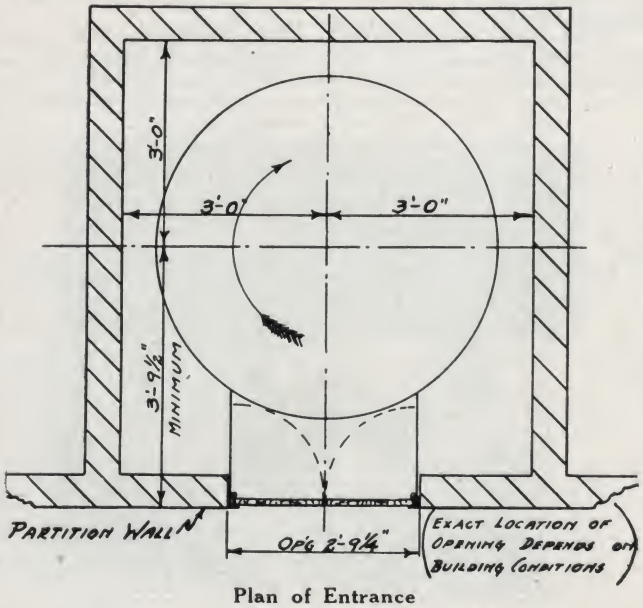


Section Through Entrance, Inside Installation

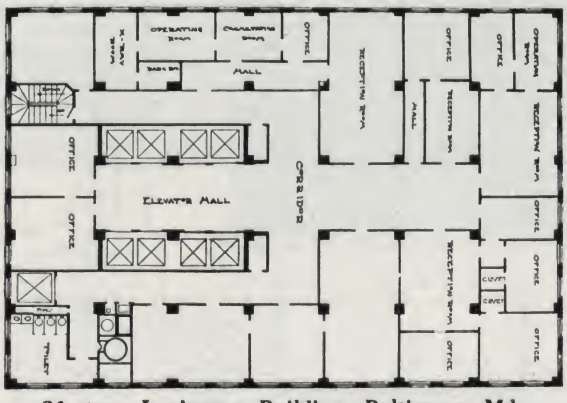
Outside Installation



Valena C. Jones School, New Orleans, La.



Plan of Entrance



21-story Lexington Building, Baltimore, Md.
PARKER, THOMAS & RICE, Architects

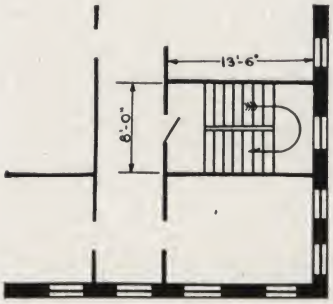
Continued on next page

Installations

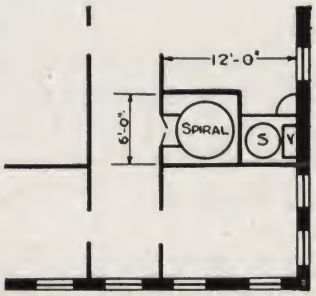
Space was saved by using only one stairway and a Logan Spiral, in these installations.

Citizen's National Bank
GRAHAM, ANDERSON, PROBST & WHITE, Architects

Building & Loan Building, South Bend, Ind.
AUSTIN & SHAMBLEAU, Architects



MINIMUM FOR 44' STAIR-108 SQ. FT.



LOGAN SPIRAL - 39 SQ. FT.

These sketches compare space required. Note the difference in extra rentable floor space made available by the spiral slide.

Typical Entrance
Inside installation with double doors

Hospital Escape
Made 7 ft. in diameter, which handles patients on a standard 36-in. mattress—"No injury even to the worst hospital case"

Specifications

The fire escape shall be the Logan Spiral Slide Escape made by LOGAN Co., Louisville, Ky. It shall be placed upon a concrete foundation.

The escape proper shall be entirely of steel, 5 ft. in diameter, placed as shown on plans, and shall have one entrance at each floor above the first.

The cylinder shall be of No. 12 U. S. Standard gauge sheet steel, for the first 18 in.; the next 6 ft. of No. 14 gauge, and the remainder of No. 16.

The spiral slide shall be of No. 16 gauge galvanized sheet securely attached to a center core of 3 in. core I. D. standard black pipe.

Entrance doors shall be wood core metal covered, in pairs, equipped with single action spring hinges. (Omit this paragraph on outside installations.)

"Doors can be equipped with panic bar locks at additional expense—these provide protection against falling through entrance doors."

Exit doors shall be one leaf opening outward and provided with brass automatic inside latch with touchplate to operate by the pressure of the smallest child.

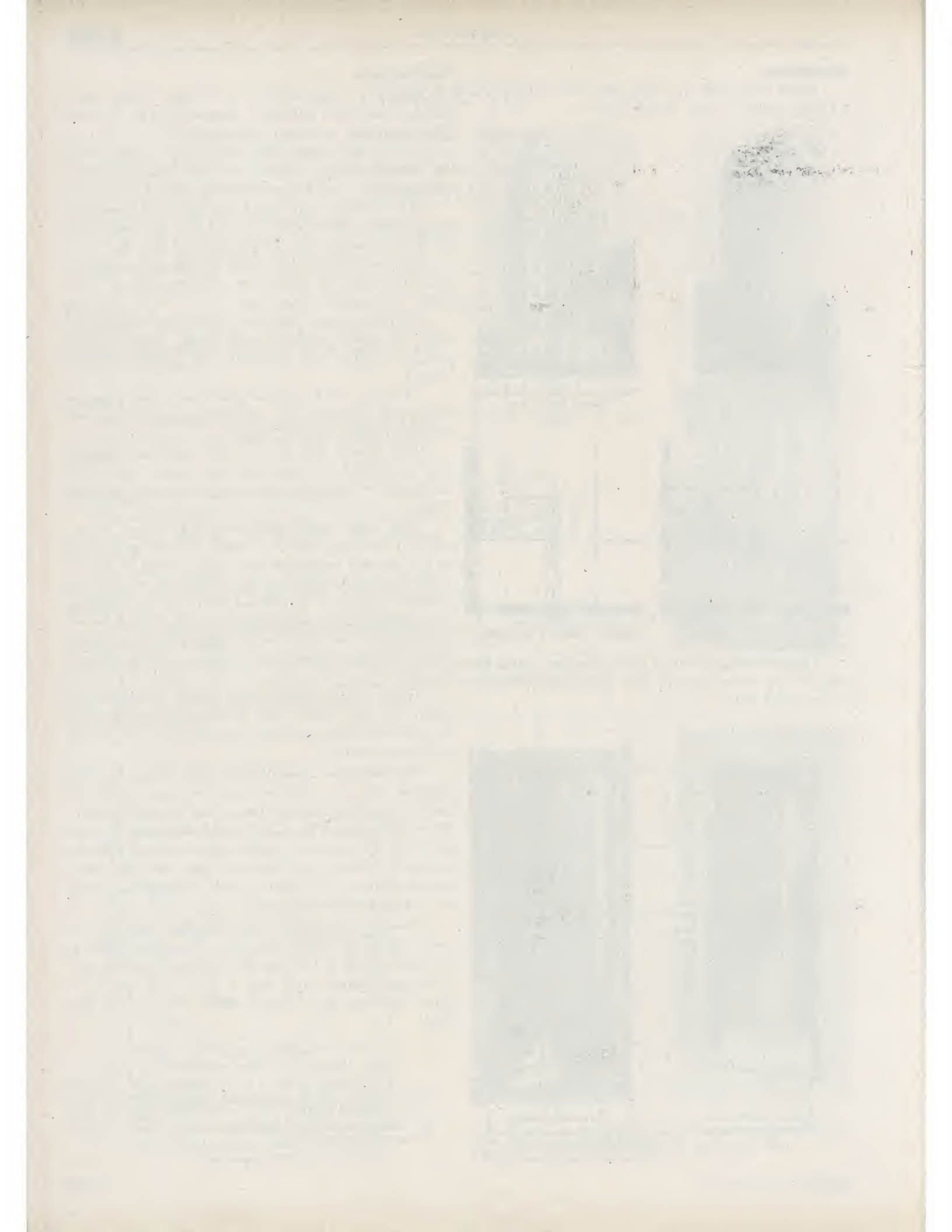
The entire escape shall be manufactured in assembled sections about 7 ft. high, with an angle ring at the top and bottom of each section, shall be set up at the factory to insure proper fitting, and each section properly marked to correspond with a setting diagram to be furnished by manufacturers. There shall be no projections of any sort on the upper surface of slide; all rivets being recessed and all edges of sheets ground smooth.

Entire escape except slide, which is galvanized, shall have one coat of best mineral paint at factory, and sufficient additional paint furnished to give a second coat after erection.

For Exterior Installations Add These Specifications—The roof shall be conical in shape of No. 16 gauge projecting not less than 4 in. beyond cylinder. Runway floor shall be of perforated sheet steel not less than No. 14 gauge on suitable angle framing with an enclosed vestibule provided at each entrance with entrance doors in two leaves each, arranged to swing in, and provided with springs.

Near the second or third story floor line and for each two stories above this point, the escape shall be securely braced to the building by a band and tie rod extending through wall and a strut of 3 in. I. D. pipe with cast iron bearing shoes for cylinder and wall.

Note: Hospital escape is 7 ft. in diameter. Material sizes given are sufficient for a 65-ft. high escape, 5 ft. in diameter. On higher inside installations, brackets are provided to rest on floor construction. On higher exterior installations, heavier sheet steel is used. Escape weighs 100 lb. a vertical foot in the 5 ft. diameter.



LANDSCAPING
FENCING
GENERAL WIRE WORK

Acorn Wire and Iron Works....B2006–2009
Allen-Drew Co., Div. of Babcock-Davis Corp....B1996
American Fence Construction Co....B1978–1980
Anchor Post Fence Co....B1972–1975
Atlas Fence Co....B1976–1977
Badger Wire & Iron Works....B2010–2013
Bright, H. V....B1997
Cincinnati Iron Fence Co....B1984–1985
Consolidated Expanded Metal Cos....B2005
Cyclone Fence Co....B1986–1987
Dayton Greenhouse Mfg. Co....B1940
Dubois Fence & Garden Co., Inc....B1966–1969
Fiske, J. W., Iron Works....B1981–1983
Foley Greenhouse Mfg. Co....B1942–1943
Garden City Plating & Mfg. Co....B2014
Habitant Shops, Inc....B1965
Hitchings & Co....B1941
Howe Ornamental Iron, Inc....B2015
Jones, L. E., Wire & Iron Works....B2016
King Construction Co....B1944–1945
Lord and Burnham Co....B1946–1951
Lutton, William H., Co....B1952–1959
Page Fence Assn....B1988–1990
Perey Mfg. Co., Inc....B1998–1999
Pitt, William R., Composite Iron Works....B2018–2019
Reeves, Robert C., Co....B1970–1971
Skinner Irrigation Co....B1964
Snow, W. A., Iron Works, Inc....B1960–1961
Stewart Iron Works Co., Inc....B1992–1995
Taylor & Dean....B2017
Thompson Mfg. Co....B1962–1963
Vulcan Rail & Construction Co....B2020–2023
Western Wire & Iron Works, Inc....B2024–2025
Wickwire Spencer Steel Co....B1991
Woven Wire Work Div. of National Assn. of Ornamental Iron and Bronze Mfrs....B2000–2004

DAYTON GREENHOUSES AND CONSERVATORIES

Manufactured by

THE DAYTON GREENHOUSE MFG. COMPANY

DAYTON, OHIO

Products

DAYTON CONSERVATORIES, SOLARIUMS, SWIMMING POOL ENCLOSURES, COMMERCIAL GREENHOUSES, SECTIONAL GREENHOUSES, and VENTILATING and HEATING EQUIPMENT for greenhouses.

Also Sludge Bed Covers, Boilers and Heating Equipment.

Skilled workmen erect complete projects.

For our page on Window Operators see Manufacturers' Index.

Dayton Conservatory with Palm House in Center and a Wing on Each Side

Details of Construction

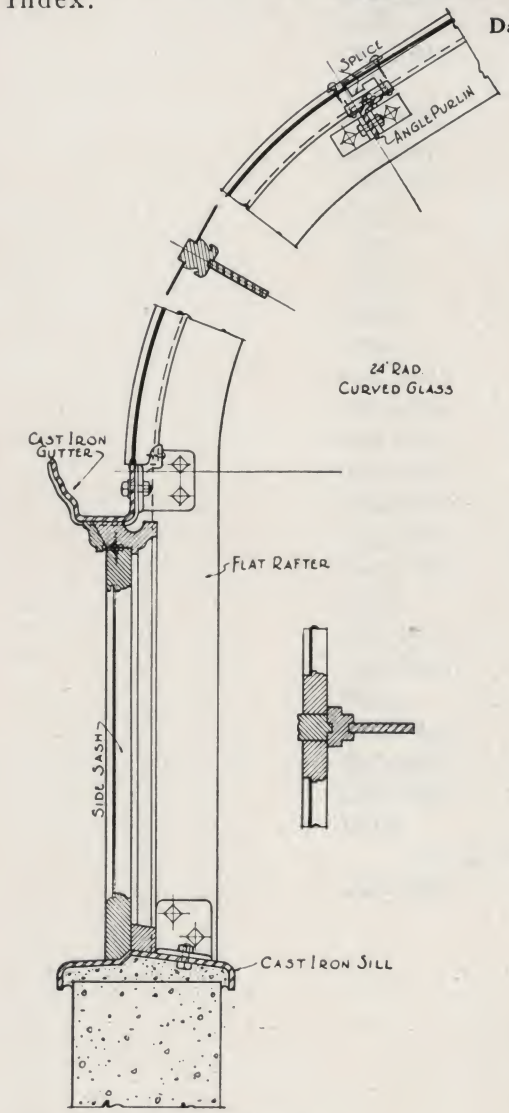
Dayton Conservatories are made in five standard widths, viz.: 11, 15, 18, 21 and 25 ft. Special widths can be furnished if necessary. The length should be governed by our standard sections which are 8 ft. 4¾ in. each, and should if possible be in multiples of this unit. The masonry walls are 8 in. thick at the sill and are usually 30 in. above floor line. The wall is capped with an everlasting cast iron sill neatly designed. All door openings in walls are 39½ in. wide.

All woodwork is milled of clear heart red tidewater cypress smoothly machined. Double strength greenhouse glass is used throughout. Ventilating machines are worm and gear type, designed for smooth and easy action. Complete heating systems furnished to meet individual requirements.

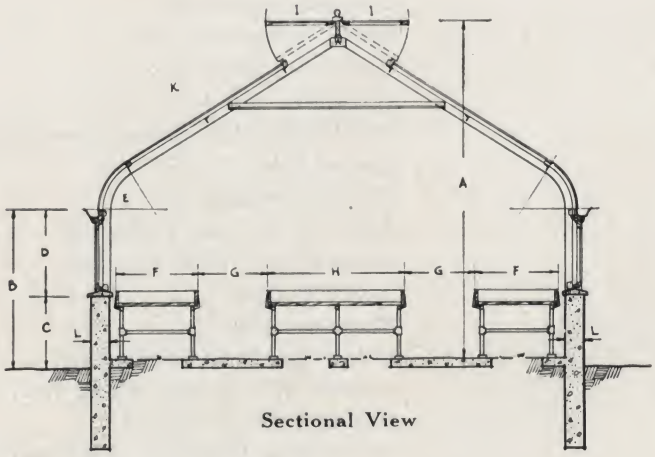
Every Dayton Conservatory when finished is and must be completely satisfactory. Dayton Conservatories are designed by greenhouse specialists of long experience. Every detail is finished with skilled perfection, and only the finest of materials are used. Dayton Conservatories are built to endure.

Engineering Service

Our Service Department will be pleased to co-operate with architects and engineers. We can give every service from designing to erection of the finished structure. Detailed specifications and plans gladly furnished upon request. Write freely to our Service Department.



Details of Sidewall Construction



Sectional View

STANDARD WIDTHS DAYTON CONSERVATORIES

Width	11 ft.	15 ft.	18 ft.	21 ft.	25 ft.
A—Height from grade to ridge, ft.—in.	9—9	11—0	12—0	12—11	14—2
B—Height from grade to gutter, ft.—in.	5—6	5—6	5—6	5—6	5—6
C—Height of concrete walls, ft.—in.	2—8	2—8	2—8	2—8	2—8
D—Height from sill to gutter, ft.—in.	2—10	2—10	2—10	2—10	2—10
E—Radius of curve, ft.—in.	2—0	2—0	2—0	2—0	2—0
F—Width of side bench, ft.—in.	2-3—0	2—6	3—0	2—6	3—0
G—Width of walks, ft.—in.	3—2	2—1	2—1	2—1	2—5
H—Width of center bench, ft.—in.	.....	4—0	5—0	2-4—0	2-5—0
I—Width of roof vents, in.	29	29	29	29	29
K—Roof pitch, degrees	32	32	32	32	32
L—Thickness of walls, in.	8	8	8	8	8

HITCHINGS & COMPANY

Manufacturers and Erectors of Improved Iron Frame Greenhouses and Greenhouse Heating Systems

HOME OFFICE AND FACTORY
ELIZABETH, N. J.

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Products

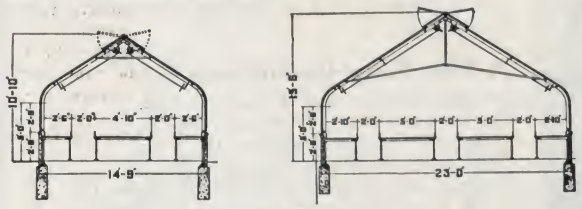
IMPROVED IRON FRAME CURVED EAVE GREENHOUSES.

SUPER-FRAME STRAIGHT EAVE GREENHOUSES without interior columns.

Also Greenhouse Boilers and Heating Systems, Sash Operating Apparatus, Greenhouse Equipment.

Curved Eave Iron Frame Greenhouses

Widths: 10, 14¾, 18, 23 and 25 ft.
Length of standard bay: 8 ft. 2⅞ in.
Glass spacing: 24 in.



Typical Section

Gutters and side ventilation optional.

Pier foundations and curtain walls, or continuous foundations and walls optional.

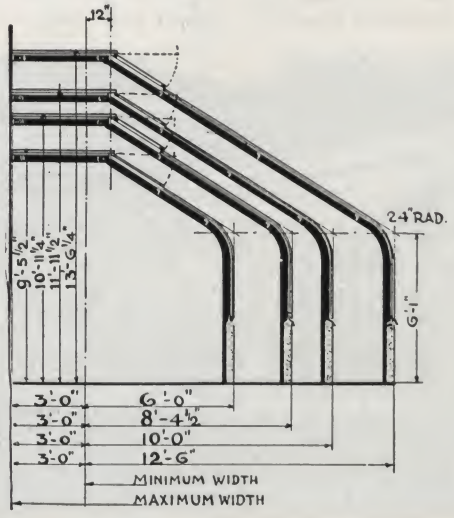
Roof pitch: 7½ in.

Curved Eave Leantos with Deck

Built like our full span curved eave greenhouses, but with a roof deck that may be varied in width to meet conditions where leanto connects to other building. Deck also acts as a protection from falling icicles in winter. By its use, excessive height is avoided. It casts no shade over space allotted to plants.

Standard sizes with minimum to maximum widths are shown on the drawing below.

Roof pitch: 7½ in.



Both leantos and full span greenhouses may also be furnished with straight eaves.

Super-frame Greenhouses without Columns

Available when a straight eave greenhouse is preferred.

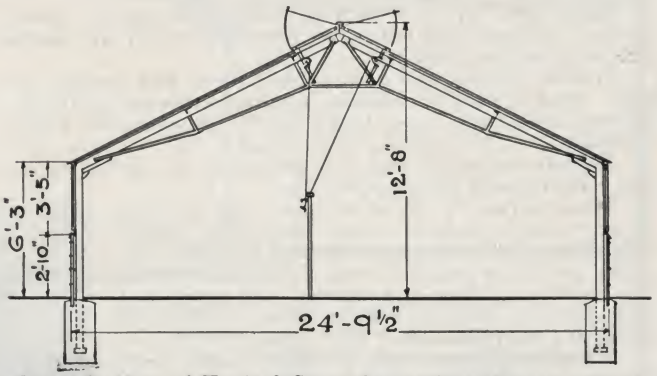
Standard width: 11 ft., 14 ft. 5 in., 17 ft. 11 in., 21 ft. 4 in., 24 ft. 10 in., 28 ft. 3 in., 31 ft. 9 in., 35 ft. 2 in., and over up to 85 ft.

Designed to eliminate shade-casting structural members and columns. By welding and galvanizing, all side construction is thoroughly rustproofed. All joints that can be, are welded at our factory.

HITCHINGS
SUPER-FRAME
GREENHOUSE
by practical engineers

Height of sides, 6¼ or 7½ ft., optional.
Glass spacing: 20 in.
Roof pitch: 6 in.
Lower first cost and lower upkeep.
Send for catalogue with full particulars.

This type of greenhouse is the most modern of recent years and is particularly preferred where greater area for growing is needed at moderate cost.



Cross Section of Typical Super-frame Greenhouse without Columns—In Widths Up to and Including 51 Ft. 6 In.

Planning and Estimating Service

All Hitchings offices are equipped to render individual service in the planning and erecting of greenhouses for your clients. They will gladly provide you with all desired information, directly applicable to the particular requirements.

Individual service by our men makes your planning *individual* and permits quicker and more definite results with every assurance of a pleased client.

THE FOLEY GREENHOUSE MANUFACTURING COMPANY

Designers, Manufacturers and Builders of Greenhouses and Conservatories

GENERAL OFFICES AND FACTORY

7700 Jackson Boulevard, FOREST PARK, ILL.

(A Suburb of Chicago)

Products

GREENHOUSES and CONSERVATORIES of all types for private and commercial use, featuring our reinforced roof bar (see Detail "D"), and equipment for same, including Ventilating and Sash operating devices, Hot Bed Sash, Benches and Plant Tables, Cast Iron and Steel Boilers, Hot Water and Steam Heating Systems.

Also Glass Enclosures for Swimming Pools, Sun Parlors, Vitalariums and Sludge Beds.

Sketches and Estimates

Preliminary sketches, plans and data will be prepared and on award of contract, complete masonry plans, heating plans and details will be furnished.

Brief Specifications for Iron Frame Greenhouse or Conservatory

Suitable cast iron sills to cap masonry walls, complete with splice plates, end stops and corners. (See Alternate Specification and Detail "A" for combination sill and gutter.)

Space steel rafters 8 ft. 3-in. centers and securely attach to sills. Rafters shall extend to ridge where they are joined with suitable iron brackets.

Connect rafters with steel angle purlins with suitable fittings. Purlins shall be drilled to receive bolts which attach reinforced wood bars. (See Detail "E.") Provide collar beams as shown.

Provide ornamental cast iron gutter at each sidewall spring line, complete with down-spouts, etc.

Woodwork—To consist of ridge, ridge cap, ventilating sash, roof bars, rafter caps, gable rafters, sash doors and hoods, carefully and smoothly machined and to be made of clear California redwood, free from sap, knots and defects. All wood roof bars shall be reinforced their entire length with galvanized steel channels. (See Detail "D.")

Ventilating Apparatus—Provide suitable ventilating machines of self-locking type, complete with arms, hangers and shafting.

Paint—Three coats as follows: woodwork two coats and steel one coat at factory. Second coat on steel when erected. Third coat on wood and steel, inside and outside after glazing. Side boards of benches and heating coils one coat after installation.

Benches and Plant Tables—Galvanized metal frame arranged as shown on plan. Cypress sides and bottoms. All outside corners provided with round corner plates. (Tile bottoms, slate sides if preferred.)

Hardware—Galvanized hinges for vents and doors. Bronze locks for doors. Copper nails for superstructure. Brass screws and galvanized bolts.

Glass and Glazing—Due to our reinforced bar, glass 24 in. wide is generally used. All glass to be double strength. All curved glass shall be bent to proper radius. Bed glass in special greenhouse putty and secure with zinc or copper points.

Heating System—Preferably gravity hot water. (Steam may be used if more advantageous.) Radiation arranged in coils located under benches providing usually a temperature of 55° to 60° at 10° below zero outside temperature. The coils are to be properly valved so as to have flexible control. Mains to be extended to Foley Cast Iron Sectional Boiler. Provide air vents, radiation for potting room and cover boiler with asbestos covering.

Watering System—Connect to owner's water pipe at wall of greenhouse and install watering system using galvanized pipe and fittings. Provide one hose bibb in each walk in each compartment.

Labor—Furnish labor required to erect greenhouse, install heating and watering system. All to be performed in a thorough and workmanlike manner.

Alternate Sidewall Construction Using Combination Sill and Gutter—Provide cast iron combination sill and gutter to cap masonry wall with wall ventilators for masonry wall complete with copper screens and ventilating apparatus. (See Detail "A.")

A Few Foley Installations

W. H. Crocker, San Francisco, Cal.
G. Gunby Jordan, Columbus, Ga.
Albert D. Lasker, Chicago, Ill.
Stuyvesant Peabody, Chicago, Ill.
Harold M. Florsheim, Highland Park, Ill.
L. B. Kuppenheimer, Hubbard Woods, Ill.
F. W. Woodruff, Joliet, Ill.
Cyrus H. McCormick, Lake Forest, Ill.
Owen Barton Jones, Lake Forest, Ill.
Gen. Roy D. Keehn, Lake Forest, Ill.
Col. Noble B. Judah, Lake Forest, Ill.
Col. R. R. McCormick, Wheaton, Ill.
Bruce F. Failey, Terre Haute, Ind.
J. W. Bettendorf, Bettendorf, Iowa
W. K. Kellogg, Battle Creek, Mich.
H. Coulby, Cleveland, Ohio
F. E. Drury, Cleveland, Ohio
W. E. Telling, Cleveland, Ohio
E. W. Marland, Ponca City, Okla.
C. E. Schaff, Houston, Tex.
William C. Grunow, Lake Geneva, Wis.
William Wrigley, Jr., Lake Geneva, Wis.
Albert C. Elser, Milwaukee, Wis.
Russell M. Alger, Grosse Pointe, Mich.
Edwin S. Barbour, Grosse Pointe, Mich.
Lawrence D. Buhl, Grosse Pointe, Mich.
Harry M. Jewett, Grosse Pointe, Mich.
French Lick Springs Hotel Co., French Lick, Ind.

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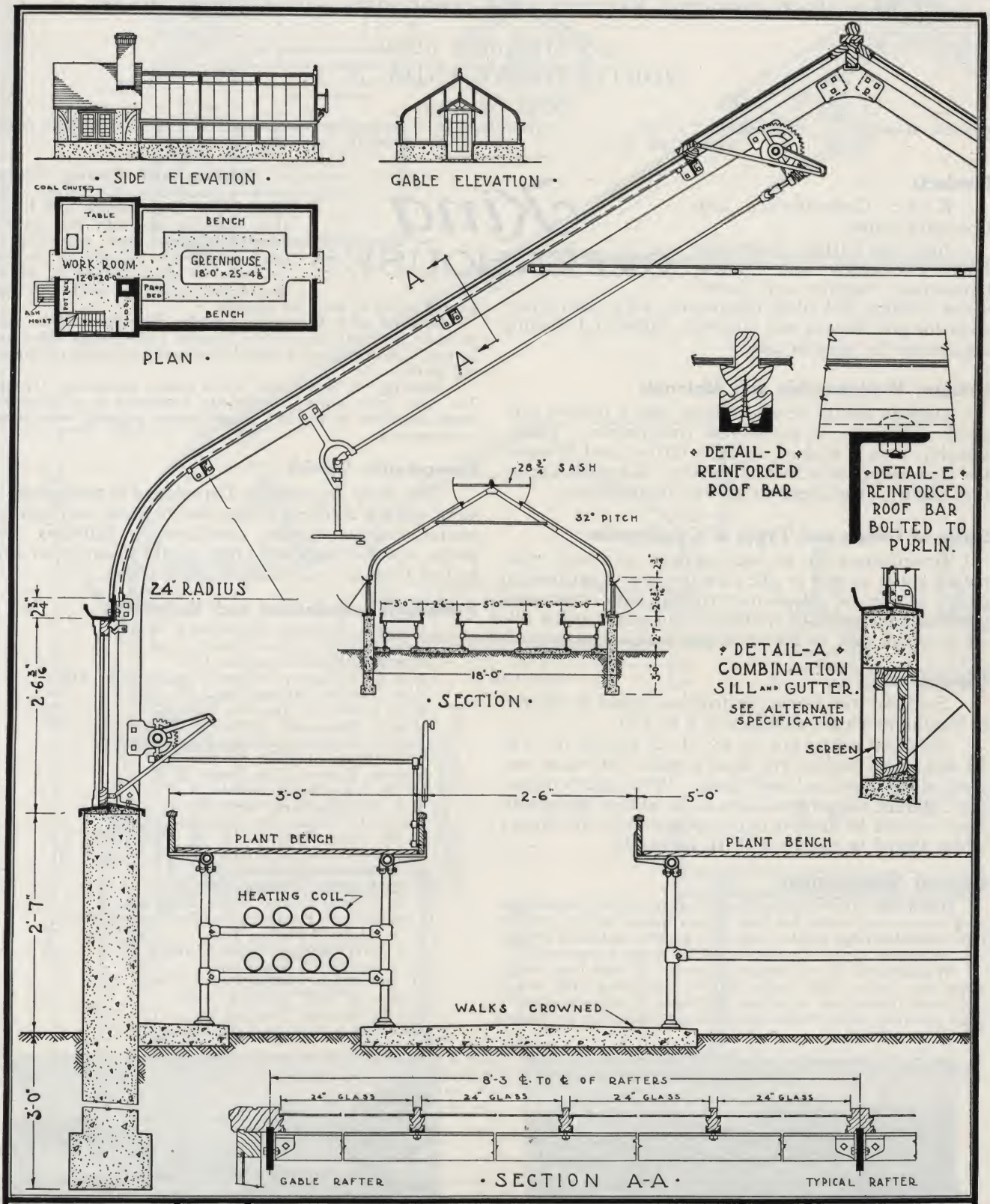

STANDARD IRON FRAME CONSTRUCTION	THE FOLEY GREENHOUSE MFG. CO. GREENHOUSES · AND · CONSERVATORIES	SHEET No.3 3-31-30

ESTABLISHED 1902

KING CONSTRUCTION COMPANY

Manufacturers and Erectors of Greenhouses and Conservatories

529 Wheatfield Street
NORTH TONAWANDA, N. Y.

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King GREENHOUSES

Products

KING GREENHOUSES AND CONSERVATORIES.

Also Sun Parlors, Swimming Pool Enclosures and Roofs; Greenhouse Supplies and Accessories; Sludge Bed Glass Enclosures; King Sash Operators for greenhouses and factories; Boiler and Heating Equipment for greenhouses.

Designs, Workmanship and Materials

Designs are the result of more than a quarter century's experience in greenhouse construction. Workmanship is in a modern daylight factory and is under the supervision of skilled engineers. Materials are of first quality, guaranteed to be free from defects.

Styles of Design and Types of Construction

Greenhouses can be built straight eave with ornamental gutter at eave or sill; curved eave with ornamental gutter at eave or sill; semicurvilinear with ornamental gutter at eave or sill; curvilinear with gutter at the sill; all of which may be sectional iron frame construction.

Dimensions

Sectional iron frame construction should be planned in lengths which are multiples of 8 ft. 5 in.

Standard widths are 11, 18, 21, 25 and 28 ft. The 18 and 25-ft. widths are most popular and most economical for bench and walk space. When plants requiring different temperatures are to be grown, the greenhouse should be divided into compartments—no one of which should be less than 17 ft. in length.

General Specifications

Ironwork—The superstructure consists of cast iron sills capping the masonry walls, flat steel rafters spaced on 8 ft. 5 in. centers, malleable ridge plates, angle iron purlins, malleable fittings, etc., necessary for the complete erection of the framework.

Woodwork—Wood members consist of sash bars, ridge, ridge cap, rafter caps, gable rafters, ventilating sash, doors and door frames, all of which are made of straight-grained, clear, air-dried, heart, California redwood. Sash bars are spaced for 16-in. wide glass.

Painting and Glazing—Framework is painted 1 coat before shipment, 1 coat after erection and 1 coat after glass is set, with best quality greenhouse paint made according to our own formula. Grade "A" American window glass bedded in special greenhouse putty and held with zinc glazing points is used for glazing.

Benches and Watering System—Benches will be constructed with galvanized iron frames and cypress sides and bottom. Hose valves are placed at convenient points for watering plants.

Heating—A gravity hot water system circulating through 2-in. pipe coils is used. Coils are connected to a King sectional cast iron boiler with ample excess capacity over actual requirements.

Co-operative Service

The King Engineering Department is maintained to work out the architect's ideas and to assist him with all matters relative to glass construction. Bulletins, blue prints, specifications and other useful information may be had from any of the above listed offices.

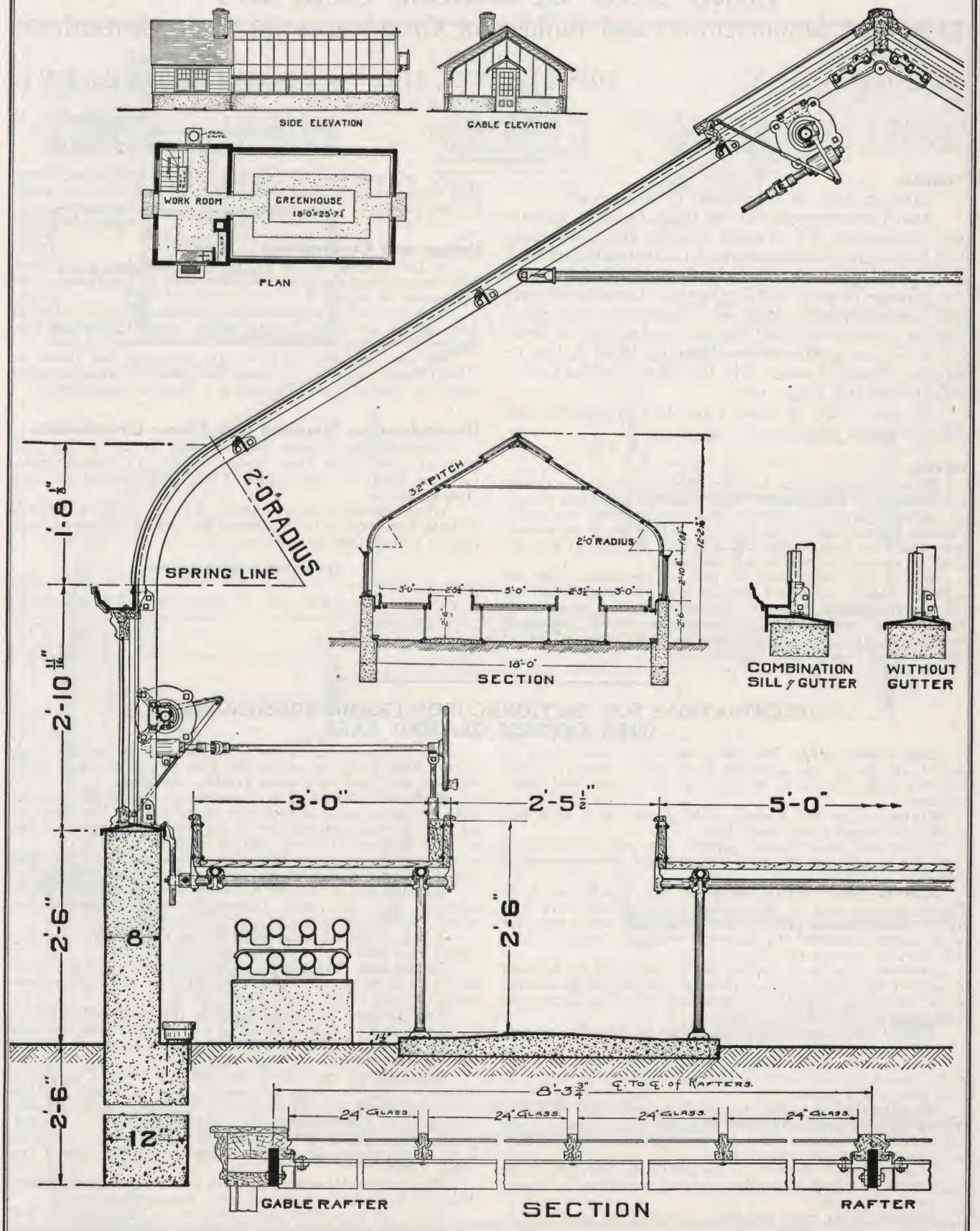
Prominent Installations and References

James E. Williams, Glastonbury, Conn.
Yale University, New Haven, Conn.
Eugene duPont, Greenville, Del.
Mrs. Okle Painter Williams, Jacksonville, Fla.
Wm. Candler, Atlanta, Ga.
R. T. Crane, Jr., Ipswich, Mass.
Walter Hunnewell, Wellesley, Mass.
John S. Newberry, Grosse Pointe, Mich.
Como Park, St. Paul, Minn.
Stephen Ransom, Bay Shore, N. Y.
W. H. Schoellkopf, Buffalo, N. Y.
J. P. Morgan, Great Neck, N. Y.
Barron G. Collier, Pocantico Hills, N. Y.
E. H. Cluett, Troy, N. Y.
New York Botanical Gardens, New York, N. Y.
F. A. Seiberling, Akron, Ohio
A. S. Kreider, Annville, Pa.
J. B. Stetson Estate, Elkins Park, Pa.
University of Pennsylvania, Philadelphia, Pa.
L. R. Munger, Dallas, Tex.
J. P. Weyerhauser, Tacoma, Wash.
P. D. Armour, Chicago, Ill.
H. W. Hoover, North Canton, Ohio
Arthur H. Buhl, Oxford, Mich.
Hershey Estates, Hershey, Pa.
Mrs. Ogden Armour, Lake Forest, Ill.

Greenhouse with Curved Eave
The gutter is at the eave

Palm House with Two Wings
Curved eave construction, with gutter at the sill

Continued on next page



GREENHOUSE
18 FEET WIDE

KING CONSTRUCTION COMPANY
GREENHOUSES *and* CONSERVATORIES

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CURVED EAVE
CONSTRUCTION

LORD AND BURNHAM COMPANY

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GREENHOUSES OF STANDARD CONSTRUCTION.

Also Conservatories of all types for both private and commercial use, Tennis Courts and Swimming Pool Enclosures, Solariums and Vitalariums constructed with special glass for the transmission of ultra-violet rays, Sludge Drying Bed Enclosures; Greenhouse supplies and equipment, such as: Ventilating Apparatus, Heating Equipment, Steel Tubular and Cast Iron Boilers for Steam or Hot Water Heating, Plant Tables or Benches, Wiring Frames, Hot Bed Sash, Special Greenhouse Paint and Putty, etc.

For our page on Sash Operating Apparatus, see Manufacturers' Index.

Service

Three large modern factories devoted to the exclusive manufacture of greenhouses, conservatories and glass covers for various purposes, equipped with most modern machinery insuring prompt deliveries, together with a staff of trained experts and an Engineering and Research Division at the disposal of owners, architects and engineers.

Any of our offices will be glad to co-operate with the architect, builder, or owner on any type of construction and will gladly prepare, without cost or obligation, preliminary sketches and outline specification. Given below, for your convenience, are brief specifications for both a special Metal Clad Bar and Cypress Bar Constructions.

We are prepared to contract to build greenhouses complete from the turning of the sod to a finished structure ready for the plants.

Design and Construction

In the designs shown on the accompanying pages, have been incorporated the latest improvements in construction and refinement of details.

Special attention is given to the design and construction of palm houses and large private ranges requiring growing conditions for special purposes.

We also specialize in structures used for sun rooms or "Vitalariums" designed for other than plant growing purposes, requiring special details to insure a dripless construction.

Dimensions for Standard Iron Frame Greenhouses

Standard Greenhouses are furnished in any length multiples of 8 ft. 2½ in. from center to center of rafters, spaced for four lights of 24-in. glass, 4 in. to be allowed for each glass gable end.

Where greenhouses are connected to an adjoining building or wall, 3 in. more is to be allowed for making necessary flashing for a watertight connection.

STANDARD GREENHOUSES

Width to outside of 8-in. wall	Height walk level to top of ridge
10 ft.	9 ft. 6 in.
18 ft.	11 ft. 10¼ in.
25 ft.	13 ft. 10½ in.

SPECIFICATIONS FOR SECTIONAL IRON FRAME GREENHOUSES WITH CYPRESS GLAZING BARS

Iron Frame—***Sills***—The 8-in. foundation walls are to be capped with heavy cast iron sills 10 in. wide. Special fittings and stop ends are to be provided at all corners and intersections.

Gutters—Cast iron gutters to be placed along each side of the greenhouse at the eaves line.

Ornamental splice plates, together with neat cast returned ends and suitable outlets, are to be provided for each run of gutter.

Rafters—Steel rafters, bolted to sills, spaced on 8 ft. 2½-in. centers, bent to the correct radius at the eave line, are to extend in one piece from sill to ridge where they are to be secured together by specially designed fittings, which also serve to support the ridge.

Purlins—Steel angle purlins are to be placed in the roof to support the glazing bars. These purlins are to be secured to the rafters by specially designed lugs providing a two-bolt connection to the rafters.

Ties—Double steel angle ties are to be provided extending between the rafters and bolted to them.

Sash Stops—Sash stops of certified malleable iron are to be placed on each side of the rafters, securely bolted to sills, rafters and gutters.

Woodwork—All wood to be clear, air dried red gulf cypress of tank grade, free from sap and other imperfections. All mouldings, fascias, pilasters, finials, etc., are to be provided to complete the structure.

A ridge is to be secured to the iron rafter brackets. This ridge to be provided with ridge cap and mouldings to receive the ventilating sash.

Grooved rafter caps, moulded to receive the glass, are to be fitted over the rafters.

Cypress glazing bars are to be furnished and placed in the roof of the greenhouse, moulded on the upper face to receive the glass, and provided with condensation grooves in their sides. Gable and partition bars are to be similar to those in the roof, except that the condensation grooves may be omitted.

The metal frame of the greenhouse is to be completely capped with wood, on which the glass is set, to avoid direct metal contact and consequent breakage of glass.

Sash and Doors—The greenhouses are to be provided with ventilating sash on each side of the roof, at the ridge and on each vertical side, all sash to be arranged to open out and to be continuous for each run of ventilation.

Glazed doors, of the design as shown, are to be furnished for the door openings in the gable and partition.

All sash and doors are to be blind mortised and tenoned together and all joints thoroughly white leaded before assembling.

Hood—A glazed hood supported by brackets, is to be furnished and placed over the outside door.

Gables and Partitions—A complete glass gable and partition is to be constructed, where indicated on plan, in a manner similar to the roof.

Ventilation—Ventilating sash in the roof and sides are to be operated by L & B arm and rod, screw-thread type ventilating apparatus, which is self-locking at any point with controls conveniently located.

Glazing—All glass is to be double strength "A" quality, American Window Glass Co. manufacture, or equal, in 24-in. widths, and 26-in. lengths, as far as practicable, the curved glass to be bent to a 24-in. radius.

All glass to be laid with lapped joints, bedded in special L & B greenhouse putty and secured by wedge shaped zinc glazing nails.

Hardware—All ventilating sash are to be hung with heavy wrought steel, hot galvanized butts having brass pins.

Doors are to be hung with solid bronze butts and lock sets, exterior doors to be fitted with mortised cylinder locks.

Plant Beds—Plant beds are to be placed in the greenhouse, arranged as shown on plan, constructed of galvanized steel frames and to have all corners rounded by the use of suitable cast iron fittings. Plant beds are to be furnished with cypress sides and removable cypress bottoms. (*Alternate*—Plant beds are to be furnished with porous tile bottoms, sup-

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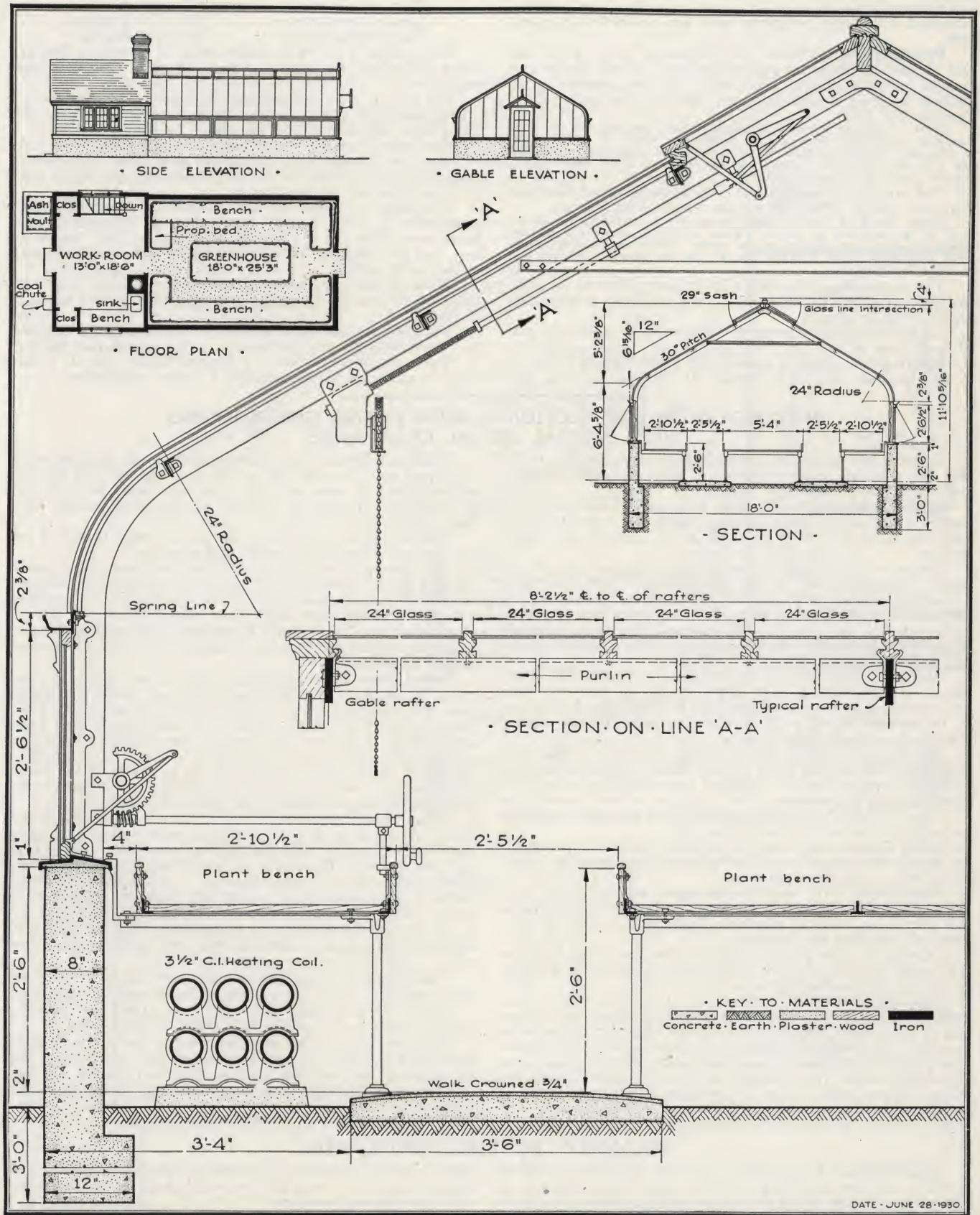

DATE - JUNE 28-1930

DETAILS OF STANDARD GREENHOUSE AND • WORK-ROOM •	LORD AND BURNHAM COMPANY BUILDERS OF GREENHOUSES & CONSERVATORIES	• SERVICE SHEET • No. 1. DETAIL SCALES 1½"-3"-1'0"

Continued on next page

ported on galvanized steel frames and are to have planed slate sides.)

A propagating bed is to be placed where indicated on plan, furnished with apron, additional heat, and covered with glazed sash.

Painting—All materials, not galvanized, to be given one coat of specially prepared greenhouse paint, of our own manufacture, before shipment. The interior of the structure to be finished with Lord and Burnham Special Aluminum Paint, Formula No. 47.

(*Note:* Lord and Burnham Aluminum Paint, Formula No. 47, is an aluminum paint made especially for greenhouse work. It is the result of exhaustive experimentation on the part of this Company, in conjunction with the Aluminum Company of America, and is the only formula designed solely for greenhouse work.)

The exterior of the structure to have two coats of Lord and Burnham Special White Greenhouse Paint during erection.

(*Note:* The final coat of outside paint may be tinted to a color desired by the architect or owner, without additional charge, if specified within ten days from placing of the order. While we strongly recommend Aluminum Paint, Formula No. 47, for the interior, this can also be changed if desired.)

The outer face of the sides of the plant bed are to be given two coats of paint after erection. (Does not apply to slate sides which are to be oiled.)

All heating pipes exposed to view are to be given one coat of lamp black in oil.

Heating—A complete gravity hot water heating system is to be installed, and is to consist of 3½-in. cast iron pipe arranged in coils under the plant beds to maintain the following temperatures at zero:

First compartment .....55 to 60 degrees
Second compartment .....50 to 55 degrees
Third compartment .....60 to 65 degrees

The system is to be furnished with all necessary fittings, valves, automatic air headers, expansion tank, cast iron pipe chairs, etc.

The system is to be connected by mains of proper size to a Burnham Hot Water Boiler which is to be placed in the boiler cellar where indicated on plan.

The boiler is to be covered with asbestos cement and connected to the chimney by a galvanized iron smoke pipe, unless the contract is for material only, in which case the smoke pipe is to be furnished by the owner.

Plumbing—A system of plumbing is to be placed in the greenhouse to furnish cold water through galvanized pipe. Brass hose bibbs are to be so located that a 25-ft. length of hose may be utilized. An additional hose bibb is to be placed in the boiler cellar.

Metal Work—Horsehead zinc or copper leaders are to be furnished to connect the outlets of gutters with the fine uprights of drains.

Final—Plans are to be furnished for all masonry required in connection with the greenhouse by the greenhouse builder.

These specifications are of a general nature, and all details must be executed to the architect's entire satisfaction.

SPECIFICATIONS FOR SECTIONAL IRON FRAME GREENHOUSES WITH SPECIAL METAL CLAD BARS

(Over forty years ago this company introduced a metal clad bar. Metal clad, or composite bars, of various forms and shapes have since been adopted by others.)

Iron Frame—***Sills***—The 8-in. foundation walls are to be capped with heavy cast iron sills 10 in. wide. Special fittings and stop ends are to be provided at all corners and intersections.

Gutters—Attractively moulded cast iron gutters, to be placed along each side of the greenhouse at the eaves line.

Ornamental splice plates, together with cast returned ends and suitable outlets, are to be provided for each run of gutter. (*Alternate*—If wall vents are to be used, cast iron gutter at the eave line is omitted. If desired a combination sill and gutter can be furnished.)

Rafters—Steel rafters, bolted to sills, spaced on 8 ft. 2½-in. centers, bent to the correct radius at the eave line, are to extend in one piece from sill to ridge where they are to be secured together by specially designed fittings, which also serve to support the ridge.

Purlins—Steel angle purlins are to be placed in the roof to support the glazing bars. These purlins are to be secured to the rafters by specially designed lugs providing a two-bolt connection to the rafters.

Ties—Double steel angle ties are to be provided extending between the rafters and bolted to them.

Sash Stops—Sash stops of certified malleable iron are to be placed on each side of the rafters, being securely bolted to the sills, rafters and gutters.

Woodwork—All wood to be clear, air dried red gulf cypress of tank grade, free from sap and other imperfections. All mouldings, fascias, pilasters, finials, etc., are to be provided to complete the structure.

A ridge is to be securely bolted to the iron rafter brackets. This ridge is to be provided with ridge cap and to be moulded to receive the ventilating sash.

Glazing Bars—The glazing bars for roof, sides, gables and partitions, to be special Metal Clad Bars, these bars to consist of special steel shapes galvanized after fabricating, and to be provided with improved cores of air dried cypress. Condensation grooves to be entirely contained within the wood core so as to prevent water from seeping in between the bars and the cores. These cores are to be securely fastened to the steel angles with brass screws. All bars to be furnished in one piece and bent at the eave to receive glass of 24-in. radius.

Sash and Doors—The greenhouse is to be provided with ventilating sash on each side of the roof and on each vertical side, arranged to open out and to be continuous for each run of ventilation. (*Alternate*—If wall ventilation is desired, omit side ventilation.)

Glazed doors, of the design shown, are to be furnished for the door openings in the gable and partition.

All sash and doors are to be blind mortised and tenoned together and all joints thoroughly white leaded before assembly.

Hood—An ornamental glazed hood, supported by brackets, is to be furnished and placed over outside door.

Gables and Partitions—A complete glass gable and partition is to be constructed, where indicated on plan, in a manner similar to the roof.

Ventilation—The ventilating sash in the roof and sides are to be operated by L & B arm and rod, screw and thread type ventilating apparatus, which is self-locking at any point with controls conveniently located. (*Alternate*—If wall vents are desired. Cast iron wall panel vents 16x24 in., complete with cast iron frames and galvanized screens are to be furnished and placed in the center of each bay on each side of the house. These vents to be furnished by the greenhouse contractor, and built into the masonry wall by the mason contractor.)

Plant Beds—Plant beds are to be placed in the greenhouse, arranged as shown on plan, constructed of galvanized steel frames, and to have all corners rounded by the use of cast iron fittings. Plant beds are to be furnished with cypress sides and removable cypress bottoms. (*Alternate*—Plant beds are to be furnished with porous tile bottoms, supported by galvanized steel frames and are to have planed slate sides.)

A propagating bed is to be placed where indicated on plan, furnished with apron, additional heat and covered with glazed sash.

Hardware—All ventilating sash are to be hung with heavy wrought steel, hot galvanized butts having brass pins.

Doors are to be hung with solid bronze butts and lock sets, exterior doors to be fitted with mortised cylinder locks.

Galvanizing—All metal work used in the house is to be galvanized by the hot dipped process after fabrication, with the exception of malleable castings, cast iron gutters and sills.

Painting, Glazing, Heating, Plumbing, Metal Work and Final—Are the same as for previous specifications for Iron Frame Greenhouse with Cypress Glazing Bars.

MASONRY—POTTING HOUSE, ETC.

Foundations—Greenhouses require a foundation of stone, brick or concrete extending 2 ft. 3 in. above the walk level of greenhouse; below grade the walls should extend below frost level. Tops of all walls should finish with a plinth course 8 in. wide on which cast iron sill can be set.

Walks—It is customary to construct concrete, tile or brick walks between the plant benches extending 6 in. under the beds to support uprights of plant benches. Walks should have a crown of ½ in. to drain water from sprinkling.

Potting House—A suitable building in which the plants can be potted should be attached to the greenhouse. This building can be of masonry or wood designed to harmonize with surrounding buildings.

A cellar with floor at least 7 ft. 6 in. below walk level in the greenhouse is necessary and can be built under Potting Room.

A potting bench, sink, and seed closet are necessary fixtures for the workroom.

A chimney containing 12x12-in. (minimum) tile flue, to which the boiler can be attached, should be provided.

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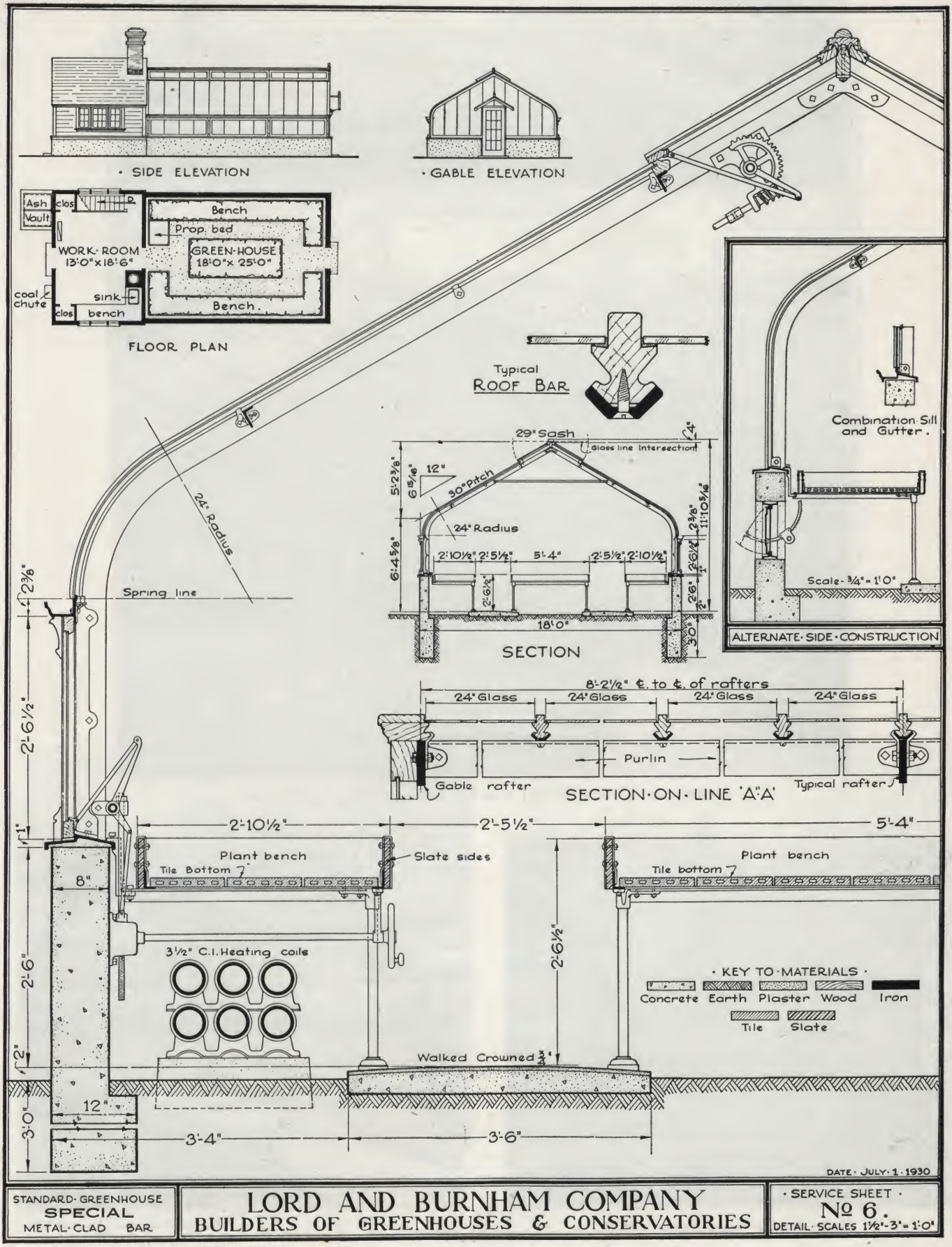

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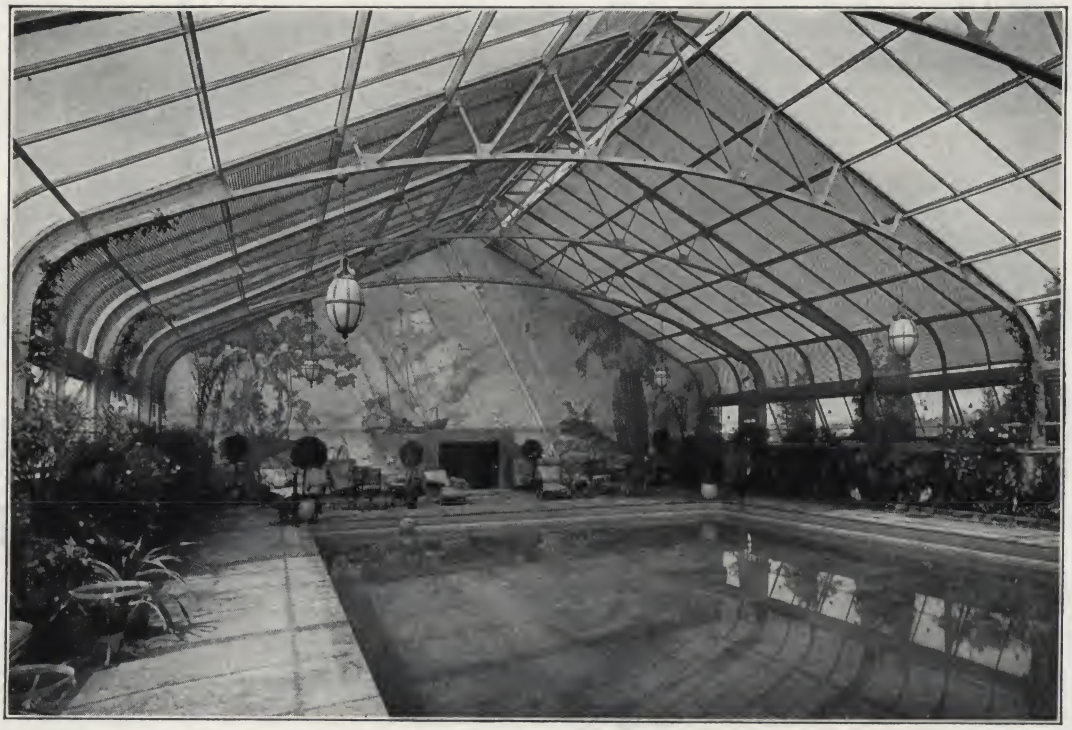
Dome Top Palm House and Wings
Palm house 25x41 ft. 8 in. Wing houses 18x41 ft. 8 in.



Glassed-over Swimming Pool with Sun Bathing Lounge at One End

Dome Top Octagon Conservatory

EWING GALLOWAY, *Photographer*
Vitalarium or Sun Bath Room on Top of the New York Athletic Club
Roof is glazed with glass that transmits the ultra-violet rays

Continued on next page

Three Suggestions for Greenhouse Locations Where Available Ground Space Is Limited

Lean-to for a Southern Exposure
Can be used for a swimming pool, sun soaking room, conservatory or a regular glass garden

A Glass Garden Opening Directly from the Residence
To those interested, this one 18 ft. wide and 33 ft. long holds a suggestion

E. A. WARD, President and Treasurer H. W. PRATT, Vice-president R. B. WARD, Secretary

WILLIAM H. LUTTON COMPANY

Designers and Builders of Greenhouses, Conservatories and Modern Glass Structures

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Automatic Temperature and Ventilation Control Equipment.
Complete catalogue on request.

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V-BAR GREENHOUSES
TRADE-MARK

Attempts have been made to copy the products of the William H. Lutton Company, so far as patents would permit. Our copyrighted trade-mark above identifies all products of the William H. Lutton Company, and when specified insures the highest quality in workmanship and design.

The Company

The William H. Lutton Company has been continuously in business since 1904, specializing in the erection of private greenhouses, conservatories, swimming pool enclosures, solariums and the highest class work of this type.

Through intimate contact and co-operation with leading architects and owners the Solar V-Bar type of construction has been developed. It is a type of construction for glazed enclosures that is exclusive with them and which is considered the standard for quality where the highest grade of work is wanted.

The experience of the company has been extensive. This experience is at the disposal of prospective clients and architects in the preparation of plans that will satisfy the architectural requirements and that will, at the same time, be most thoroughly practical from an engineering and constructional standpoint. When wanted, competent representatives are available on short notice, and without obligation.

Manufacturing facilities are available for the manufacture and erection of the largest of greenhouse ranges. Lutton sales and erection services cover the whole United States. All wood and steel work is fabricated and erected, including complete heating systems, by the William H. Lutton organization.

The William H. Lutton Company is especially well qualified and equipped to take care of special work both as to design and manufacture.

Features of Lutton Solar V-Bar Construction

Lutton Solar V-Bar construction is the lightest, yet the strongest greenhouse construction that has been developed. A minimum amount of wood is employed in the construction. Its additional cost is more than justified by its greater permanence, by the reduction of shadows, its superior appearance and lower maintenance expense.

All structural steel, either flat or trussed rafters, purlins, tie rods, and fittings are galvanized *after* fabrication by the "hot dip" process, insuring a thoroughly rustproof structure. Cast-iron sills and gutters are not galvanized except when definitely specified. The Solar V-Bar construction is almost universally specified where a low degree of fire hazard is essential and it can be furnished with wood treated by a process to pass fire inspection codes. When desired, outer surfaces of all woodwork can be copper covered.

When a method of glazing, for solariums with a low pitch, etc., is required, and when it is essential that it be absolutely tight against driving storms, a method of glazing designated by Lutton as "Header Construction" is available which insures the tightest roof possible.

The class of equipment, including heating systems, plant benches, hardware, etc., furnished in conjunction with the Solar V-Bar type of construction is always of the very highest grade. (See detailed specification.)

Range of Solar V-Bar Conservatories and Greenhouses Built for Dr. Charles V. Paterno—One of the Largest and Finest Private Conservatories in America

Continued on next page

GENERAL INFORMATION ADAPTABLE TO GREENHOUSE CONSTRUCTION

Location of Greenhouse

In locating a greenhouse, ideal conditions are met when the ridge can be run approximately north and south, and when no part of the greenhouse is within the shadow cast by any object, at any season of the year or time of the day. It must be remembered that an object 10 ft. high will cast a shadow 20 ft. long at noon in the winter months, and further that it is more important to receive the morning sun than to receive the afternoon sun. It is desirable that the service building, which is almost always provided in connection with a growing house, be erected at the north end.

Suggested Dimensions

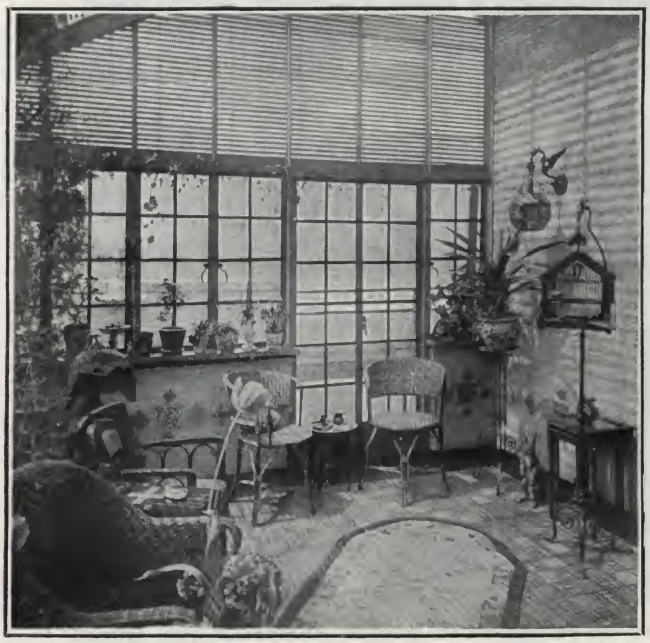
The following is a list of widths and lengths which work out to the best advantage, but units of any width and any length can always be provided to meet special conditions. The widths indicated simply work out best from an economic standpoint with respect to the bench requirement, allowing for the maximum width of benches that can be easily worked and a sufficient width of walk between benches.

Style	Over-all width ft. in.	Lengths										
		ft.-in.	ft.-in.	ft.	ft.-in.	ft.-in.	ft.-in.	ft.	ft.-in.	ft.-in.	ft.-in.	ft.
Lean-to	9-0	16-6	24-9	33	.....	.....	.....	....	.....	.....	.....	....
	12-6	16-6	24-9	33	41-3	49-6	.....	....	.....	.....	.....	....
	15-0	.....	24-9	33	41-3	49-6	57-7	66	.....	.....	.....	....
Even span	8-6	(Connecting passage only)										
	11-0	16-6	24-9	....	.....	.....	.....	....	.....	.....	.....	....
	18-0	.....	24-9	33	41-9	49-6	57-9	66	74-3	.....	.....	....
	25-0	.....	.....	33	41-9	49-6	57-9	66	74-3	82-6	90-9	99

Ventilation

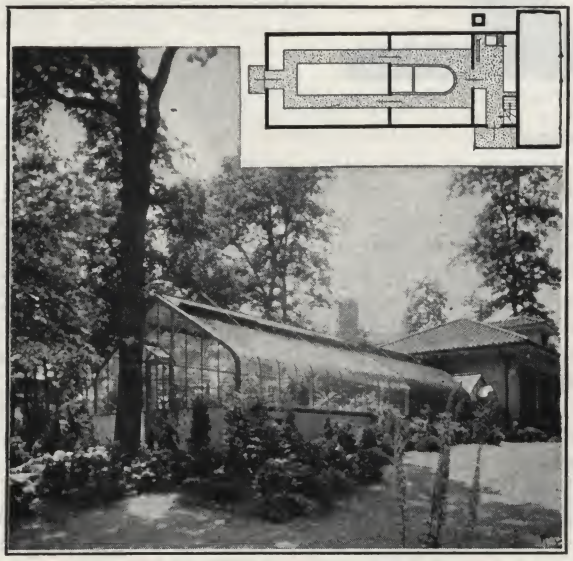
A greenhouse should always be well ventilated. Two lines of top ventilation are desirable. Two kinds of bottom ventilation are available; first, with side sash between gutter and sill, second, wall panel ventilation which has large cast iron wall ventilating panels erected in the foundation wall. (See section Sheets No. 2-A and 3-A.)

Conservatories, solariums, etc., are frequently provided with special roof ventilators and with casement sash or other methods of side ventilation. Lantern roofs are often desirable to break up the lines of a large roof expanse (see cut, Page 1).



Solar V-Bar Conservatory with Steel Casement Sash, Erected Against a Penthouse on a New York Apartment Roof
(Note slat shading)

It is frequently desirable to provide automatic top ventilation in each compartment. This is especially



Solar V-Bar Greenhouse in Combination with Group of Service Buildings—Roof Partly Covered with Slat Shades

desirable in connection with an automatically fired boiler installation and in all cases where a man is not constantly in attendance at the greenhouse. In this case, motor operated ventilating machines should be installed together with special thermostats, weather vane switch, timer, and push button controls, and also with provision for manual operation when electric power is interrupted.

It is strictly essential that the primary control of the automatic system be according to temperature, with a secondary control that will automatically connect a lee ventilator so as to open and close in accordance with temperature, in steps, with an interval of approximately 10 minutes between steps. When a lee ventilator becomes a windward ventilator, while open, the automatic system must provide for the immediate closing of the former lee ventilator without waiting for the step by step action.

Roof Pitch

It is desirable to keep the pitch of the roof not less than 6½ in. per foot and preferably 7½ in. per foot when shingled glass construction is used. Roof pitch can go down to 4 in. per foot when using "Header" construction.

The eaves can be curved to any radius, but 24 in. and 30 in. are more common except in large structures.

Benches

Several different classes of benches can be provided, such as all cypress, cypress sides and bottoms with pipe leg frames, cypress sides and bottoms with galvanized angle iron frames, tile bottoms and slate sides with angle iron frames. (The last should always be specified when the best is wanted.) In no case should the side of the bench be less than 7 in. high to provide sufficient soil depth and for certain cultures this is frequently increased.

Slate top tables with galvanized iron fascias are preferable to growing benches for culture in pots. A section of propagating bench is desirable in any greenhouse, which should be equipped with removable sash and adjustable curtain to control bottom temperature.

Continued on next page

Compare Shadow Cast by Solar V-Bar (Left) with All Cypress Roof Bar Shown at Right

All structural members of Solar V-Bar Greenhouses are designed to cast a minimum amount of shadow

(Right) Shadow Cast by Cypress Glazing Bar of Ordinary Greenhouse. Compare This with Illustration at Left

Heavy shadow casting members are not permitted in the Solar V-Bar type of construction

Heating

Except in very large ranges of greenhouses, hot water heat is the most economical and is considered by experienced growers as the best heat for the proper growth of plants. The open tank gravity system is generally used and is preferred by most gardeners and growers. 2-in. hot water heating coils have a sufficient capacity to maintain even temperatures, but at the same time are not so large but that a rapid circulation is obtained through them.

The heating installation in a greenhouse is of prime importance. It is common practice simply to specify the temperatures which must be maintained in order that the greenhouse manufacturer can estimate the amount of radiation required to maintain temperatures in his class of construction. On account of the activity of corrosion, genuine wrought iron pipe coils and mains are desirable. Heating coils are erected under each growing bench and should be provided with valves on both flow and return connections and with a system of mains so that each greenhouse compartment can be controlled and regulated absolutely independent of the temperature in any other greenhouse compartment. (See figure 6.)

When greenhouses are to be heated from a central plant or from a residence boiler, it is desirable that separate automatic temperature control be provided. (Send for special information.)

Work by Other Contractors

While the WILLIAM H. LUTTON COMPANY is prepared to contract for the complete erection of a greenhouse or other glass structure, including all trades, it is customary that the following work be not included in the greenhouse contract.

(1) Excavating and grading.
(2) Foundations, walks, trenches, etc.
(3) Service building and its equipment.
(4) Drains, bringing water to the building site, electrical work.
(5) Cap flashing and reglet for same.
(6) Building permit.

The WILLIAM H. LUTTON COMPANY furnishes without charge all drawings for foundations, walks, trenches, etc. and when wanted, a design for the service building. When the greenhouse is to be tied in to any existing structure their drawings show alterations necessary, if any, in the existing structure.

Greenhouses of Painted Iron Frame Type of Construction (Not Galvanized)

The WILLIAM H. LUTTON COMPANY is prepared to build this class of structure, but it is of a lower grade and not recommended by them except when a saving in first cost is of greater importance than quality. Specifications submitted upon request.

Careful Examination of This Illustration Will Disclose the Fine Points of Construction Always Entering into a Solar V-Bar Greenhouse

Continued on next page

TYPICAL DETAILED SPECIFICATIONS COVERING SOLAR V-BAR TYPE OF CONSTRUCTION

(1) Steel Framework

A complete steel framework to be furnished and erected;
(a) For Structures of Less Than 30 ft. Span—With flat steel rafters, angle iron purlins and tie rods, erected on cast-iron sills not less than 9½ in. wide, weighing 10 lb. or more per lineal foot. Rafters to be in one continuous piece from sill to ridge and of dimensions adequate for the span and load. Special castings to be provided for the support of the ridge and joining of rafters at the ridge. Rafters to be secured to the sill with bolted knees. The sill shall run in one continuous piece between rafters. The sill shall also be provided with special return castings at corners and door openings. Glazing bars over rafters to be identical with regular glazing bars but supported on top of rafters in special lead "M" shaped members. No wood rafter caps to be used. (See sheets No. 2-A and 3-A.)

Door jamb posts are to be of flat steel. Partitions when called for shall be erected on cast-iron sills same as outer walls.

All metal work in superstructure except cast-iron gutters and sills to be galvanized by the "hot dip" process after fabrication and finished after erection in aluminum bronze.
(b) For Structures of More Than 30 ft. Span—Same as covered in specifications (a) above, except that instead of flat rafters, rafters shall be of truss type having a curved lower cord.

(2) Gutters

(a) For Greenhouses and Structures of Normal Span—Cast-iron gutters approximately 5½ in. wide to be furnished and erected at the eave line. Gutters to be provided with return ends and with cast-iron downspout outlets on the inside; outlets to be connected by 16 oz. copper leaders to drains (drains to be provided by others).
(b) When Greenhouse is Provided with Wall Panel Ventilation—Gutter same as under (a), shall be erected at the sill line, with outside down spout connections.
(c) For Palm Houses and Large Enclosures—Cast-iron gutters to be 9 in. wide, otherwise as covered in (a).

(3) Eaves

Eaves to be curved to a radius of
(a) Pin bend (straight eaves)
(b) 24-in. radius
(c) 30-in. radius
(d) 36-in. radius
(e) 48-in. radius
(f) 60-in. radius
(g) 72-in. radius

(4) Entrance

(a) Gable Entrance—An ornamental curved glazed canopy, supported by means of genuine handmade wrought iron scroll brackets galvanized after fabrication to be furnished and erected over the gable entrance as shown on plan.
(b) Side Entrance—Side entrance with necessary valleys, gable, and with ornamental curved glazed canopy supported by means of genuine handmade wrought iron scroll brackets, galvanized after fabrication, to be located where shown on plan.

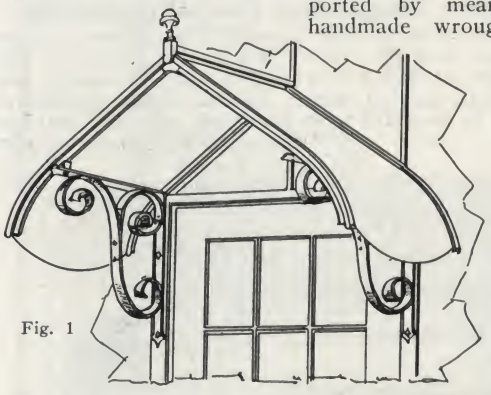


Fig. 1

(c) Vestibules—Vestibules with necessary valleys, gables and side glazing with steel framework to be furnished and erected where shown on plan.

(5) Glazing Bars

(a) For Greenhouses and Enclosures of Normal Span—Solar V-Bars 1x1x⅜ in. fitted with a heart cypress cushion core and provided with a condensation groove on each side, spaced to receive 24 in. wide glass, to be provided.

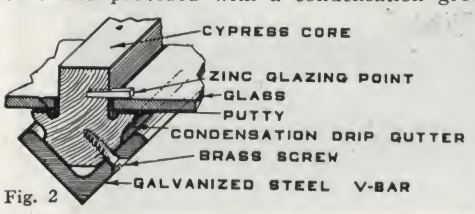


Fig. 2

(b) For Large Enclosures or Where Extra Wind Pressure is to be Encountered—Solar V-Bars same as in (a) above, except 1¼x1¼x⅜ in. to be provided.

(6) Ventilation

(a) Two (2) lines of top ventilating sash approximately 30 in. wide, hinged at the ridge and provided with three (3) operating arms between each rafter, also equipped with 1 in. diameter steel shafting, self-locking worm and gear ventilating machines, operating rod brought down parallel with roof, including necessary universal joints and with mitre gear, so that hand wheels are brought out beneath side benches. Each line of ventilating sash in each compartment to be operated separately. (When top ventilators are automatically controlled, operating equipment is to be brought down as far as tie rods only, and removable crank to be provided for emergency hand operation.)

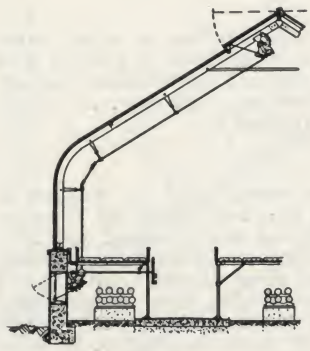


Fig. 3

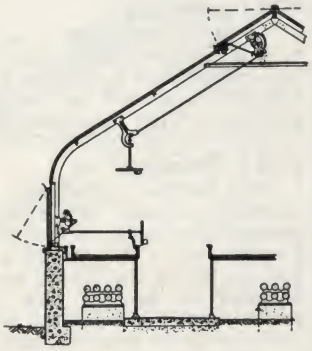


Fig. 4

(b) (Alternate with (c))—Side ventilation to be provided by means of top hung, outward swinging side ventilating sash, between the eave and sill—normal height approximately 2 ft. 6 in. Each sash to be equipped with arms, shafting and ventilating equipment as described above, but with operating shafting brought out just above the benches.
(c) (Alternate with (b))—Side ventilation to be provided by means of cast-iron wall panels, 16 in. high by 24 in. wide, with swinging cast-iron shutter, built into the foundation wall, operated by means of arms and hangers, self-locking worm and gear machines, etc. the same as the side ventilation sash (wall panels to be placed by mason contractor).

(7) Automatic Control Equipment for Top Ventilation

Independent fractional horsepower motor units with gear reduction to be provided for each side of top ventilation in each compartment and connected to it by suitable mechanical means. The thermostat for the primary control of the motors to be furnished of suitable range and with glass enclosed mercury bulb type contacts, adjustable as to point of control, with brass case and to be provided with suitable sun shield. A weather vane of neat design including glass enclosed mercury type switch with suitable mechanical connection between switch and weather vane to be furnished and erected where indicated on plan. An electric timer with glass enclosed mercury contacts operated by a synchronous motor from lighting circuit to be provided.

Design of the equipment to be such that the lee ventilator is electrically operated in steps, at intervals of approximately 10 minutes in accordance with temperature, to open when too hot and to close when too cool. When lee ventilator is open and becomes a windward ventilator, it is to automatically close without the step by step action. Motors to be provided with suitable limit switches and with push button controls for manual operation, independent of automatic operation. System to be provided for emergency hand operation in times when electric power may be interrupted.

(8) Glazing

(a) Roof Glazing—Roof glazing to be shingled construction with ¼ in. glass laps using 24 in. wide "A" quality, double strength, clear, special flat drawn glass, or equal; to be bedded on Solar V-Bars with special greenhouse putty mixed with pure linseed oil and secured with heavy solid zinc glazing tacks. All surplus putty to be carefully removed.
(b) When a Light Degree of Shading is Wanted—Same as (a) except that glass shall be frosted.
(c) Side ventilating sash shall be glazed with 24 in. wide "A" quality, double strength, clear, special flat drawn glass.
(d) Side sash to be glazed with ¼ in. thick polished plate glass.

Continued on next page

(9) Woodwork

All sash and mouldings to be of best quality genuine red gulf heart cypress, free from all defects, milled to modern details. Thickness 1⅜ in. for standard greenhouse construction. Thickness 1¾ in. for ornamental construction. All doors to be of clear white pine 1¾ in. thick, paneled and glazed as indicated on plan.

(10) Hardware

All ventilating sash to be hung with galvanized steel butts and brass pins; all nails, bolts and screws to be of brass or galvanized. Door hardware to be of polished cast brass or bronze, butts to be steel bushed, locksets to have heavy brass knobs, double cylinder locks and to be provided with master pass key.

(11) Flashing

Where greenhouse joins service building or other structure, a weather tight connection is to be made by flashing with heavy sheet lead or copper in a neat and workmanlike manner. (Reglet to be left by service building contractor, if service building is other than wood construction.)

(12) Painting

All interior galvanized iron work is to be finished in aluminum bronze. All exterior iron and woodwork is to be painted three coats of best white lead and oil mixed with 20% French zinc. The second coat to be applied before glazing and the third coat to be applied after glazing. All exposed surfaces of heating coils beneath the plant benches and mains in boiler cellar are to be finished with a coat of specially prepared heat resisting black paint, that will be harmless to plants.

(13) Plant Benches

(a) Indestructible sanitary type plant growing benches arranged as shown on plan to be furnished and erected, consisting of galvanized angle iron frames supported on galvanized iron pipe legs, with porous tile bottoms resting in galvanized tees, and with sand rubbed slate fascias 1 in. by 7 in. All fittings to be hot galvanized iron castings.
(b) Plant benches same as in (a); except that sides will be of genuine red gulf heart cypress. Bottoms to be of porous tile.
(c) Plant benches same as in (a) except that bottoms and side fascias are to be of genuine red gulf heart cypress. Side fascias to be provided with moulded cap.
(d) Section of bench indicated on plan shall be equipped for propagating purposes with propagating frame with glazed sash and with cypress curtain beneath bench with adjustable panels to control the bottom heat.
(e) Plant tables where shown on plan shall be furnished and erected, with galvanized angle iron frames having pipe legs and with flat sand rubbed slate top 1 in. thick and provided with galvanized iron fascia approximately 3 in. high.
(f) Where shown on plan, benches shall be equipped with orchid steps consisting of galvanized angle iron frames and genuine red gulf heart cypress slatted steps.

(14) Plant Supports

Each growing bench where indicated on plan shall be provided at intervals of not more than 25 ft. with adjustable plant supports for carrying wire stretchers. These shall be bent to form from galvanized angle iron secured to benches by suitable braces and shall be provided with a cross bar adjustable in height in steps of 2 in. to a maximum of not less than 30 in. At corners the plant supports shall be returned so that wires can be stretched in both directions.

(15) Heating Coils

(a) Hot water heating coils are to be furnished and installed, with sufficient radiating surface in coils of 2-in. Byers or equal, genuine wrought iron pipe, placed beneath the plant benches to maintain a temperature of ( ) in Compartment No. 1

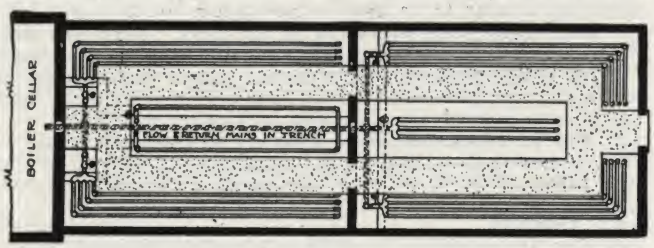


Fig. 6

and ( ) in Compartment No. 2, etc.; these temperatures to be maintained at night in zero weather, with water at the boiler heated to 180° F.
(b) Same as above but heating coils of 2-in. wrought steel pipe instead of wrought iron.
(c) Heating coils or a cast-iron radiator of sufficient heating surface to maintain a temperature of 65° to 70° to be furnished and installed in the workroom.

(16) Mains

(a) Mains of adequate size of Byers or equal genuine wrought iron pipe are to be furnished and installed, connecting the boiler to the various coils in such a manner that the control on each bank of coils is independent of that of any other.
(b) Mains shall be furnished and erected as in (a) except that they are to be of wrought steel instead of genuine wrought iron.

(17) Valves

Each bank of coils is to be fitted on both flow and return connections with a finished brass gate valve and each independent coil is to be provided with positive brass air cocks.

(18) Automatic Temperature Control Equipment

On the flow main to each separate compartment, direct connected motor operated valves are to be furnished and installed. Valves to be of a type that may be opened and closed by hand in case of motor failure. Each greenhouse compartment to be provided with a mercury tube type thermostat—range ( ) to ( ). Operating differential at mid

Fig. 5
Solar Plant Benches with Plant Supports

Fig. 7
Solar Slat Roof Shades

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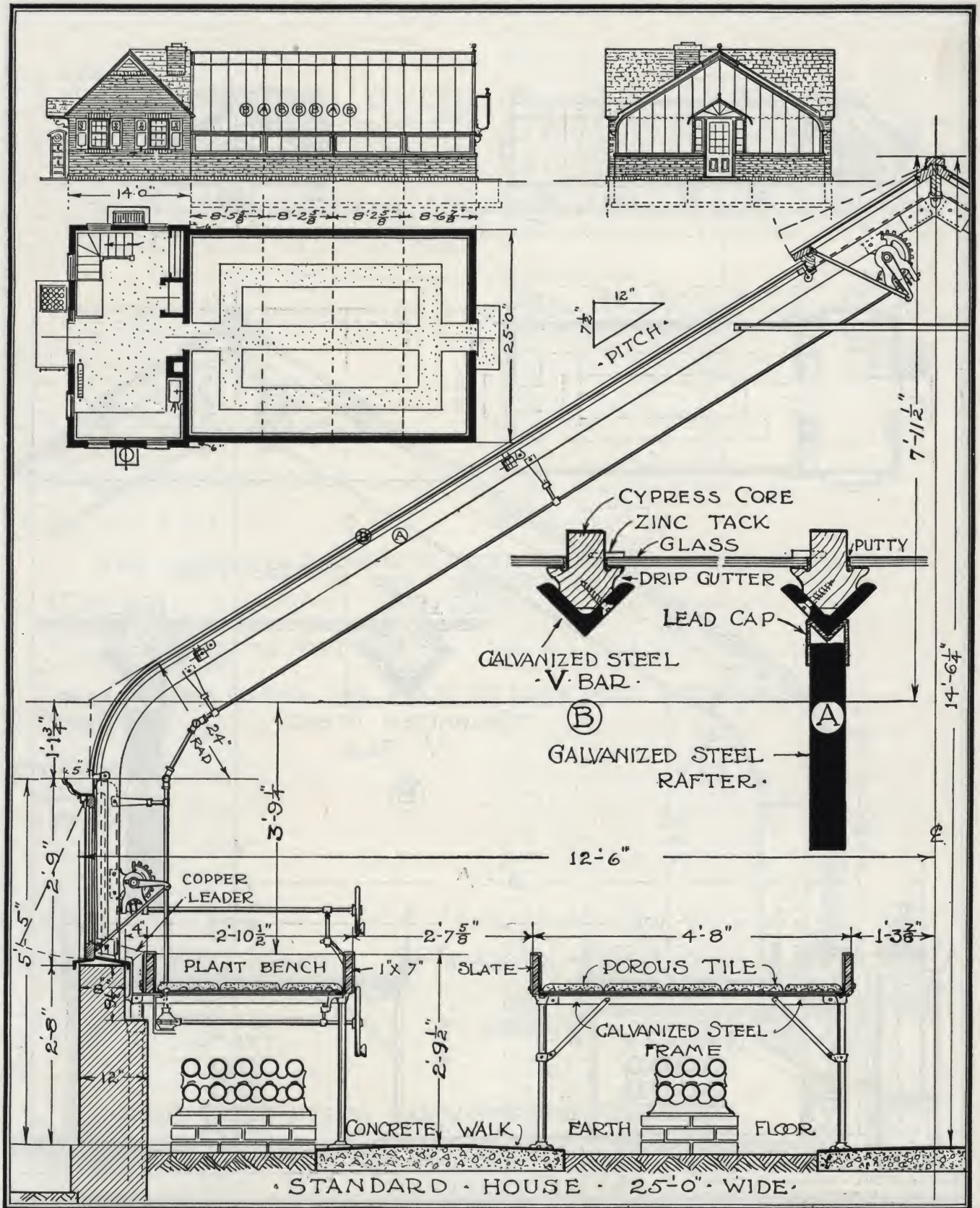

SIDE SASH VENTILATION TYPE	LUTTON SOLAR V-BAR GREENHOUSE WILLIAM H LUTTON COMPANY	SHEET No 2A JERSEY CITY N J

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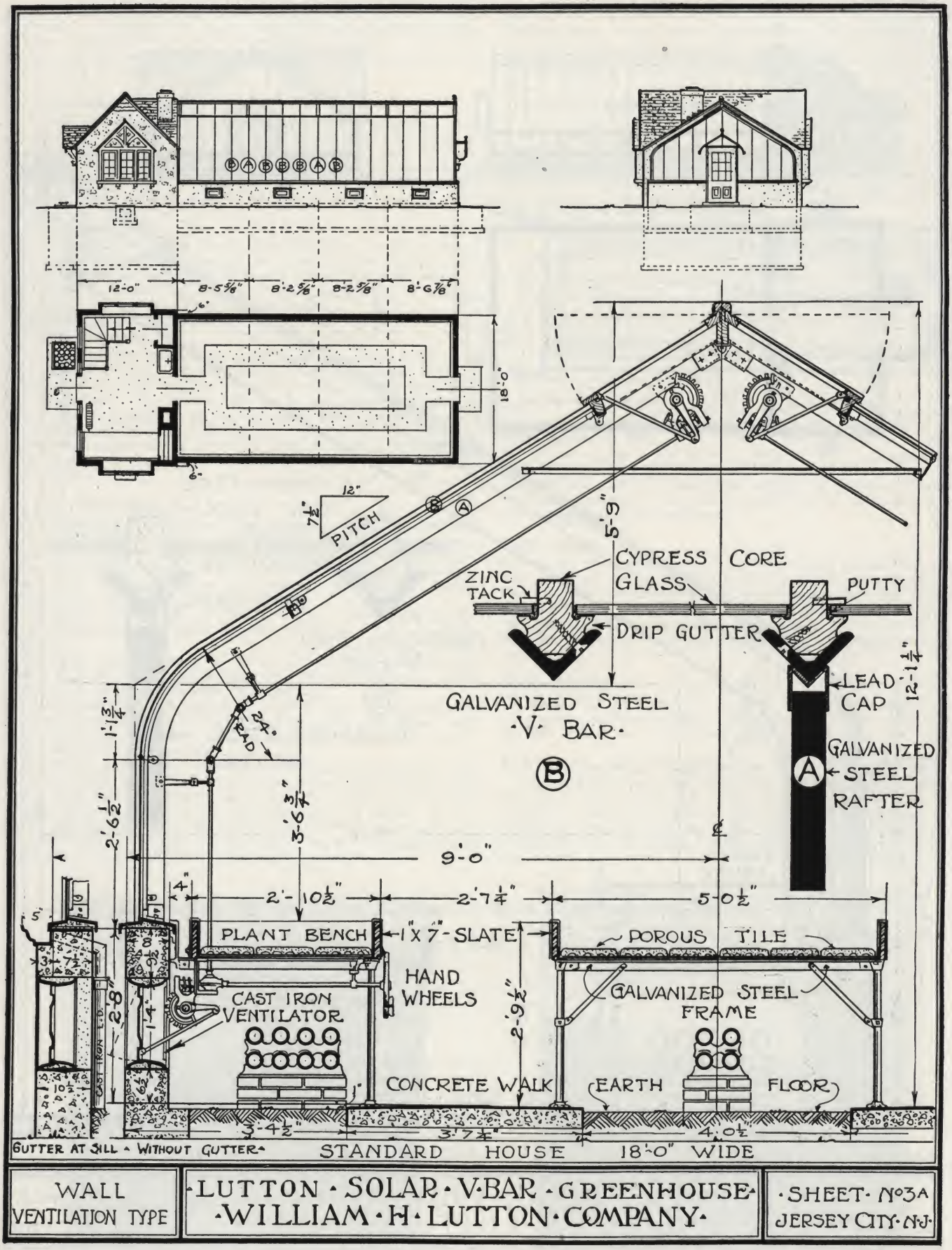

WALL VENTILATION TYPE	·LUTTON·SOLAR·V·BAR·GREENHOUSE· ·WILLIAM·H·LUTTON·COMPANY·	·SHEET·N°3A JERSEY CITY·N.J·

Continued on next page

temperature not greater than plus or minus 2° F. System so designed that it controls the burner on the furnace and at the same time causes the motor valve controlling the flow of water to its compartment to open and to remain open until the desired temperature has been reached in its compartment.

(19) Boiler

(a) A square sectional cast-iron hot water boiler, American Radiator Company's make or equal, having a rated capacity of ( ) is to be furnished and installed in the boiler cellar. Boiler is to be properly connected to chimney flue and to be fitted with thermometer, altitude gauge and expansion tank, etc.

(b) A welded steel tube boiler ( ) make or equal having a rated capacity of ( ) is to be furnished and installed in the boiler cellar. (Oil or gas burner to be furnished by other contractors.) Boiler to be fitted with altitude gauge, thermometer, aquastat, expansion tank and other necessary equipment.

(20) Solar Slat Roof Shades

Solar Slat Shades are to be furnished and erected over the section of roof indicated on the plan. They are to be adjustable from sill to top ventilating sash header, except where cut by hips or valleys. They are to be fixed to top ventilating sash and operate with the sash.

Slats are to be of selected genuine comb grained heart cypress, ⅞ in. wide by ¼ in. thick, spaced ⅜ in. apart. Slats to be linked by brass links, so designed that no strain is put upon the slats themselves. To be painted two coats best white lead and oil with 20% French zinc tinted pearl grey.

A bronze ridge bracket, with saddle spanning the ridge cap, is to be secured to the ridge of each section to be shaded, by means of bolts in such a manner as to prevent working loose in service. Braided rope for adjusting shades, with necessary cleats, etc. to be included.

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M. E. Hospital, Indianapolis, Ind.
University of Kentucky, Lexington, Ky.
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We manufacture all types of non-climbable fences and gates of the chain link type. Quotations and further information will be submitted on request.

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Our iron and wire fences and gates are made in all types and styles and are applicable for all uses, such as factory enclosures, residence purposes, lawns, courts, stairs, porches, cemeteries, fields, farms, etc.

Garden Furniture

Our garden furniture is designed along graceful lines which make our patterns distinctive and attractive. Although ornamental, it is substantially constructed to stand the outdoor weather of any climate. It is all very nicely finished in a soft green but any color requirements can be furnished at a nominal extra cost.

No. 540 S—Colonial arm chair, standard size.
No. 540½S—large size.
No. 541 S—Colonial side chair, standard size.
No. 541½S—large size.
No. 542 S—Colonial bench, length 48 in.
No. 542½S—length 56 in.
No. 543 S—Colonial bench, circular pattern, length 56 in.
No. 543½S—length 72 in.
No. 544 S—Colonial table, four legs, 30-in. diameter.
No. 545 S—three legs, 25-in. diameter.
No. 601 S—Colonial table, 20x36 in.

Numerous other patterns and styles, including side benches, fern tables, and glass top tables are available.

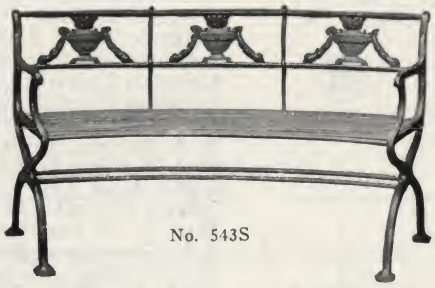
French Garden Furniture—We also carry a line of imported French garden furniture.

No. 581S—Lawn table, 36-in. diameter.
No. 605S—42-in. diameter.
No. 606S—48-in. diameter.
No. 577S—Side chair with spring seat.
No. 579S—Arm chair with spring seat.

Old Southern (1820) Garden Furniture—No. 558S as shown is 36-in. length. Single chair and table to match can be furnished.

No. 544S

No. 541S

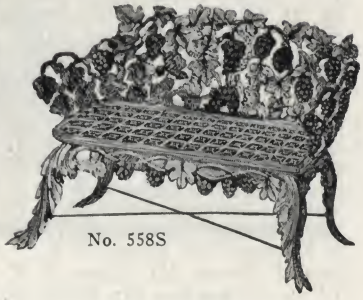

No. 543S

No. 542S

No. 540S

No. 601S

Imported French Garden Furniture


No. 558S

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SNOW WEATHER VANES
SILHOUETTE AND COPPER

Plate 200W

Plate 203W

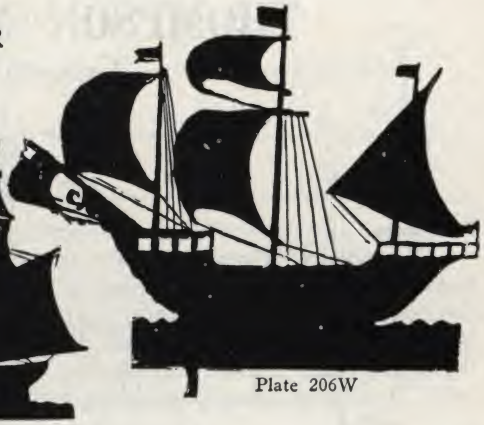


Plate 206W

Plate 208W

Plate 209W

Silhouette Weather Vanes—These weather vanes are of unusual and attractive designs and are used for the garden, garage and stable. All vanes are furnished with the letters complete as shown in Plate 200W. Sails on the ship designs can be finished in white if desired.

Plate 200W—"Full Rigged Ship," length 28 in.

Plate 203W—"Charles W. Morgan," the last whaler sailing out of New Bedford, Mass., length 32 in.

Plate 204W—"Mediterranean Galley," length 33 in.

Plate 206W—"Galleon," in the time of Elizabeth (1670), length 30 in.

Plate 207W—"Boy with Rabbit," length 29 in.

Plate 208W—"Colonial," height 30 in.

Plate 209W—"Setter," length 30 in.

Plate 210W—"Rooster," height 24 in.

Plate 211W—"Automobile," length 30 in.

Plate 212W—"English Rooster," height 24 in.

Copper Weather Vanes—These vanes are made of copper and gilded with pure gold leaf. All vanes are furnished with letters complete as shown in Plate 251V.

No. 220V—"Ship," length 34 in.

No. 221V—"Airplane," length 42 in.

No. 222V—"Grasshopper" (1565), length 42 in.

No. 223V—"Indian Chief" with bow and arrow (1720), length 30 in.

No. 224V—"Wyandotte," size 19x24 in.

No. 225V—"Deer" without bush, length 31 in.

No 226V—"Deer" with bush, length 31 in.

No. 227V—"Smuggler" (horse), length 25 in.; No. 228V, 32 in.; No. 229V, 42 in.; No. 230V, 48 in.

No. 231V—"Dog," length 34 in.

No. 232V—"Codfish," length 31 in.; No. 233V, 36 in.; No. 234V, 48 in.

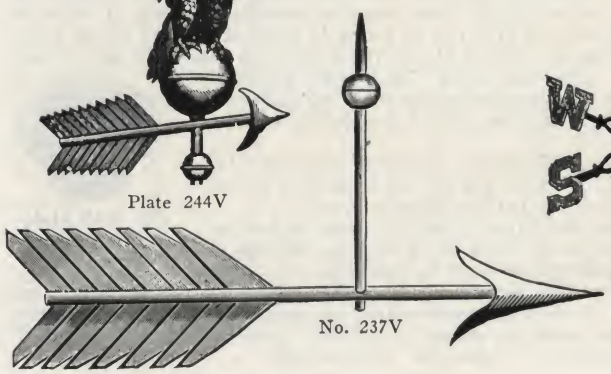
No. 235V—"Pickerel," length 36 in.; No. 236V, 48 in.

No. 237V—"Arrow," length 18 in.; No. 238V, 24 in.; No. 239V, 30 in.; No. 240V, 36 in.; No. 241V, 42 in.; No. 242V, 48 in.; No. 243V, 60 in.

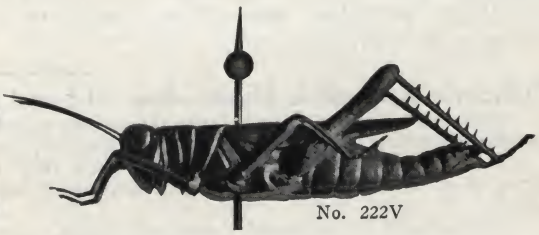
No. 244V—"Eagle," spread 15 in.; No. 245V, 18 in.; No. 246V, 24 in.; No. 247V, 30 in.; No. 248V, 36 in.; No. 249V, 42 in.; No. 250V, 48 in.

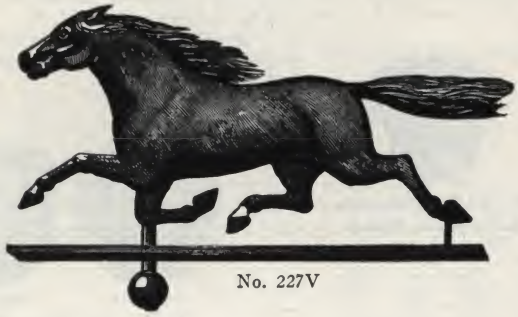
No. 251V—"Banneret," length 30 in.; No. 252V, 36 in.; No. 253V, 42 in.; No. 254V, 48 in.

Plate 244V


No. 237V

No. 251V


No. 222V


No. 227V

THOMPSON MANUFACTURING COMPANY

Concealed Lawn Sprinkling Systems

2251 East Seventh Street
LOS ANGELES, CALIF.
EASTERN OFFICE: 325 West Huron Street, CHICAGO, ILL.

Products

THOMPSON CONCEALED LAWN SPRINKLING SYSTEMS, consisting of SPRINKLER HEADS, CONTROL VALVES, STRAINERS, STRAINER VALVES, GRASS TRIMMERS and other devices for use with Thompson Lawn Sprinkling Systems.

Thompson Sprinkling Systems — Solve Sprinkling Problems

Thompson Concealed Lawn Sprinkling Systems

Thompson Concealed Lawn Sprinkling Systems consist of Thompson Sprinkler Heads, placed at intervals in the lawn and set even with the top of the ground, but below the level of the grass, these being connected to water pipes underground and operated from Thompson Control Valves. The systems are laid out in sections, a certain number of heads and one valve to each section. The number of heads to a section and the number of sections that can be satisfactorily operated at a time depend largely upon the size of the water supply line and meter, and upon the available water pressure.

Thompson Sprinkler Heads are manufactured in a variety of sizes and styles to meet any lawn and water condition.

Both full-circle and half-circle sprays are made. The former are for general use in areas that are 10 ft. square or larger. The half-circles are used in narrow spaces, in parkways, along walks, in driveways, next to buildings—any place where it is desired to throw the water in one direction only.

Engineering Service to Architects

To promote satisfactory installation of Thompson Systems, the Thompson Free-Plan Service is maintained. Through this service you can obtain detailed plans—prepared by Thompson engineers—without charge. These plans make it easy for any one understanding pipefitting to put in a system. All essential information and full specifications covering location and size of pipes, heads, valves, etc., are given on the blue print. To secure such a plan, send us a blueprint of the grounds to be sprinkled, with the following data indicated:

(1) Dimensions of each area to be sprinkled.
(2) Water pressure. (If available, indicate maximum and minimum.)
(3) Location and size of meter.
(4) Location and size of water supply line.
(5) Location of trees, shrubs, gardens, etc.
(6) If an elevated tank is used please state: (a) capacity of tank; (b) pump capacity in g.p.m.; (c) distance from bottom of tank to grounds; (d) size and length of pipe leading from tank to area to be sprinkled; (e) difference in elevation between tank and area to be sprinkled.

Distribution and Guarantee

Thompson products are marketed through hardware and plumbing supply jobbers, and exclusively appointed installers. Thompson Systems are installed by plumbing contractors, hardware dealers, landscape gardeners and sprinkler installers. Direct shipments are made only when convenient and satisfactory representation is not available; all such shipments are made C.O.D.

All Thompson products are guaranteed to be as represented in quality of materials and workmanship. Any articles found defective may be returned at our expense for credit or replacement.

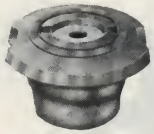
Full-circle Adjustable Head—Nos. 115 and 116

The most popular sprinkler head used in concealed lawn sprinkling systems. Adaptable for any lawn in any climate.

Nothing to get out of order. Contains only two parts. Body is of Horse Head zinc, die-cast, lined with heavy, yellow brass.

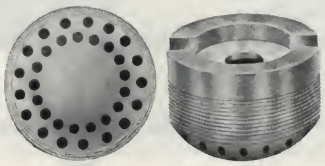
Nozzle-core is machined from solid brass. Strainer and patented port-plate are spun in nozzle-core. These metals are rust-resisting and will withstand corrosive action of water no matter where used.

Irrigates perfectly with uniform coverage and correct amount of water.



No. 115 Full-circle Adjustable Head

Threaded for ½-in. pipe. No. 116 for ¾-in. pipe. Choice of 5 different nozzle sizes: "Special," "A," "B," "C," "D." Consult spacing table



Strainer Side View

Full-circle Brass Nozzle

Half-circle Adjustable Head—Nos. 140, 141, 142, 144 and 117

The companion sprinkler head to No. 115. Used along walks, next to buildings, in parkways—wherever it is desired to throw water in one direction only.

So designed that the body does not interfere with spray—an important feature with this type of head. Angle of spray is such that when head is installed at foot of terraced lawn, terraced area can be properly covered without tilting head.

Also die-cast of Horse Head zinc and machined with expert care. Like all other Thompson products, passes rigid inspection before being packed.

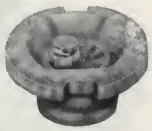
See table for correct sizes when specifying.

No. 142 (½-in. thread) and No. 143 (¾-in. thread) are of same design, except nozzle-slot is cut for quarter-circle.

No. 144 Strip Sprinkler Head is for use in narrow strips of lawn such as driveways and parkings, or next to buildings.

No. 117 Shrubbery Sprinkler Head is made of all-brass construction for mounting on riser pipes in shrubs and flower gardens.

Choice of full-circle nozzle-cores.



No. 140 Half-circle Adjustable Head

Threaded for ½-in. pipe. No. 141 for ¾-in. pipe. Choice of 2 nozzle sizes: –3 and –5. Consult table

Continued on next page

Full-circle Head with Adjustable Nipple—No. 160

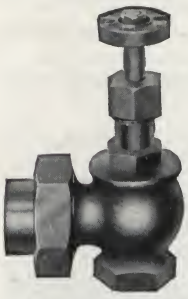
No. 160 Head

Zinc body; brass lining and nozzle-core. Mounted on adjustable brass nipple (for ½-in. pipe).

Thompson Sprinkler Head No. 160 is identical with No. 115, except that it is equipped with a 4-in. adjustable brass nipple which permits raising or lowering the head to conform with ground level. This is an advantage, particularly in new lawns, it being unnecessary to change the riser-nipple after the lawn has settled.

Supplied in the usual nozzle sizes in the full, half and quarter circles and in the strip sprinkler.

All-brass Control Valves



All-brass Control Valve

Complete with union. Made in ¾, 1, 1¼, 1½, 2 and 2½-in. sizes. Drain valve, ½ in.

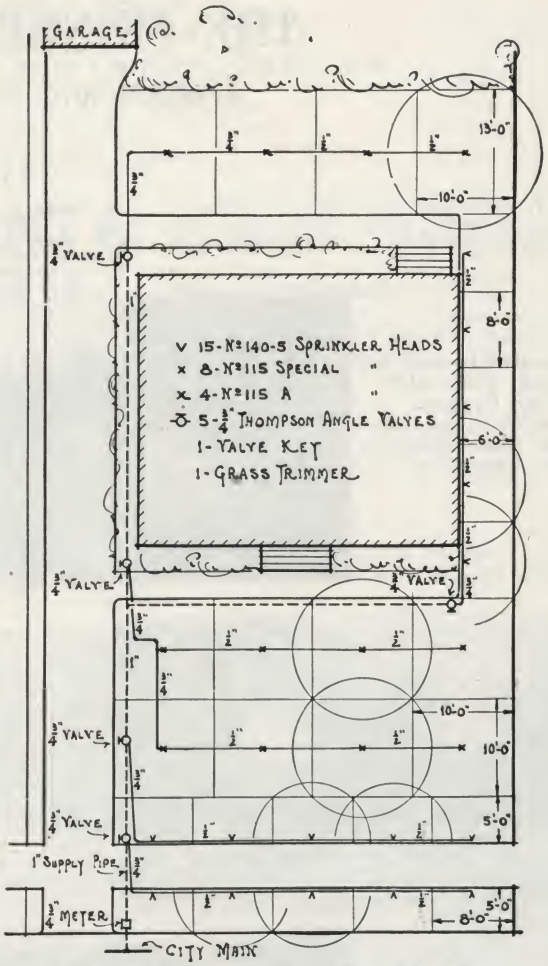
Thompson Control Valve is designed especially to meet requirements of sprinkling systems. Substantially constructed to permit the frequent operation necessary.

Angle type—allows full opening for unobstructed flow of water, assuring maximum flow for proper function of system. It shuts off tight, avoiding leaks and puddles that waste water and make soggy spots in lawn.

Parts are few and of high tensile strength, assuring rigidity and enabling them to withstand severe stress. Castings are of heavy red-brass valve stock. Valve stem is much larger in diameter than in most valves of similar size. In order to minimize wear on discs, disc holder is made to permit its revolving around stem. Jenkins' No. 93 composition disc assures full opening and perfect closure.

Accessories

The necessary accessories for the correct installation and operation of sprinkling systems are also manufactured. These include water strainers, control valve sleeves to protect the valve stem, valve keys for turning the sprinklers on and off, and grass trimmers for cutting lawn around the sprinkler heads.



A Typical Thompson Lawn Sprinkler Plan

INSTALLATION TABLE, SHOWING SPACING, PIPE SIZES AND WATER PRESSURES

Number of sprinkler heads on each line

Water pressure available	Size of control-valve, in.	"Special" 7/32 in.	"A" ¼ in.	"B" 5/16 in.	"C" 3/8 in.	"D" 7/16 in.	140-141-142 —3	140-141-142 —5
		8 ft. apart	14 ft. apart	16 ft. apart	18 ft. apart	20 ft. apart	5 ft.	8 ft.
		Discharge 1.5 g.p.m.	Discharge 3. g.p.m.	Discharge 3.75 g.p.m.	Discharge 4.5 g.p.m.	Discharge 5.6 g.p.m.	Discharge 1.125 g.p.m.	
20 to 30 lb.	½	2	(Do not use "A" head on less than 40 lb. pressure.)	(Do not use "B" head on less than 50 lb. pressure.)	(Do not use "C" head on less than 50 lb. pressure.)	(Do not use "D" head on less than 60 lb. pressure.)	3	2
For pressures of less than 20 lb. consult our Eng. Dept.	¾	4					6	5
	1	8					16	12
	1¼	13						
	1½	20						
	2	32						
		Spaced 10 ft. apart						
30 to 40 lb.	½	2					5	3
	¾	5					10	7
	1	12					24	18
	1¼	19						
	1½	29						
	2	48						
40 to 50 lb.	½	3	1				6	5
	¾	6	3				13	10
	1	16	8				32	24
	1¼	26	13					
	1½	38	19					
	2	64	32					
50 to 60 lb.	½	4	2	2	1		8	6
	¾	8	4	3	2		16	12
	1	20	10	8	6		40	30
	1¼	32	16	14	10			
	1½	48	24	20	16			
	2	80	40	32	26			
60 lb. and over	½	4	2	2	1	1	8	6
	¾	8	4	3	2	2	17	13
	1	22	11	8	6	5	44	33
	1¼	35	17	15	11	8		
	1½	52	26	21	17	12		
	2	86	43	34	28	20		

A Few Owners of Thompson Systems

Thompson Concealed Lawn Sprinkling Systems are adaptable for any size lawn in any climate. Following are a few typical examples of Thompson installations:

University of Arizona, Tucson
Hall Scott Motor Company, Berkeley, Calif.
First Christian Church, Oakland, Calif.
Baron Long Estate, San Diego, Calif.
Howard Spreckels' Residence, San Francisco
Forest Lawn Memorial Park, Glendale, Calif.
McKinley Home for Boys, Los Angeles, Calif.
Los Angeles City Hall, Los Angeles, Calif.
Over 325 Public School Grounds, Los Angeles
Union Stock Yards, Los Angeles, Calif.
Sears, Roebuck & Co., Los Angeles, Calif.
Grounds of Douglas Fairbanks, Beverly Hills
Residence of Mayor J. O. Billig, Boulder, Colo.
City Park, Crescent City, Fla.
City Hall, Lake Worth, Fla.
Albert D. Laskar Estate, Miami Beach, Fla.
Col. Robt. Law, Jr. Estate, Miami Beach, Fla.
J. C. Penney Estate, Miami, Fla.
Aaron Colnon Residence, Chicago, Ill.
Grounds of Chas. P. Thompson, Flossmoor, Ill.
Concordia Hospital, Concordia, Kan.
John M. Mideke's Grounds, Oklahoma City, Okla.
C. A. Mayo, Tulsa, Okla.
Robt. Rutledge's Home, Midvale, Ohio
Estate of Walter B. Beebe, Portland, Ore.
J. R. Bowles' Lawn, Portland, Ore.
E. A. Landreth Estate, Fort Worth, Tex.
L. M. Davenport Residence, Spokane, Wash.
Grounds of the Masonic Home, Zenith, Wash.
Grounds of the Royal Hawaiian Hotel, Honolulu

THE SKINNER IRRIGATION CO.

Garden and Lawn Watering Systems

FACTORY
TROY, OHIO

BRANCH OFFICES
LOS ANGELES, CAL. SAN FRANCISCO, CAL. CHICAGO, ILL. BOSTON, MASS. NEW YORK, N. Y. PHILADELPHIA, PA.

Concealed Lawn Watering, Flush with the Ground

Fed by underground piping. Closed when not in use. Fine fog-like, uniform coverage

Special Large Coverage Head for Expansive Lawns

Reduces installation costs. Gives maximum coverage on limited water supply

Semi-concealed Lines Laid Along Walks, Walls or Hedges

Excellent for borders, terraces, narrow lawns. Delivers finely broken spray. Often combined with concealed lawn heads

Watering Foundation Plantings

Foundation plantings watered completely by the turn of a valve form these specially designed lines set around the house foundation

For Vegetable Gardens

The Skinner System of Irrigation (recognized as standard the world over) is used on many of the finest estates in America. Overhead lines 50 ft. apart. Streams swing slowly from side to side

TRADE SKINNER SYSTEM OF IRRIGATION. MARK.

Products

WATERING EQUIPMENT for everything that grows:

Overhead Spray Irrigation for gardens.

Concealed Lines for shrubbery, foundation plantings and terraces.

Semi-concealed Sprinkling Lines for lawns, flowers and parking.

Buried Lawn Watering Systems fed from underground pipe.

Portable Sprinklers for lawns, gardens, polo fields, athletic fields, and golf courses.

Special Watering Devices for unusual needs.

Experience

Pioneers in the field of overhead watering. Have led in every progressive step for a quarter of a century.

Ample manufacturing facilities.

Complete and balanced engineering and service organization.

Product is in use in every State in the Union, every province in Canada and almost every important country in the world.

Method

The many possible uses of *irrigation* call for careful selections from our broad range of equipment. This should be made after considering such factors as the available water supply, any unusual watering requirements, the problems of effective watering and initial cost.

Our engineers are available at all times to give prompt and thorough co-operation. General catalogues and data for the asking. Plans prepared on request.

Clientele

Among American users are such names as:

Dreers, Philadelphia, Pa.
Peter Henderson, New York, N. Y.
Hicks, Long Island, N. Y.
Iowa State College
Ohio State University
West Point Military Academy
Cornell University
John D. Rockefeller
James Duke Estate
Henry Ford
J. P. Morgan
Julius Rosenwald
Pennsylvania State Hospital
Vincent Bendix

Together with thousands of hospitals, public buildings, schools, estate owners, small garden or lawn owners.

HABITANT SHOPS, INC.

Manufacturers of Wood Fences and Garden Furniture

32 Washington Avenue, BAY CITY, MICH.

DISTRIBUTORS IN 62 PRINCIPAL CITIES

Look for the name "Habitant" in Local Telephone Directory

Products

RUSTIC WOOD FENCES.
Also Garden Furniture.

HABITANT FENCING

TRADE-MARK

Habitant Fencing

Habitant Fencing is made in the north woods of Michigan, entirely by hand. Only selected sound Northern white cedar (*arbor vitae:* the tree of life) is employed because of its extremely rugged qualities. It is resistant to time and the elements, and requires no painting. Habitant Fencing is picturesque, setting harmoniously in any natural or architectural background.

Construction

Habitant Standard consists of sound cedar poles, mounted on cedar rails with rustproof nails. Habitant "Good Will" is made by running galvanized pipe through entire lengths of fence, preventing removal of palings and presenting identically the same appearance on both sides. Single walk and double drive gates to match various styles of fencing can be supplied.

Shipped Complete

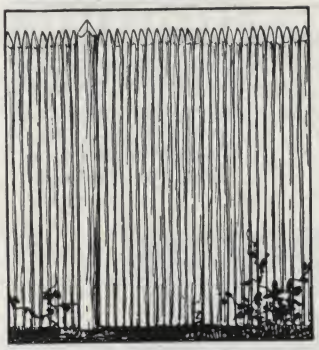
Habitant Fencing comes complete with posts and other necessary parts. No "extras" need be bought.

Nation-wide Erection Service

In every district of the United States a capable firm of fencing specialists assures the utmost satisfaction and attention. Where erection complete is desired, crews of trained men are at your service.

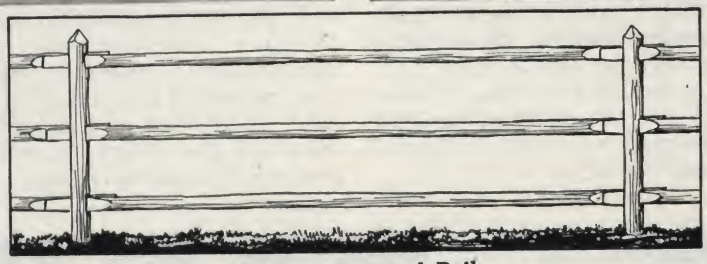
Estimates

Our nearest distributor will be happy to furnish complete details and an estimate of cost either with or without erection, and without obligation.



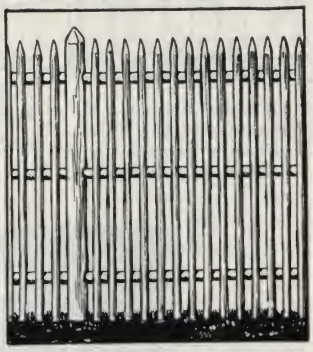
Habitant Stockade

No. 200. Closely woven, 2 in. halved pickets, peeled cedar posts and rails.
No. 900. "Good Will," full round 2-in. peeled pickets, bored for galvanized pipe rails, with posts complete. Same appearance on both sides. Heights 3 to 8 ft.
No. 1400. Brook full round 1¼ in. pickets, complete with posts and rails, winter cut with bark on.



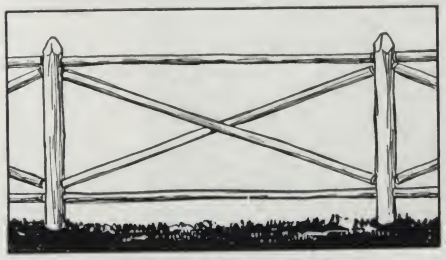
Habitant Post and Rail

No. 700. Made of full round cedar, exceptionally strong. Heavy posts spaced on 12-ft. centers. 3 or 4 rails, 4 ft. high.
No. 400. Lighter fence, posts spaced on 7 ft. 6-in. centers. 4 or 5 rails high.
Note: Post and rail fences can be ordered in various heights and any desired number of rails.



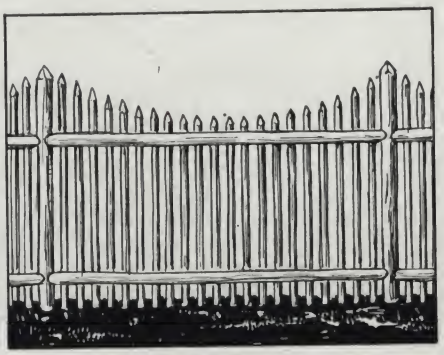
Habitant Picket

No. 300. Similar construction to No. 200, but pickets spaced either 1 or 2 in. apart.
No. 920. Similar to No. 900 Good Will with pickets spaced 2 in. apart.
No. 1500. (Potts) similar to No. 1400, full round pickets with bark on, spaced either 1 or 2 in. apart.
Colonial white painted fence also available



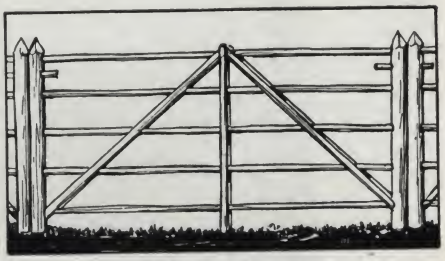
Habitant Cross Rail

No. 444X. Posts spaced on 7 ft. 4-in. centers, 4 ft. high, rails 2½ to 3¼ in. in diameter. This fence is shipped knocked down. Habitant Cross Rail Fence is a perfect combination of beauty and efficiency



Habitant Lennox

No. 1200. Curved top picket fence, 2 and 4-in. spacing, 3, 4 and 5 ft. high at lowest point. Full round pickets mounted between halved rails. Same appearance on both sides



Habitant Hurdle

No. 600. One of the strongest made. Diagonally braced on both sides. 8 ft. 3-in. sections, five bars, 4 ft. high

DUBOIS FENCE & GARDEN CO., INC.

Manufacturers of Woven Wood Fence

101 Park Avenue, NEW YORK, N. Y.

THE ORIGINAL WOVEN WOOD FENCE

Made in France of Seasoned French Chestnut

Dubois Woven Wood Fence Blends Perfectly with Any Period or Design

DUBOIS (TRADE-MARK REG. U. S. PAT. OFF.)

The fact that the foremost architects and landscape artists of this country are using *Dubois* as part of their landscaping schemes is conclusive evidence of its remarkable utility and practical features.

It is being used in a multitude of ways:

To enclose an estate or garden.

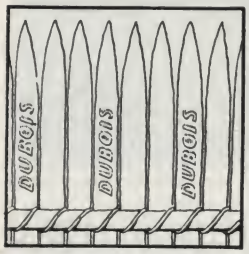
To screen a laundry or service yard.

To provide a harmonious background for flowers and shrubs.

To bring safety and charm to city roof gardens and pent house terraces.

To shut out unwelcome views.

Its installation on golf courses is constantly increasing and it is extensively used as an enclosure for tennis courts, playgrounds, swimming pools and in many other ways.



Genuine Dubois Is Branded on the Back of Every Section for Your Protection

To architects, *Dubois* presents a completely satisfactory answer to their problem of how to achieve privacy for an estate or garden without the sacrifice of beauty or architectural harmony, for *Dubois* has a charm that is unique in character and blends with any style or period of architecture.

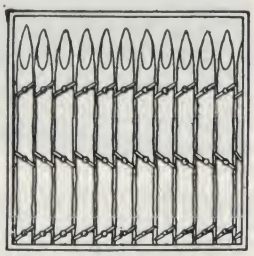
Provides Immediate Privacy

One of the principal advantages of specifying *Dubois* to complete the ensemble of house and grounds is that it gives privacy *immediately*. There is no bare and ugly period of waiting for plantings to grow and, unlike a hedge, *Dubois* never needs attention once erected.

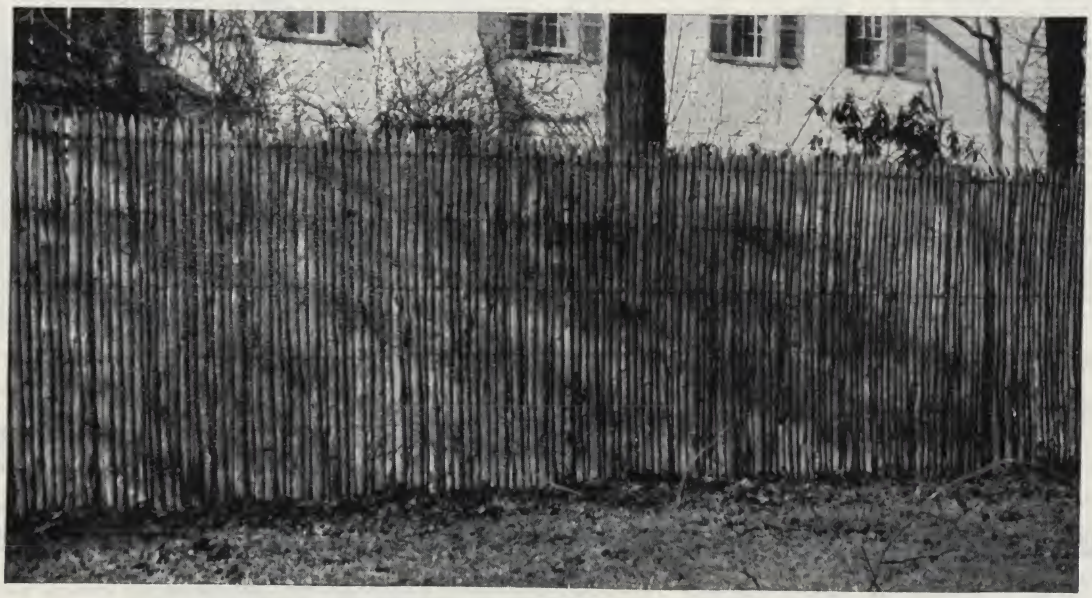
Dubois Is Made in France

"Woven wood" fences have been made by French craftsmen and used with telling artistry on the continent for centuries, but not until the advent of *Dubois* were these richly decorative rustic chestnut fences introduced to home lovers throughout the United States. Still made by hand, with typical French thoroughness, the strict specifications laid down for the manufacture of *Dubois* assure much better quality, uniformity and length of life than when the choice of materials and excellence of workmanship depended upon the skill and conscientiousness of the small maker.

To obtain *Dubois* quality and *Dubois* dependability, it is therefore important that you clearly specify *Dubois* by name. The registered trade-mark "DUBOIS" is branded on the back of every section. Thus you will be assured of genuine *Dubois*.



Heavy, Rustproof Copperweld Wire Is Now Used Exclusively to Bind the Saplings



The First Recorded Installation of Dubois Woven Wood Fence, Erected in 1901

This fence is as beautiful and charming today as the day it was erected. *Dubois* Woven Wood Fence never needs painting. The first cost is moderate and as the years pass, it becomes an even more thrifty investment for it is absolutely free from maintenance cost

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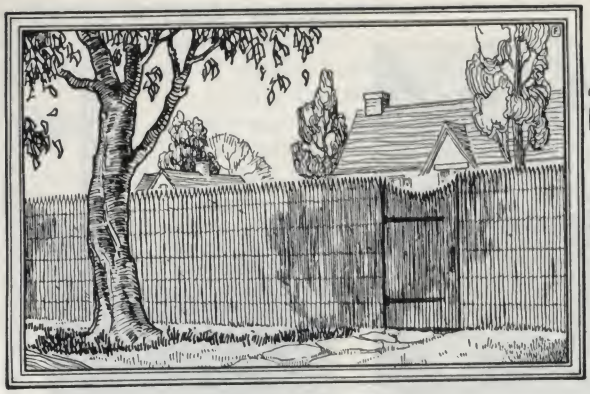
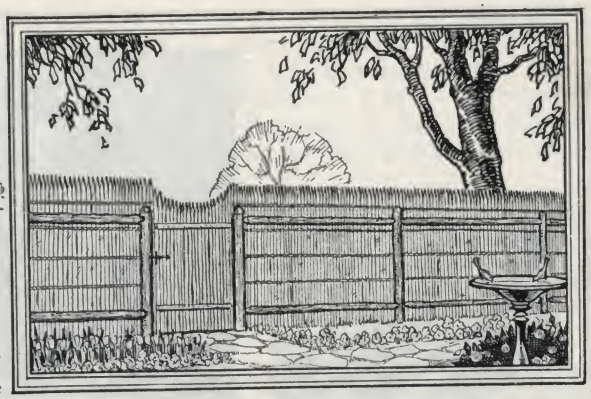


From the Outside

Dubois presents an even façade of sturdy saplings, uniformly straight and so closely woven that outsiders cannot see through

The posts are placed about 8 ft. apart and connected top and bottom with 2x4 in. timbers or other cross-rails. Then the sections of *Dubois* are nailed to this framework—an easy job for almost anyone



From the Inside

The ready-cut rustic framework harmonizes perfectly with *Dubois*, making the inside effect as attractive as from without

Single or Double Gates Are Furnished with Curved or Straight Tops

Gives a Lifetime of Service

Before use the live-cut *Dubois* chestnut saplings are thoroughly seasoned and heat treated by a special baking process to prevent all possibility of warping.

Dubois uses Copperweld *rustproof* wire to bind the pickets securely to their backing strips. Being rustproof and weatherproof, *Dubois* never needs painting. Its first cost is moderate and, as years pass, it becomes an even more thrifty investment for it is absolutely free from upkeep cost. *The first cost is the last.*

A Height for Every Purpose

Dubois is imported from France ready to erect in convenient sections 5 ft. long.

Six Heights—*Dubois* comes in six heights: 18 in.; 3 ft. 10 in.; 4 ft. 11 in.; 6 ft. 6 in.; 8 ft.; and 10 ft.

Gates to match can be furnished equipped with quaint iron hinges and latches. These gates come in both single and double sizes (for driveways), with straight or curved tops and give a most artistic effect.

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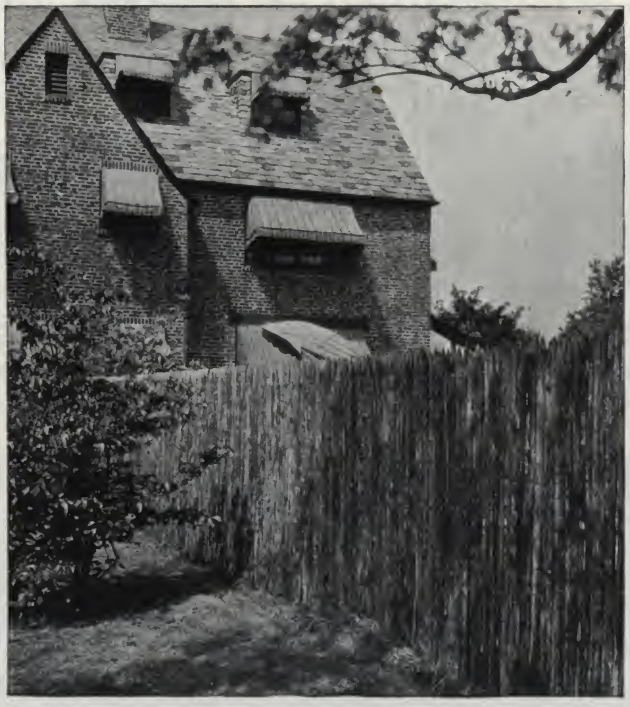
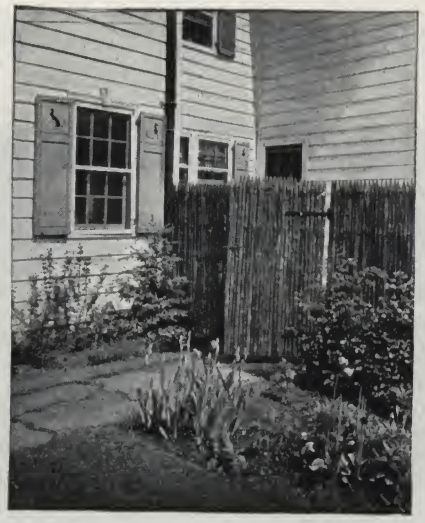




A Few Picturesque Installations of Dubois Woven Wood Fence

Continued on next page

Dubois Is Easily Erected

Dubois is shipped just as it is imported—in 5-ft. sections, and is easily handled. These sections are readily erected. No skilled labor is required. Only a framework of posts and crosspieces is needed which can be procured from any carpenter or lumber dealer.

Dubois Rustic Post
The cross-rails fit into the posts easily and are held securely

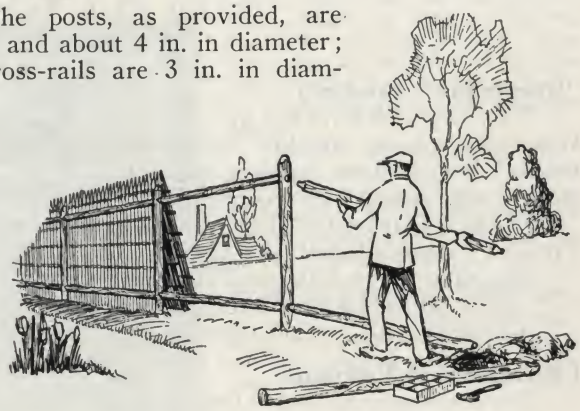
The posts are set approximately 8 ft. apart and should be connected by two crosspieces, to which the sections of *Dubois* are nailed. Locust or cedar is recommended for the posts.

Rustic Framework—Ready to Erect

For those who prefer, we now supply an attractive rustic cedar framework, designed especially as a support for *Dubois*. This consists of mortised and tenoned posts and cross-rails, finished to harmonize with the quaint, rustic aspect of *Dubois*. To erect this, no labor is required beyond the setting of the posts and the fitting together of the ready-cut parts.

In addition to its added convenience, this framework is desirable as well because it is so thoroughly in harmony with the natural charm of *Dubois*. Now the rear side of the fence may have as much rustic charm as the front.

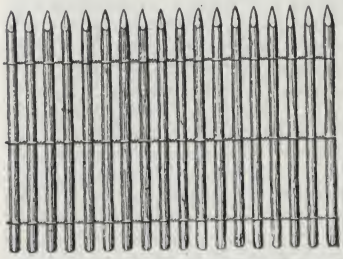
The posts, as provided, are round and about 4 in. in diameter; the cross-rails are 3 in. in diameter.



DUBOIS CLEFT CHESTNUT FENCE

A Beautiful and Economical Fence

In many respects, *Dubois* Cleft Chestnut Fence is the equivalent of the famous *Dubois* Woven Wood Fence for it supplies the same note of charm and rustic beauty given by the latter. It is made in France of live chestnut saplings, thoroughly processed to prevent warping and consequently will give just as remarkably long service as the Woven Wood Fence.



Section of Cleft Chestnut Fence
Showing spacing between the saplings

The chief difference between these two fences is that *Dubois* Cleft Chestnut Fence is made by machinery with the saplings *spaced one inch apart,* while in the other type they are closely woven together by hand.

Dubois Cleft Chestnut Fence is furnished with the saplings bound with Copperweld rustproof wire or galvanized wire.

Dubois Cleft Chestnut Fence is ideal for use where a fence somewhat lower in cost than *Dubois* Woven Wood Fence is desired and where absolute privacy is not a consideration.

Suitable for Many Purposes

This versatile fence may be used in a multitude of ways:

To screen a driveway or service yard.
To mark a property line.
To enclose tennis courts.
To give a delightful, rustic atmosphere to a garden.
To serve as a background for vines, flowering shrubs, a trellis for climbing roses, and many similar interesting and beautiful applications.

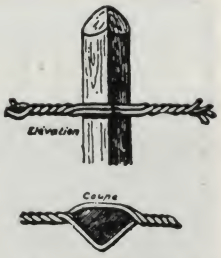
Sizes Available

Dubois Cleft Chestnut Fence is furnished in 16 ft. rolls and in three heights: 6 ft. 6 in.; 4 ft. 11 in.; and 3 ft. 10 in.

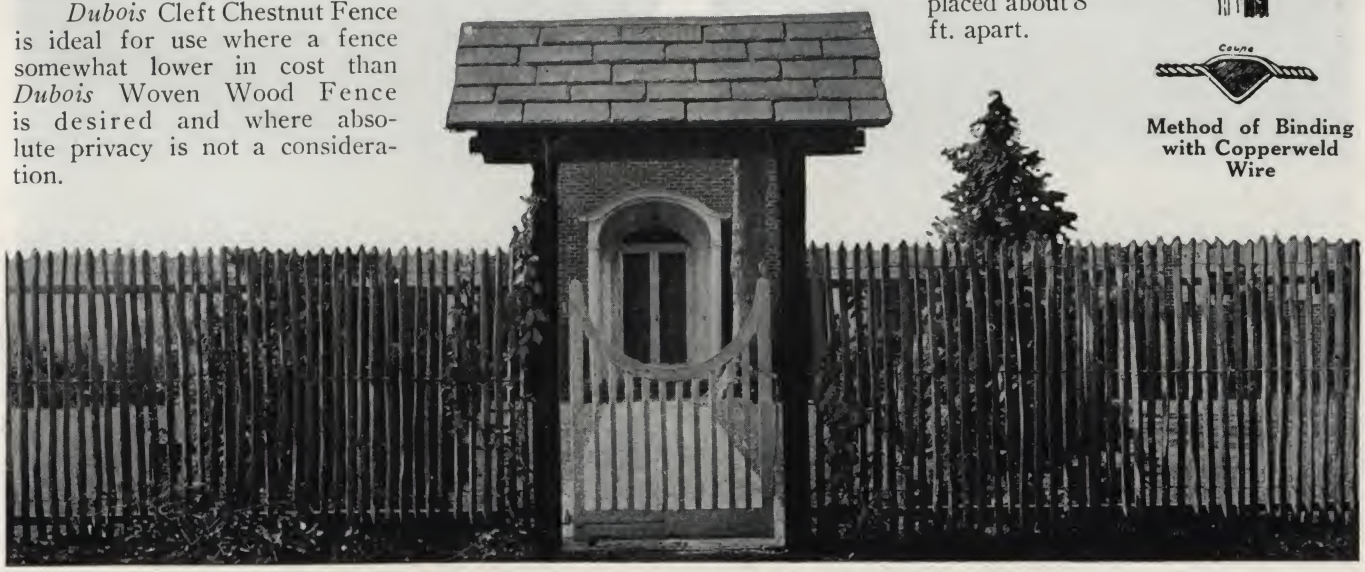
Gates, either single or double driveway types, are furnished in corresponding heights.

Installation

Dubois Cleft Chestnut Fence is easy to erect against stringers between cedar or locust posts placed about 8 ft. apart.



Method of Binding with Copperweld Wire



Dubois Cleft Chestnut Fence Is Pleasing and Attractive in Appearance

ROBERT C. REEVES CO.

Manufacturers and Distributors of Wooden and Wire Fences

101 Park Avenue, NEW YORK, N. Y.

"Reeveshire" Products

FRENCH "PROVINCIAL" WOVEN WOOD FENCE—a sturdily constructed fence of live chestnut saplings, woven together with copperweld rustproof wire.

"CLEFT CHESTNUT" FENCE—somewhat similar to French "Provincial" but with saplings spaced 1 in. apart.

ENGLISH TYPE HURDLE FENCE and GATES.

OLD-FASHIONED POST and RAIL FENCE.

COPPERWELD CHAIN LINK FENCE.

Literature and Estimates

We have prepared interesting pamphlets and booklets dealing with the application and installation of "Reeveshire" Fences. These will be sent on request.

Estimates gladly furnished on receipt of specifications.

Reeveshire
"The Name of Famous Fences"

Service to Architects

Our Service and Advisory Departments were organized to co-operate in the solution of fencing problems. In submitting any fence problem to the ROBERT C. REEVES CO., you have the assurance that they will give not only *competent* advice but an *impartial* recommendation.

The Reeves organization handles every type of fence, and their only interest in recommending any particular kind is that it shall best serve your purpose.

"REEVESHIRE" WOVEN WOOD FENCES

French "Provincial" Fence

Equally charming and practical is this woven wood fence. The grace of the slender palings and its rustic simplicity blend into any background. Age only mellows its beauty and it is an attractive frame for any enclosure. It affords privacy and protection while presenting an extremely pleasing appearance to the outside world.

Sturdy and Economical—The practicability of the French "Provincial" Woven Wood Fence lies in the sturdiness of its construction. The live chestnut saplings are grown, cut and assembled in the provinces of France, and are woven together with rust-resisting copperweld wire. Rigidity is provided by a firm stripping which is attached to the back. Its economy lies in the fact that the hand-split saplings never need painting.

French "Provincial" Gate

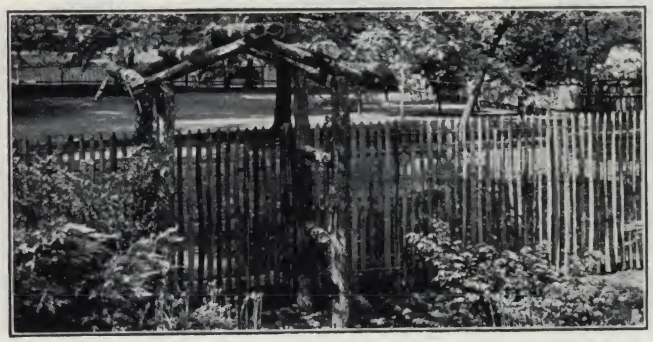
How Furnished—Supplied in panels in full 5-ft. lengths and in six heights; 10 ft.; 8 ft.; 6 ft. 6 in.; 4 ft. 11 in.; 3 ft. 10 in., and 18 in. Gates are furnished complete with hardware.

"Cleft Chestnut" Fence

Somewhat similar in construction and design to the French "Provincial" with the exception that the saplings are spaced one inch apart and that this type of fence is furnished in rolls instead of in sections. It is somewhat lower in cost than French "Provincial" and adaptable wherever absolute privacy is not desired.

How Furnished—Supplied in 16-ft. rolls, in five heights; 10 ft., 8 ft., 6 ft. 6 in.; 4 ft. 11 in., and 3 ft. 10 in., and fastened with either copper weld or galvanized wire.

French "Provincial" Fence



"Cleft Chestnut" Fence

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"REEVESHIRE" HURDLE FENCES

English Type Hurdle Fence

An adaptation of the riven chestnut Hurdle Fence which has been used in England for centuries. It is made of split chestnut timber, constructed in sections or hurdles, each hurdle being 8 ft. 3 in. long. Posts are 6 ft. long and extend 18 in. into the ground. When erected the fence is 4 ft. high. The posts of one hurdle are securely fastened to those of adjoining hurdles by means of wooden pins which are supplied. This makes for exceeding strength, as no one post is required to support alone a strain on its particular hurdle.

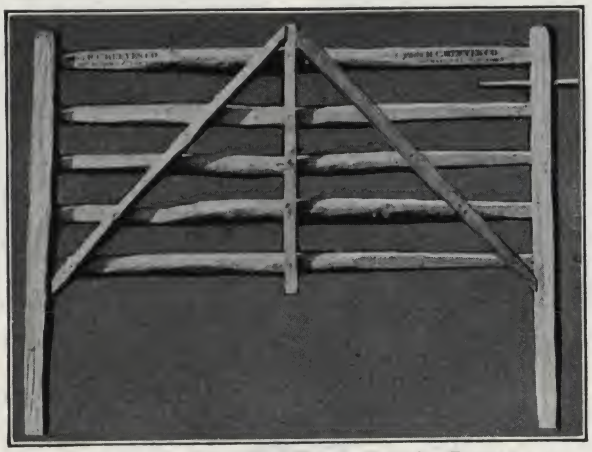
The hurdles are made in 3 types—4, 5 and 6-bar, all of which are the same length and height, the difference being in the spacing between the bars.

Uses—English Type Hurdle Fence is more than an enclosure—it is decidedly an artistic fence, possessed of unusual rustic charm and it blends well with many types of architecture. Ideal as a division fence in the suburbs, as a boundary fence for large estates, or to accentuate the setting for a residence of the English farmhouse or similar type.

The 4-bar hurdles are suitable for enclosing pastures for cattle where a close fence is unnecessary. The 5-bar type makes an ideal fence for paddocks or pastures for spirited horses and is used for this purpose on the estates of many leading horsemen of the country. The 6-bar hurdles make a very close fence and are particularly suited for enclosing pastures or pens for sheep.

Hurdle Fence Gates—Made with 4, 5 and 6 bars to conform to the three types of fencing.

Stocked in 10-ft. lengths with extra braces. Furnished to order in any desired length.



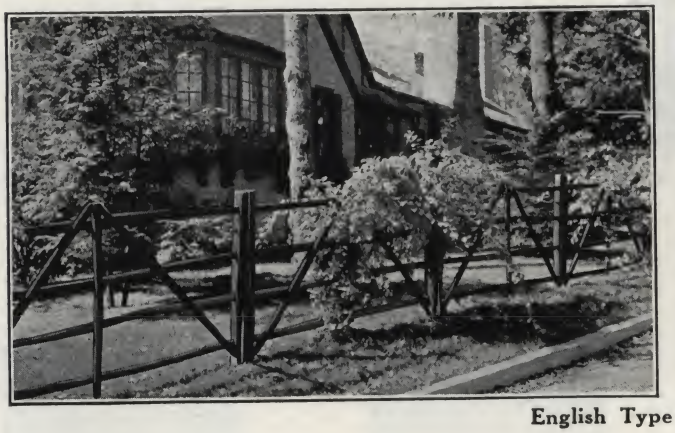
Section of English Type Hurdle Fence

Portable Post and Rail Fence

Much heavier than the English Type Hurdle Fence although of the same length and height when set.

Posts extend 2½ ft. into the ground.

Generally used as permanent fences in hunting districts.



English Type Hurdle Fence

OTHER "REEVESHIRE" FENCES

Copperweld Chain Link Fence

Enduring copperweld fence offers permanent protection and eliminates painting and the usual maintenance and replacement costs. Beautifies as it protects. We are prepared to give complete service—from the first plans to the final erection. Where a wire screen fence is desired, Copperweld Chain Link Fence is most suitable

The two types of fencing here shown are typical "Reeveshire" products and provide the utmost in quality, design and adaptability.

Old-fashioned Post and Rail Fence

An authentic early American fence. Made of split chestnut. Economical and practical for pastures and many other purposes. Provides a touch of distinction when used in front of dwellings as above

ANCHOR POST FENCE COMPANY

Manufacturers of Wire Fences, Iron Fences and Entrance Gates

GENERAL SALES OFFICE

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NEWARK, N. J., 60 Park Place
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PITTSBURGH, PA., 541 Wood Street
ST. LOUIS, MO., 1245 Syndicate Trust Building
SHREVEPORT, LA., 3306 Line Avenue

SALES AGENTS IN OTHER PRINCIPAL CITIES—CONSULT TELEPHONE DIRECTORY

FACTORIES: BALTIMORE, MD., CLEVELAND, OHIO and SAN FRANCISCO, CAL.

Products

ORNAMENTAL IRON ENTRANCE GATES; ELECTRICALLY WELDED IRON FENCES; GATES.

WIRE and IRON FENCES of all kinds and in several heights, for country places, residences, parks, playgrounds, institutions, factories, mills, railroads, reservoirs, etc.

TENNIS COURT and ATHLETIC GROUND ENCLOSURES; KENNEL, POULTRY and STOCK PADDOCK FENCES; expert designing and construction of special ENCLOSURES for game, birds, etc.; IRON and WIRE ARBORS, ARCHES and TRELLISES.

TRADE-MARK

Nation-wide Sales and Erecting Service

A chain of Anchor offices located in principal cities in all parts of the United States insures immediate attention to the requirements of architects. We maintain trained crews of erectors who erect fences under the supervision of our main office and branches, thus insuring good workmanship and an economical job. If desired, we will make surveys for grades and measurements and take entire charge of the work. When a customer prefers to do the erecting, tools and necessary instructions are furnished.

Estimates and Catalogues

Estimates given for products delivered and set complete in any part of the country. In requesting estimates, send, if possible, a diagram giving dimensions, location of gates, ends and corners.

For the convenience of architects and their specification writers we have prepared a special folder according to specifications for A.I.A. filing system. It contains a complete set of catalogues, specification sheets with scale drawings, details and dimensions on Anchor Wire and Iron Fences and Gates.

The nearest Anchor office will gladly send you one of these handy folders. Just write for folder "A.I.A. File 14-k."

Ornamental Iron Entrance Gate on the Estate of Asa G. Candler, Jr., Atlanta, Ga.
This installation also includes 5700 ft. of Anchor Chain Link Fence, Type DOA-1, 7 ft. high

Continued on next page

Anchor Garden Gate on Private Estate

Anchor-Weld Iron Fence, Type RA-1
Surrounding residence of H. C. McCrady, Pittsburgh, Pa.

Iron Fences and Entrance Gates

Long experience enables this company to manufacture iron fences and ornamental gates properly proportioned and designed, and correctly made in all details. Special or stock designs furnished.

Anchor-Weld Iron Fences and Gates

The ANCHOR POST FENCE COMPANY has secured the right to manufacture iron fences and gates by the *electric-weld process.* As shown in the illustrations, we use grooved square bars: ½, ⅝ and ¾ in. square. The rails consist of these bars in horizontal pairs the length of a panel. Welded between these pairs, and at right angles to them, are the pickets. All welding is done on the flange sides of rails and pickets.

The strength of this type of construction is enormous. Not only does it permit the making of panels as long as 10 ft., but the center support is unnecessary.

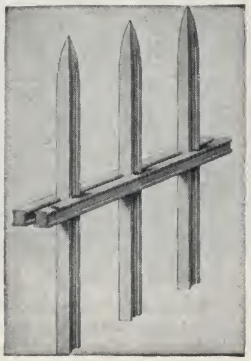
Even when supporting an additional weight of several hundred pounds at the center, the rails show little or no deflection. Pickets can not loosen and fall. Gates, made in the same manner as the railing, require no disfiguring diagonal braces to maintain rigidity.

Elaboration is possible: circles, scrolls, ellipses, and other special features may be introduced, double top or bottom rails may be used, and highly ornamental iron posts or brick, stone, concrete, or cast iron columns may be employed.

Grooved Square Rods of Open Hearth Steel

Electrically Welded Under Tons of Pressure

Forming One Solid Piece at Each Intersection



Perfect Union of Pickets and Rails

Anchor-Weld Iron Fence, Type RA-3
And single walk gate at St. Mary's School, Elizabeth, N. J.

Anchor-Weld Double Gate
At the factory of The Duratex Co., Newark, N. J.

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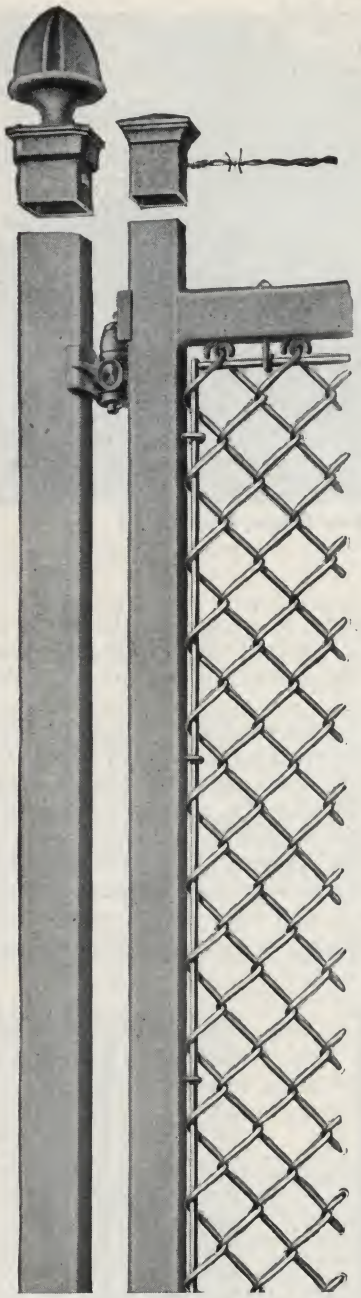
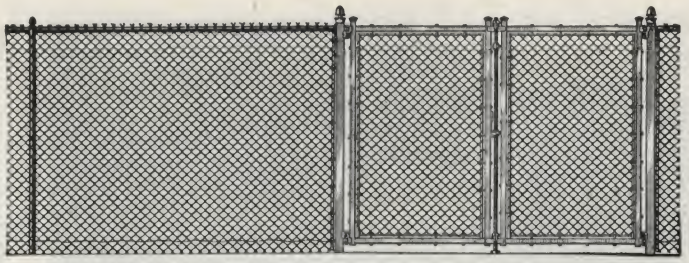
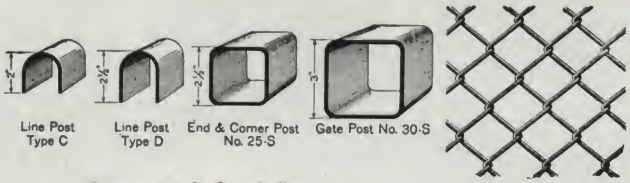


Section of Anchor-Weld Wire Gate with Anchor Square Terminal Post

Anchor Drive-Anchorage





Chain Link Steel Fence

Fabric.....Copper-bearing steel wire, galvanized *after* weaving
Line posts..High carbon steel, Type C or D, U-bar, spaced about 10 ft.
End, corner and single gate posts.....No. 20-S or 25-S
Double gate posts.....No. 25-S

Anchor Chain Link Fences

It is our contention that a chain link fence should be not only enduring in construction, but attractive in appearance as well. Anchor Chain Link Fences have been designed with these points in mind. Their four exclusive features—(1) *High carbon steel U-bar Line Posts;* (2) *Square Terminal Posts;* (3) *Drive-anchorage;* (4) *Anchor-Weld Wire Gates*—contribute materially to their exceptional strength and distinction.

Anchor Chain Link Fabric is of best quality copper-bearing steel wire, *galvanized after weaving.* Made of No. 9 and No. 6 gauge wire, the latter being more commonly used. Heights up to 10 ft. The small mesh affords no foothold for climbers and the three strands of barbed wire at the top provide an additional safeguard.

Both top rail of galvanized pipe and barbed wire topping are optional. All parts are heavily galvanized by the hot-dip spelter process.

Anchor Square Terminal Post

An exclusive Anchor feature developed for Anchor Fences.

Stronger—because of its square shape; unclimbable—no bands or footholds for trespassers to use as a stepladder; more protective—fabric can not be detached from post from outside; better-looking—has no disfiguring fabric-holding bands.

Anchor U-bar Intermediate Posts

Because they are U-shaped and are made of high carbon steel, these posts are exceptionally strong and rigid. They are heavily galvanized throughout.

Anchor Drive-Anchorage

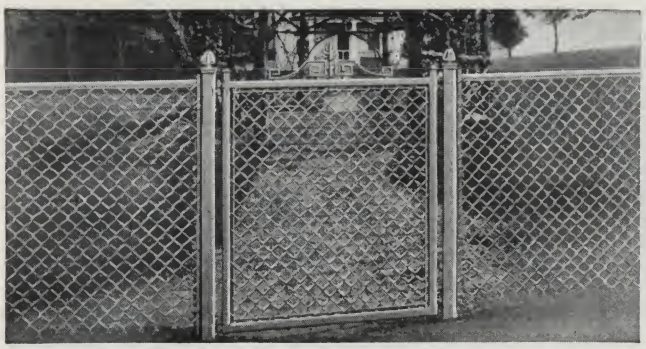
To insure permanent alignment of Anchor Fences we set the posts by our *drive-anchor* method, as illustrated. Neither frosts, thaws nor the heavy strains to which a fence is subjected can disturb a fence anchored by this method.

Anchor-Weld Wire Gate

The Anchor-Weld Wire Gate is the latest Anchor development. It marks an important improvement in gate construction.

For the frame of this gate we use square tubular steel, which contributes materially to the attractive appearance, strength and rigidity of the entire gate structure. The horizontal and vertical members of the frame are inseparably *arc-welded* together at the corners. So strong is this construction that no diagonal braces are needed.

Anchor-Weld Wire Gates are made in both single and double types, in a variety of widths.



Anchor Chain Link Fence
A lawn type of fence with Anchor-Weld Single Wire Walk Gate

Anchor Chain Link Fence
An installation of Anchor Chain Link Fence, including Double Anchor-Weld Wire Gate

Continued on next page

Anchor Chain Link Lawn Fence, Type AT-1

On the property of T. H. Hogsett, Cleveland Heights, Ohio. Type AT-1 fences are made in heights of 3 ft. 7 in. and 4 ft. 1 in.

Anchor-Weld Iron Double Driveway Gate

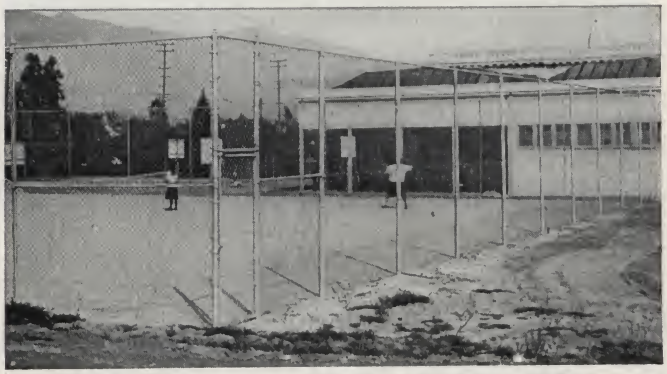
Anchor-Weld Iron Gates are made in both single and double types. Single gate opening: 3 ft. 0 in. to 4 ft. 2 in. Double gate opening: 8 ft. 0 in. to 16 ft. 0 in.

Anchor Chain Link Fence, Type DO-1

Part of an installation of 2980 ft. at the Soldiers' Home, Noroton, Conn.

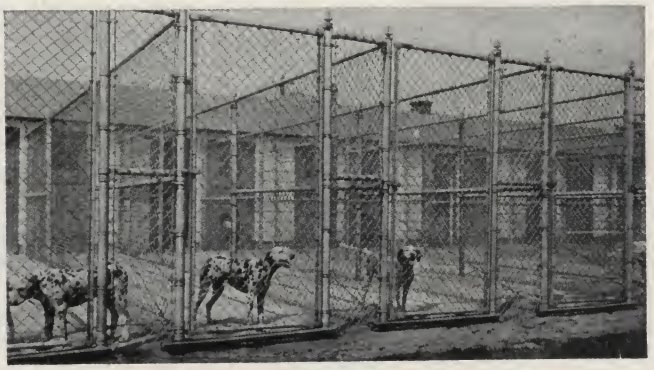
Anchor Chain Link Fence, Type DOA-1

Surrounding the estate of John D. Rockefeller, Sr., Lakewood, N. J.



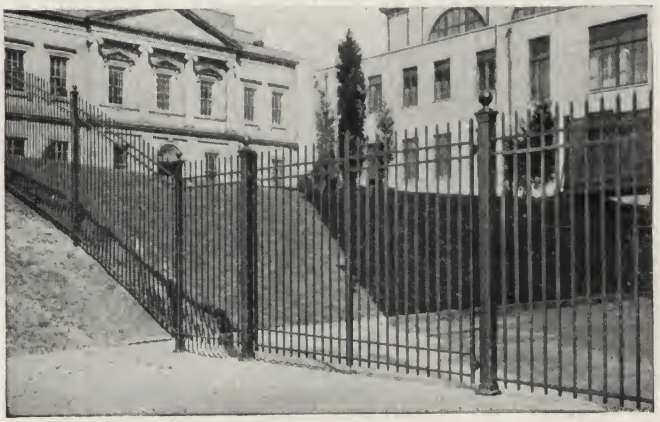
Anchor Chain Link Tennis Enclosure, Type DT-1

Installed on grounds of high school, Pasadena, Cal. Built up to 12 ft. high, with adequate bracing of corners and firm anchorage. Narrow entrance gates comprised in enclosure proper



Chain Link Kennel Enclosure, Type DT-1

This kennel enclosure offers a clean runway, ample room for exercise and absolutely guards the dogs against escape, injury or theft. Can be furnished with or without covered top



Anchor-Weld Iron Fence and Gate

Installed at Metropolitan Museum of Art, New York, N. Y.

Anchor-Weld Ornamental Iron Gate

Part of an installation of Anchor-Weld Iron Fence on the estate of Merle Graves, Pittsfield, Mass.

ATLAS FENCE COMPANY

Protective and Ornamental Iron and Wire Fences

TELEPHONE
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103 Park Avenue
NEW YORK, N. Y.

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NEWARK, N. J.

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Products

ATLAS CHAIN LINK FENCES and GATES.

ATLAS ROAD FENCES — ATLAS TENNIS FENCES.

ATLAS WROUGHT PICKET FENCES and GATES.

ATLAS ORNAMENTAL ENTRANCE GATEWAYS.

Also Baseball Backstops, Goal Posts, Diamond Mesh Partitions and Window Guards.

Uses

Atlas Chain Link and Wrought Picket Fences meet every requirement of a good fence, especially for industrial plants, railroads, transformer stations, schools, parks, reservoirs, institutions, estates, residences, etc.

Service

Atlas Factory Representatives and Engineers are always ready to render assistance in the solution of all fencing problems. We will submit without cost or obligation, plans and estimates for every fencing need.

Construction

At Newark, N. J., easily accessible for quick shipments by rail, boat, or motor truck, we have a complete fence manufacturing plant exclusively devoted to the manufacture of wire and iron fences—handling every step of manufacture from the raw materials to the finished product—a strong and durable fence. Quality must be *in* the material, and all the component parts must be properly related. Extra weight in fence frame construction means nothing, and is needless, unless there is combined with it—strength and durability. It is with especial emphasis on the last two essentials on which Atlas Fences are constructed.

Catalogue

Send for your copy of our new, profusely illustrated catalogue describing Atlas Fences for every fence requirement.

Test of Posts Conducted by Pittsburgh Testing Laboratory

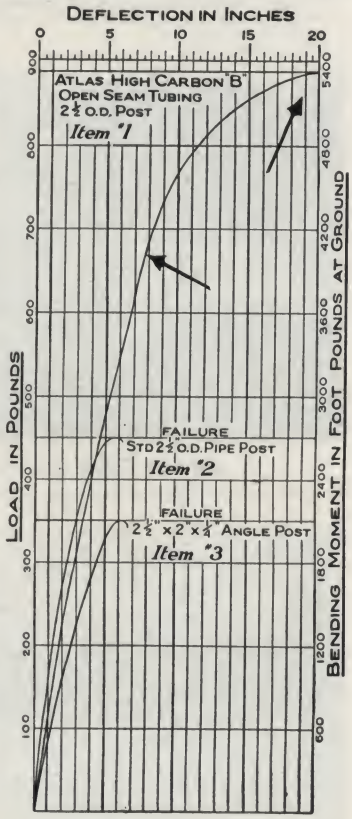
This test was made to determine relative strength of various sections used as standard fence posts.

Item 1—Atlas standard high-carbon open-seam post 2⅜ in. but nominally specified by ATLAS FENCE COMPANY as 2½-in. outside diameter. The standard mill weight listed as 3.12 lb. per ft., ungalvanized. Actual weight of post tested 3.30 lb. per lin. ft., hot galvanized; wall thickness $\frac{9}{64}$ in. (.140).

Item 2—This was a standard 2½-in. outside diameter copper-bearing galvanized pipe post. The rated weight being 3.65 lb. per lin. ft.; wall thickness $\frac{11}{64}$ in.

Item 3—Angle posts of 2½x2x¼ in. and identified as commercial steel angle. The listed weight being 3.7 lb. per lin. ft. and the actual weight of post tested 3.55 per lin. ft. The post was tested with 2½-in. flange of angle in line with the pull.

Reference to the graph will show that in this test, made not by us but by the unprejudiced eyes and hands of the Pittsburgh Testing Laboratory, *the Atlas standard high-carbon open-seam post had 100%* greater strength than the pipe post *(Item 2 on graph) and almost 300% greater strength than the angle post of commercial steel (Item 3).*



TYPES AND SIZES, ATLAS STANDARD FENCE FRAME CONSTRUCTION

Types and Heights	Line posts	Min. Concrete Base: Depth	Min. Concrete Base: Diam.	Post spacing	Line post tops	*Pressed steel arms, 15¾" long	Barbed wires	End posts	Corner posts	Gate posts: Single gates up to 6' opening; double gates up to 12' opening	Gate posts: Single gates 7' to 11' opening; double gates 14' to 24' opening	Gate posts: Single gates 12' to 18' opening; double gates 26' to 36' opening	Gate frame—tubular	Gate top finish	Top rail	Middle rail	Horizontal braces	Bolts, nuts and rivets	Rail clamps	Finish
Atlas Home: Up to 4' high	1⅝"	2' 6"	8"	10'	Certified malleable	None	None	2½"	2½"	2½"	None	None	1⅜"	Scroll	1⅜"	None	None	Solid brass or bronze (High tensile strength)	Heavy pressed steel	Hot dipped galvanized
Atlas Heavy Estate: 5', 6' and 7' high	2"	2' 9"	10"	10'		None	None	2½"	2½"	3"	4"	6⅝"	2"	Plain	1⅝" B	None	1⅝"			
Atlas Super Estate: 5' high and up	2½"	2' 9"	10"	10'		None	None	3"	3"	3"	4"	6⅝"	2"	Plain	1⅝" B	None D	1⅝"			
Atlas Armed: 5', 6' and 7' high	2"	2' 9"	10"	10'		Arms	3	2½"	2½"	3"	4"	6⅝"	2" A	Plain	1⅝" B	None	1⅝"			
Atlas Standard Armed: 5' high and up	2½"	2' 9"	10"	10'		Arms	3	3"	3"	3"	4"	6⅝"	2" A	Plain	1⅝" B	None	1⅝"			
Atlas Double Armed: 7' high and up	2½"	2' 9"	10"	10'		Arms	5	3"	3"	3"	4"	6⅝"	2" A	Plain	1⅝"	None	1⅝"			
Atlas Estate Tennis: 8', 10' and 12' high	2"	2' 9"	10"	10'		None	None	2½"	2½"	3"	4"	6⅝"	2"	Plain	1⅝"	Note (D)	1⅝" D			
Atlas Club Tennis: 8', 10' and 12' high	2½"	2' 9"	10"	10'		None	None	3"	3"	3"	4"	6⅝"	2"	Plain	1⅝"	Note (D)	1⅝" D			

*Represents vertically 12 in. in height of fence.

A—3 strands of barbed wires on the gate extend vertically. B—In these types of fence (where the top rail is omitted), a No. 6 gauge (W&M) coil spring cable wire is placed along the top approximately 6 in. below the top selvage of the fabric. D—In fences, 12 ft. high, a middle rail of same size as top rail is recommended.

Continued on next page

Atlas High Carbon Steel Fence Posts

All Atlas Chain Link Fence framework is tubular, of high carbon steel, hot-dip galvanized, rolled with an open seam, thus preventing the accumulation of condensation on the inside of the post. The Atlas tubular post, one of the strongest shaped fence members, contains a high carbon content of .35 to .60 per cent, is properly heat-treated, refined and close grained, thus insuring the strongest and most lasting fence frame construction. (See specifications for sizes, etc.)

Field Construction

No matter where it is erected, a trained crew of experienced salaried Atlas erection engineers personally erect every Atlas Fence. None of our fences are erected under contract with other fence erection crews.

Atlas Chain Link Fabrics

Atlas Chain Link Fence fabric is woven from the very best hard-drawn steel wire, consistent to a close and rigid specification. Every square inch must stand a test of at least 65,000 lb. for tensile strength—a mighty rigid test.

Atlas Chain Link Fence fabrics are furnished either Atlas Special "Crapo" Galvanized, or Atlas "Galvanized-After-Weaving. (See specification chart.)

Atlas Chain Link Fences

The strength and durability of Atlas Chain Link Fences make them ideally adaptable to every situation where a neat attractive fence line for protection or ornamentation is desired. Atlas Fences are manufactured and erected to meet the contours and particular requirements of each particular job.

Atlas Chain Link Fence

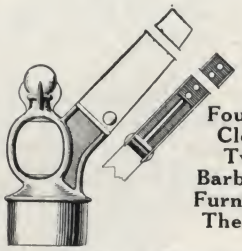
Atlas Wrought Picket Fences and Gates

Atlas Wrought Picket Fences are made up in various standard styles and sizes, also to meet individual specific requirements. All pickets are permanently locked in place by the Atlas Shur-Tite Compression process, firmly and lastingly bonding the members together. Atlas Fences are not manufactured for "stock" but to meet individual requirements.

Atlas Wrought Picket Fence, Newark, N. J.

Atlas Ornamental Entrance Gateways

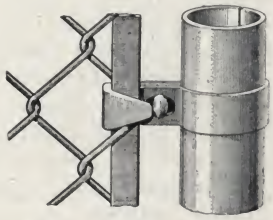
Although Atlas Ornamental Gates are usually made in special designs in keeping with the particular plans of the owner, architect or engineer, we are always ready to submit standard styles of Atlas Ornamental Gates.



Four-point, Close-set, Two-ply Barbed Wire Furnished for These Arms

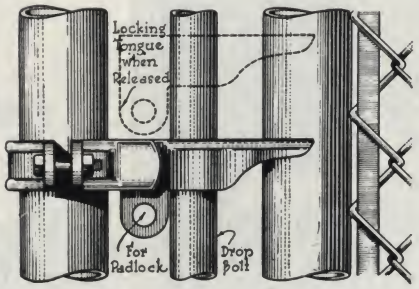
Detail of Top

Showing arm to carry three barbed wires



Detail of Atlas Boltless Fitting

Showing Atlas high carbon open seam tubular post



Atlas Positive Gate Locks

(From inside of gate)

SPECIFICATIONS ATLAS CHAIN LINK FENCE FABRICS

Types and heights	Style of galvanizing	Width of fabric	Wire mesh and gauge (W. & M.) of wire	Selvage finish		Fabric ties to line posts	Fabric ties to top rail and braces	Fabric ties to corner gate and end posts
				Top	Bottom			
Atlas Home: Up to 4′ high	Crapo After weaving Commercial	3′ 0″ 3′ 6″ 4′ 0″	1″—#14 1⅝″—#11 2″—#11, #9, #6	Knuckled A	Barbed A	Special formed non-rusting high tensile aluminum bands	Special "Crapo" No. 11 gauge wire ties	Heavy pressed steel Boltless bands with Atlas boltless malleable fitting
Atlas Heavy Estate: 5′, 6′ and 7′ high	Crapo After weaving	5′ 0″, 6′ 0″, 7′ 0″	2″—#9 or #6	Barbed	Knuckled			
Atlas Super Estate: 5′ high and up	Crapo After weaving	5′ 0″ to 12′ 0″	2″—#9 or #6	Barbed	Barbed			
Atlas Armed: 5′, 6′ and 7′ high	Crapo After weaving	4′ 0″, 5′ 0″, 6′ 0″	2″—#9 or #6	Barbed	Barbed			
Atlas Standard Armed: 5′ high and up	Crapo After weaving	4′ 0″ to 11′ 0″	2″—#9 or #6	Barbed	Barbed			
Atlas Double Armed: 7′ high and up	Crapo After weaving	6′ 0″ to 11′ 0″	2″—#9 or #6	Barbed	Barbed			
Atlas Estate Tennis: 8′, 10′ and 12′ high	Commercial	8′ 0″, 10′ 0″, 12′ 0″	1⅝″—#11	Knuckled	Knuckled			
Atlas Club Tennis: 8′, 10′ and 12′ high	Crapo	8′ 0″, 10′ 0″, 12′ 0″	1⅝″—#11	Knuckled	Knuckled			

A—This type of fabric is reversible.

In all heights of fences 5 ft. high and over, a No. 6 coil spring wire is placed along the lower part of the fabric, approximately 6 in. above the bottom edge of the selvage. This coil spring wire is attached to the fence framework with aluminum tie wire. The fabric in turn is attached to the coil spring cable wire with No. 11 Atlas Special Crapo galvanized wire ties, spaced not over 2 ft. apart.

AMERICAN FENCE CONSTRUCTION CO.

Iron Picket Fences—Chain Link Fences

TELEPHONE
MURRAY HILL 4470

S. W. Corner Fifth Avenue and 44th Street
NEW YORK, N. Y.

REPRESENTATIVES IN PRINCIPAL CITIES

Products

IRON PICKET FENCES and GATES of plain or ornamental design; CHAIN LINK WIRE FENCES for all purposes; Poultry and Kennel Runs; Tennis Court Enclosures; Baseball Backstops.

Also Window Guards; Iron and Wire Work.

AFCO
TRADE-MARK

Standardized and Special Design Fences

This company offers a wide and complete choice of designs in standardized fences and gates both of iron picket and chain link wire types. In addition, it is prepared to execute special-design fences and ornamental iron work from architect's designs. Some of our work of this kind is pictured here.

Iron picket fences, because of the infinite possibilities of ornamental design work, are standardized only in respect to the general use of certain "plain" picket fences of the designs detailed on the following page. Ornamental work, special gates, etc., are executed in infinite variety.

Chain link wire fences, however, are a standardized product, as per specification details presented on the second following page.

Catalogues, installation views, and blue prints of stock and semi-standard designs of iron or wire fence are available for reference.

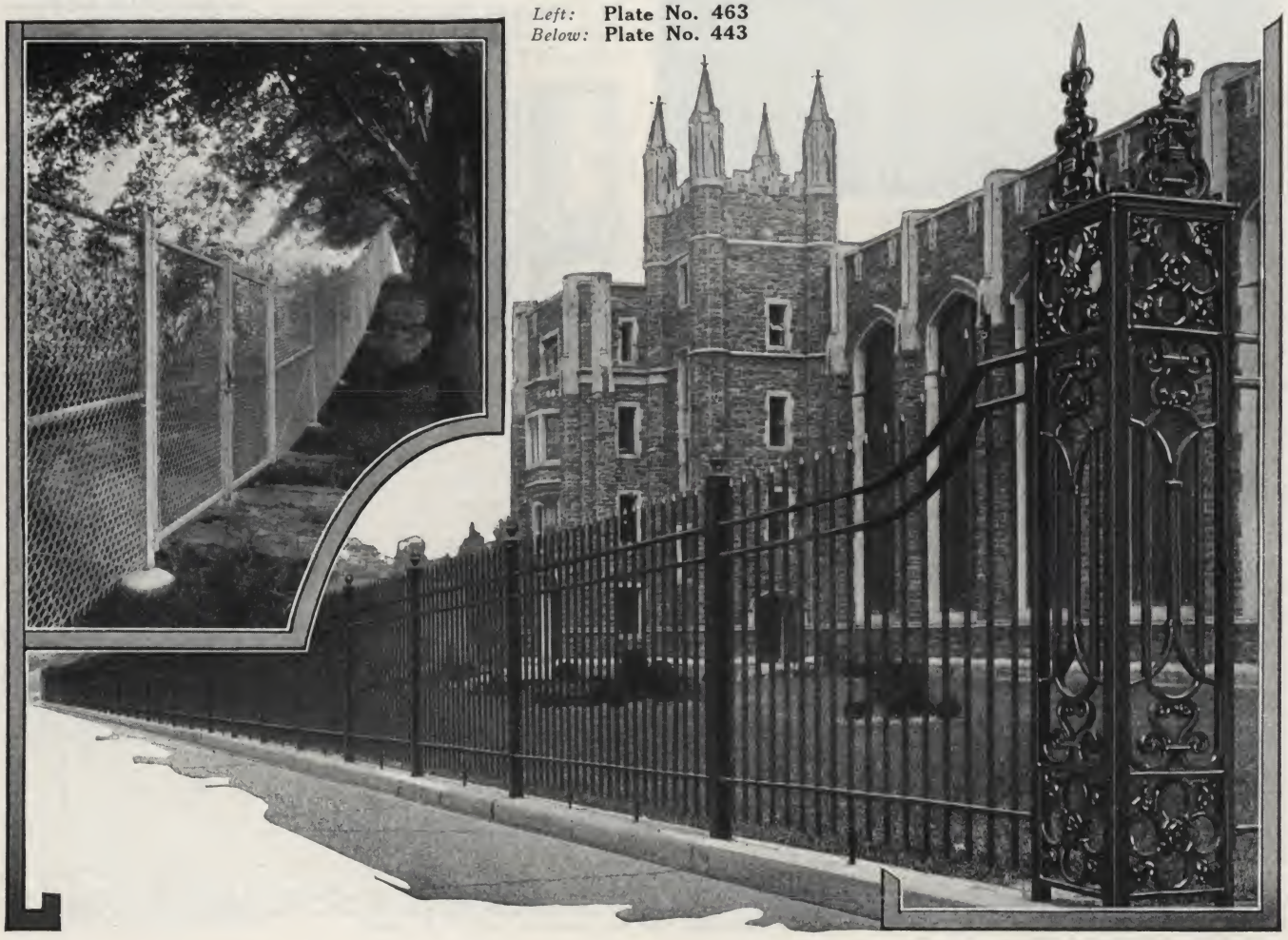
We gladly assist in preparing specifications that enable the economical production of special designs from standard size materials.

Estimates and Service

Estimates on either fence materials or fences plus erection will be given, either by this office or local representatives throughout the Eastern, Central and Southern States. The fullest measure of co-operation is available.

Information regarding standard practice in the size of members, dimensions of concrete footings and other such practical data is made available to any who will find it helpful.

Left: **Plate No. 463**
Below: **Plate No. 443**



Continued on next page

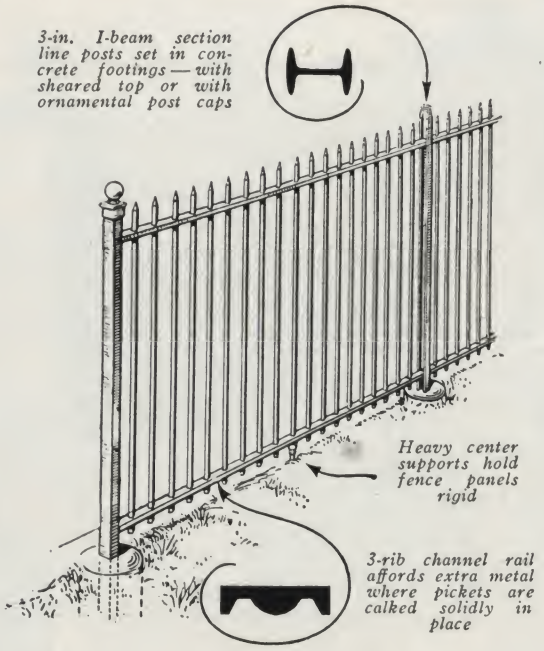
Plate No. 537

Plate No. 482

Iron Picket Fences

The standard iron fences are of designs and weights detailed here. Simple ornamentation can be added to the "plain" designs as required. Special design work originates with the architect, often with our co-operation in preparing a specification which will utilize standard sizes in materials.

Structural Details—Afco Iron Picket Fences are built with special I-section line posts, which are set in concrete and require no back bracing. The section is designed to develop maximum strength per pound of metal and to give beauty to the fence without over-heavy members. The posts for the line of fence may have either sheared tops, or be ornamental with heads.



Afco recommends the square-tubular posts for ends, corners and gate posts, in appropriate sizes, and with ornamental post caps. Ornamental gate posts can be furnished in either standard or special designs.

To provide extra strength where the picket passes through the rail Afco builds with a center-rib channel section. This rib also provides the extra metal for caulking.

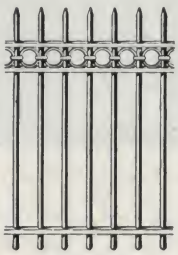
Afco Fences are caulked by a positive process which recesses two sides of each picket and forces metal from the rib of the rail into this recess. This results in a positive bond between picket and rail, and a panel flexibility which compensates for minor changes in ground contour and eliminates a costly survey on average fence lines.

Afco Iron Fence Panels of standard 10-foot lengths are strong enough to support their weight over their entire length without sagging. But to further increase strength and to insure permanent horizontal alignment each panel is equipped with an adjustable center support set in a concrete footing.

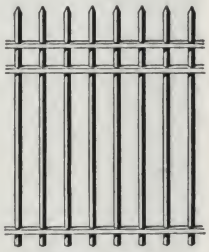
Entrance Gates

Afco entrance gates can be furnished to match the standard fence designs here illustrated. More elaborate or special designs will be found illustrated in the Afco Iron Fence Catalogue. Afco gates are equipped with self-oiling ball and socket hinges to insure easy operation.

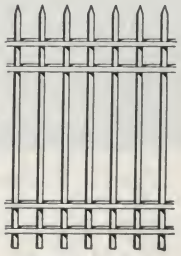
Style 20-5



Style 35-5



Style 30-5



Style 40-5

SPECIFICATIONS OF AFCO IRON PICKET FENCES

Type of fence	Pickets, in.	Picket spacing, c. to c. in.	Channel rails, in.	Length of panels, ft.	Weight, pounds per lineal foot — Height of fence (to top of pickets) 4 ft.	5 ft.	6 ft.	7 ft.	8 ft.
20–5	5/8	5	1½x½	10	19	23	26	..	..
20–6	¾	5	2x⅝	10	26	31	36	..	..
20–7	⅞	6	2x⅝	10	.	38	45	52	59
20–8	1	6	2x⅝	10	..	..	55	64	69
30–5	5/8	5	1½x½	10	20	25	28	.	..
30–6	¾	5	2x⅝	10	28	33	38	..	..
30–7	⅞	6	2x⅝	10	..	40	47	54	61
30–8	1	6	2x⅝	10	..	..	57	64	71
35–5	5/8	5	1½x½	10	23	27	30	..	..
35–6	¾	5	2x⅝	10	30	35	40	..	..
35–7	⅞	6	2x⅝	10	..	42	49	56	63
35–8	1	6	2x⅝	10	..	..	59	66	73
40–5	5/8	5	1½x½	10	23	27	30	..	.
40–6	¾	5	2x⅝	10	30	35	40	..	..
40–7	⅞	6	2x⅝	10	..	42	49	56	63
40–8	1	6	2x⅝	10	..	.	59	66	73

Continued on next page

Plate No. 492

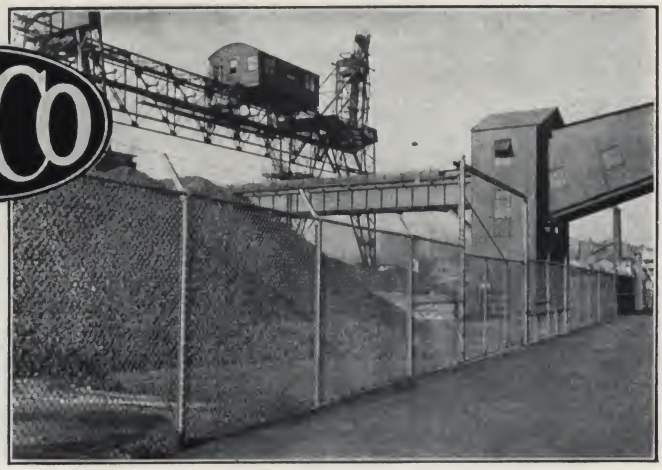


Plate No. 495

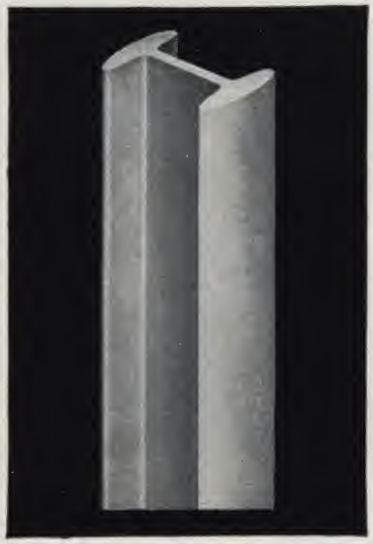
SPECIFICATION DETAILS OF AFCO CHAIN LINK FENCES

(All posts set in concrete footings)

Afco Style	Heights, ft.	Fabric		End and corner posts		Intermediate or line posts			Top rail, diameter, in.	Barbed wire	Gates		Gate posts	
		Mesh, in.	Gauge wire	Square, in.	Depth footings, ft.—in.	Diam., in.	Spacing, ft.	Depth footings, ft.—in.			Width opening: Single, ft.	Width opening: Double, ft.	Square in.	Depth footings, ft.—in.
"Suburban"	3½, 4	2	11 or 9	2	2—6	1⅝ o.d.	8 or 10	2—6	1⅜ o.d.	None	3½, 4	8, 10	2	2—6
"Guardian"	4, 5, 6	2	9 or 6	2	3—0	2 o.d.	10	2—6 (4' high) 3—0 (others)	1⅝ o.d.	None	3½, 4	8, 10 12, 14	2 2½	3—0
"Bulwark"	5, 6, 7, 8, 9, 10	2	9 or 6	2½	3—0	2½ o.d.	10	3—0	1⅝ o.d.	None	3½, 4	8, 10, 12 14 to 24	2½ 3	3—0
Style "913"	5, 6	2	9 or 6	2	3—0	2 o.d.	10	3—0	1⅝ o.d.	3 strands	3½, 4	8, 10 12, 14	2 2½	3—0
Style "1003"	6, 7, 8, 9, 10	2	9 or 6	2½	3—0	2½ o.d. or 2¼ "I"	10	3—0	None	3 strands	3½, 4	8, 10, 12 14 to 24	2½ 3	3—0
Style "1103"	6, 7, 8, 9, 10	2	9 or 6	2½	3—0	2½ o.d. or 2¼ "I"	10	3—0	1⅝ o.d.	3 strands	3½, 4	8, 10, 12 14 to 24	2½ 3	3—0
"Standard Tennis"	8, 10, 12	1¾, 2	11 or 9	2	3—0	2 o.d.	8	3—0	1⅜ o.d.	None	3½ All 7-ft. high with transom panel	10	2	3—0
"Ex. Heavy Tennis"	8, 10, 12	1¾, 2	11, 9 or 6	2½	3—0	2½ o.d.	10	3—0	1⅝ o.d.	None	Same as "Standard Tennis"		2½	3—0

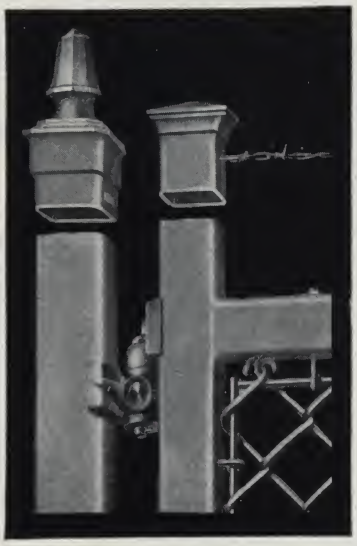
Notes: Gate frames are of 1½-in. square tubular members for "Suburban," "Guardian," Style "913" and "Standard Tennis" Fences.
Gate frames are of 2-in. square tubular members for "Bulwark," Style "1003," Style "1103" and "Ex. Heavy Tennis" Fences.

Three Important Improvements in Afco Construction



Special "I" Beam Line Posts

The Afco Special "I" Beam Post is furnished with all fences of heavy construction. The strength and enduring qualities of this post insure lasting and economical protection



Square Frame Gate

The Afco Square Terminal Post eliminates braces and bands and is consequently more attractive. Its square construction makes it stronger and more protective

The Square Terminal Post

The Afco Square Frame Gate is one of the strongest gates on the market today. Welded at each corner, the entire gate frame is a solid and rigid structure

ESTABLISHED 1858

J. W. FISKE IRON WORKS

Ornamental Iron, Brass, Bronze, Wire and Zinc Work

69-71 Park Place, NEW YORK, N. Y.

Products

ORNAMENTAL METAL WORK and FENCING as follows: Ornamental Entrance Doors, Window Guards, Lamps and Lamp Standards; Metal Stairs; Memorial Tablets; Fountains; Iron Railings and Entrance Gates; Woven Wire and Climbproof Chain Link Fencing; Sanitary Stable and Barn Equipment.

Also Brass and Bronze Railings; Andirons and Fire Sets; Fire Escapes; Flagpole Bases; Balls and Trucks; Folding Gates; Leader Shoes; Marquises; Garden and Park Furniture; Sundials; Tree Guards; Wire Partitions.

Co-operative Service

The J. W. FISKE IRON WORKS will submit estimates for products either delivered or erected complete. A well organized engineering staff is maintained, and contracts for designing and erection complete are made when desired. Co-operation with the architect, contractor or owner in executing unusual specifications is a specialty.

Fiske Quality

The quality of Fiske products is best evidenced by installations for the United States Government, States, cities and leading commercial organizations, and upon many of America's largest private estates.

Entrance Gates, Fencing and Ornamental Iron Work

This company will carry out any design in ornamental entrance gates, iron fencing, window guards, metal stairs and similar work, or will prepare and submit designs for such work.

Illustrations of Work Finished and Installed by J. W. Fiske Iron Works

(1) Seymour H. Knox Residence, Aiken, S. C.
Peabody, Wilson & Brown, Architects

(2) L. H. Shearman Estate, Manhasset, L. I., N. Y.
J. W. O'Connor, Architect

(3) General Howard S. Borden Residence, Rumson, N. J.
George S. Chappell, Architect

(4) Thomas A. Edison Junior High School, West Orange, N. J.
Guilbert & Betelle, Architects

(5) State Capitol, Raleigh, N. C.
Atwood Nash Inc., Architects

(6) United Piece Dye Works, Lodi, N. J.

(7) Richmond Borough Hall, St. George, S. I., N. Y.
Carrere & Hastings, Architects

(8) S. L. Rothafel Bronze Tablet
Roxy Theatre, New York, N. Y.

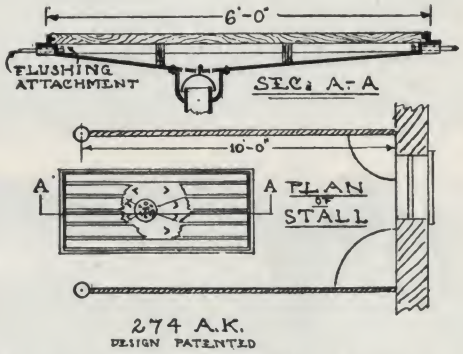
Continued on next page

Sanitary Stable and Barn Equipment

In most of the finest stables in this country Fiske Sanitary Stable and Barn Equipment has been installed. This includes both the privately owned and commercial stables. Hundreds of architects have specified our equipment because they have felt that by so doing they best served the interests of their clients. On this page a few standard details are shown, the result of more than 70 years of specialized experience in this class of construction. You will find us ready to co-operate when unusual conditions require special treatment.

Our complete catalogue of stable equipment will be sent on request, as well as any special information.

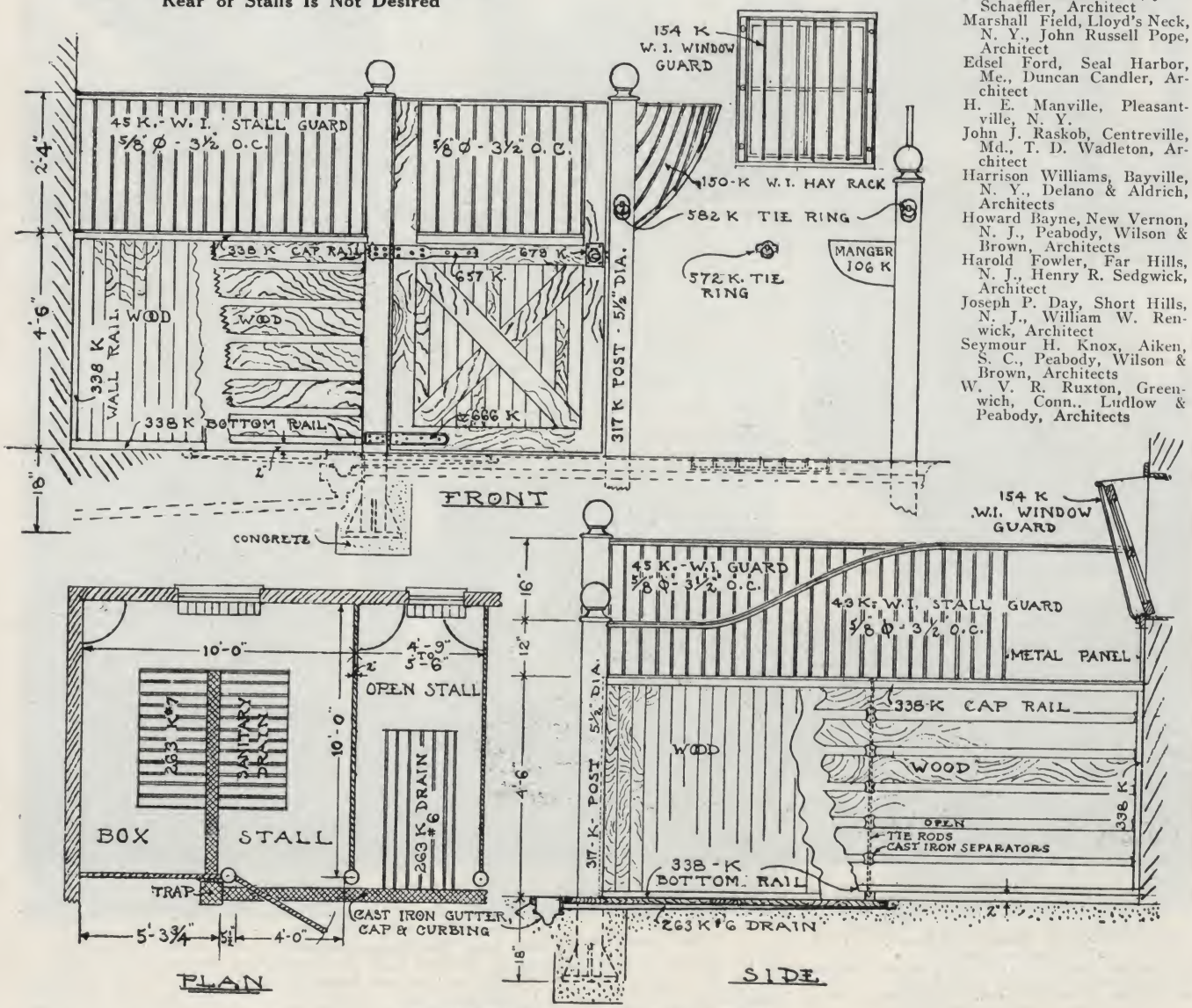
Herbert N. Straus Stable, Red Bank, N. J.
ALFRED HOPKINS and ASSOCIATES, Architects



A Type of Drain Used Where Gutter at Rear of Stalls Is Not Desired

A Few Recent Installations

Borden Farm Products, J. C. Schaeffler, Architect
Marshall Field, Lloyd's Neck, N. Y., John Russell Pope, Architect
Edsel Ford, Seal Harbor, Me., Duncan Candler, Architect
H. E. Manville, Pleasantville, N. Y.
John J. Raskob, Centreville, Md., T. D. Wadleton, Architect
Harrison Williams, Bayville, N. Y., Delano & Aldrich, Architects
Howard Bayne, New Vernon, N. J., Peabody, Wilson & Brown, Architects
Harold Fowler, Far Hills, N. J., Henry R. Sedgwick, Architect
Joseph P. Day, Short Hills, N. J., William W. Renwick, Architect
Seymour H. Knox, Aiken, S. C., Peabody, Wilson & Brown, Architects
W. V. R. Ruxton, Greenwich, Conn., Ludlow & Peabody, Architects



Standard Details of Fiske Horse Stalls

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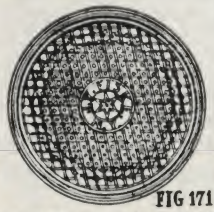


FIG 171 K

CESSPOOL OR COAL HOLE COVER WITH RIM.

Covers are furnished in following diameters:

12 in. (14 in incl. Rim.) 20 in (24 in incl Rim.)
16 in (20 in " ") 22 in (26 in " ")
18 in (22 in " ") 24 in (28 in " ")

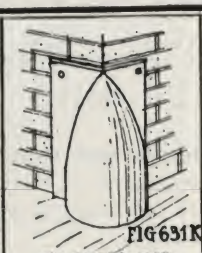


FIG 631 K

CAST IRON WHEEL GUARD

18 in. high, 12 in diam.

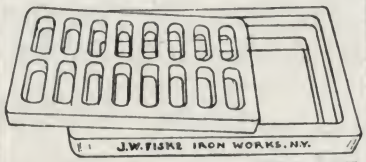


FIG 160A K

GRATING & FRAME - HEAVY

No 1: 15½ in long, 10½ in wide 2¼ in deep. Grating 13½ in long, 8½ in wide

No 2: 15 in long, 15 in wide 2¼ in deep. Grating 13½ in square, 1 in thick

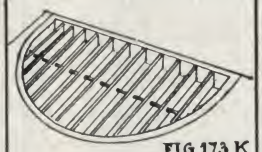


FIG 173 K

WROUGHT IRON GRATING

Any size made to Order

Prices given on Application.

FIG 196C K

FRAME WITH GRATING - HEAVY

No 1 Frame 12 in x 12 in. - Grating 9½ in x 9½ in

No 2 Frame 16 in x 16 in - Grating 13 in x 13 in

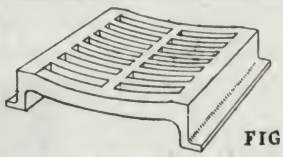


FIG 159A K

HIGHWAY CATCH BASIN FRAME & GRATING

(Very Heavy)

24" long, 22½" wide, 5½" deep. Grating only, 20½" x 20", 2½" thick in center

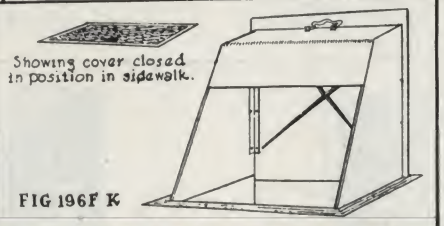


FIG 196F K

SAFETY COAL HOLE COVER & FRAME

	Cover	Frame
No. 1 -	18" x 18"	23" x 23"
No 2 -	22" x 22"	27" x 27"
No 3 -	30" x 30"	35" x 34"

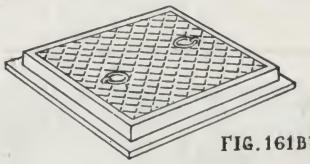


FIG. 161B K

MANHOLE FRAME & COVER, FOR CONCRETE.

Size cover	Outside dimensions	Depth frame
12"x12"	16¼"x16¼"	3"
18"x18"	22"x22"	3"
24"x24"	28"x28"	3"
30"x30"	36"x36"	3"

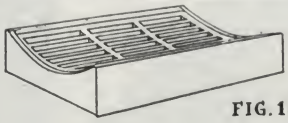


FIG. 196E K

LIGHT CUTTER BASIN & GRATE

For lawns & carriage drives, not for street use 18" wide x 24" long x 5" deep Grating only, 16" x 22"

HEAVY GUTTER BASIN & GRATE

For roadways, streets, parks, cemeteries etc No. 2 - 18" wide x 24" long x 5" deep Grating only, 16" x 22"

No 1 - 9" x 15" x 3" for use in draining small areas The outlet is so designed that it can be used on 4", 6", 8", or 10" pipe

SPIRAL STAIRS

Furnished for all floor heights with following diameters 4'-0", 4'-6", 5'-0", 5'-6", 6'-0", 7'-0"

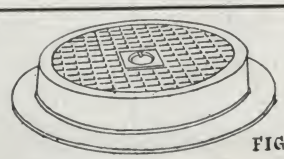


FIG 173A K

MANHOLE FRAME & COVER

Opening	Depth	Diam. on bottom	Cover
20" (light pattern)	4"	26½"	20½"
20" (deep pattern)	6½"	26¾"	20½"
20" (heavy pattern)	4¾"	27"	20½"
24" (light pattern)	6"	31½"	24¼"
24" (heavy pattern)	6"	31½"	24¼"

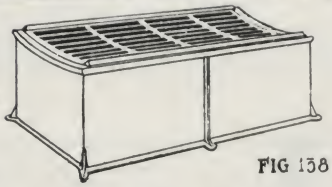


FIG 158 K

ROAD BOX

For public or private roadways, etc

No. 1 - Top: 25" long, 14½" wide, 10" deep Grating only 23" long, 13¾" wide

No. 1A - Top: 25" long, 14½" wide, 4" deep

No. 2 - Top: 32" long, 14½" wide, 4" deep

FIG 163 K

MANHOLE FRAME & COVER

No.	Clear opening	Size cover	Flange diam.	Depth	Weight
13	22¼"	24"	34⅝"	8"	385 lb.
28	22"	24"	31½"	8"	405 lb.
45	23"	25"	37"	10"	500 lb.
98	24"	26"	38"	8"	509 lb.
36	21¼"	22½"	38¼"	10⅛"	545 lb.

FIG. 761 KK

LEADER SPOUT

Length 2 Feet.

Top made to receive 4x3 in leader. Outlet for 4 in soil pipe, offset 5¾ in.

FIG. 761 HK

LEADER SPOUT

Lengths 12", 18", 24", 30", 36" 48", 60 & 72"

To Receive 2" x 3" Leader, 3" Outlet.

To Receive 3" x 4" Leader, 4" Outlet.

To Receive 4" x 5" Leader, 4" Outlet.

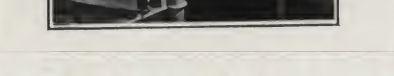


FIG 201 C K

CAST IRON GRATING

For concrete or iron gutter Width - 5¾

FIG. 201 D K

GUTTER COVER For concrete gutter

	Wide	Thick	Wide	Thick
	3½"	⅜"	7"	½"
	4	⅜"	8"	½"
	5	½"	9"	½"
	6	½"	9"	⅝"

FIG 173 B K

GRATING

To fit in bell ends of soil pipe

Size of pipe	Grating	Size of pipe	Grating
8"	10"	18"	20⅝"
10"	12"	20"	23¼"
12"	14¾"	24"	27¾"
15"	17¾"		

SCS

A FEW OF J. W. FISKE IRON WORKS SPECIALTIES

AUG 1928

CINCINNATI IRON FENCE COMPANY INC.

Manufacturers of Ornamental Iron and Wire Work

3330 Spring Grove Avenue, CINCINNATI, OHIO

Products

ORNAMENTAL and PLAIN IRON and WIRE WORK of every description and for every purpose.

Steel and Iron Fence suitable for residences, cemeteries, school grounds, parks, etc.; Entrance Gates; Folding Gates, Door and Window Guards, Sidewalk Doors, Grilles, Gratings, Iron Shutters, Wire Window Guards and Partitions, etc.

Estimates

Blue prints on request. Estimates cheerfully given.

Fencing Design and Construction

The dominant features of Cincinnati Iron Fencing are its rugged strength, coupled with attractive design.

Rails—Made of channel, angle or flat sections.

Pickets—Square, round, flat or angle, suitable thickness according to height required, pointed or tipped with malleable iron heads.

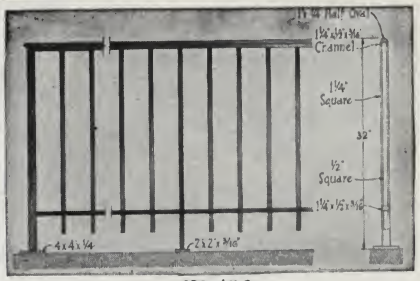
Posts—Made in large variety of sizes and styles to harmonize with the architectural surroundings.

No. 450
Iron Work—the Distinguishing Feature of a Building

No. 620
Interior Wrought Iron in True Character

A Special Ornamental Entrance Gate for a Large Estate or Cemetery

Continued on next page



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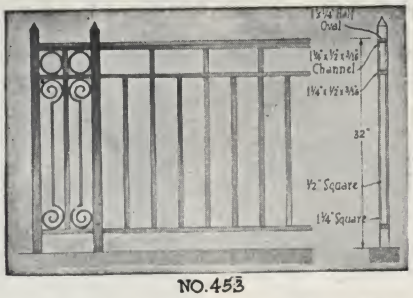

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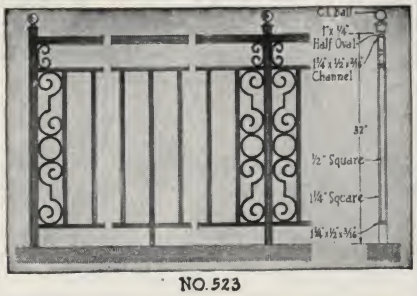
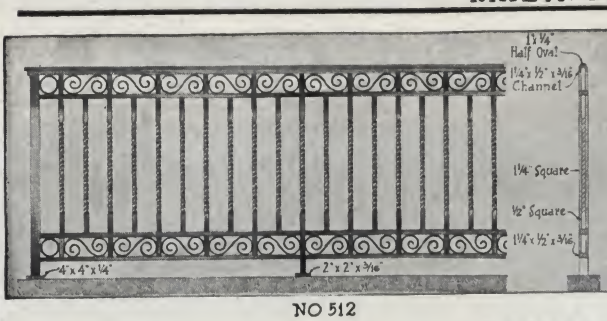


NO. 523

RAILINGS AND FENCE



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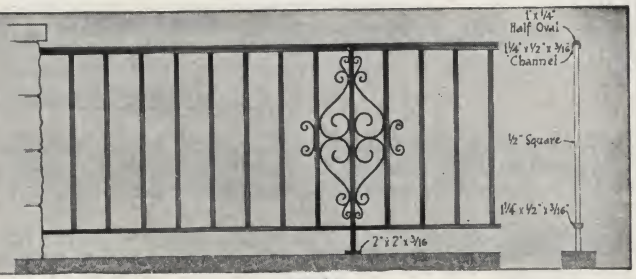
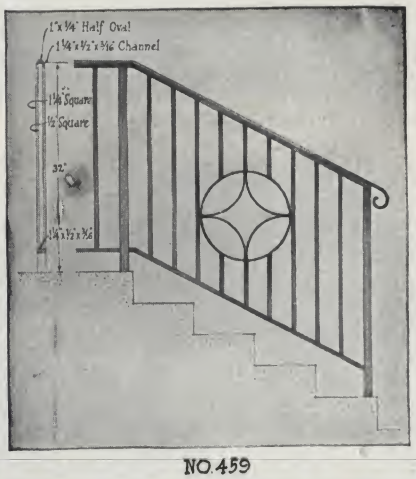


NO. 521

RAILINGS AND FENCE



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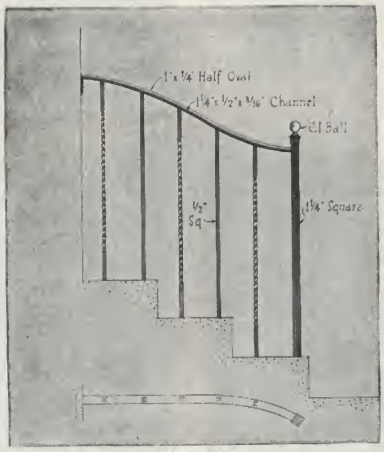

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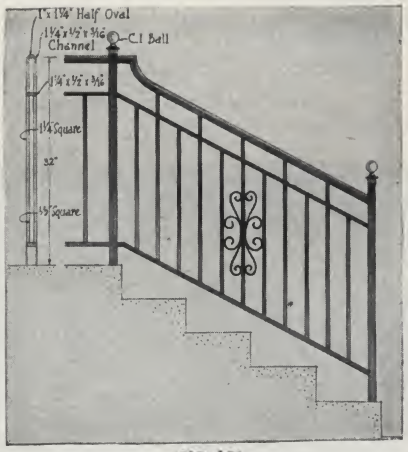
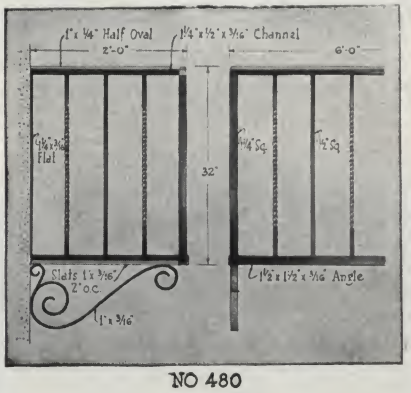


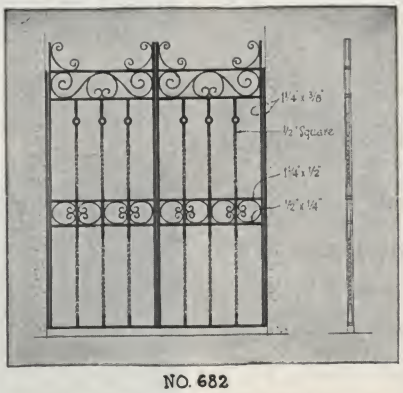
NO. 461

EXTERIOR RAILINGS



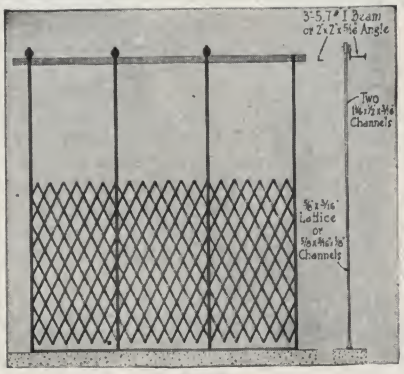
NO 480

BALCONY



NO. 682

INTERIOR GRILLE



NO. 599

FOLDING GATE

CINCINNATI IRON FENCE COMPANY	IRON RAILING, FENCE, BALCONY, GRILLE & GATE CONSTRUCTION & DESIGN.	PLATE 1

CYCLONE FENCE COMPANY

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

WAUKEGAN, ILL.

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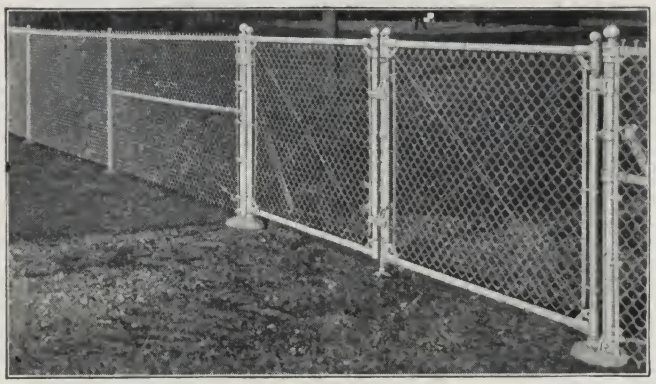
PACIFIC COAST DIVISION: STANDARD FENCE COMPANY, OAKLAND, LOS ANGELES, SAN FRANCISCO, CALIF., PORTLAND, ORE., SEATTLE, WASH.

Cyclone Safeguard Chain Link Fence

Specifications—Standard height, 6 ft. Built in heights from 4 ft. up to and including 10 ft. Chain Link fabric is full height of fence.

Fabric—"Galv-After" Chain Link copper-bearing wire heavily zinc-coated (or hot-galvanized) by hot-dip process after weaving. No. 9 or No. 6 gauge wire woven in a 2-in. mesh. On heights 5 ft. and over, both edges of fabric have twisted and barbed finish. On heights 4 ft. and lower, one edge has twisted and barbed finish, the other has knuckled finish and it is recommended that the knuckled edge be placed at top of fence dressed below top rail with the barbed edge at the bottom.

Posts—*Line Posts*—Hot-dip galvanized: 2-in. H-column copper-bearing steel. Weight 4.10 lb. per lin. ft. where fence is 6 ft. and over in height. Where fence is less than 6 ft. in height, 2-in. outside diameter, weight 2.72 lb. per lin. ft.



Cyclone Safeguard Fence

Beautiful and dignified property protection for country estates and homes—also golf grounds and clubs

End, Corner, Angle and Pull Posts—3-in. outside diameter, weight 5.79 lb. per lin. ft. where fence is 6 ft. and over in height. Where fence is less than 6 ft. in height, these posts are 2½-in. outside diameter, weight 3.65 lb. per lin. ft.

Gate Posts—The size and strength of gate posts for swinging and sliding gates have been carefully determined by our Engineering Department. Details upon request.

Post Spacing—Posts are spaced in line of fence not farther apart than 10-ft. centers.

Depth of Posts—Line posts for fence 4 ft. or lower are set 24 in. in concrete base; terminal posts 30 in. In 5-ft. fence, line posts are set 30 in., terminal posts 36 in. In Cyclone Safeguard Fence 6 ft. in height and over, all posts are set 36 in.

Post Setting—Concrete post bases are of proper mixture, size and shape to furnish sufficient foundation. Reinforced to prevent cracking from frost action.

Post Tops—Hot-dip galvanized. All posts fitted with heavy ornamental post tops of malleable iron. The base of these tops fits into the post and a flange carries over the outside to cap the post against moisture.

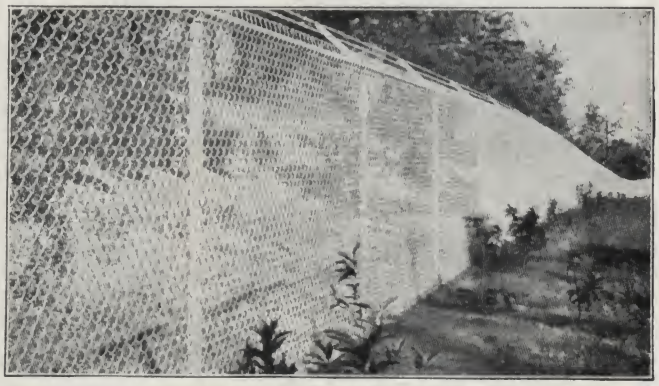
Top Rail—Made by the National scale-free process, hot-dip galvanized. Tubular copper-bearing steel 1⅝-in. outside diameter, weight 2.27 lb. per lin. ft. Provided with expansion rail coupling. Top rail passes through post tops and forms a continuous brace from end to end of each stretch of fence.

Braces—Made by the National scale-free process, hot-dip galvanized. End, gate and corner posts are braced by tubular copper-bearing steel braces 1⅝-in. outside diameter, weight 2.27 lb. per lin. ft. Braces are spaced midway between the top rail and ground and extend to the first line post, fastened by malleable iron or pressed steel connections, then trussed from line post back to end, gate or corner post.

Fittings—All copper-bearing materials, hot-dip galvanized. All fittings used with Cyclone Safeguard fencing and gates are malleable, wrought iron, pressed steel or aluminum.

Fabric Bands—Aluminum. Fasten the fabric to line posts and top rail, spaced approximately 14 in. apart.

Finish—All materials entering into the fence construction, except aluminum bands, are heavily galvanized.



Cyclone Invincible Chain Link Fence

Standard height, 7 ft. All copper-bearing materials. Built in heights up to and including 11 ft. Fabric, "Galv-After" Chain Link, heavily zinc-coated (or hot-galvanized) by hot-dipping process after weaving. No. 9 or No. 6 gauge wire woven in a 2-in. mesh. Extension arms carry 3 rows of 4-point barbed wires, 12 in. in or out from fence line. Posts and framework, H-column steel, hot-dip galvanized

Cyclone Tennis Court Enclosures and Back Stops

Framework, tubular copper-bearing steel, hot-dip galvanized. Fabric "Galv-After" Chain Link No. 11 gauge copper-bearing steel wire woven in a 1¾-in. mesh. Standard height, 10 ft.

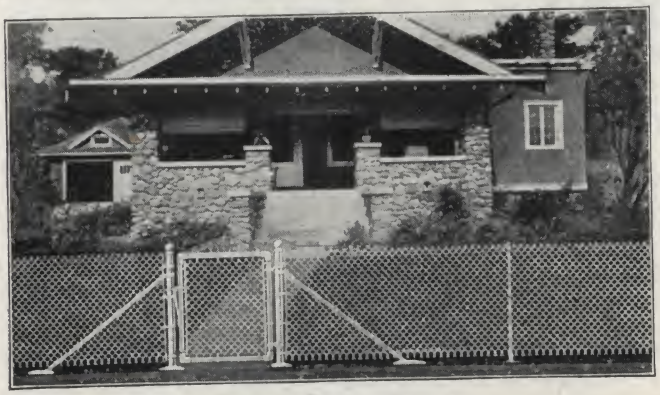
Continued on next page

Cyclone Colonial "Complete Fence"

Standard heights: 36, 42, 48 and 54 in. Framework, tubular steel, hot-dip galvanized. Fabric, style "F." Pickets spaced 3 in. apart at top, 1⅜ in. apart at bottom

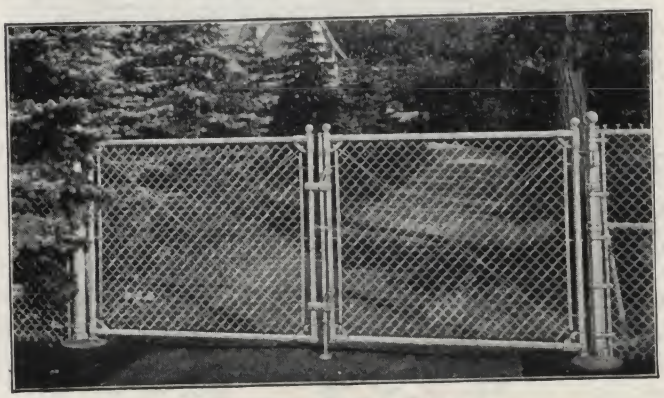
Safeguard Fence with Wrought Iron Gate

Standard heights: 36, 42 and 48 in. Framework, tubular copper-bearing steel hot-dip galvanized. Fabric "Galv-After" Chain Link copper-bearing steel No. 9 gauge. 2-in. mesh



Cyclone Banner Fence

Furnished with "Galv-After" Chain Link fabric in 3½ or 4-ft. heights. End, corner and gate posts are heavy tubular copper-bearing steel, set in concrete. Line posts, banner drive style. All posts heavily hot-dip galvanized. Braces, heavy tubular copper-bearing steel. Gates, either walk or double drive to match fence



Cyclone Swinging Gates

Either single or double, for Safeguard Fence

Specifications, Cyclone Swinging Gates

Standard Sizes—Single swing walk gates built standard for 4-ft. opening. Double swing gates for driveways built standard for 12 to 18-ft. openings. Where conditions are such that standard sizes cannot be used, gates are built to meet requirements.

Frames—Hot-dip galvanized, tubular copper-bearing steel. In heights 6 ft. or over, frames are 2-in. outside diameter. Corner fittings are extra heavy malleable iron.

Stays—Hot-dip galvanized, tubular copper-bearing steel. Stays, together with ⅜-in. adjustable truss rods, keep gate absolutely rigid; prevent sagging, buckling and side weave.

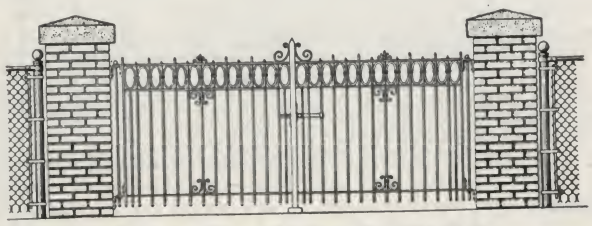
Fabric—Cyclone "Galv-After" Chain Link to match fabric used in fence.

Hinges—Hot-dip galvanized. Made of malleable iron. Exceptionally large bearing surface for clamping hinge on gate post. Cyclone hinge equipment will carry 100% overload. Bottom hinge is ball and socket pivot type.

Latch and Lock—Hot-dip galvanized. Plunger bar type with positive latch; arranged for padlock locking. Double drive gates equipped with catch posts to hold gates in open position.

Wrought Iron Double Gates

Cyclone Wrought Iron Fence and Entrance Gates are built in a variety of heights and attractive patterns for residences and estates.



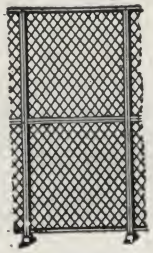
Cyclone Wrought Iron Double Gate

Wire Work of All Kinds

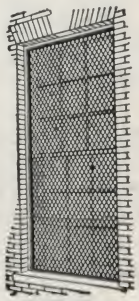
Partitions (Built-in-Sections)—Standard size sections 4 ft. wide by 8 ft. high. Frames are 1-in. channel iron. Fabric is No. 10 gauge wire woven in 1½-in. diamond mesh. Furnished with either swinging or sliding gates. Handholes or wickets provided where needed. Floor flanges furnished for either wood or concrete floors. Sections are interchangeable, movable; can be taken out and used elsewhere—no refitting—no loss.

Send blue print or layout of partition work wanted.

Window and Skylight Guards—Frames are 1-in., ¾-in. channel, or ⅜-in. round iron. Fabric is usually No. 10 gauge wire woven in 1½-in. diamond mesh. Channel iron frames fit into openings. Round iron frames usually allow ¾ in. on all sides for lap. Special guards built with either channel or round iron frames, using size of wire and mesh desired.



Partition Section



Window Guard

Complete Responsibility—Nation-wide Fencing Service

Engineering Counsel—Cyclone Engineers will make a complete study of your fence requirements and submit recommendations, layouts, and estimates of cost.

Cyclone Erection Crews—There are more than 100 erection crews constantly at work installing Cyclone Fence. One of these crews is available for your installation.

However, if you prefer to have your own workmen install the fence, a Cyclone erection superintendent will be furnished at nominal charge, to direct them.

Diagram, Prices, etc.—When writing for information, prices, etc., send simple diagram of proposed fencing. Give measurements of each stretch and total measurements. State whether single or double swing, or sliding gates are wanted and give size of opening.

PAGE FENCE ASSOCIATION

520 North Michigan Avenue
CHICAGO, ILL.

MEMBER COMPANIES

Distributing Chain Link Products of the Page Steel and Wire Company, an Associate Company of the American Chain Company, Inc., Bridgeport, Conn.

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MOBILE—Turner Supply Company
CALIFORNIA: LOS ANGELES—Southern California Fence Co.
SAN FRANCISCO—Michel & Pfeffer Iron Works
COLORADO: DENVER—Stearns-Roger Mfg. Co.
CONNECTICUT: NEW HAVEN—The John P. Smith Co.
WESTPORT—Page Fence Exhibit
FLORIDA: JACKSONVILLE—Jacksonville Supply Co.
MIAMI—E. F. Holmes
ORLANDO—Harry P. Leu, Inc.
TAMPA—Tampa Marine Co.
GEORGIA: ATLANTA—J. R. Whitman
SAVANNAH—Savannah Iron & Wire Works
ILLINOIS: CHICAGO—Chicago Fence & Wire Co.
INDIANA: INDIANAPOLIS—Hoosier Fence & Wire Co.
IOWA: DES MOINES—Des Moines Steel Co.
KENTUCKY: LOUISVILLE—Logan Co.
LOUISIANA: NEW ORLEANS—Orleans Steel Products Co.
SHREVEPORT—Beaird Corporation
MARYLAND: BALTIMORE—Horace T. Potts & Co.
MASSACHUSETTS: BOSTON—C. A. Gates & Co.
MICHIGAN: DETROIT—Barnes Wire Fence Co.
MINNESOTA: MINNEAPOLIS—Crown Iron Works Co.
MISSOURI: KANSAS CITY—Kansas City Wire & Iron Works
ST. LOUIS—Sears and Piou
NEBRASKA: LINCOLN—Lincoln Steel Works
OMAHA—Gate City Iron Works
NEW YORK: BINGHAMTON—Titchener Iron Works, Inc.
BUFFALO—Buffalo Fence Construction Co.
FORT EDWARD—Newton & Hill
NEW YORK—Brook Iron Works, Inc.
ROCHESTER—National Fence Co.
NEW YORK: TROY—Fred K. Blanchard, Inc.
WATERTOWN—Thos. H. Bradley
NORTH CAROLINA: CHARLOTTE—General Equipment Co.
OHIO: ASHVILLE—J. S. Roof
CINCINNATI—The Davis & Siehl Co.
CLEVELAND—The Betz-Pierce Co.
TOLEDO—Toledo Fence & Post Co.
WASHINGTON C. H.—W. W. Wilson & Son
ZANESVILLE—The F. Wilking Sons Co.
OKLAHOMA: TULSA—The Peerless Supply Company
OREGON: MEDFORD—Volney Dixon
PORTLAND—Portland Wire & Iron Works
PENNSYLVANIA: ERIE—Erie Concrete & Steel Supply Co.
PHILADELPHIA—Horace T. Potts & Co.
PITTSBURGH—Stewart-Holland Co., Inc.
SCRANTON—The Bittenbender Co.
RHODE ISLAND: PROVIDENCE—Rayhill & Greene Supply Co.
TENNESSEE: CHATANOOGA—James Supply Co.
JOHNSON CITY—Johnson City Foundry & Machine Co.
KNOXVILLE—Nelson Iron Works
MEMPHIS—Miller-Cochran Co.
TEXAS: DALLAS—Columbia Fence & Wire Co., Inc.
HOUSTON—Vincent A. Tozzi Co.
SAN ANTONIO—Southern Steel Co.
UTAH: WOODS CROSS—Burnham Manufacturing Co.
VIRGINIA: DANVILLE—Vass-Mobley Hardware Co.
RICHMOND—Richmond Machinery & Equipment Co.
ROANOKE—Graves-Humphreys Hardware Co., Inc.
WASHINGTON: SEATTLE—Galbraith & Co.
SPOKANE—Spokane Culvert & Tank Co.
WEST VIRGINIA: HUNTINGTON—West Virginia-Kentucky Hardware & Supply Co.
PARKERSBURG—Parkersburg Supply Co.
WISCONSIN: MILWAUKEE—A. F. Wagner Architectural Iron Works

IN CANADA: NIAGARA FALLS, ONTARIO—Dominion Chain Co., Limited

Products

Chain Link Fencing for protection and ornamental purposes of every description.

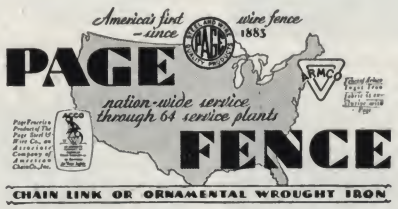
Wrought Iron Fencing for industrial, institutional and residential purposes.

Industrial Fencing for factories, mills, refineries, railroads, power stations, mines, yards, etc.

Fencing for city, state and national institutions, including schools, parks, playgrounds, prisons, hospitals, etc.

Enclosures for athletic fields, tennis courts, baseball grounds, amusement parks, aviation fields, automobile parking enclosures, etc.

Also manufacturers of Page "Hi-Way" Guard; Panel Partitions made of Page Chain Link fabric, for factories, offices, warehouses, stockrooms, etc.; Fencing and Entrance Gates of copper-bearing steel for residences, estates, country clubs, etc.



The first wire fence ever made was designed by J. Wallace Page in 1883. For 47 years Page Fences have been standards of good fence design.

Page Offers These Four Metals to Suit Your Requirements

Page Fence is available in four different metals, selection being made according to local atmospheric conditions. Our fencing experts in your territory will be glad to advise you as to the kind of Page Fence that will give the longest service.

(1) Page Aluminum Fabric—The ultimate achievement of the Page organization. It is highly resistant to corrosion and will retain its rich medium gray color without the need of surface protection. Discriminating buyers will investigate Page Aluminum Fabric where beauty, permanent protection and ultimate economy are desired.

(2) Page-Armco Ingot Iron Fabric—(Exclusive with Page.) Made of the purest and most uniform of ferrous metals. Wherever elements exist that would be harmful to even the finest copper-bearing steel protected by galvanizing, Page-Armco Fence has proved to give exceptional service.

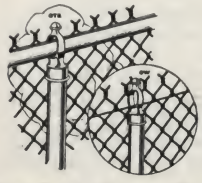
(3) Page Copper-bearing Steel Fabric—Made of copper-bearing steel of analysis conforming to specifications of the American Society of Testing Materials. The framework supporting Page Fence Fabrics is made of basic open hearth or copper-bearing steel. For the heavier and more durable types of construction, Page H-Section Line Posts complete a structure that will withstand every ordinary form of use and abuse.

(4) Page Wrought Iron Fence—Made under Page supervision and in accordance with the high standards of Page craftsmanship. Wrought iron is "the most enduring of all metals" which results in Page Ornamental Wrought Iron Fence—desirable wherever dignified protection is needed. The iron in this fence is in accordance with A.S.T.M. Specification Serial Designation: A-41-18.

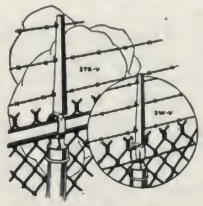
64 Service Plants

In each district of the United States and Canada there is a responsible firm of fence engineers that carries complete stocks of Page products and specializes in fence construction. This assures expert performance of the work all the way through, and gives the advantage of consultation with men of long experience in the erection of fences.

Estimates are gladly furnished on receipt of rough sketches of proposed work, or complete detailed design will be drawn up, if desired, and estimates supplied. Get in touch with the distributor nearest you, as listed above, or write direct to Association headquarters for interesting literature.

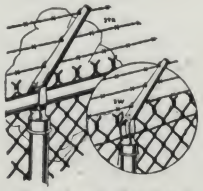


Standard Fence Post Top Where No Barbed Wire Is Used
With top rail OTR; without top rail OW

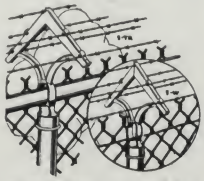


Vertical Type Arm with 3 Barbed Wires
With top rail 3TR-V; without top rail 3W-V

Standard Barbed Wire Arm for 3 Wires with Special Arm for Lighting Fixtures
With top rail 3TRLF; without top rail 3WLF



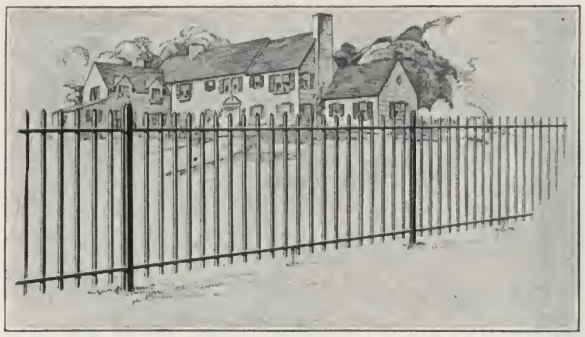
Standard Barbed Wire Arm for 3 Wires
With top rail 3TR; without top rail 3W



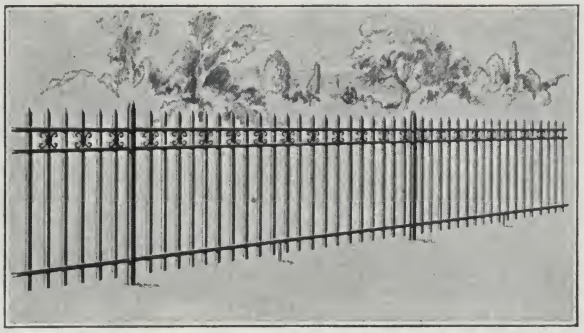
Standard Barbed Wire Arm for 5 Barbed Wires
With top rail 5TR; without top rail 5W

Continued on next page

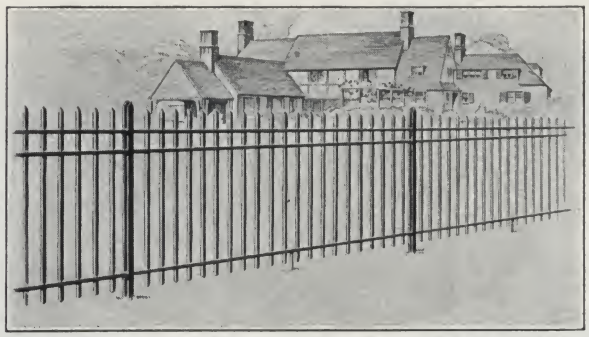
Page Wrought Iron (Not Steel) Fence



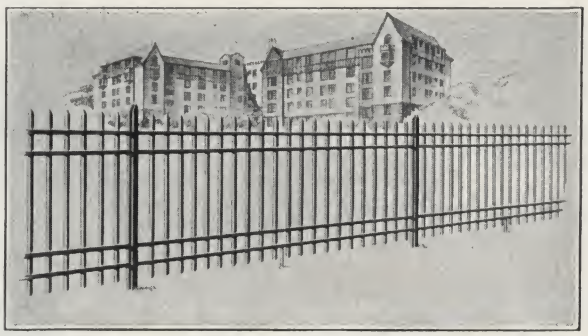
Page Ornamental Wrought Iron Fence Design 1000
Its simplicity led to its use for institutional and private property



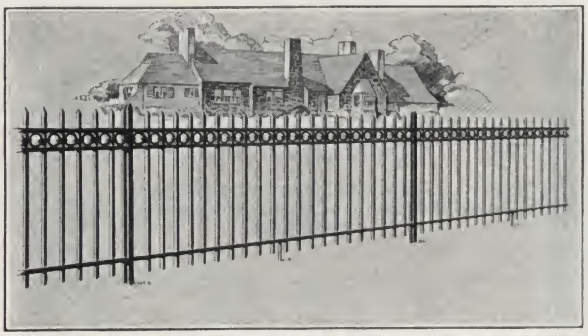
Page Ornamental Wrought Iron Fence Design 5000
The scroll is employed to obtain this rich looking enclosure



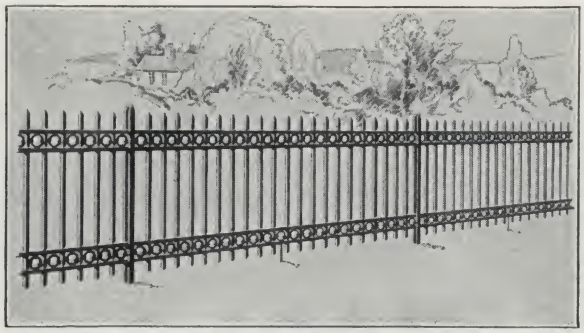
Page Ornamental Wrought Iron Fence Design 2000
Added strength is given through an additional top rail member



Page Ornamental Wrought Iron Fence Design 6000
Two rails, top and bottom, give an unusually rugged appearance

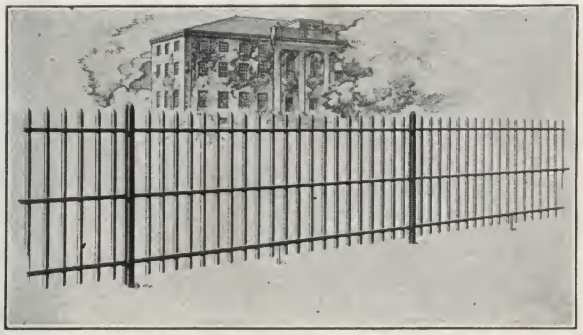


Page Ornamental Wrought Iron Fence Design 3000
An attractive setting for the most beautiful property. Oval rings, Design 3000-D, can be furnished



Page Ornamental Wrought Iron Fence Design 7000
Artistry and strength. Oval rings, Design 7000-D, furnished

Page Ornamental Wrought Iron Fence Design 4000
Alternate short and long pickets emphasize the privacy of grounds



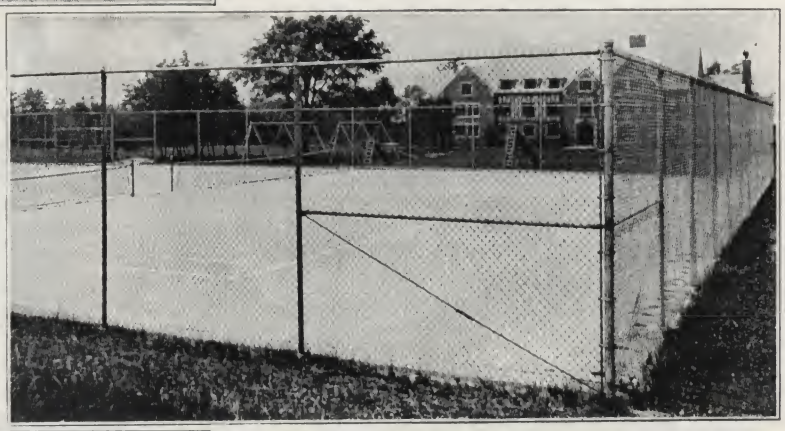
Page Ornamental Wrought Iron Fence Design 8000
A design that always appeals through the beautiful simplicity of the three-rail construction

Page Wrought Iron (not steel) Fence harmonizes with the beauty of lawns and gardens while it enforces a rigid "keep out." It represents a definite boundary and insures privacy at all times—privacy to the very limits of property. Children can play in peace and safety away from malicious characters and fast moving traffic. For schools, athletic fields and institutions, Page Wrought Iron Fence insures a double barrier. Crowds are always under control—paid admissions are increased and you are assured of an artistic fence that will harmonize with the natural beauty of your grounds.

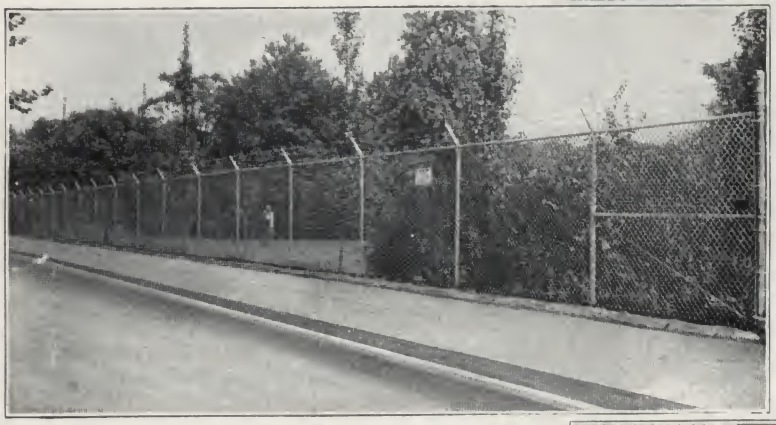
Either walk or drive gates can be furnished to match all designs of Page Wrought Iron (not steel) Fence.

Continued on next page

Page Wrought Iron (Not Steel) Fence and Gate, Style 2000
Made in many styles



This Beautiful Enclosure Keeps Balls Within Bounds—10-ft. Tennis Court Construction



Added Protection Secured with the Aid of 3 Strands of Barbed Wire—7-ft. 3TR Fence

Protection to the Very Limits of Your Property—4-ft. Reliable Fence Without Top Rail

Page Fabric

To guard against corrosion and rust, Page Fabric is heavily galvanized after weaving with a uniform coat of zinc—approximately five times heavier than ordinary galvanizing. This is applied by a hot dip process perfected by Page and assures uniformity.

Page Fabric galvanized in this manner has proved its claim for superiority by giving many years of satisfactory service under the most adverse conditions in all parts of the country.

WICKWIRE SPENCER STEEL COMPANY

Manufacturers of Wire and Iron Fences and Gates

GENERAL OFFICES
41 East 42nd Street
NEW YORK, N. Y.

FACTORY AND SALES OFFICE: RIVER ROAD, BUFFALO, N. Y.

OFFICES AND WAREHOUSES

WORCESTER, MASS., 80 Webster Street
CHICAGO, ILL., 208 So. LaSalle Street
LOS ANGELES, CAL., 1070 No. Alameda Street
TULSA, OKLA., The Philtower
PORTLAND, ORE., 361 14th Street, No.
CLEVELAND, OHIO, 1217 Guarantee Title Bldg.
SAN FRANCISCO, CAL., 144 Townsend Street
SEATTLE, WASH., 1025 Sixth Avenue, So.

Products

CHAIN LINK FENCES and GATES.

Also Ornamental Iron Fences and Gates.

For our pages on Electrically Welded Wire Fabric for Concrete Reinforcement, Woven Wire Lath, and Metal Grilles, see Manufacturers' Index.

Advisory and Erection Service, Estimates, etc.

Engineers, architects and contractors are invited to write our service department for any assistance in helping to solve their fence problems. We will be glad to furnish estimates in accordance with all standard specifications, engineer's or architect's designs or any special design. Complete fence catalogue and specifications for standard designs will be gladly mailed on request.

Chain Link Wire Fences

The pioneer chain link wire fence, hot galvanized after weaving, woven from special drawn wire of extra high tensile strength. Framework made from standard full weight galvanized steel pipe.

Specifications—

Types—300, 310 and 320.

Heights—Type 300—3, 3½, 4, 5 and 6 ft.; Type 310—3, 3½ and 4 ft.; Type 320—3, 3½, 4, 5 and 6 ft.

Fabric—Woven in 2-in. mesh of No. 9 or No. 6 (W&M) gage special drawn copper bearing steel wire, heavily hot galvanized after weaving. Selvage of fabric on fencing 5 ft. and higher, barbed finish. Fabric 4 ft. or less in height, one edge barbed finish and the other edge knuckled.

Frame—Constructed throughout from full weight hot galvanized copper bearing tubular steel.

Line Posts—2-in. outside diameter tubing. Weight 2.72 lb. per lineal ft. (For spacing 10 ft. apart.)

Top Rail—Type 300* none; Type 310 1⅜-in. outside diameter tubing. Weight 1.68 lb. per lineal ft.; Type 320 1⅝-in. outside diameter tubing. Weight 2.27 lb. per lineal ft.

End Posts—2½-in. outside diameter tubing. Weight 3.65 lb. per lineal ft.

Corner Posts—2½-in. outside diameter tubing. Weight 3.65 lb. per lineal ft.

Gate Posts—2½-in. outside diameter tubing. Weight 3.65 lb. per lineal ft.

Brace Tube—Type 300* 1⅜-in. outside diameter tubing. Weight 1.68 lb. per lineal foot; Type 310† none; Type 320 1⅝-in. outside diameter tubing. Weight 2.27 lb. per lineal ft., on 6-ft. fence only.

Gates—Constructed of 1⅝-in. outside diameter welded pipe frames and so designed to give continued service under heavy duty, filled with fabric to match fence, strongly braced and equipped with strong fittings and ornamental scroll on top, all parts heavily hot galvanized.

*On Type 300 Friendly Fence (no top rail) a No. 7 gage heavily galvanized coiled spring tension wire is furnished in place of top rail.

†On Type 310 and 320 Fences, when specified, end, corner and gate posts can be furnished with brace tube and truss and all necessary fittings.

Friendly Fence

Type—300 and 310.

Height—45 in. only.

Fabric—Woven in 1½-in. mesh of No. 12 gage (W&M) Special Drawn Copper Bearing Steel Wire, Heavily Hot Galvanized After Weaving.

Frame—Constructed throughout from full weight copper bearing tubular steel.

Line Posts—1⅝-in. outside diameter tubing. Weight 2.27 lb. per lineal ft.

Top Rail—Type 300* none; type 310 1⅜-in. outside diameter tubing. Weight 1.68 lb. per lineal ft.

End, Corner and Gate Posts—2-in. outside diameter tubing. Weight 2.72 lb. per lineal ft.

Gates—Constructed of 1⅛-in. outside diameter pipe frame, filled with fabric to match fence and equipped with ornamental scroll on top. All parts heavily hot galvanized.

Other Types

We are prepared to furnish all types of industrial and institutional fences, as well as tennis court enclosures, and backstops, and will be glad to forward complete specifications on request.

ESTABLISHED 1886

THE STEWART IRON WORKS COMPANY, INCORPORATED

Ornamental Iron, Iron Picket and Chain Link Wire Fences and Gates

611 Stewart Block, CINCINNATI, OHIO

REPRESENTATIVES IN PRINCIPAL CITIES

Products

PLAIN and ORNAMENTAL IRON FENCES and GATEWAYS; CHAIN LINK WIRE FENCE and GATES.

Also Iron Railings, Iron Grilles, Bronze and Iron Lanterns and Lamp Standards, Lawn Furniture, Park Settees, Folding Gates, Window Guards, General Ornamental Iron and Wire Work.

For our page on Jail and Prison Construction, see Manufacturer's Index.

Stewart

TRADE-MARK

Factory, Covington, Ky.
(Opposite Cincinnati, Ohio)

Facilities

This Company, "The World's Greatest Iron Fence Builders," has back of it an experience of nearly 50 years. The plant occupies 8 acres and has 350,000 ft. of floor space, manned and equipped to produce products on scheduled time, and at proper prices.

A complete design and drafting department is available for the preparation of design suggestions—or to co-operate in working out architects' designs.

The company specializes in ornamental iron fences and entrance gates, in addition to maintaining large scale production of standard designs.

STANDARD IRON PICKET FENCES

Stewart manufactures a range of plain or standard design iron fences *for all purposes.* The following pages present those in most general use. A wider selection will be found in the Stewart Iron Fence Catalogue (sent on request).

Structural Details

Stewart, because of its volume production, has evolved and offers special design fence members which produce structural and commercial advantages.

Line-of-fence Posts—Stewart builds with "I" section posts and, except for the heaviest fences, of an oval face section especially rolled for Stewart use. This section offers maximum strength per pound of metal, is an open and easily painted section, and needs *no* back bracing.

This is a new and revolutionary improvement in iron fence design, and one which establishes Stewart Fences in a preferred class.

Adjustable rail fittings are designed to facilitate the lining up of horizontal rails after posts are set.

Post Caps—Standard designs are illustrated or, for practical economy, posts with pointed (sheared) tops can be used.

Rails—The improved patented Stewart three-rib channel has been redesigned with deeper flanges and a heavier center rib. Pound for pound this is much more rigid than a commercial channel or flat bar. The center rib affords extra metal at the point of calking.

Pickets—Are round or square in 3/8, 1/2, 5/8, 3/4 and 7/8-in. sizes—or heavier if required.

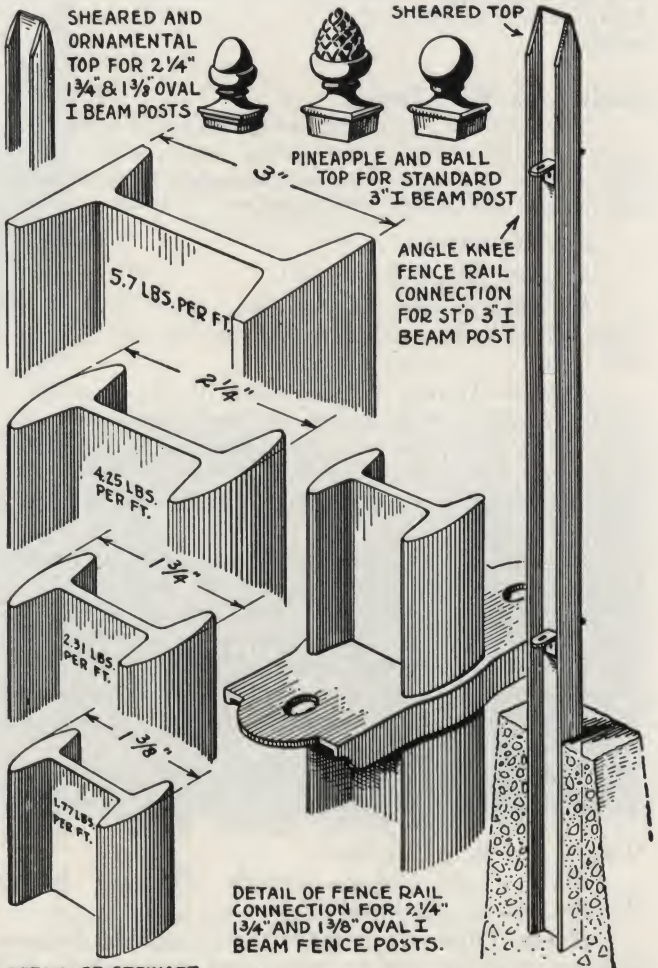
Calked or Welded Pickets—The Stewart Improved three-rib channel rail permits either form of picket fastening, at the customer's option. Calking is done by methods which work the metal of the rail into the picket, and fix the latter rigidly and permanently in place.

For installations requiring it, welded picket construction can be supplied--with each picket electric-welded in place.

Center Supports—Adjustable center supports for the panels of iron fence are furnished as part of standard construction (see detail illustration).

Gates—Walk, driveway and special gates may be of design matching the fence, or of ornamental design. Our "Book of Designs" is available for those who wish to consult its 78 pages of design suggestions.

Gates are furnished, when specified, with Stewart bronze interior locks. Heavy gates are designed with bronze bushed socket mounted hinge bars, with provision for oiling.



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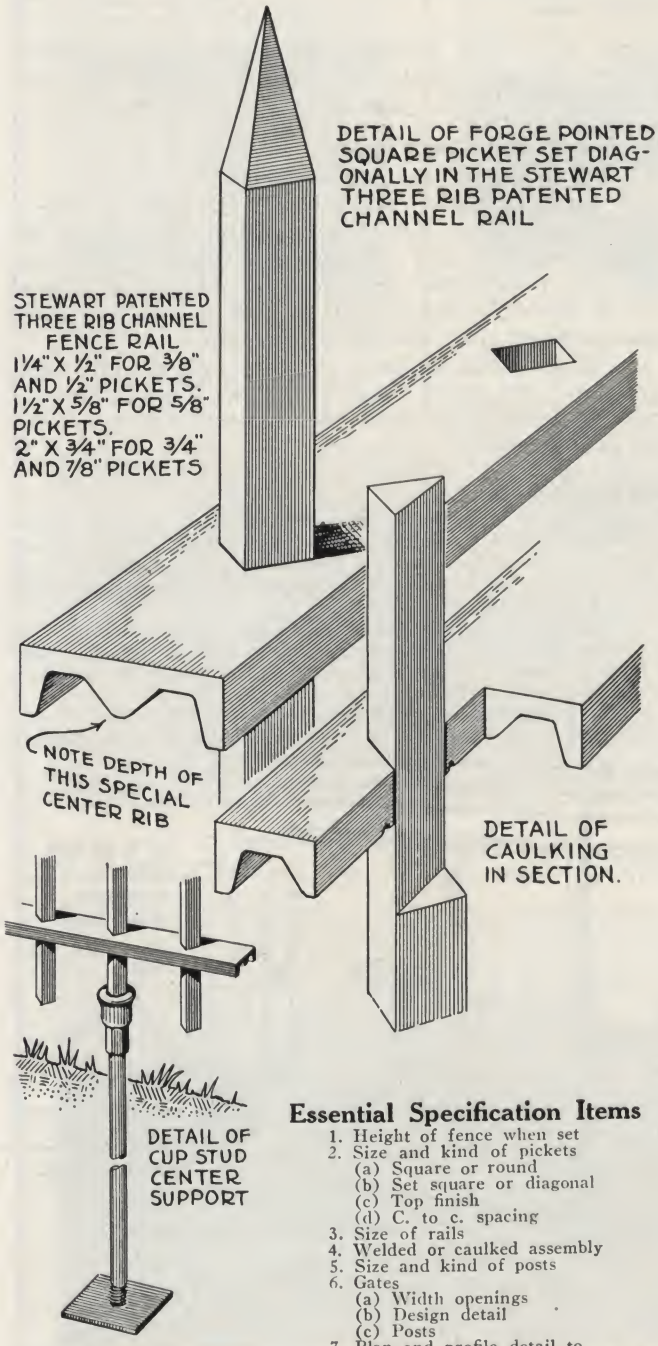
Ornamental and Special Design Work

The company maintains a special division for the execution of designed ornamental iron fences, gates, balcony railings, grilles, etc. The craftsmanship of this department of Stewart's shop compares with any ornamental iron works in the country.

The company offers, also, the services of its staff of designers, whose specialization on ornamental iron work has given them a facility of expressing decorative ideas in forms which can be worked out to practical cost advantage. Blueprints and photographs of work done are available, inquiries solicited.

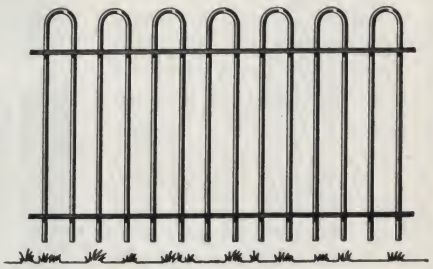


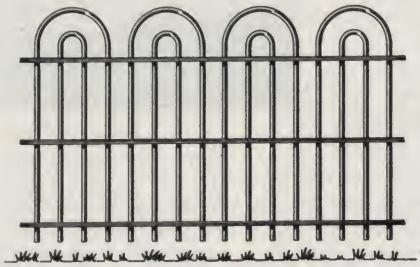
Essential Specification Items

1. Height of fence when set
2. Size and kind of pickets
   (a) Square or round
   (b) Set square or diagonal
   (c) Top finish
   (d) C. to c. spacing
3. Size of rails
4. Welded or caulked assembly
5. Size and kind of posts
6. Gates
   (a) Width openings
   (b) Design detail
   (c) Posts
7. Plan and profile detail to
   (a) determine panel lengths and post spacing
   (b) detail grades
   (c) show special items

Designs shown are but a glimpse of our full line. Over 500 designs available.

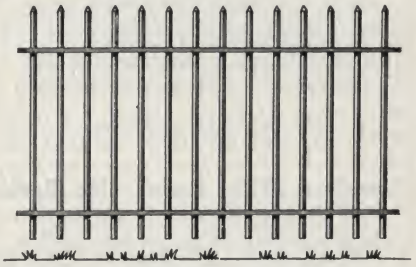
Stewart Design
No. 800—⅜ in. pickets
No. 801—½ in. pickets
1⅜ in. oval "I" posts
4 in. picket spacing

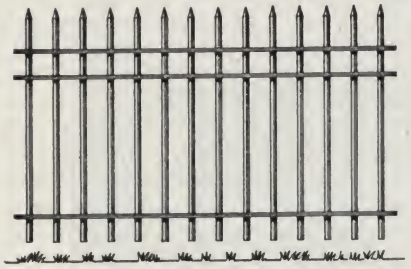




Stewart Design
No. 810—⅜ in. pickets
No. 811—½ in. pickets
3 or 4 in. picket spacing
1⅜ in. oval "I" posts

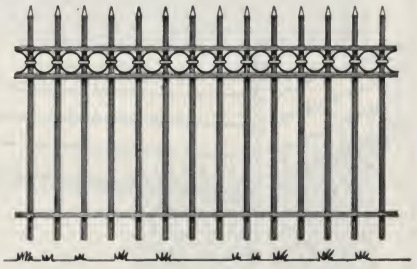
Stewart Design
No. 901—½ in. pickets
No. 910—⅝ in. pickets
No. 911—¾ in. pickets
No. 912—⅞ in. pickets
Picket spacing—4 in. for 901; 5 in. for 910, 911 and 912.

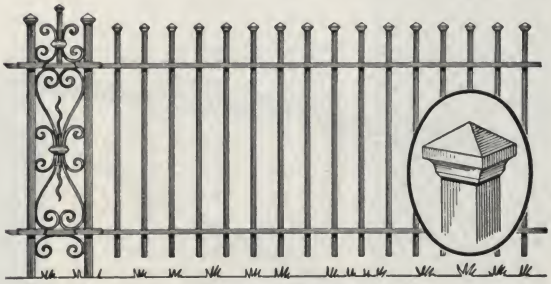




Stewart Design
No. 950—½ in. pickets
No. 951—⅝ in. pickets
No. 952—¾ in. pickets
No. 953—⅞ in. pickets
Picket spacing—4 in. for 950; 5 in. for 951, 952 and 953.

Stewart Design
No. 1000—½ in. pickets
No. 1001—⅝ in. pickets
No. 1002—¾ in. pickets
Picket spacing—4 in. for 1000; 5 in. for 1001 and 1002.





Stewart Design
No. 960—½ in. pickets on 4 in. centers
No. 961—⅝ in. pickets on 5 in. centers
No. 962—¾ in. pickets on 5 in. centers
Ornamental design panel posts are optional.

See the following pages for ornamental fence and gate designs, and chain link wire fence.

Continued on next page

STEWART CHAIN LINK WIRE FENCES

Standardized Designs

These afford a range of choice for all purposes—from light lawn fence to school, institutional and industrial property enclosures.

Materials Specification—Fabric of copper alloy steel woven in chain link mesh and hot dip galvanized after weaving; also the barbed wire.

Framework members of copper alloy steel, fittings of pressed steel, ornamental tops of malleable iron—all hot dip galvanized after fabrication.

Stewart "Heavy Duty" Gates

Design Advantages—Stewart Chain Link Fences are an engineered product in which refinements of detail are worked out for practical advantage. The Stewart oval-back I-beam post with integral arm construction is noteworthy. It is the heaviest post in standard use today and has a complete surface exposure. The same section in a smaller size is used as a top rail. Thus with Stewart Fences there are no pockets where internal moisture accumulation can take place.

Standard OTM Fence (No Barbed Wire)

Fabricated in 4, 5, or 6-ft. heights with 2-in. mesh fabric of No. 9 gauge wire, 1¾-in. oval-back I-beam line posts and top rail. End, corner and gate posts 3-in. open section post. Posts spaced 10 ft. apart and set in concrete.

Standard OTH Fence (No Barbed Wire)

Fabricated in 5, 6, 7, 8, 9 or 10-ft. heights with 2-in. chain link fabric of No. 6 or 9 gauge wire; 2¼-in. oval-back I-beam line posts; 1¾-in. oval-back I-beam top rail; 3-in. open section end, corner and gate posts. Furnished with or without top-rail as desired. Posts spaced 10 ft. apart and set in concrete.

Standard 3T-OB Fence (with Barbed Wire Overhang)

Same structural specifications as Stewart OTH Fence plus barbed wire overhang arrangement with 3 strands of barbed wire. The extension arm which holds the barbed wire strands is an integral part of the post itself.

Stewart Lawn Fence

Standard in 3, 3½ and 4 ft. heights with 2-in. chain link fabric of No. 9 gauge wire, 2-in. tubular line posts, 2½-in. tubular corner and gate posts, and 1⅜-in. tubular top rail. Posts spaced 10 ft. apart and set in concrete.

Stewart Tennis Court Fence

Furnished in two specifications:

"Professional"—8, 10 or 12 ft. high of 1¾-in. mesh chain link of No. 11 gauge wire, 2½-in. pipe line posts, 3-in. pipe end and gate posts and 1⅝-in. pipe top rail; middle rail furnished for 12-ft. high fences and at extra cost for 8 or 10-ft. high enclosures. Posts spaced 10 ft. apart and set in concrete.

"Regulation"—Same as above, except line posts are 2-in., end, corner and gate posts 2½-in., and top rail 1⅜-in. diameter pipe. Posts spaced 8 ft. apart and set in concrete.

Stewart Gates

Furnished any width desired. We also furnish sliding gates with 1.9-in. outside diameter steel tubular frames joined with pressed steel corners; a horizontal cross member; ½-in. solid round steel brace rods. Stewart offset hinges are absolutely unbreakable.

Double Gate Latch Device—Very simple and effective. Permits opening left-hand gate independently of the right. Locks by means of a padlock arrangement which can be operated from either side of gate.

Gate Equipment—Includes center stop for setting in concrete and automatic back stops to hold gates in open position.

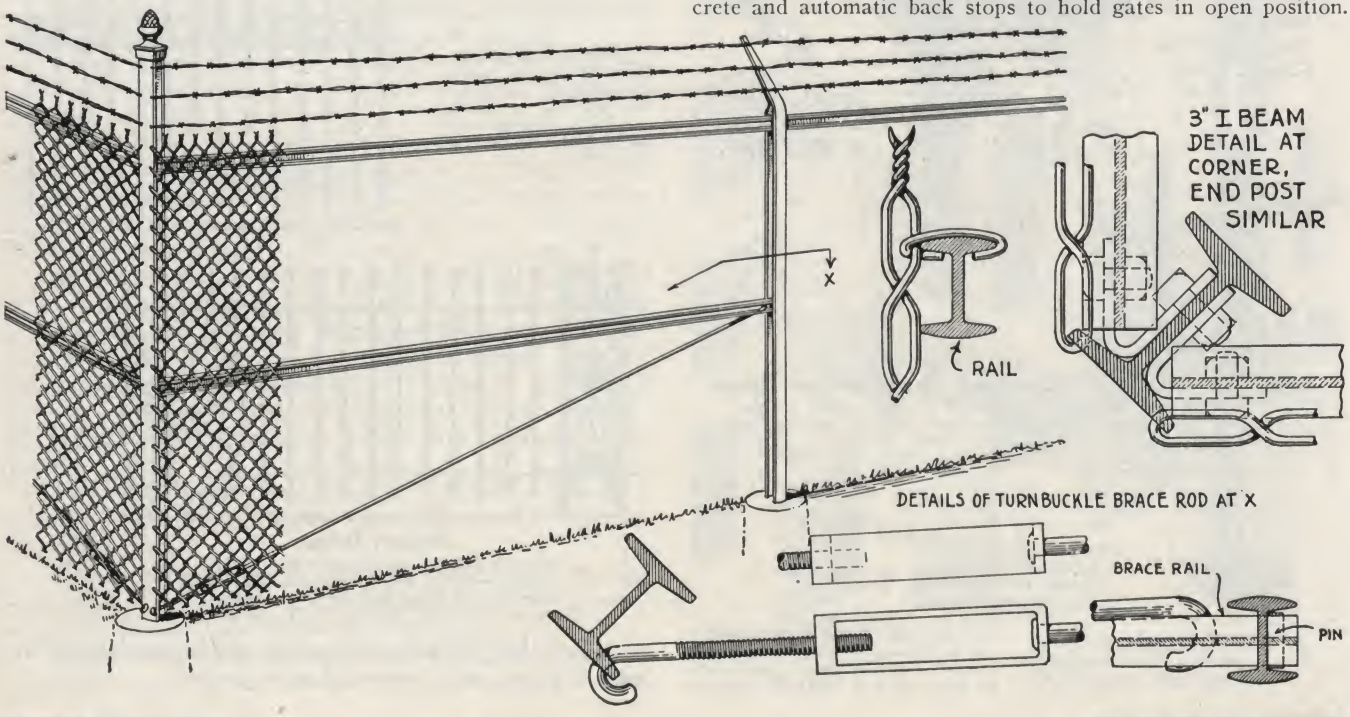


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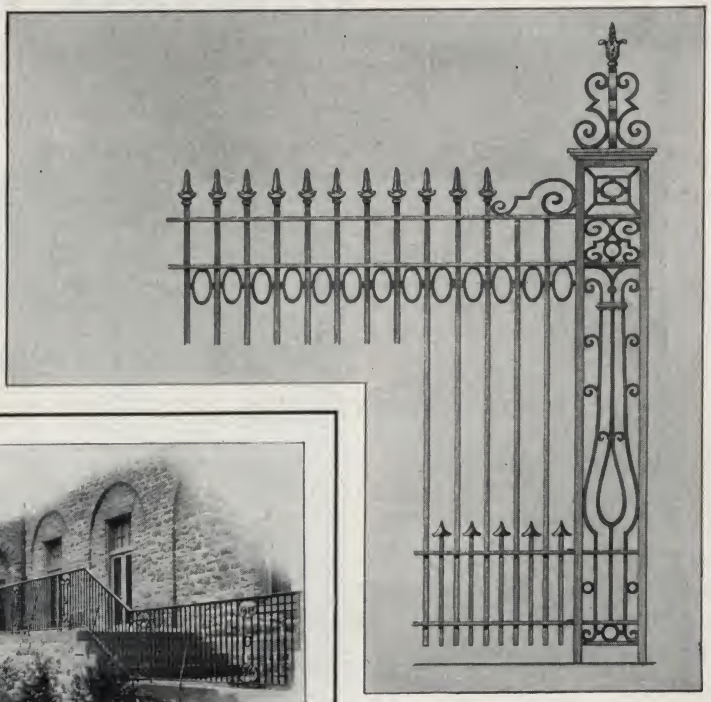
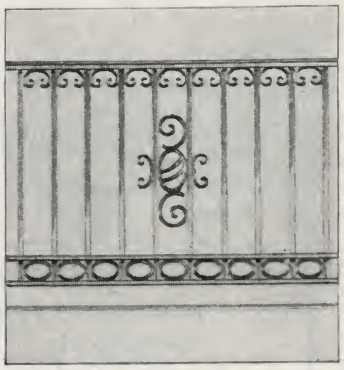
Plate No. 90 A Stewart Ornamental Iron Fence



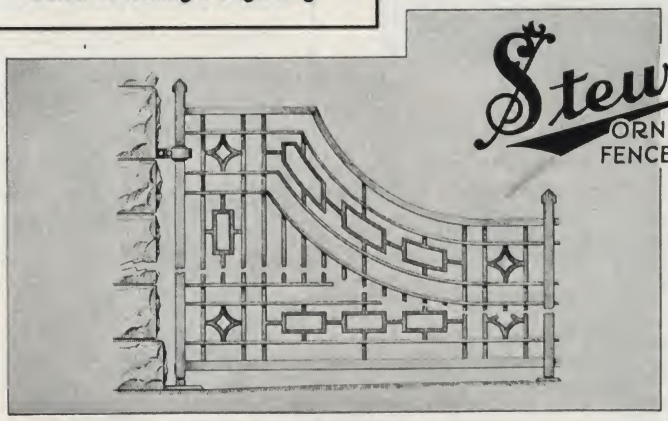
Detail from Plate No. 90



Detail of Railing Design 1115

Plate No. 129498-F Balcony Railing

Stewart
ORNAMENTAL
FENCES & GATES



Detail from Plate No. 52-A

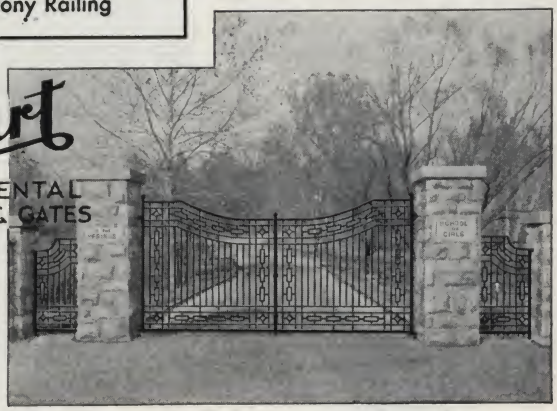
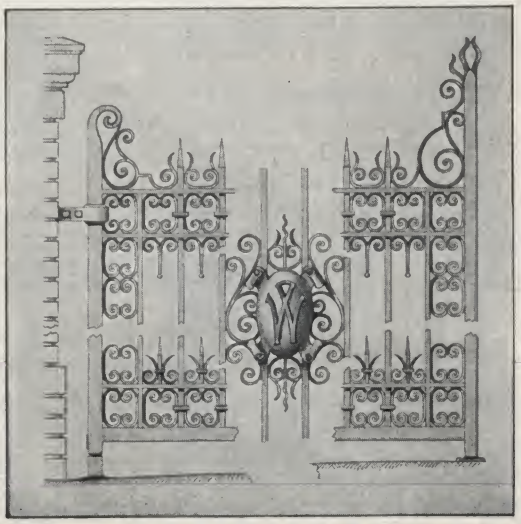


Plate No. 52-A A Distinctive Iron Gate Design

Plate No. 111 A Special-design Iron Fence and Gates



Detail from Plate No. 111

ALLEN-DREW COMPANY

DIVISION OF
BABCOCK-DAVIS CORPORATION

43-45 Brookford Street
CAMBRIDGE, MASS.

For Other Catalogues on Our Products, see Manufacturers' Index

MOTOR OPERATED GATES

FOR INDUSTRIAL PLANTS, PRIVATE ESTATES, AIRPORTS, ETC.

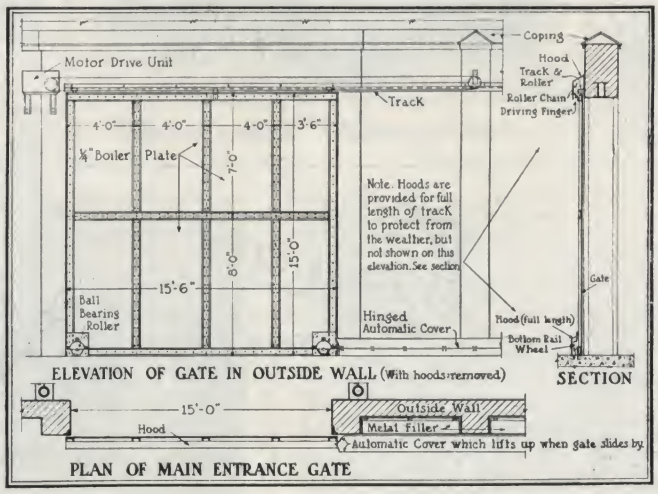
Electrically operated gates are a necessity in such buildings as industrial plants, large private estates, etc.

Gates for Private Estates

Entrances to many private estates are remote from the buildings, and motor operation of the gates is very convenient, eliminating the necessity of hand operation in inclement weather. There is also the advantage of being able to open the gates from a remote point to allow the entrance of vehicles or pedestrians who are authorized to enter while it is impossible for unauthorized persons to enter until the electric mechanism is operated.

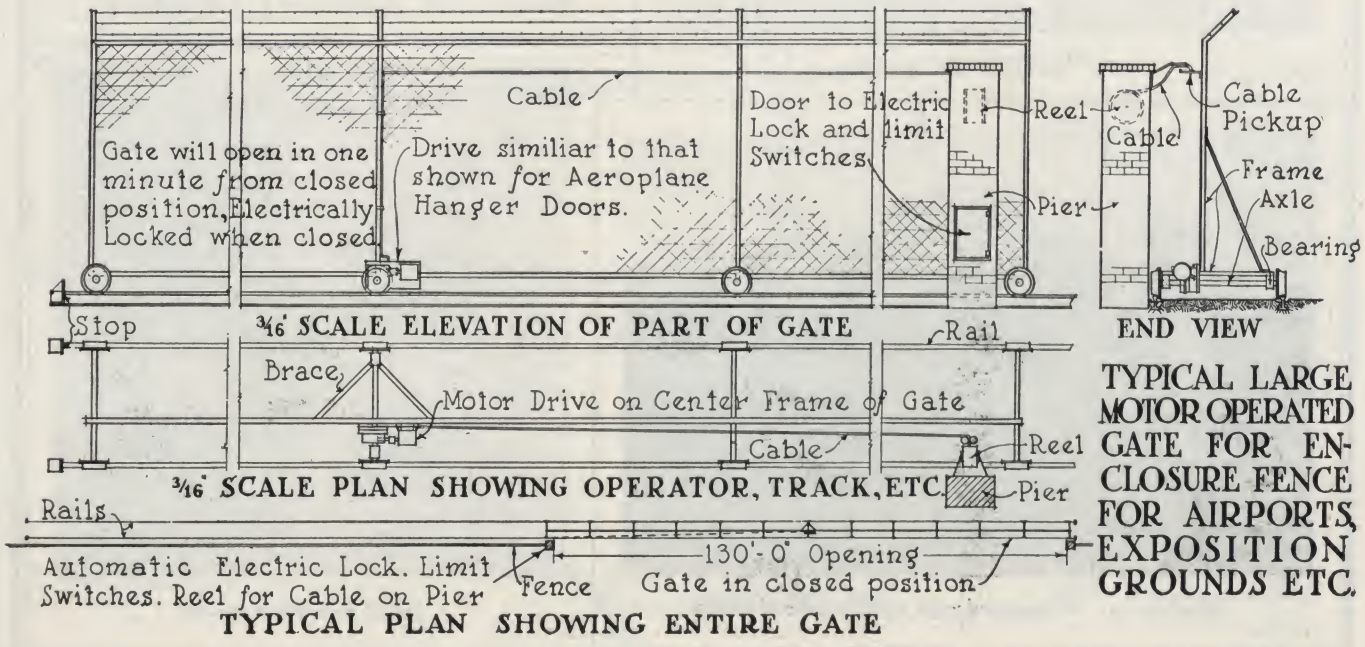
The majority of entrance gates to estates are of the swing type, but it is possible to use horizontal and vertical sliding in a good many cases. We can operate all types.

Where gates are of heavy ornamental wrought iron, and hinged or pivoted, we also operate them by a slightly different arrangement of the same type of motor unit. Doors of practically any size or weight can also be operated.



Gates for Large Openings at Industrial Plants, Airports, etc.

In some industrial plants and airports, it is desirable to enclose an area and still to have large openings available at times. The drawing below shows the method of operating gates of practically any width. Openings of 300 or 400 ft. can be operated as easily as a 50-ft. opening.



TYPICAL LARGE MOTOR OPERATED GATE FOR ENCLOSURE FENCE FOR AIRPORTS, EXPOSITION GROUNDS ETC.

H. V. BRIGHT

Manufacturer of Turnstile Equipment for Entrances and Exits

1104 Prospect Avenue, CLEVELAND, OHIO

Products

TURNSTILES, including Registering Automatic Pattern and Non-registering Turnstiles.

METAL EXITS or BAFFLE GATES; also hardware for metal or wood Exits including ratchet, dogs, etc.

Also Ticket Cancelling Machines and Coin Controlled Turnstiles.

Application and Service

Can furnish turnstiles for any purpose desired, such as swimming pools, museums, libraries, pay-toilet rooms, self-serve groceries, stadia, baseball parks, university or high school athletic fields, amusement parks, expositions, fair grounds, railroads, ferry and boat landings.

This concern has been manufacturing and furnishing turnstiles for more than twenty-five years, and has furnished them for use at many different places including the baseball clubs of both the American and National Leagues, the Sesqui-Centennial and Municipal Stadium at Philadelphia, the Woodland Hills Park Swimming Pool at Cleveland, Grandstand at Illinois State Fair, "Playland" Amusement Park, at Rye, N. Y., and others.

Suggestions and advice given for arrangement and building of entrances and exits. Write us what you have in mind.

The "Bright" Printing Register

The "Bright" Printing Register for turnstiles furnishes a printed record of the opening and closing numbers of the turnstile register on a record slip, in a convenient form for filing or reference. It eliminates the chance for error in reading and writing down the figures from the register.

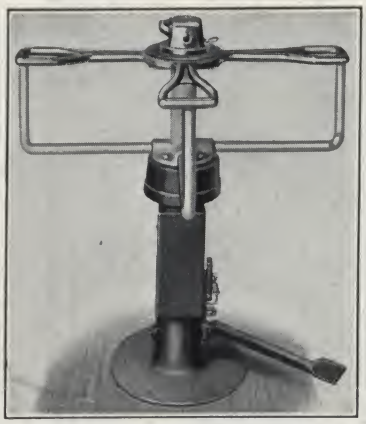
Registering Turnstile "D"
Installed at Municipal Swimming Pool. Operator to be inside booth. Exit Turnstile or Baffle Gate is installed at the left.

Registering Turnstile "A"
This machine is more generally used in connection with tickets and is suitable for many places where a lower-priced turnstile is desired.

The base is of gray iron, levers of malleable iron, arms of steel tubing and iron castings.

Turnstile "A" is successfully used at many places. It is under control of the gatekeeper or attendant by use of the foot lever. Furnished with either the printing or plain register.

Turnstile "A" with Broad Arms
The above cut shows the Turnstile "A" equipped with the *broad arms*, the idea being to lessen the possibility of two people passing through the turnstile on one registration.

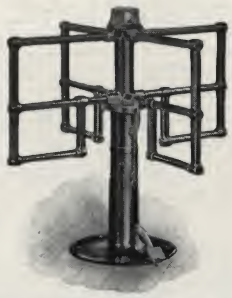


Automatic Pattern Registering Turnstile "D" with the Open Type Brass Arms
Can be used for either cash or ticket admissions. It embodies especially desirable features, particularly in that the patrons practically operate the turnstile themselves as they go through —the attendant or gatekeeper's duty being to collect the tickets or money. It is not a coin controlled turnstile.

It is equipped with air shock absorbers that check the arms at each quarter turn. Can always be under control of gatekeeper by use of foot lever.

The top open type broad arms are of polished brass and the lower arms of steel tubing and iron castings with a light gray finish.

It is suitable for many different places including *swimming pools, amusement parks, baseball parks, stadia, museums, libraries,* etc.



Registering Turnstile "B"
The above Turnstile is equipped with the *drop arms*, an added protection in that it makes it just that much harder for anyone to crawl under the arms of the Turnstile.

Can be used for an inside exit turnstile if desired.

Wood Exit Turnstile or Baffle Gate
The above operates one way only and no attendant is necessary. The hardware only is furnished for this turnstile consisting of the top and bottom castings, ratchet plate, dogs, etc. A blue print is also furnished giving the dimensions, etc. of the principal wood parts used in the construction so that if desired the complete exit turnstile can be built in your own locality.

PEREY TURNSTILES

MANUFACTURED BY

PEREY MANUFACTURING CO., INC.

101 Park Avenue, NEW YORK, N. Y.

Perey Turnstiles Are Standard Equipment

Perey Turnstiles, Passimeters, Coinpassors, Registering Fare Boxes, and Baffle Gates are recognized as standard equipment at all public places for collecting fares and admission fees, maintaining accurate registration of attendance, controlling the direction of the movement of the public and safeguarding exits. They are not subject to error or tampering by employees.

Quality

The Perey registering and controlling mechanisms of today represent the ultimate refinement in apparatus of this type that many years' experience and constant striving for improvement have been able to produce.

They are manufactured with the utmost care from the finest materials and are built to withstand the most severe usage to which such mechanisms are subject. It has been found from experience that Perey Turnstiles outlast and cost less per year of useful service than any other similar devices. They have served for twenty years or more in congested subway stations without breakdown.

The Perey Recording Meters are made in Perey shops and are guaranteed to stand up in this service. Other meters were found unsatisfactory.

What Perey Turnstiles Do

Perey Turnstiles serve both as gates and registers.

They may be used either with or without tickets.

They give an independent, untamperable check on cash received. This check-up is not controlled by the cashier or ticket seller, since the registration is made by the patrons themselves as they pass through the turnstile.

They prevent pilfering or fraud on the part of the cashiers or ticket sellers by registering accurately and unalterably the number of persons admitted.

They prevent "gate crashing" through regular entrances.

They speed up the handling of patrons by reducing the amount of work that cashiers or ticket sellers must do.

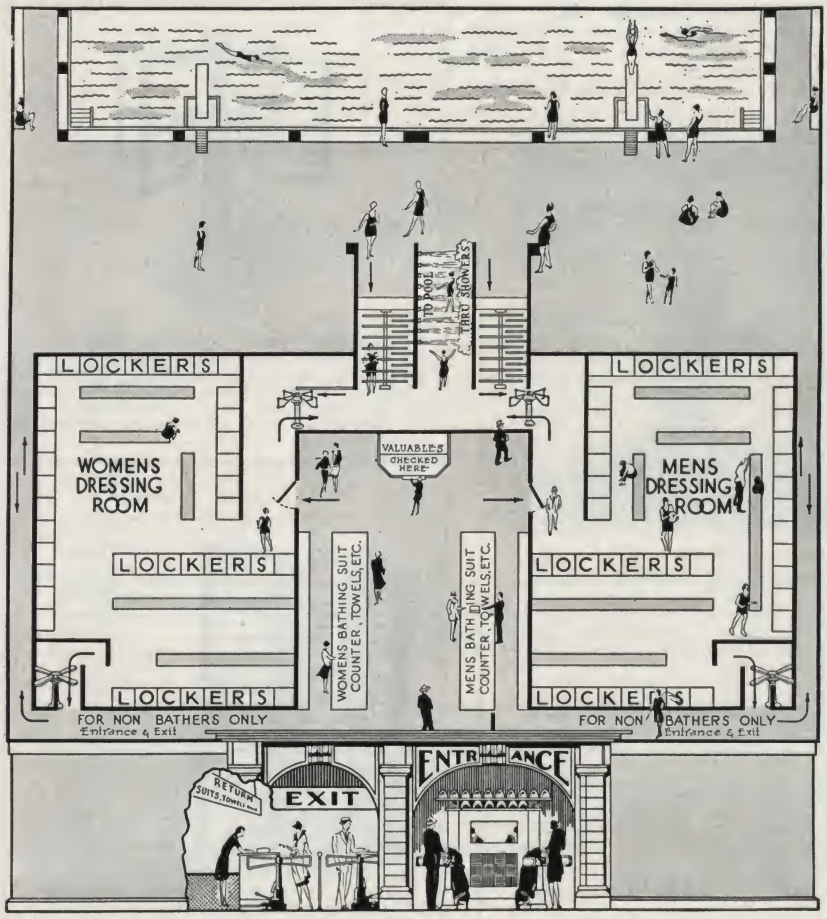
They save the wages of ticket takers and the cost of tickets.

Where Perey Turnstiles Are Used

Swimming pools	Bathhouses	Athletic stadia
Amusement parks	Exposition grounds	Fair grounds
Public lavatories	Public parks	Zoos
Botanical gardens	Museums	Railroads
Street railways	Subways	Ferries
Boat piers	Boat landings	Miniature golf courses

Service

It is advisable for architects designing plants and structures where accurate mechanical registration of people or means of controlling their movements are desired, to consult us in advance of construction to ascertain the most suitable system and mechanism for the purpose and to plan for its use in the most efficient way. We suggest you write us concerning your projects involving turnstile equipment and let us supply you with data, without obligation.



Typical Application of Perey Turnstiles in a Swimming Pool

Representative Perey Turnstile Users

Miramar Pool, New York
Westchester County, N. Y., Park Commission
BMT Subway and Elevated Ry., New York
Philadelphia Rapid Transit Co., Philadelphia
Boston Elevated Railway, Boston
Boston, Revere Beach & Lynn Ry., Boston
Public Service Corporation of New Jersey
Grand Central Station (Lavatory), New York
South Station (Lavatory), Boston
North Station, Boston
Atlantic City Steel Pier
Hotel Astor (Lavatory), New York
City of Chicago, Public Parks
Brooklyn Botanic Gardens
Metropolitan Museum of Art, New York
Fort Lee Ferry, New York
Municipal Ferries, New York
Harvard University (Stadium), Cambridge
Cincinnati National League Baseball Club
National Council of Y. M. C. A.'s
Luna Park, Coney Island, New York
Riverview Park, Chicago
Kentucky Jockey Club (Race Track)
Tokyo Underground Ry., Tokyo, Japan
Eagle Pass Toll Bridge, Texas
New York City, Public Schools
Central Airport, Camden, N. J.
Museum of The City of New York
Young's Million Dollar Pier, Atlantic City
LaCroze Subways, Buenos Aires

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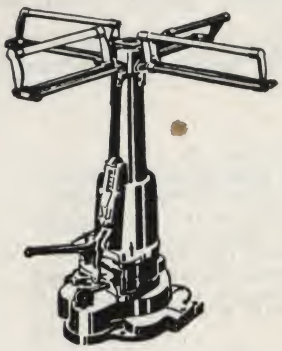


The Automatic—A Perey Passimeter

The fastest of all turnstiles for entrance and exit use where large crowds have to be handled, change made or tickets collected without delay or congestion. This Passimeter is unlocked for entrance by the patron himself pressing the arm while passing through, thus allowing the cashier or ticket taker to devote the utmost attention to the making of change or inspection of tickets, avoiding error and confusion.

It can be held locked, however, by means of a pull cord attached to a lever at the base of the Passimeter, whenever necessary to exclude dead beats and undesirables.

The Automatic Passimeter is fitted with a positive lock and backlock, permitting only one quarter turn forward at a time and preventing backward turning.

Other features include: built-in tamperproof five-digit recording meter; spread type arms; built-in shock absorber; compression spring throw; clockwise or counter-clockwise rotation, the direction of rotation desired to be specified with each order.

The careful workmanship and rugged construction insure long life and satisfactory service. Can be equipped with wood arms or drop arms to special order.

Standard finish, black.

Net weight	240 lb.
Gross weight	300 lb.
Spread of arms	38 in.
Height to top of arms	37 in.

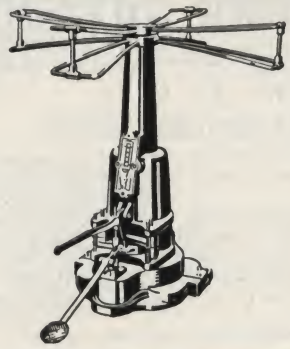
The No. 10—A Perey Turnstile

This turnstile is designed for use at exits where no registering or locking features are required and which are under observation by cashier or other attendant. It is widely used also for enforcing one-way movement without requiring attendants at every such point. Swimming pools, amusement parks, dance halls, skating rinks, cafeterias, self-service stores, etc., use these turnstiles to advantage.

The No 10 Turnstile is strongly built and will stand hard usage either indoors or out. The arms are drop type. This turnstile has no register and does not lock. It is arranged to turn in one direction only, but can be supplied for either clockwise or counter-clockwise rotation, direction to be specified with order.

Standard finish: pedestal, aluminum; arms, black.

Net weight	75 lb.
Gross weight	100 lb.
Spread of arms	40 in.
Height to top of arms	36 in.
Height to bottom of arms	23 in.



The Standard—A Perey Passimeter

This is the standard "always locked" type turnstile for use at pay-enter entrances or pay-leave exits. It is also widely used for swimming pool and bathhouse exits to check outgoing patrons to prevent the removal of rented property.

The Standard Passimeter, in contradistinction to the Automatic, is always locked and must be unlocked for each individual admitted. It is fitted with a trip latch which enables the operator merely to trip the hand or foot control levers to unlock the Passimeter for the passage of one person, after which it automatically relocks.

Special features include: tamperproof, five-digit recording meter built into the pedestal; solid brass spread type arms; automatic lock and positive backlock; built-in shock absorber; levers for both hand and foot control; compression spring carrying throw; clockwise or counter-clockwise rotation, the direction of rotation to be specified with order.

These Passimeters are strongly and durably built and handsomely finished.

Standard finish, battleship gray.

Net weight	240 lb.
Gross weight	300 lb.
Spread of arms	38 in.
Height to top of arms	36 in.

The Popular—A Perey Turnstile

This turnstile is designed to meet the demand for a reliable registering and locking turnstile of the established Perey Quality to sell at a moderate price where conditions make the item of first cost an important consideration.

It is designed according to the best turnstile practice and is ruggedly built to give satisfactory service.

The Popular is of the "always locked" type and is unlocked by the cashier or operator for each individual admitted, by means of a foot treadle. The recording meter is located in the head of this turnstile where it is geared directly to the shaft. It is enclosed and fitted with a lock. The arms are "spread type" and are painted uniformly with the pedestal. The pedestal is cut off at the base to prevent people entering the turnstile from tripping over it.

Standard finish, black.

Rotation, clockwise or counter-clockwise, direction to be specified with each order.

Net weight	165	lb.
Gross weight	225	lb.
Spread of arms	39	in.
Height to top of arms	36	in.
Height to top of register	40½	in.

The Coinpassor—A Perey Coin-controlled Turnstile

The most efficient and economical turnstile for use where a uniform admission fee, payable with a single coin or token, is to be collected. It collects the money and admits the patron automatically, registering each admission on a tamperproof recording meter. The coin or token unlocks the Coinpassor and the patron does the rest in passing through. No operator is required. This turnstile is widely used in subways, elevated railways, trolley and bus pre-payment and post-payment stations and in pay lavatories, etc.

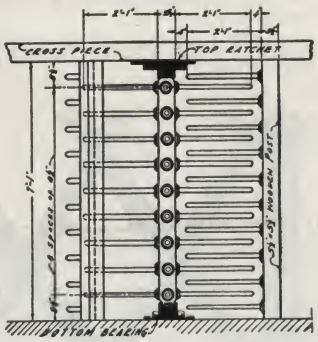
The Coinpassor is entirely mechanical, no electrical wiring required. It is entirely self-contained in one unit and, when used in batteries of two or more, no railings or fences are required between them. It is easily installed by simply bolting to the floor. The Coinpassor can be arranged to operate on coin or metal token. It can be supplied for either one-way or two-way operation (two-way operation involves coin-controlled entrance and free exit). Standard features include: wood arms; cast iron base and coin receptacle compartment with lock; working parts fully enclosed in sheet metal compartment; nickelplated coin slot with lock; tamperproof recording meter.

Standard finish, gray

Net weight	700	lb.
Gross weight	850	lb.
Height over all	38	in.
Width across top	41½	in.
Length across top	54½	in.
Floor dimensions	37x15	in.

Clockwise or counter-clockwise

An Entrance Using Perey Automatic Passimeter



Perey Baffle Gate Mechanisms

These mechanisms are recognized standard for this type of equipment. For all exits not under observation, baffle gates constructed with Perey mechanisms are the surest protection. They are also ideal for use in swimming pools and bathhouses to compel one-way movement without the use of attendants.

These mechanisms are substantially built to withstand the most severe usage.

The top and bottom mechanisms only are furnished, the center post, arms and baffles to be constructed to suit individual conditions as to height, spread, etc., according to instructions which will be furnished. Each set of mechanisms consists of top ratchet and post cap and bottom bearing and post cap.

Ratchets can be supplied for either clockwise or counter-clockwise rotation. Direction to be specified with order

WOVEN WIRE WORK DIVISION

OF NATIONAL ASSOCIATION OF ORNAMENTAL IRON, BRONZE AND WIRE MANUFACTURERS

WASHINGTON, D. C.

CONTRIBUTING MEMBERS

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DISTRICT OF COLUMBIA: WASHINGTON, Fred S. Gichner Iron Works
ILLINOIS: CHICAGO, Acorn Wire & Iron Works
American Iron & Wire Works
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Globe Wire & Iron Works

A SIGNIFICANT EMBLEM

The above Craftsmen and Fabricators who display this emblem are pledged to good and efficient execution of Woven Wire Work and the advancement of the art. Firms nearest you will gladly furnish additional information.

Article 7, Code of Ethics—Membership in the Association shall be an assurance to the public of honest and efficient workmanship and material and the most scrupulous observance of the terms and conditions of contracts and service to our customers.

A NEW SERVICE TO ARCHITECTS AND CONTRACTORS

The above members have contributed to these pages for the purpose of furnishing the architect and contractor with authoritative general information on the uses and advantages of woven wire work, standard specifications, and approved modern methods of fabrication.

For estimates, address individual members.

Important—When Asking for Quotations

Standard gauge for steel wire is W&M. As this is in most instances heavier than other gauges, the architect should make certain that all quotations are based on W&M gauge.

Mesh is the opening or space between parallel wires, as shown below, and as defined by the National Association.

THE SPECIAL FEATURES AND ADVANTAGES OF WOVEN WIRE

Woven wire work is fabricated entirely from drawn materials and has many adavantages over expanded or perforated products for general open mesh construction. Drawn materials have no fractured surfaces to invite corrosion, and no burrs to cut the hands and gather lint and dust.

In general there is no real substitute for woven wire work in open mesh construction where the following requirements are of prime importance:

(1) Ventilation—Largest percentage of open area.

(2) Lighting—More light due to better diffusion.

(3) Cleaning—All smooth surface; easily kept clean.

(4) Vision—Easier to look through from any position.

(5) Fire—No obstruction to hose stream.

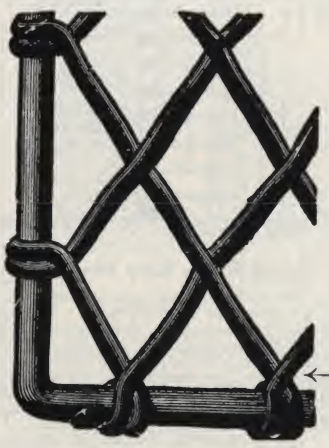
(6) Heating—Maximum circulation of air.

(7) Sound—No interference.

(8) Painting—Easily repainted.

(9) Strength—All wires double crimped and securely interwoven and clinched on drawn metal frames. (See illustrations below.)

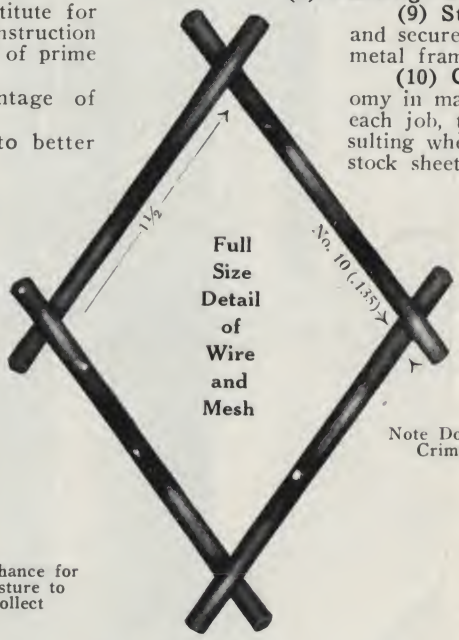
(10) Cost—Lowest cost because of economy in manufacture as mesh is woven up for each job, thus eliminating the usual waste resulting when mesh is cut from limited sizes of stock sheets.



←No Chance for Moisture to Collect

Round Frame

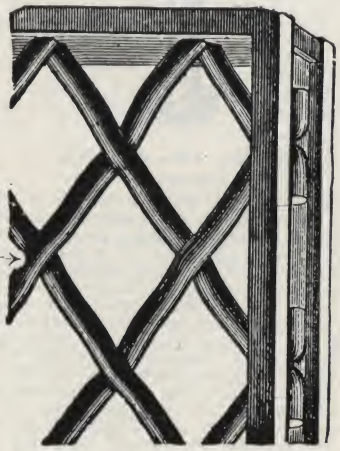
Is generally used for exterior window and skylight guards



Full Size Detail of Wire and Mesh

Standard Mesh

Mesh shown above is the accepted standard for partitions and window guards. Other meshes are available. Data and recommendations for bank cages, grilles, registers, etc. is given on the following pages under specific headings



Note Double Crimp →

Channel Frame

Used for partitions and general interior woven wire work

Continued on next page

WOVEN WIRE WORK HAS BEEN IN GENERAL USE FOR MORE THAN A HALF CENTURY

For more than a half century woven wire work has been the standard for highest quality in open mesh construction, where utility and good appearance are necessary requirements.

SOME USES OF WOVEN WIRE WORK

Screen Enclosures and Partitions—

Stockrooms
Toolrooms
Switchboards
Transformers
Elevator shafts
Fire escapes
Cashier cages
Bank cages
Office partitions
Corridors and runways
Stair enclosures
Locker rooms
Departmental divisions
Basement storerooms for apartment buildings and department stores

General Uses—

Window guards for gymnasiums, cellars and exteriors
Door guards
Transom guards
Skylight screens
Bins and lockers
Elevator car tops
Elevator safety gates
Pipe rail screens
Porch grilles
Heating and ventilating grilles
Radiator guards and covers
Shelves

STANDARD WOVEN WIRE PARTITIONS (Industrial Type)

Built up of interchangeable sections. Easily and quickly erected by inexperienced labor. Double crimp in wires holds mesh securely in diamond shape and prevents spreading of wire.

All wires are clinched into place through channel frames.

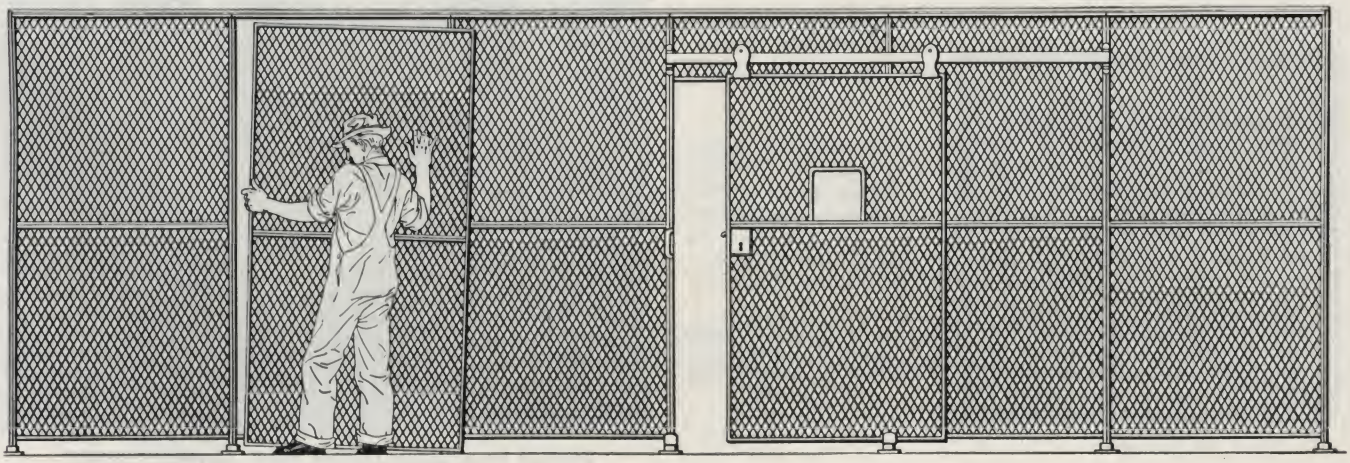
Specifications for Standard Woven Wire Partitions

Furnish and install, where shown on drawings or called for in specification, standard woven wire partitions, built of standard sections (4 ft.) (5 ft.) wide by (7 ft.) (8 ft.) high and made of No. 10 (.135) W&M gauge wire woven into 1½-in. diamond mesh with 1x½x⅛-in. channel iron frames. Provide an additional top rail.

Door sections shall be interchangeable with other sections and shall be of widths called for on drawings. Sliding doors shall be hung with approved ball bearing hangers and furnished with (padlock) (cylinder) locks (architect to specify which).

Swinging doors shall be hung with approved standard butt hinges and furnished with (padlock) (cylinder) lock (architect to specify which).

Furnish and install service windows and shelves where shown and as detailed. All partitions shall be painted one shop coat.



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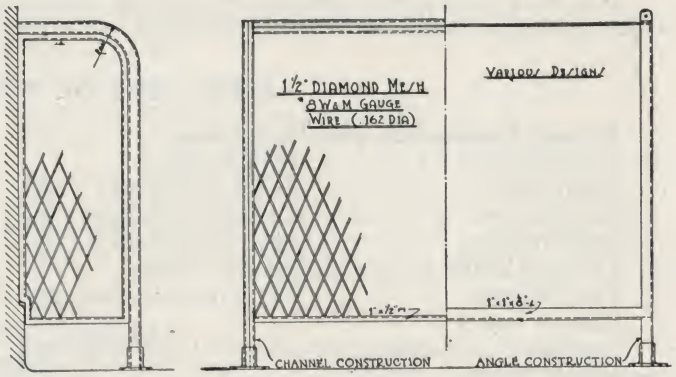
WOVEN WIRE RADIATOR GUARDS

Uses

This is the ideal radiator guard for asylums, hospitals and other institutions. Woven wire makes a rigid construction that will withstand continued abuse. Woven wire has no sharp edges or burrs and eliminates any chance of injury to patients.

Recommended Specification

Furnish and install removable woven wire radiator guards with curved tops, where shown on plans and as detailed, set in cast iron floor sockets and secured with setscrews. Floor sockets to be fastened to floor in approved manner. All guards shall be made of 1½-in. diamond mesh No. 8 (.162) W&M gauge wire set in 1x½x⅛-in. channel frames. Corner uprights shall have auxiliary channel to give post effect. (1-inch angle frames may be used. See illustration.) All guards shall be painted one shop coat.



Woven Wire Radiator Guard

WOVEN WIRE FOR CASHIER CAGES, BANK CAGES AND OFFICE PARTITIONS

Detail of Bronze Wire Bank Cages

Advantages

Woven wire is unquestionably the ideal construction for the above installations from the standpoint of appearance, ventilation and practicability. It is almost invariably used in modern bank cage designs. See following page for range of designs available. Two or more designs are also often used in combination and make an excellent appearance. Popular styles are No. 4 for upper section and No. 3 for lower section.

Uses

Woven wire is constantly used for office enclosures and bank cages where it is required to give security and privacy to employes handling monies, valuable gems, confidential papers and important documents. Its ease of application to special conditions and uses makes it the ideal material to use.

Recommended Specification

Cages shall be of a height to conform to front fixture and shall be made of *(see following page for design wanted)*. Framing shall be of 1x½x⅛-in. channels, tenoned and riveted at corners. Posts at doors and at each intersection shall be of 1½-in. square seamless steel tubing. Top rail shall be of same material.

Note: If low type cages (as shown in illustration) are desired, show detailed construction.

Finish all work prime coat of paint as selected.

WOVEN WIRE SKYLIGHT SCREENS

Uses

Double protection is afforded to skylights by the application of both exterior and interior woven wire guards. Many States stipulate their use as protection against falling objects outside and broken glass in case of fire inside. Where there is danger of falling icicles, No. 9 wire should be specified.

Recommended Specification

Furnish woven wire mesh skylight screens over and under all skylights where shown on drawings or as specified. Screens to be made of 1-in. diamond mesh No. 12 W&M gauge (.105) wire with ⅜-in. round rod frames and welded intermediate stiffeners. Screens to be easily removable and supported on rigid angle and tee-iron construction, as detailed, not less than 8 in. away from glass. All material to be painted shop coat of weatherproof paint.

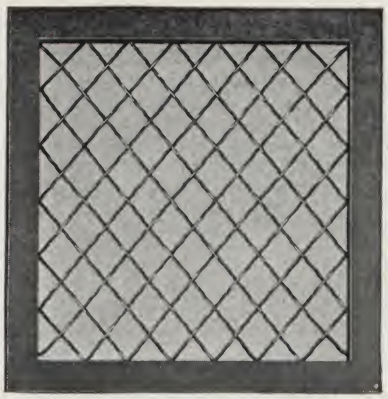
Note: Where it is unlikely that work will be painted at regular intervals, it is recommended that hot galvanizing or cadmium plating after fabrication be specified.

Channel frames can also be used instead of round rod frames.

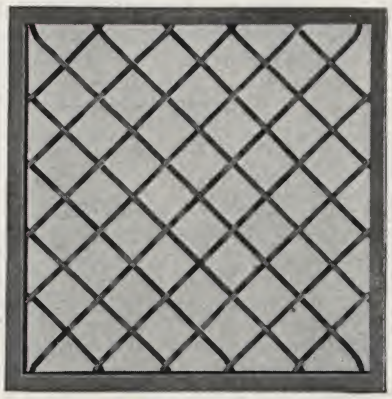
Typical Installation Double Pitch Skylight Screen

Continued on next page

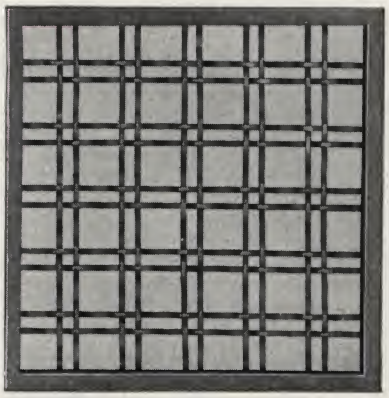
WOVEN WIRE DESIGNS FOR VENTILATOR AND RADIATOR GRILLES AND BANK CAGES



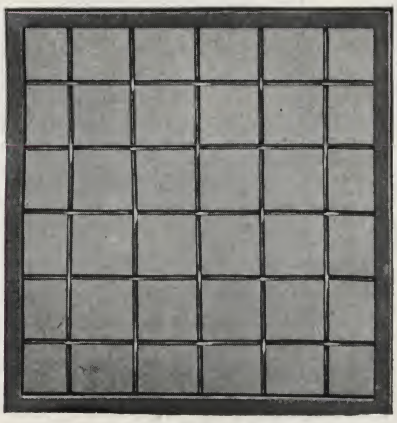
Grille No. 1



Grille No. 3



Grille No. 5



Grille No. 7

Many otherwise fine interiors have lost their entire architectural and structural character through the use of incorrect materials. It will be readily noted from the illustrations shown, that, under a wide variety of conditions and style of architecture, woven wire lends dignity and character not approached by any other material, and is adaptable to any style. Besides, it has the advantage that, regardless of the size of the opening, a uniform border is always maintained. Woven wire work can also be supplied in allegheny metal, aluminum, brass, bronze, copper and monel metal, when materials are available.

Nos. 1 and 2 Ventilator Grilles—Show diamond and square mesh respectively made of round wire with angle frames. This style is available in sizes as follows:

Mesh	¾-in.	1-in.	1¼-in.	1½-in.
Wire gauge, in	14	12	11	10
Frame, in.	(angles 1 to 2; channels ¾ to 1½)			

Nos. 3 and 4 Grilles—Ordinarily used for radiator grilles and bank cages. Show diamond and square mesh respectively. Made of flat wire with channel frames. This style is available in sizes as follows:

Mesh	¾-in.	1-in.	1¼-in.	1½-in.	2-in.
Flat wire	5/16	3/16 or ¼	¼ or 5/16	5/16 or ⅜	⅜
Frames	(for grilles only), same as Nos. 1 and 2				

No. 5 Grille—Shows one of the many varieties of design possible with the use of woven wire. Illustration shows 3/16 in. flat wire, double strand, square mesh. Other designs made to architects' detail.

Nos. 6 and 7 Grilles—Show ⅛ in. square wire, 1½ in. square mesh, pressed crimp, set square, and set on diamond, respectively.

Section—Grille No. 7

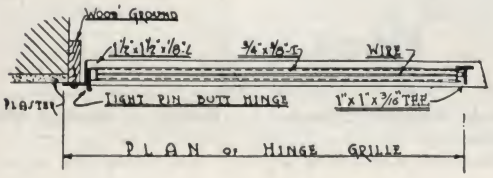
Section—Grille No. 6
Available as Shown with Angle or Channel Frame

Both these styles are popular in modern bank cage work.

No. 8 Grille—Shows flat wire pressed crimp with channel frame.

Important Note

Any of the above grilles can easily be made hinged for access by setting into an outer angle frame.



Grille No. 2

Grille No. 4

Grille No. 6

Grille No. 8

Continued on next page

WOVEN WIRE MESH WINDOW GUARDS

Uses

Woven wire mesh window guards have proven their ability to protect stores, churches, schools, homes and factories against thievery and breakage of glass and fire embers over a period of many years. When properly constructed they will last the life of the building.

Woven wire mesh is the standard for protection of gymnasium windows and lends itself readily to any style of window construction.

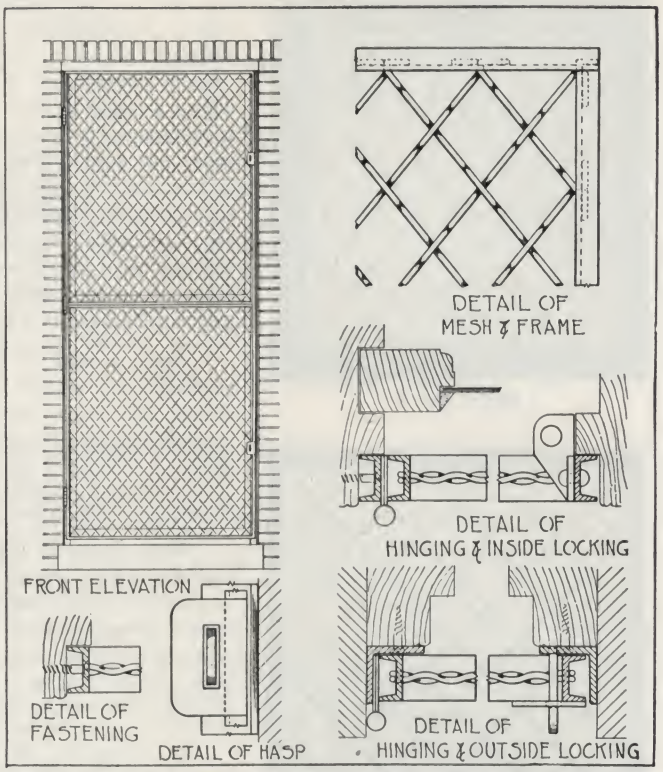
Illustrations on this page present application to a variety of conditions. Note ease of application to steel sash windows with pivoted ventilators.

Advantages

Woven Wire Window Guards are always made to fit the exact openings of windows and there is no waste of material as webs are not cut from stock sheets, but are woven up for each individual guard. Mesh openings can be decreased to suit special conditions as for Bird Screens for church windows. Thickness of wire can be increased where added protection is required as per exterior windows adjacent to school playgrounds.

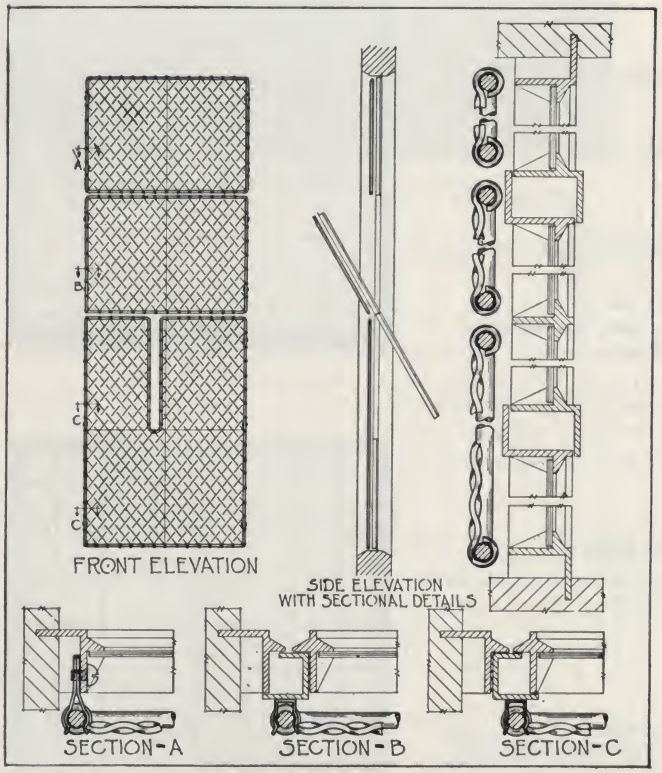
Recommended Specification

Furnish and install over all windows as shown on drawings Woven Wire Mesh Window Guards constructed of 1½-in. diamond mesh No. 10 W&M gauge (.135) wire with (⅜-in. round rod) (1-in. channel) frames, and intermediate stiffeners where required. Guards to be made to swing with suitable locking arrangement, and securely fastened, as detailed. All work to be painted one shop coat.



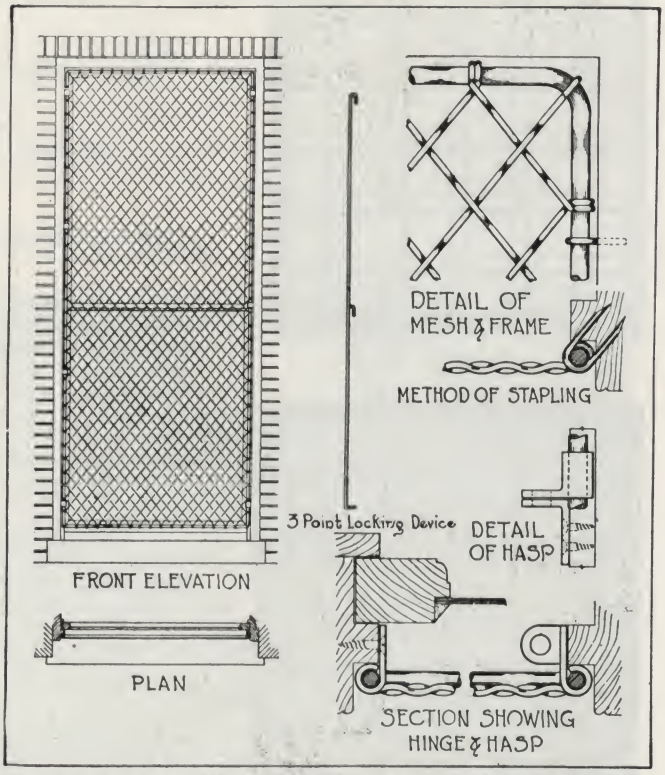
Details of Woven Wire Mesh Window Guards with Channel Iron Frame

Recommended for interior use in gymnasiums, etc., and for interior and exterior application to all double hung windows



Details of Removable Woven Wire Mesh Window Guards with Round Rod Frames

Applied to steel sash windows with pivoted ventilators by means of spring clips



Details of Woven Wire Mesh Window Guards with Round Rod Frames

Especially recommended for exterior use on windows

THE CONSOLIDATED EXPANDED METAL COMPANIES

Steelcrete Diamond Mesh Window Guards and Partitions

Steelcrete Building, WHEELING, W. VA.

SALES OFFICES AND WAREHOUSES

BOSTON, MASS., 137 Washington Street, Somerville
BUFFALO, N. Y., 2 Ganson Street
CHICAGO, ILL., 2531 Arthington Street
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PITTSBURGH, PA., 6626 Hamilton Avenue
DETROIT, MICH., 4015 Michigan Avenue
PHILADELPHIA, PA., 1075 Germantown Avenue
FOREIGN SALES OFFICE, 152 West 42nd Street, NEW YORK, N. Y.

For Steelcrete Concrete Reinforcing Mesh and Steelcrete Armor Mat Reinforcing, see Manufacturers' Index

Manufacture and Erection of finished Steelcrete Guards and Partitions is handled by responsible Steelcrete Shops in:

ARKANSAS
Little Rock
ALABAMA
Birmingham
Ensley
CALIFORNIA
Oakland
Petaluma
Sacramento
San Francisco
CONNECTICUT
Bridgeport
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GEORGIA
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Rockford
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Shreveport
MARYLAND
Baltimore
MASSACHUSETTS
Boston
Lynn
Malden
Pittsfield
MASSACHUSETTS *(Continued)*
Salem
Springfield
Walpole
Williamsette
Worcester
MICHIGAN
Detroit
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MINNESOTA
Minneapolis
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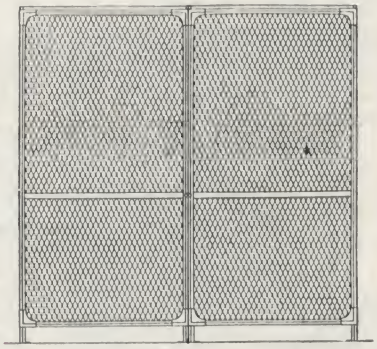
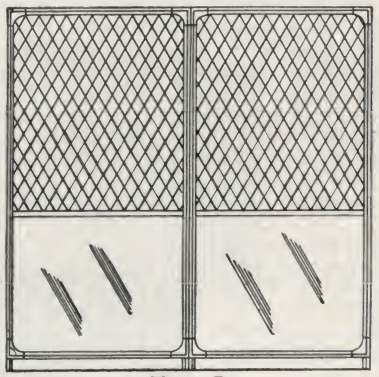
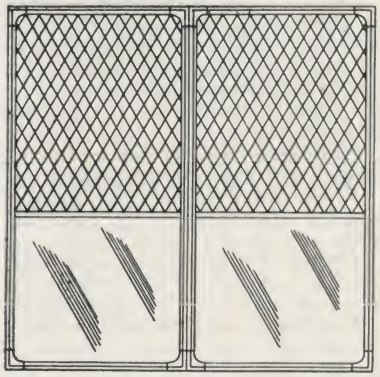
Paterson
Plainfield
Trenton
NEW YORK
Albany
Batavia
Brooklyn
NEW YORK *(Continued)*
Buffalo
Jamestown
New York
Newburgh
Niagara Falls
Poughkeepsie
Rochester
Schenectady
Utica
OHIO
Akron
Bucyrus
Canton
OHIO *(Continued)*
Cincinnati
Cleveland
Columbus
Dayton
Mansfield
Sandusky
Toledo
Youngstown
OKLAHOMA
Oklahoma City
Tulsa
PENNSYLVANIA
Allentown
Altoona
PENNSYLVANIA *(Continued)*
Chester
Elwood City
Erie
Greensburg
Harrisburg
Johnstown
Mechanicsburg
Philadelphia
Pittsburgh
Reading
Scranton
Wilkes-Barre
Williamsport
York
RHODE ISLAND
Providence
TENNESSEE
Chattanooga
Knoxville
Memphis
TEXAS
Houston
VIRGINIA
Richmond
WEST VIRGINIA
Charleston
Huntington
Wheeling
WISCONSIN
Appleton
Green Bay
Milwaukee
CHINA
Shanghai
VENEZUELA
Caracas



Type A



Type B



Type D

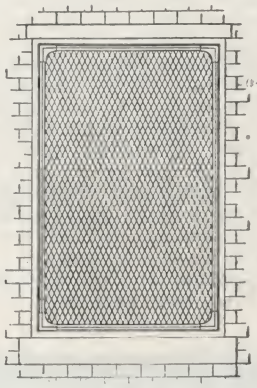
Steelcrete

Partitions

Architects specializing in apartment building construction will be interested in the basement storage enclosures which can be fabricated and erected using Steelcrete Mesh framed with partition bar, at low cost. These enclosures allow a free passage of air and light and are strictly modern in every respect. In industrial plants Steelcrete open mesh tool and stock room enclosures, provide visibility as well as security.

Window Guards

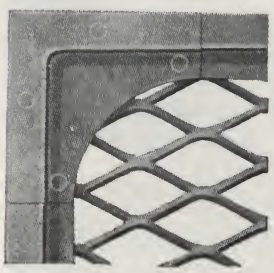
Attractive window guards are fabricated using Steelcrete Mesh and Frame Bar. The mesh is secured in the bulb shaped bar and the corner pieces riveted in place, making a finished panel of unusual strength. Accessories include hinges, clips and every necessary part for a well constructed guard properly erected in the building.



Type C

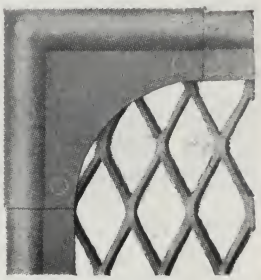
Specifications for Diamond Mesh Partitions—Open mesh partitions, where specified, shall be constructed using Steelcrete Mesh and Partition Bar, as manufactured by THE CONSOLIDATED EXPANDED METAL COMPANIES, Wheeling, West Virginia, and all connections, corners and attachments shall be made in accordance with manufacturer's recommended details.

Size and type of mesh: (¾-in. No. 13 or 1½-in. No. 10). Partitions to be: (Painted or galvanized).



Corner Assembly of the Steelcrete Industrial Mesh and Steelcrete Partition Bar and Corner

Specifications for Window Guards—Protective guards where specified shall be of the Steelcrete Frame Bar type as manufactured by THE CONSOLIDATED EXPANDED METAL COMPANIES, Wheeling, West Virginia; hinged, hung or fastened as per detail, type No. .., Mesh Style No. ... Details to be submitted to the architect for approval. Guards shall be galvanized or painted.



Corner Assembly of Steelcrete Industrial Mesh and Steelcrete Frame Bar and Corner

Booklets

Steelcrete Partition and Window Guard Catalogue No. 127. Complete information including illustrations, details and specifications for window and door guards and partitions. Let us put you in touch with the Steelcrete Shop in or near your city.

ACORN WIRE AND IRON WORKS

Wire Mesh Enclosure Panels, Wire Cages, Wire Window Guards and Collapsible Folding Gates

TELEPHONE
NORMAL 1895

5906 Lowe Avenue
CHICAGO, ILL.

Products

Manufacturers of ACORN WIRE MESH ENCLOSURE PANELS; CAGES for Banks and Offices; DIAMOND MESH WINDOW GUARDS; COLLAPSIBLE FOLDING GATES; SANI-ROBE COAT and HAT RACKS.

Also manufacturers of Skylight Guards, Machinery Guards; Elevator Enclosures; Wire Signs; and Miscellaneous Wire Mesh Work.

Complete catalogue sent on request.

NO. 130 ACORN WIRE MESH ENCLOSURE PANELS

Description

There is a difference between Acorn Standard Mesh Enclosure Panels and just wire mesh partition.

It is always a problem when erecting partitions and enclosing various departments, to know what type of partition to select. Allowance must always be made for expansion and rearrangement of departments.

No. 130 Acorn Enclosure Panels are built in standardized units. Each section or door is a complete unit and is interchangeable with every other unit. Additional units to match may be ordered at any time.

Installation may be relocated or rearranged at any time by unskilled labor.

Architects who definitely specify the type and quality of partitions desired will relieve their clients of the burden of purchasing them later, which, for want of knowledge, is usually done in a more or less promiscuous manner.

Construction and Specification Data—Architects may specify Acorn Standard Enclosure Panels by number, indicating type of doors and service windows desired.

Wire and Mesh—No. 10 (⅛ in.) steel wire, 1½-in. diamond mesh. Entire web in one piece with wires passing through center stiffening bar, eliminating unnecessary joints.

Framing and Stiffening Bar—Framing, 1x½-in. steel channel. Center stiffening bar, 1x⅝-in. steel channel securely riveted to frame.

Capping or Top Stiffening Bar—2x$\frac{9}{16}$-in. steel channel.

Acorn Unit Wire Mesh Enclosure Panels

Height—7, 8, 9 and 10 ft. carried in stock; other heights to order.

Width of Panels—Standard panels are 5 ft. wide. Special width panels furnished to fill in where necessary.

Door Sections—Standard door sections are 3 ft., 3 ft. 6 in., and 4 ft. wide, and of height to match partition. Special widths when necessary. Doors are 6 ft. 6 in. high with transom panel overhead. Sliding doors up to 4 ft. wide, made self-closing without extra cost.

Locks—Heavy bronze locks, operated with cylinder from outside and recessed knob from inside. Materkeyed locks furnished at slight additional cost. Doors equipped with hasp for padlock instead of regular lock with reduction in cost.

Combination Service Window and Shelf—Shelf swings up, closing opening and is locked from inside with improved dead locking push bolt. 2 sizes: 135A, 15 in. wide, 9 in. high; 135B, 24 in. wide, 15 in. high. Special service windows furnished to suit requirements.

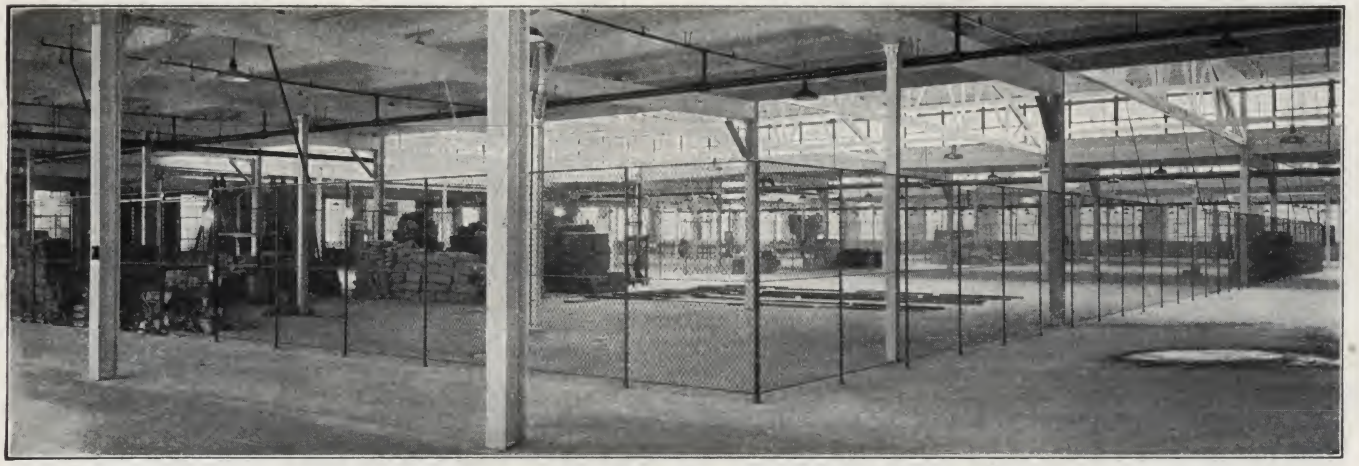
Lift-up Service Windows—Fitted with catches that lock window in open and closed position. 2 sizes: 136A, 24 in. wide, 15 in. high; 136B, 24 in. wide, 21 in. high. Shelves can be furnished any width. Special sizes furnished where necessary.

Hangers—All sliding doors equipped with ball bearing hangers.

Floor Sockets—2½ in. high to allow for adjustment where floors are uneven.

Corner Posts—1x1-in. steel angle with floor socket. This permits the making of corner at any intersection.

General Hardware—All hardware



No. 130 Acorn Wire Mesh Partitions in Unit Sections

Continued on next page

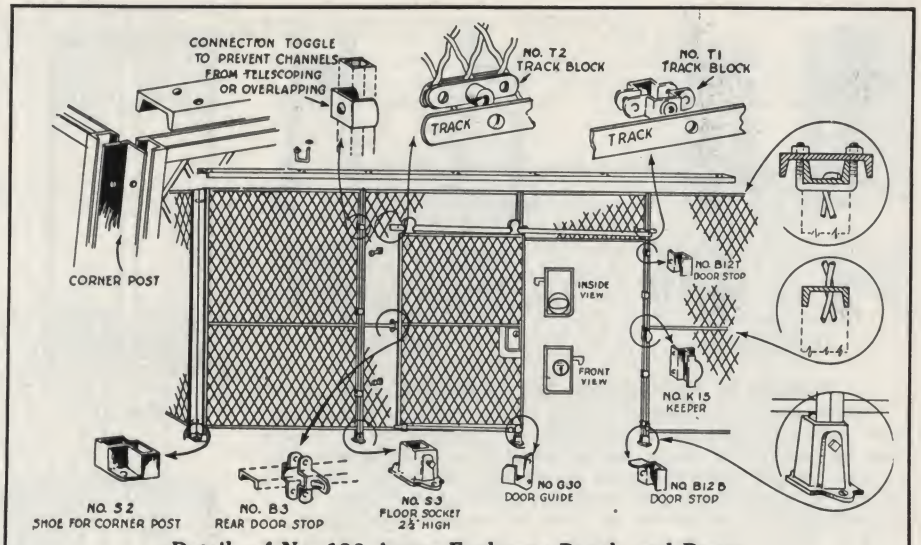
that is subject to strain is made of malleable iron or wrought steel to prevent breaking. The balance is made of soft gray iron.

Cut-outs and Special Panels—Cut-outs, or special size or shape panels furnished to meet special conditions.

Bracing—While capping or top stiffening bars will carry a reasonably long run of partition, simple methods of bracing can be easily arranged.

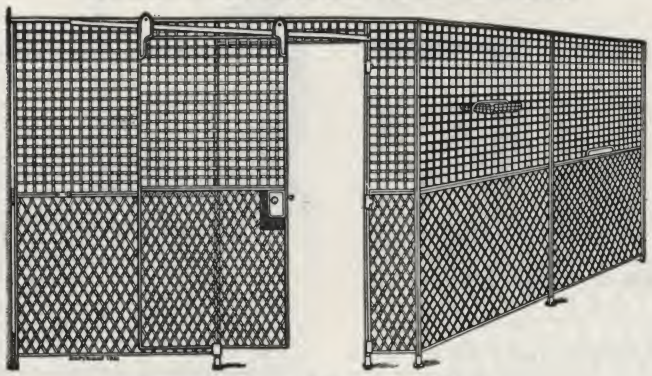
Paint—Standard factory green unless otherwise specified. Special colors may be had at slight additional cost.

Erection—Many original and exclusive features make Acorn Partitions extremely easy to erect. No experience or special skill is necessary. Diagram and complete setting instructions sent with each order.



Details of No. 130 Acorn Enclosure Panels and Doors

CAGES FOR BANKS AND OFFICES



Acorn Bank or Office Cage No. 142

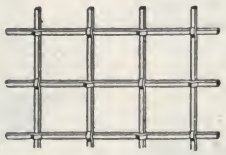
Description—The Acorn Wire and Iron Works have developed and are using the press crimp type of construction in bank and office cages (see detail). This type of crimp adds much to the character and distinctiveness of the work. The old type double crimp can still be furnished when it is necessary to match old work.

Press crimp can be furnished in either square or flat wire, but because of its greater utility and rigidity, square wire is recommended (see typical specification below).

No. 142 cage is commonly used in offices and small banks.

The upper part is made either of ⅛-in. square wire or ¼-in. flat wire, 1½-in. square mesh. The ⅛-in. square wire is preferable because of its greater strength. Wires are pressed at each intersection, making a neat and pleasing appearance. The lower part is made of round wire, 1½-in. diamond mesh.

Doors furnished either sliding or swinging type; sliding doors being made self-closing unless otherwise specified. Doors fitted with cylinder locks operating with key from outside and knob from inside.



Detail of Press Crimp Construction

Typical Specifications—Cages shall be of a height to conform to front fixture and shall be made of ⅛-in. square wire, 1½-in. square mesh of press crimped type. Framing to be of 1x½-in. channel, tenoned and riveted at corners. Posts at doors and at each intersection shall be of 1¼-in. square Shelby tubing No. 14 gage in thickness. The same tubing shall be used to finish top of cages. (See Design No. 144, Catalogue 202. Acorn Wire and Iron Works.)

Note: If flat wire is specified, ¼x⅛-in. wire, 1½-in. square mesh is recommended.

Doors to be of sliding gravity, self-closing type hung on ball bearing hangers and fitted with Yale master-keyed cylinders; master keys to be of series different from balance of building.

Pass baskets 8 in. wide, 10 in. long shall be included for each division. Pass baskets 8x8 in. shall be included for the rear of each cage. Basket to be fitted flush with outside of cage.

ACORN WIRE MESH WINDOW GUARDS

Description—Acorn Wire Mesh Guards serve a two-fold purpose. They protect glass against breakage and prevent entrance by stealth. These, like other Acorn products, carry with them new and exclusive features.

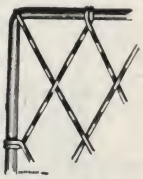
Every building is in need of wire mesh window guards. To factory buildings they not only offer the protection mentioned above, but prevent dishonest employees from passing valuable tools, etc., through the windows to confederates outside. They permit the windows to be open for ventilation with safety.

Acorn Window Guards are made of three principal specifications, namely 1¼ in. mesh, No. 12 wire; 1½ in. mesh, No. 10 wire; and 2 in. mesh, No. 8 wire. 1½ in. mesh, No. 10 wire, is the most popular specification because it is what may be called the meeting point of burglary and glass protection. When glass protection is the principal object, however, 1¼ in. mesh, No. 12 wire is sometimes preferred, while in the case of burglary protection 2 in. mesh, No. 8 wire is often used, but, as stated above, the intermediate specification is very satisfactory for both. In addition to these three specifications, guards can be furnished in any wire or mesh desired.

No. 121. Window Guard

No. 121 Guard

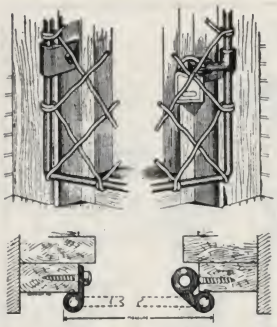
The No. 121 guard carries round iron frame of ⅛ or ⅜-in. diameter (depending on size of guard), and is adaptable to any style window frame. We recommend, whenever it is possible to use them, that hinges and hasps, Nos. H-5 and H-6, be used. These are made of malleable iron and afford an excellent means of fastening. The No. 121 guard can be furnished in either stationary or hinged type, but the hinged type is usually preferable as it permits washing windows.



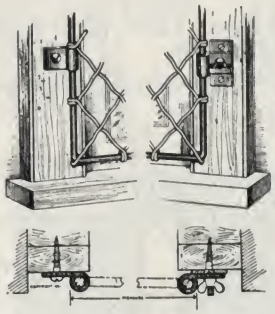
No. 121

Hinges and Hasps—H-5 hinges and H-6 hasps are adaptable to practically every style of window frame. These were designed to replace those made from band steel, commonly used by other manufacturers. These hinges and hasps strengthen the safety feature of diamond mesh guards. The hinges and hasps are made of malleable iron, and by attaching them to the guard in the different ways shown on the following page, they are made adaptable to any style window frame.

Continued on next page



Hinged Type A



Type K

Methods of Installing No. 121 Window Guards

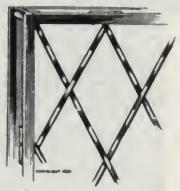
Where guards are used principally for burglar protection, hinged Type "A" is recommended. The hinges are fastened to the window frame by means of lag screws, making it difficult to remove from outside.

When burglar protection is not an important factor, and when it is desirable to attach the guards from the outside, hinged Type "B" is recommended. In this case the lag screws are exposed to the outside.

Type K is a very popular method of fastening where guards are wanted on inside of windows. Usually H-5 hinges are screwed to the window frame on one side, and held in place with "K" fittings on the other side. This permits guards to swing for cleaning windows, etc.

No. 122 Guard

No. 122 Guard carries a channel frame varying from ¾ to 1 in. in width. These work out satisfactorily if guards are to fit into opening, but we do not recommend them when they must be fastened in a way that the outer or grooved edge is exposed to view. It is often attempted to overcome the rough appearance by covering this edge with banding or a capping bar, but this forms a pocket for moisture, and corrosion soon sets in which quickly destroys the guard. This, of course, applies only to exterior guards.

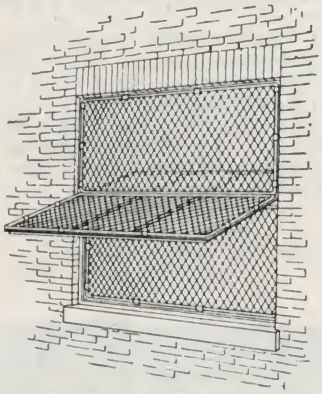


No. 122

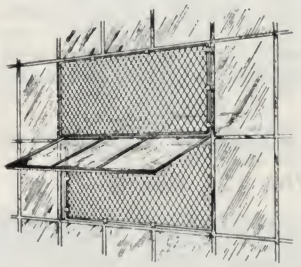
No. 126 Window Guard

A satisfactory and economical window guard for use when burglary protection only is desired. Prevents dishonest employees from passing tools or valuables to confederates outside.

Upper section is fastened outside the window and lower section is fastened inside. Usually made with round rod frame.



Type No. 126, Fig. A



Type No. 126, Fig. B

This is an excellent arrangement for guarding pivot sash windows. Where protection against entrance is desired, the guard for the upper opening is placed on outside and guard for lower on inside.

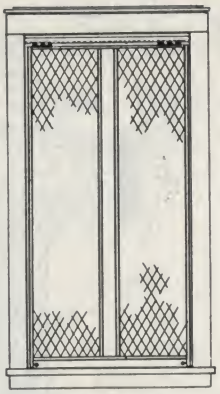
If glass protection is desired, an additional guard is placed on the pivoted sash as shown in Fig. B.

Gymnasium Window Guards

While the two types of gymnasium window guards shown are recommended because of their simplicity in operation, many other types can be furnished when desired.

Send for catalogue if interested.

Gymnasium Window Guard No. 127—Hinged at top with slot for window pole and suitable catches at bottom. This arrangement is very desirable because windows may be opened without swinging guard.

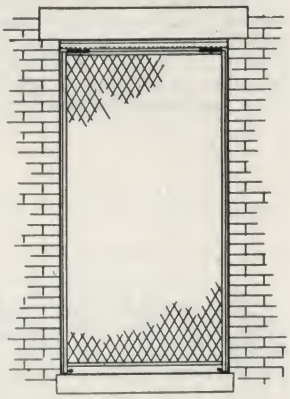


No. 127

No. 10 wire, 1½-in. diamond mesh with 1x½-in. channel steel frame recommended. Finished in green or black enamel. Specify by number and state whether fastened to wood or brick.

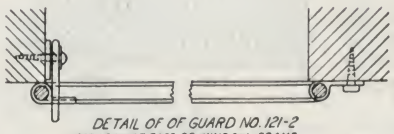
Gymnasium Window Guard No. 128—Hinged at top and suitable catches at bottom. Windows readily accessible for opening or washing.

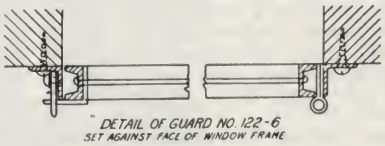
No. 10 wire, 1½-in. diamond mesh with 1x½-in. channel steel frame is recommended. Finished in green or black enamel. Specify by number and state whether fastened to brick or wood.

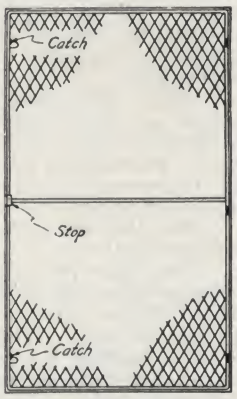


No. 128

No. 121-2







No. 122-6

Sani-Robe—The Sanitary Coat and Hat Rack

The Sani-Robe

A practical, space-saving, sanitary wardrobe unit which provides complete facilities for taking care of employees' coats, hats, parcels, etc., at low cost. Sani-Robe units are 5 ft. wide, 18 in. deep and 74 in. high. Each standard unit will accommodate 10 employees. They are easily assembled and can be rearranged or extra units added at any time.

They permit free circulation of light and air—a sanitary feature which is appreciated by both employer and employee. Used in offices, shops, factories—wherever people are employed.

In factories and offices where strict discipline is desired, Sani-Robe Coat and Hat Racks may be enclosed with Acorn Unit Sectional Wire Mesh Partitions.

The doors of the enclosure may be locked during working hours and opened at luncheon and quitting time.

Sani-Robe and Acorn Partitions are made in units of the same size. Both are standard, so that orders can be promptly filled from stock.

Special sizes can also be furnished to meet special requirements.

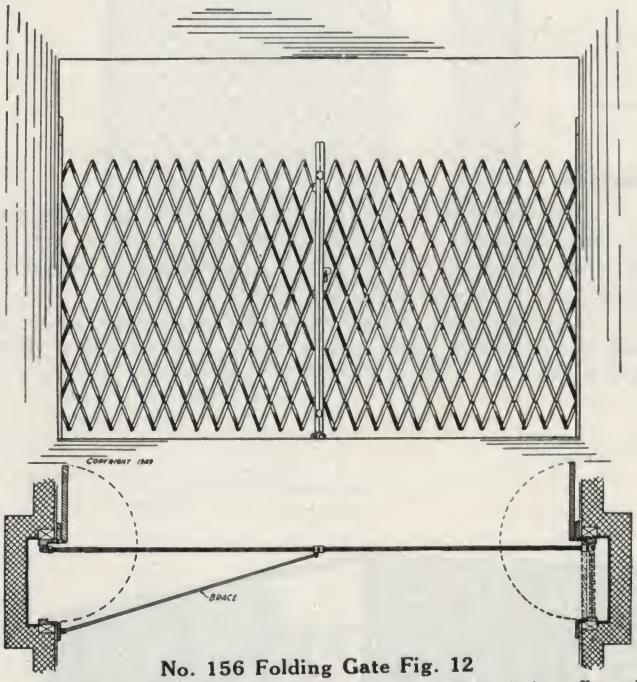
Continued on next page

COLLAPSIBLE FOLDING GATES FOR EVERY PURPOSE

Collapsible folding gates serve many purposes. They offer excellent protection without interfering with light or air.

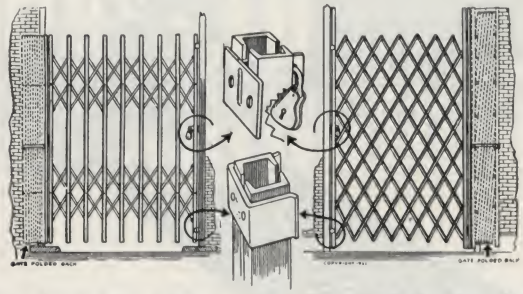
Every type of industrial, commercial or public building has a use for them. Quotations gladly furnished on request.

We have developed a very secure cylinder lock arrangement that can be used on any one of the gates shown below.



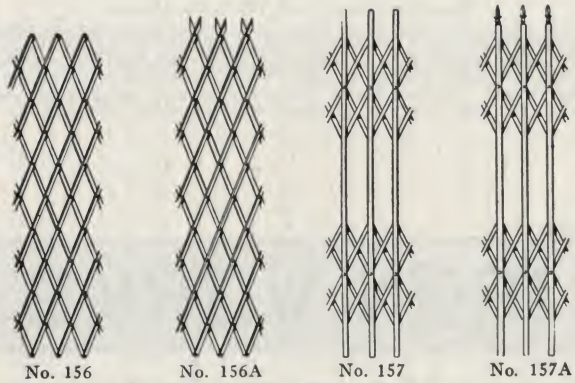
No. 156 Folding Gate Fig. 12

All school boards are now giving serious thought to closing off corridors so as to prevent the free run of school buildings while the auditorium is in use. The above is an excellent arrangement which permits the folding of gates into a cabinet when not in use. Either Type No. 156 or No. 157 may be used, but because of its greater rigidity No. 156 is recommended. Specify by number—156, Fig. 12



No. 157 Folding Gate **No. 156 Folding Gate**

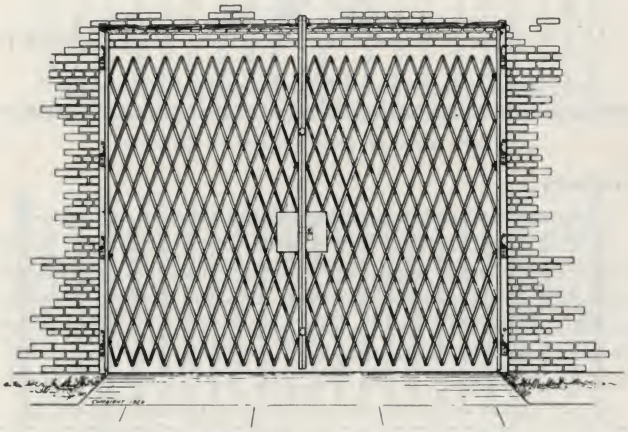
The two types of folding gates most commonly used; also, details showing method of locking gates. These gates are usually made of ¾x⅜-in. channel steel bars, but where large gates are required, and in our judgment, 1x½-in. channels should be used, and unless instructed to the contrary, we will use our best judgment



No. 156 No. 156A No. 157 No. 157A

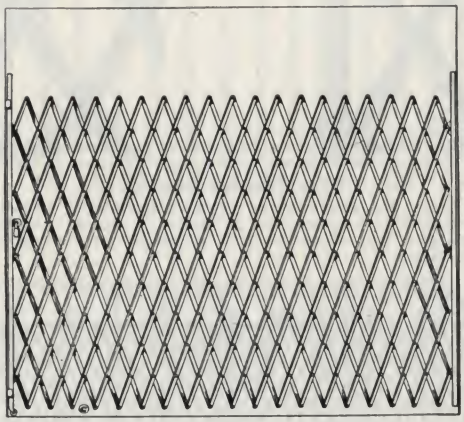
Various Folding Gate Designs

Several variations in design which may be used. The gates are the same as all others illustrated hereon, the difference being in ornamentation only. If either of these designs is desired in any arrangement shown on this page, specify by number and figure



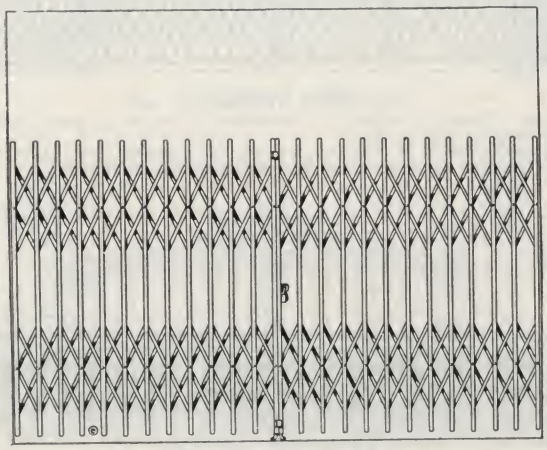
No. 156 Folding Gate Fig. 14

This is an excellent arrangement where gates are required to withstand considerable resistance. By notching the track overhead, gates may be swung around, out of the way, when not in use. May be used with safety where doors are required to remain open overnight. Specify by number—156, Fig. 14



No. 156 Folding Gate Fig. 10

This type is frequently used for large doors of factory buildings, warehouses, garages, display windows or anywhere requiring protection without shutting off light or air. Specify by number—156, Fig. 10



No. 157 Folding Gate Fig. 11

This arrangement is usually used in corridors of banks, office buildings or public institutions. Can be furnished with or without overhead track. Ordinarily rigidity is not entirely necessary and therefore a track is not essential but wherever it is to withstand abuse, an overhead track should be included. Specify by number—157, Fig. 11

BADGER WIRE & IRON WORKS

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MILWAUKEE, WIS.

Products

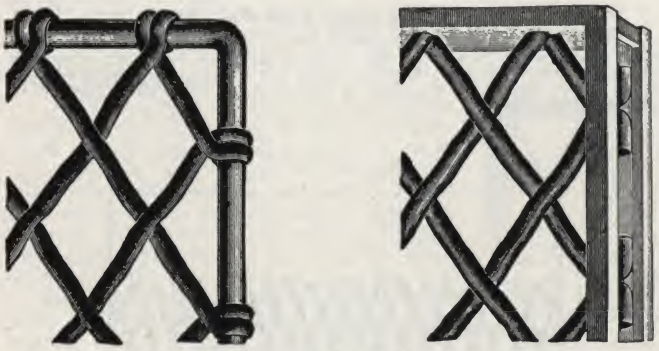
ORNAMENTAL IRON AND WIRE WORK:

Window Guards, Wire Partitions, Railings, Tool Room Enclosures, Fences, Grilles, Panels, Wire Signs, Skylight Guards, Iron Gratings, Folding Gates, Balcony Railings, Sidewalk Doors, Marquises, Fire Escapes, Iron Stairs, Elevator Enclosures, Fireproof Stairway Enclosures, Entrance Gates, Flagpoles and Lawn Furniture.

Service

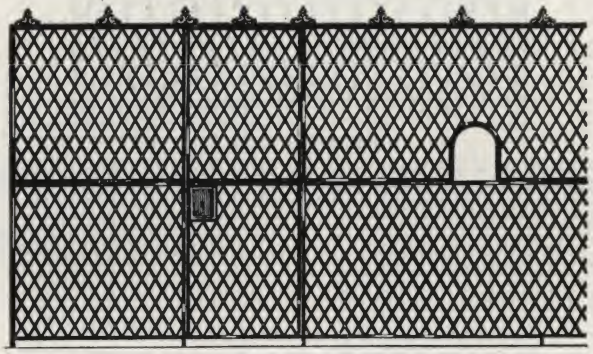
Ornamental iron and wire work according to design to be submitted, or this Company will furnish details of their standard construction. Inquiries will be given prompt and careful attention.

BADGER WIRE & IRON WORKS own and operate a new plant, where, with ample space and facilities, they will be able to give prompt and satisfactory service.



Wire Window Guards

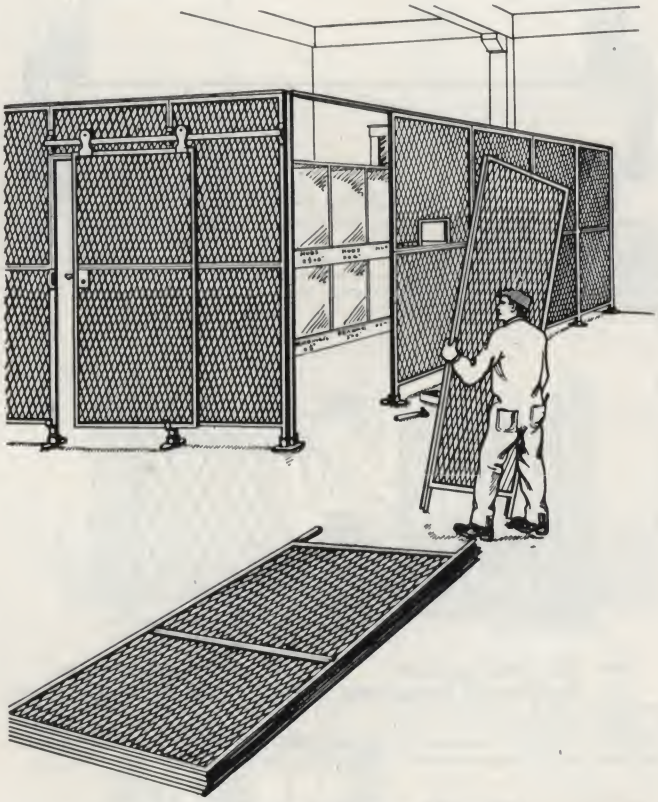
A particular specialty is made of the manufacture of wire window guards and these can be furnished at minimum prices. Inquiries should specify quantities and sizes, as well as gauge of wire, size of mesh and style of frame



Wire Partition

Used extensively where it is desirable to enclose a space effectively without obstructing the light.

Generally made of No. 10 wire, 1½-in. diamond mesh, 1x½x⅛-in. channel frames; cover bar and cast pickets at top as shown



Standard Sectional Wire Partitions

Principally for tool and stock room enclosures. Interchangeable, so that re-arrangement is possible without drilling or fitting. Standard partitions are made 4x7, 5x7, 4x8, and 5x8 ft. They are made of No. 10 wire, 1½-in. diamond mesh, 1x½x⅛-in. channel frames, horizontal bar through center, 1½-in. channel cover bar at top; swinging or sliding doors; also service windows, equipped with necessary hardware

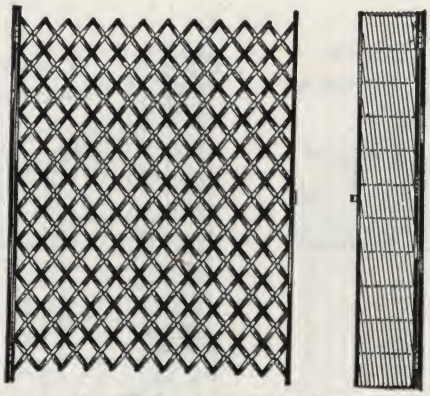
Wire Sign

A specialty is made of the manufacture of wire signs and BADGER WIRE & IRON WORKS have furnished some of the largest in use. In writing for price state length, height and lettering wanted, also the position of the sign so that the proper bracing may be figured. Complete specifications will be submitted in quoting

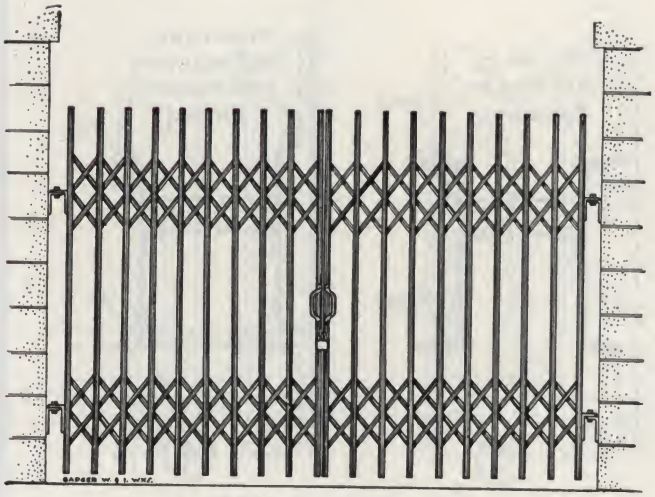
Continued on next page

Folding Gates

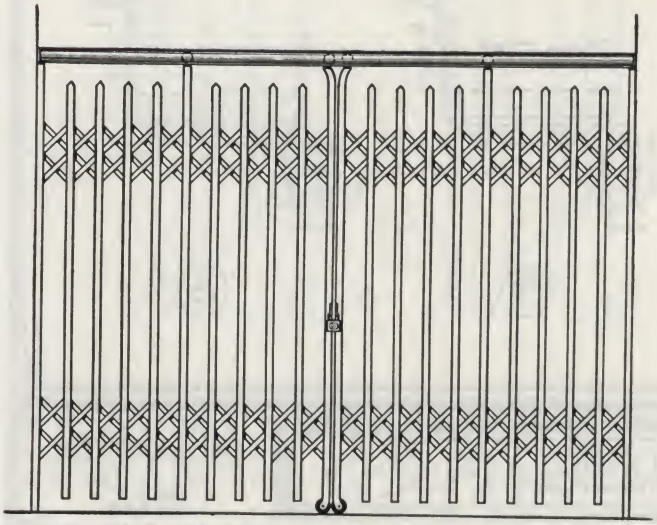
Below are shown three styles of our folding gates.



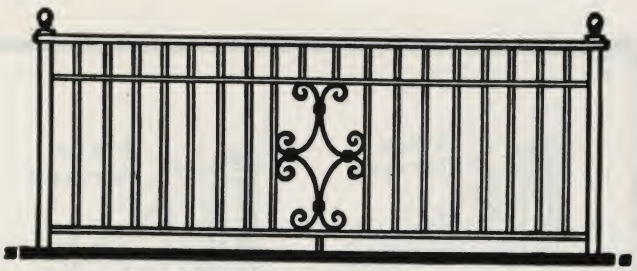
No. 25 Single Folding Gate



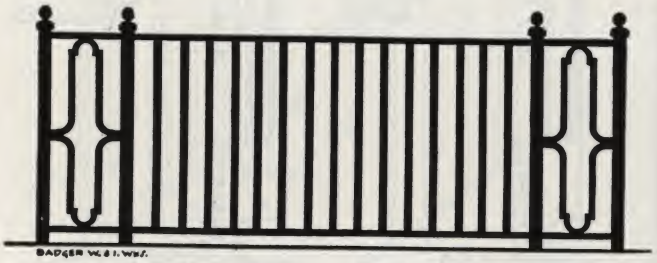
No. 27 Double Folding Gate



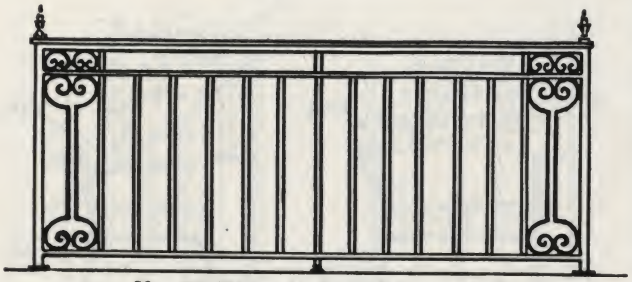
No. 28 Double Folding Gate with Overhead Track



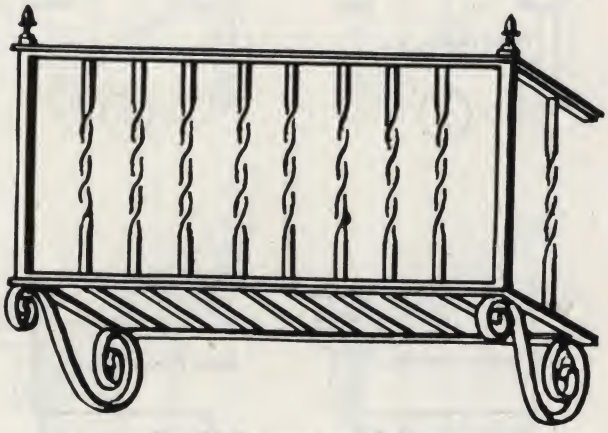
No. 65 Wrought Iron Balcony Rail



No. 66 Wrought Iron Balcony Rail with Cast Ornaments



No. 67 Wrought Iron Balcony Rail



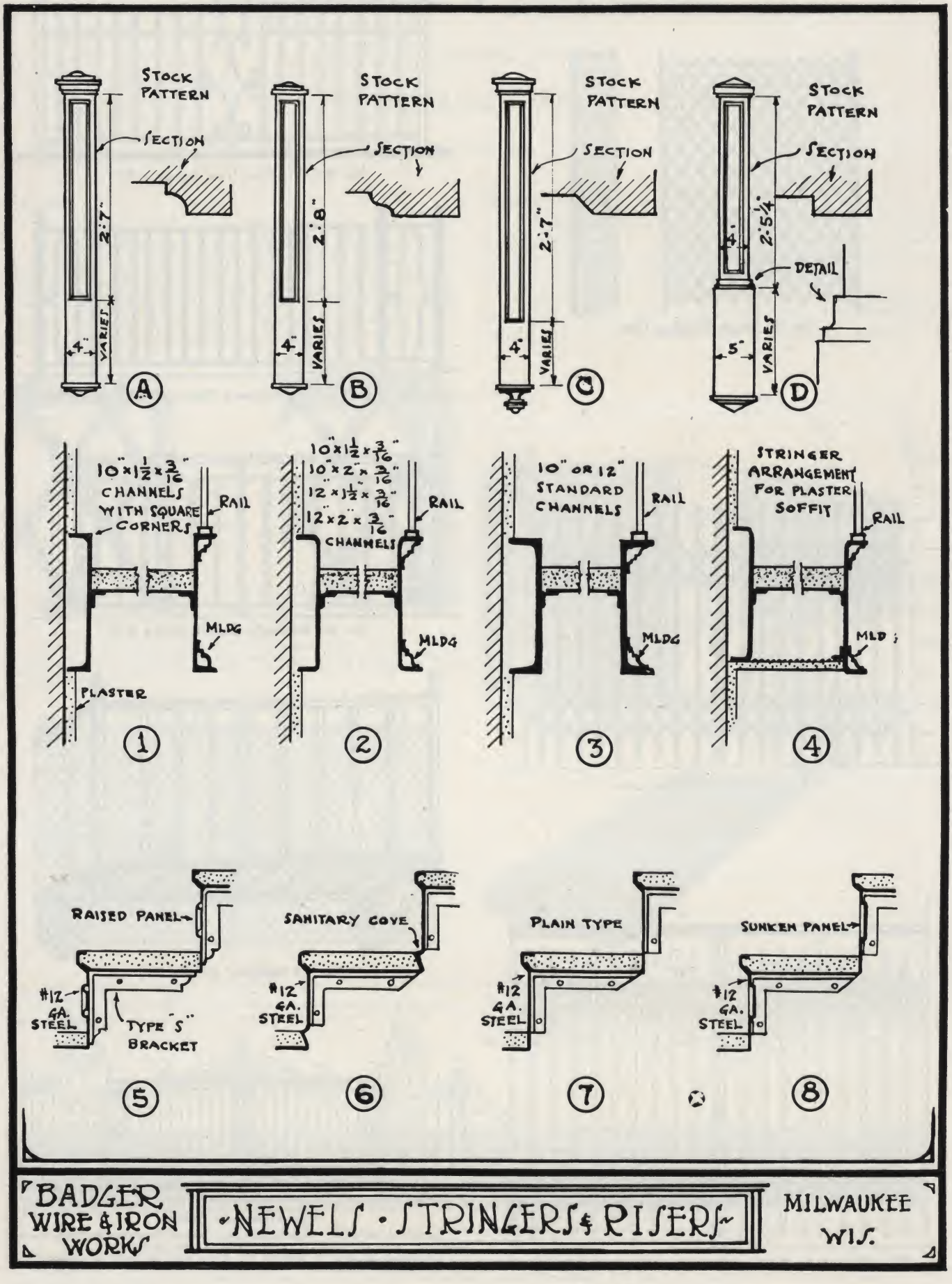
No. 68 Balcony and Railing

Iron Gate and Fence

In this department exceptionally good service is given, and low prices consistent with the quality of the product are quoted.

Catalogue showing a number of styles will be sent on application. Special designs furnished

Continued on next page



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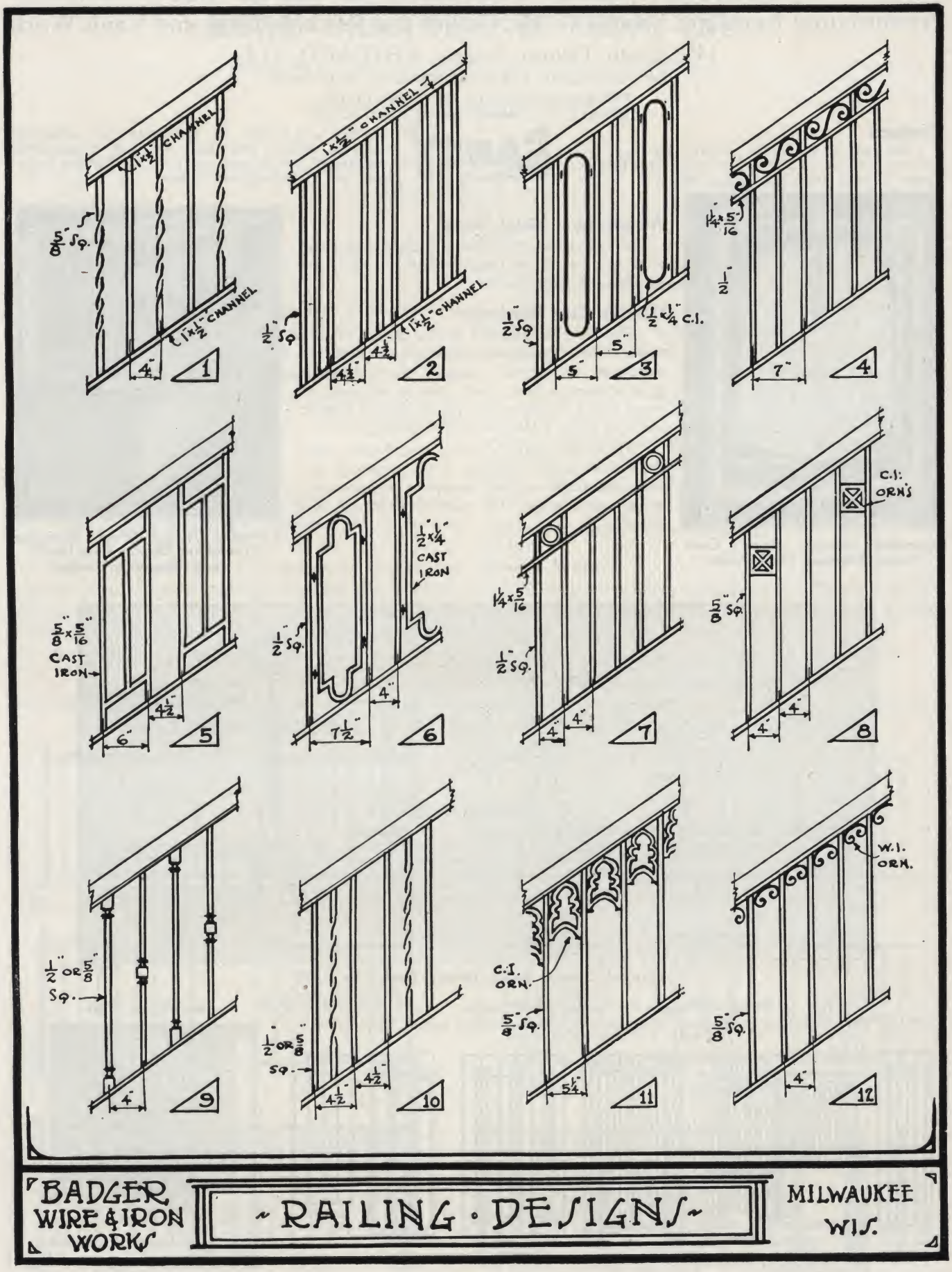
1½" CHANNEL
5/8" SQ.
1 x ½" CHANNEL
4"
1
1 x ½" CHANNEL
½" SQ
1 x ½" CHANNEL
4½"
4½"
2
½" SQ.
5"
½ x ¼" C.I.
5"
3
1¼ x 5/16
½"
7"
4
5/8" x 5/16"
CAST IRON
4½"
6"
5
½" x ¼"
CAST IRON
½" SQ.
4"
7½"
6
1¼ x 5/16
½" SQ.
4"
4"
7
C.I. ORN'S
5/8" SQ.
4"
4"
8
½" OR 5/8"
SQ.
4"
9
½" OR 5/8"
SQ.
4½"
4½"
10
C.I. ORN.
5/8" SQ.
5¼"
11
W.I. ORN.
5/8" SQ.
4"
12
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Extruded Bronze Show Case Frame, Marshall Field Design

Architectural Metal Work

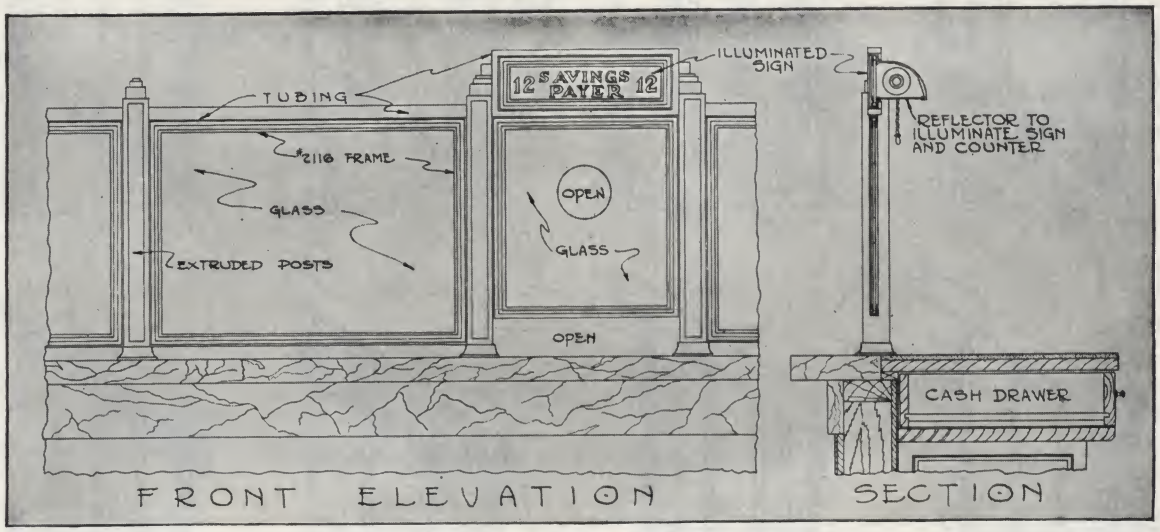
We specialize in producing architectural metal work of every description in extruded, rolled, cast or wrought metal.

Display Case Hardware

For store and museum display cases. "Garcy" display case hardware includes such items as standards and bracket supports for adjustable glass shelves; rollers, track, catches and locks of every type for sliding glass doors with or without wood or metal frames, legs and sockets, etc.

Thirty-two years of close co-operation with department stores, specialty shops, museums, fixture manufacturers, and equipment designers has made our line of this material extensive and complete.

Extruded Nickel Silver Showcase Frames and Display Case Hardware, Kaufman Design

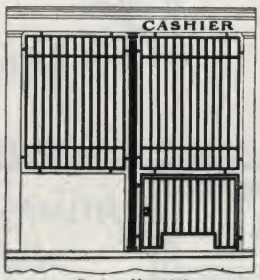


Typical Counter Screen Details, Design No. 1312

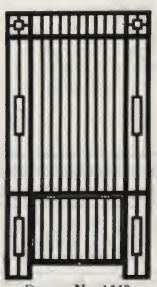
Standard Designs for Grilles and Wickets

These and other designs can be furnished from stock parts at a considerable saving. Write for chart of standard grille and wicket designs

No. 1314
Round or square bars



Design No. 1317
Showing side-swinging wicket at bottom of grille. Rosettes connecting grilles and wicket to square post and frame



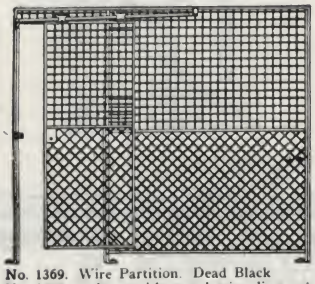
Design No. 1340
Showing upward swinging wicket at bottom of grille

No. 1328
Square bars

No 1325

No. 1341
Square bars

Bank Cage Work



No. 1369. Wire Partition. Dead Black
No. 1368 is above with round wire diamond mesh top and bottom.
No. 1365 is above with flat wire square mesh top and bottom.
Gravity sliding doors. Swinging doors.
Roofs for cages usually made with Round wire No. 10 Diamond Mesh. Channel frame No. 1362.

FOUNDED 1883

HOWE ORNAMENTAL IRON, INC.

FORMERLY THE COLUMBUS WIRE & IRON WORKS CO.

Specialists in Stock Railings

Poplar and Michigan Avenues

COLUMBUS, OHIO

Products

We specialize in the design and production of RAILINGS and GRILLES on a large scale.

We make railings for porches, terraces, stairs, balconies, display windows, banks and many other uses, from the simple inexpensive stock designs here illustrated to the finest hand wrought work designed and executed by artists and craftsmen.

Distribution

Howe-Craft Railings are shipped to all parts of this country and into foreign countries. Write for the name of your nearest agent.

Our large production eliminates lost motion and permits us to sell iron railings at prices that compete with wood.

Write for set of plates of attractive stock designs of stair rails, interior grille gates, grilles and balconies.

Stock Rail Specifications

Howe-Craft Stock Railings are made of ½ in. square bars 4½ in. on centers, welded to 1x1½ in. channel frames, with 1¼ in. half oval capping rail.

Center panels are cast.

Posts are 1 in. square with cast cap and base.

Wall flanges are cast aluminum to eliminate rust stains at point of contact with masonry or wood.

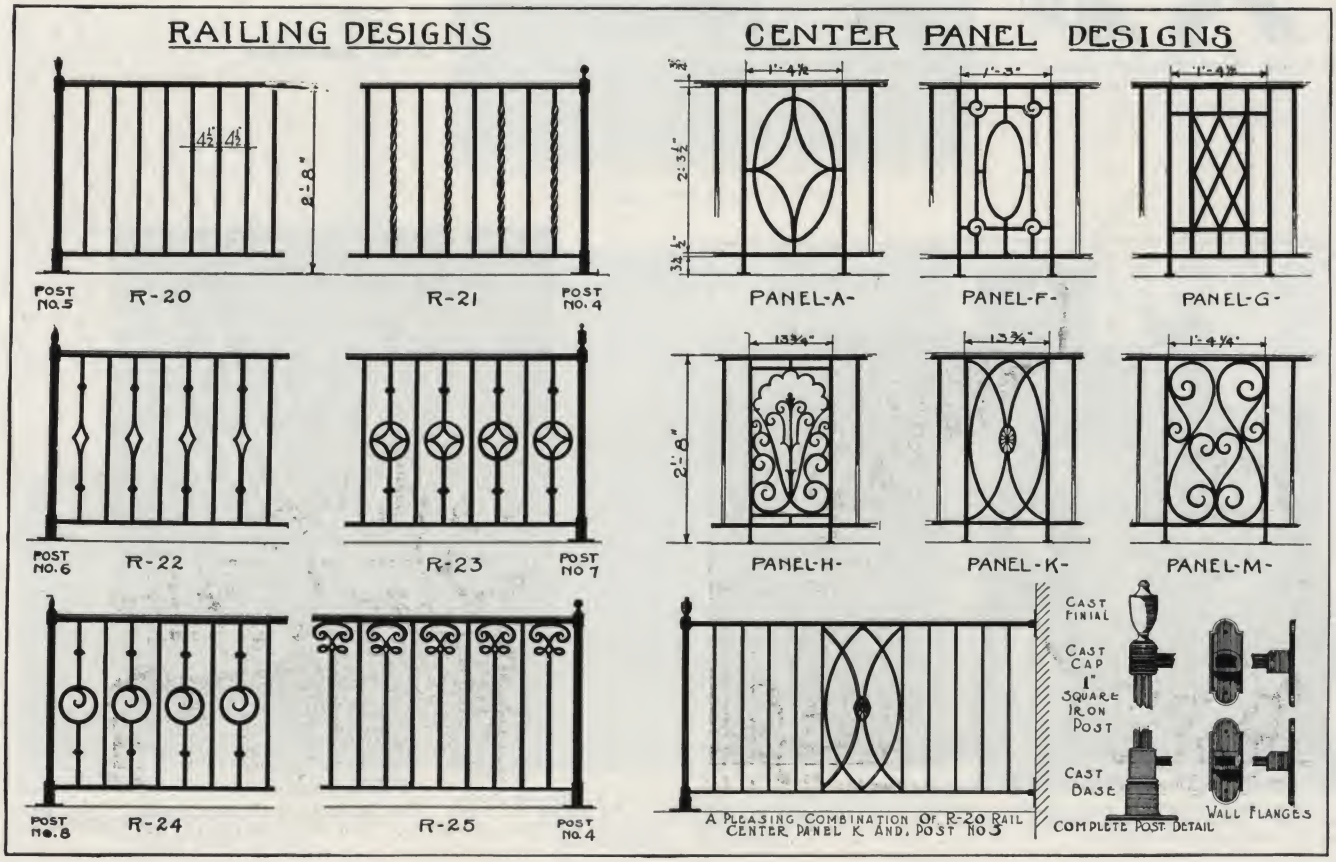
Finish: one shop coat of air drying black paint, unless otherwise specified.

Field erection is particularly simple with our standard fittings, and erection instruction sheet.

Special Work

With our complete equipment and experienced designers and engineers, we can serve you on special work in all branches of Ornamental Iron.

Send us plans for estimates and suggestions.



ESTABLISHED 1902

L. E. JONES, PROPRIETOR

L. E. JONES WIRE & IRON WORKS

321 North Calvert Street
BALTIMORE, MD.
PLANT: 318-322 Davis Street

Products

ORNAMENTAL IRON and WIRE WORK, WIRE CLOTH and FENCING, including—Window Guards, Elevator Enclosures, Grilles, Folding Gates, Elevator Cars, Sieves, Sand and Coal Screens, Machine Guards, Wire Partitions, Railings, Iron Gratings, Sidewalk Doors, Fire Escapes, Railings and Entrance Gates, Wire Cloth and Wire Screening.

All meshes steel, galvanized, copper, bronze, brass, monel, nickel and aluminum.

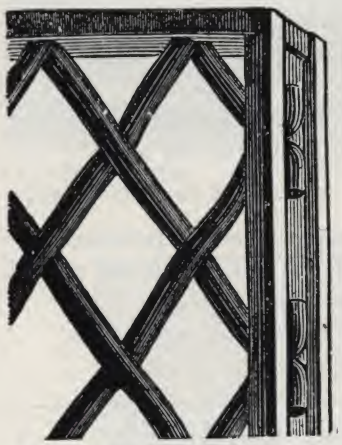
Facilities and Service

Our plant is fully equipped with facilities to handle any type of wire and ornamental iron work, wire cloth and wire screening for all requirements.

Our service is prompt and satisfactory.

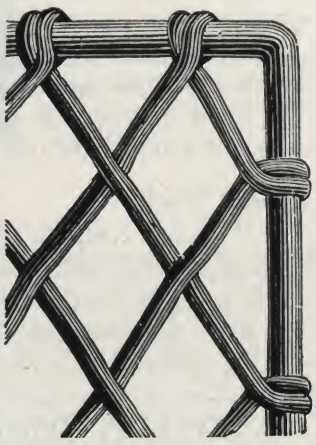
We are prepared to work up any special designs submitted to us or will offer our own suggestions when requested.

We have special catalogues covering the various types of work which will be sent on request.



No. 25 Wire Window Guard

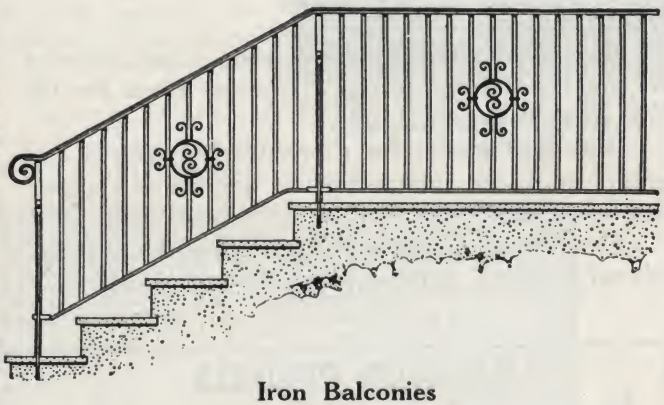
Made with channel iron frames. Strong, substantial; screw in window jamb, but can also be made to fasten to the outside of frame if so desired



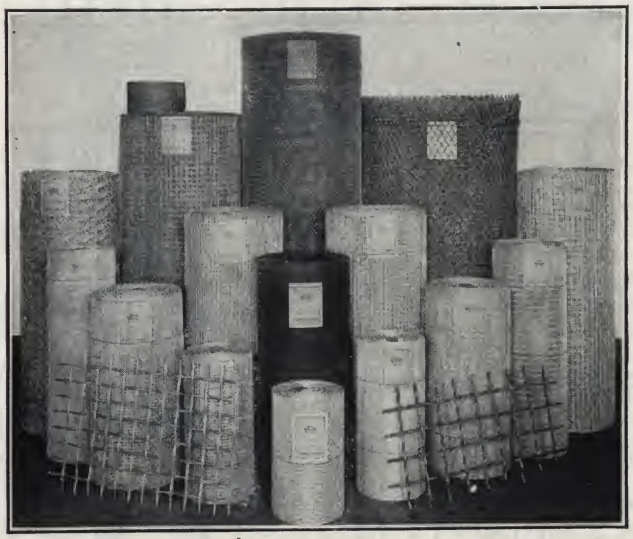
No. 26 Wire Window Guard

This type of inexpensive guard is usually fastened with staples, but can be furnished with lugs for screw attachment if desired

Iron Step Railings

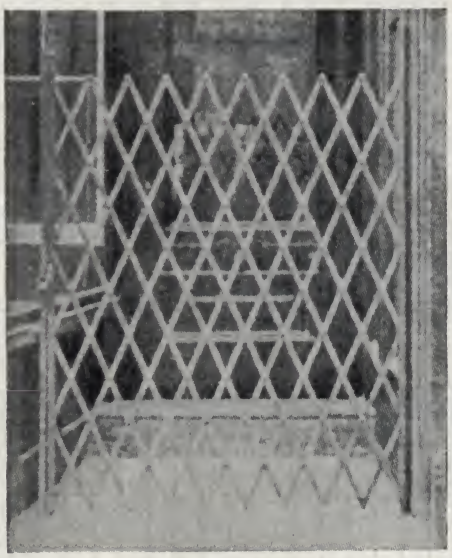


Iron Balconies



Wire Cloth for All Requirements

Any mesh, gauge or material for screening sand and gravel, coal, iron ore, stone, coke, flour, cement, pharmaceutical drugs, liquid and powder, etc.



Folding Gates

All types and sizes. Can be made to fit any opening. For store, factory, elevators, passageways and office entrances, and other miscellaneous uses

ESTABLISHED 1842

TAYLOR & DEAN

PITTSBURGH IRON AND WIRE WORKS

Ornamental Iron and Wire Work, Builders Iron Work, Bridge Railing

2418-2428 Penn Avenue at 25th Street, PITTSBURGH, PA.

Products

ORNAMENTAL IRON and WIRE WORK:

Ornamental Grilles	Fencing
Entrance Doors and Gates	Stairs
Bank Screens	Fire Escapes
Spiral Stairs	Pipe Railings
Folding Gates	Fireproof Porches
Iron and Bronze Lamps	Iron Shutters
Railings	Metallic Lockers

Iron Ladders

Designers of SPECIAL HAND WROUGHT IRON or BRONZE FIRE GUARDS.

Also Wire Fencing, Partitions, Tennis Court Enclosures, Tool Room Enclosures, Window Guards.

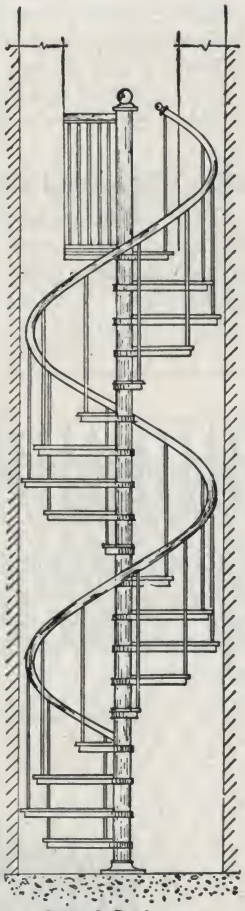
Co-operative Service

Architects, or prospective users of any of the products listed, or those having special requirements, are invited to consult our Engineering Department which is maintained for the purpose of co-operating with clients. It is always at their disposal, ready to supply detailed information concerning the design and uses of TAYLOR & DEAN products, or to provide helpful co-operation, if desired, in the solution of any special problem.

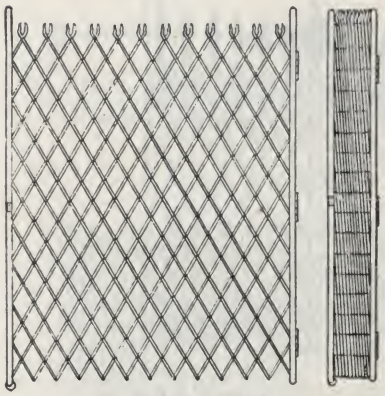
The firm of TAYLOR & DEAN have manufactured, distributed and erected ornamental iron work, etc., since 1842. The background of experience insures to its clients ability to handle, expertly and satisfactorily, any work of this character.

Flower Boxes and Balconies

Bridge and Stair Railing



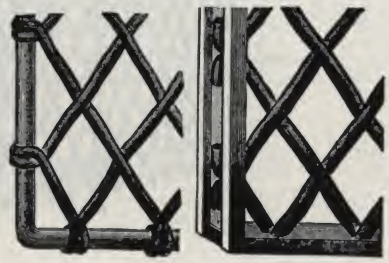
Spiral Stairway



Folding Gate

Good Example of All-steel Stairway and Hand Railing as Used in the Best of Modern Dwellings

Hammered Wrought Iron Garden Fence and Gates



Round and Channel Frame Window Guards

WILLIAM R. PITT COMPOSITE IRON WORKS

548 West 27th Street
NEW YORK, N. Y.

TELEPHONE
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Products

Manufacturers of FOLDING GATES and GUARDS for every purpose:
"Pitt-Bostwick" Folding Gates
"Pitt" Lazy Tong Folding Gates
"Pitt" Composite Folding Gates
"Pitt" Driveway and Entrance Gates
"Pitt" Car Gates
"Pitt" Folding Window Guards

Pitt-Bostwick Folding Gates to Protect

Banks and trust companies
Homes and apartments
Public school corridors
Storehouses and warehouses
Department stores
Safe deposit companies
Show windows and entrances

Folding Gates and Guards a Specialty

This company is the original manufacturer of the "Bostwick" gate, and the originator of most of the standard folding gates, developing their uses through specialization.

This department is therefore, by training, experience and facilities, prepared to meet the demands of architects, builders and the iron trade.

"Pitt" gates are internationally famous for their quality, and are found in every state and many foreign countries.

The initial cost is not high. They are strong, durable and easy working and take up very little space when not in use.

Quality of Work

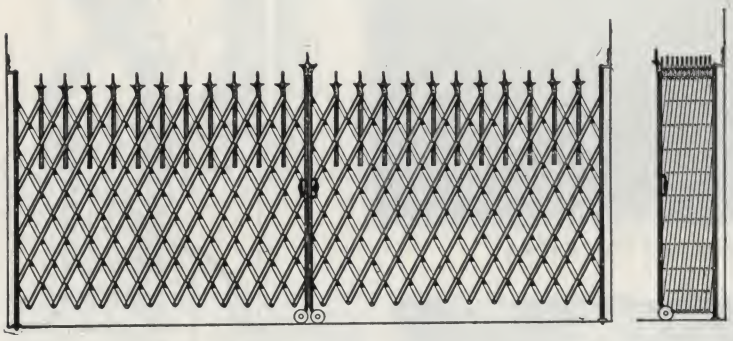
Every "Pitt" product is of the highest grade workmanship and materials, economically produced under modern conditions.

Specifications

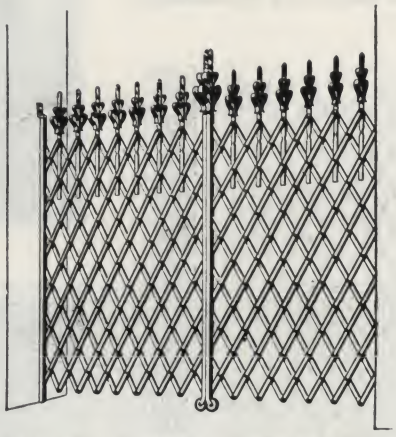
Copy the *number* and *description* of *gate desired* from the illustrations on this and the page following, *or* submit requirements for our advice and special blue *prints* or *designs.*

Estimates

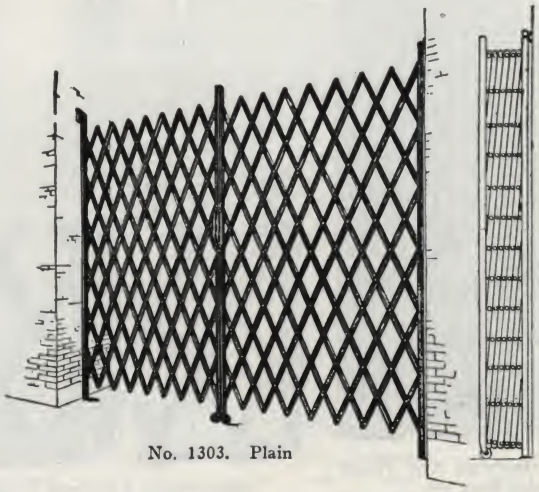
Folding Gates—Send *plans* and *specifications,* or a *sketch* showing *width* and *height,* and *where* gate is to *set.* State *purpose* for which gate is *intended.*



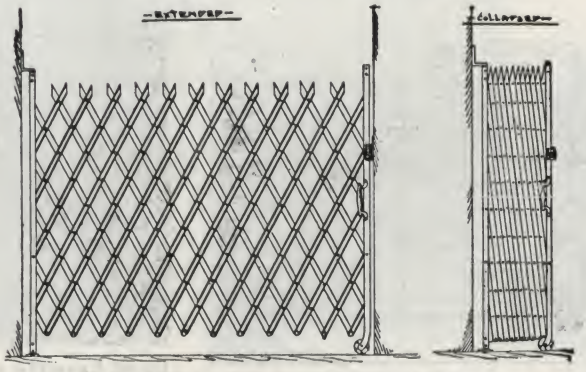
No. 1254-A. With Wrought Pickets



No. 1246. With Ornamental Pickets and Ball Rivets



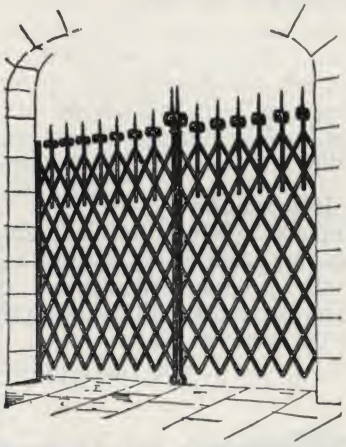
No. 1303. Plain



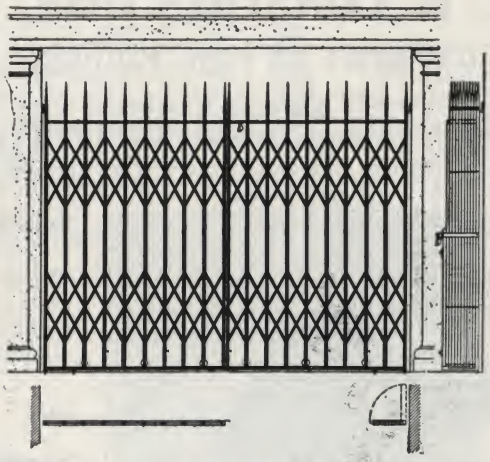
No. 1303-A. With Pointed Scissors Top

"Pitt" Lazy Tong Folding Gates for Entrances, etc.

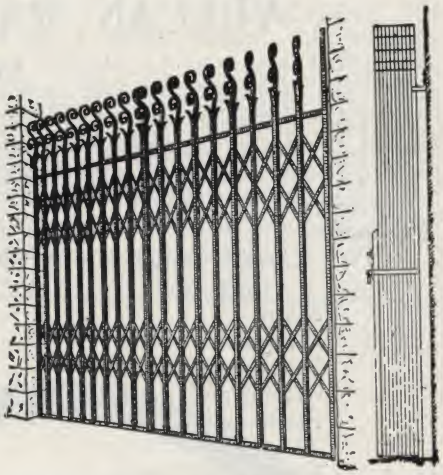
Continued on next page



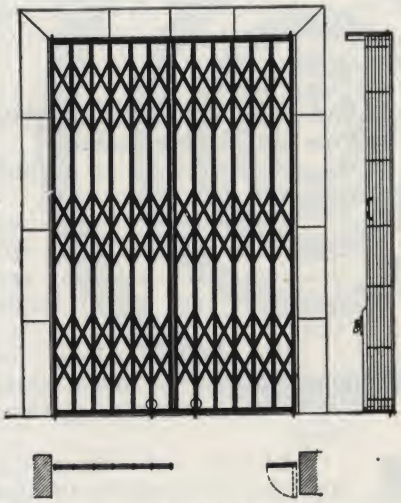
No. 1254. "Pitt" Gate, with Ornamental Wrought Pickets



No. 1262-A. "Pitt-Bostwick" Gate with Cast Spear Pickets, Hinged Stiffening Bars and Hinged Lifting Bottom Tracks

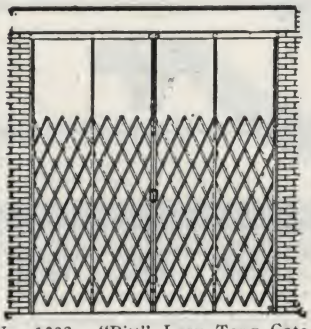


No. 1260. "Pitt-Bostwick" Gate with Ornamental Wrought Pickets, Hinged Stiffening Bars and Hinged Lifting Bottom Tracks

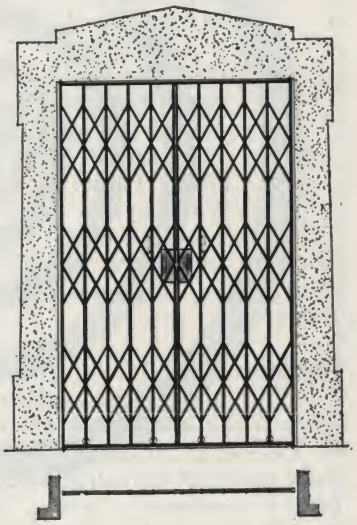


No. 1284. "Pitt-Bostwick" Vestibule or Window Gate with Stationary Top and Hinged Lifting Bottom Tracks

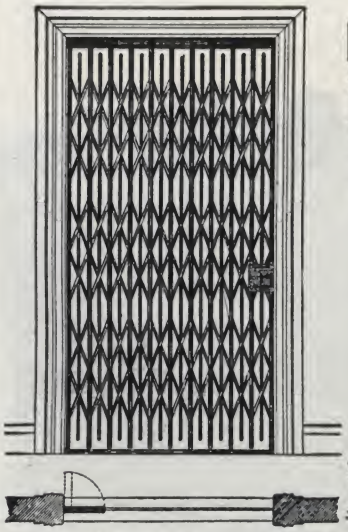
No. 1273. "Pitt-Bostwick" Gate and Window Guard for Store Front



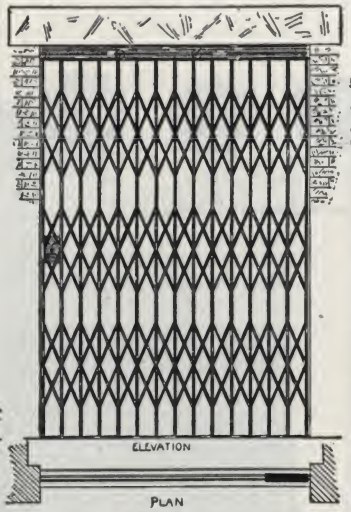
No. 1302. "Pitt" Lazy Tong Gate for Driveway Entrances



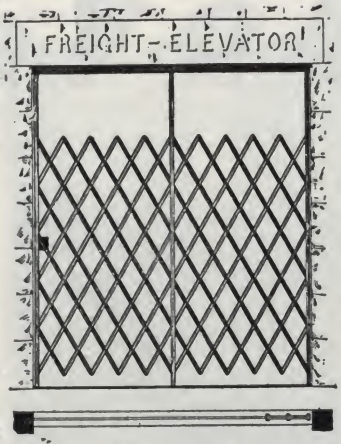
No. 1267-A. "Pitt-Bostwick" Guard for Window with Stationary Tracks Top and Bottom



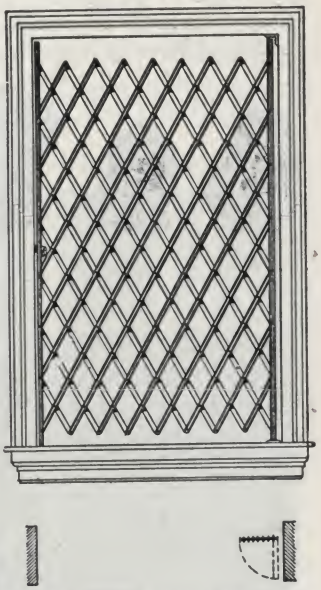
No. 1245. Close Mesh "Pitt-Bostwick" Elevator Gate for Shaft Openings



No. 1261. "Pitt-Bostwick" Folding Elevator Gate



No. 1300. "Pitt" Lazy Tong Folding Elevator Gate



No. 1316. "Pitt" Lazy Tong Guard for Windows. No Tracks

Standard Types of Folding Gates

Special designs submitted on request

VULCAN RAIL & CONSTRUCTION COMPANY

Manufacturers of Pipe Railings

MAIN OFFICE AND WORKS
Grand Street and Garrison Avenue, MASPETH, N. Y.
BRANCH OFFICE AND SHOPS: 39th Street and A. V. R. R., PITTSBURGH, PA.

Products

PIPE RAILING complete with Fittings, for:
- Stairs
- Bridges
- Boardwalks
- Grandstands
- Stadiums
- Theatres
- Factory Buildings
- Warehouses, etc.

SPECIAL PIPE WORK for:
- Turnstiles
- Garment Racks in fur storage rooms
- Table Supports
- Park Shelters

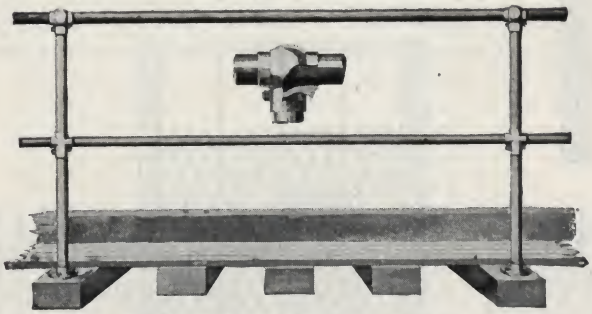
STAIRS and LADDERS with PIPE RAILING for:
- Power Plants
- Walkways
- Subways, etc.

For our page on Fire Doors, see Manufacturers' Index.

Facilities

Our main plant at Maspeth, N. Y., and branch shops at Pittsburgh, Pa., are both fully equipped to manufacture railing products, having a trained force of skilled and experienced workmen, which insures prompt and efficient execution of all orders. Both plants, located on main line railroads, have private sidings.

Standard Pipe Stair and Wall Rail



Elevated Railroad Railing Constructed with Special Malleable Iron Fittings Equipped with "Vulcan" Anti-rattler Wedges to Prevent Loosening of Railing Due to Vibration of Structure

Specific Information

Complete information, including estimates and preliminary designs for any of the products illustrated, or listed under products, will be promptly supplied on request.

Catalogue sent on application.

Service to Architects and Engineers

We offer to architects and engineers the service of our Engineering Department to advise with them or aid them in any railing problem or in any other problem involving the use of pipe and fittings in construction work.

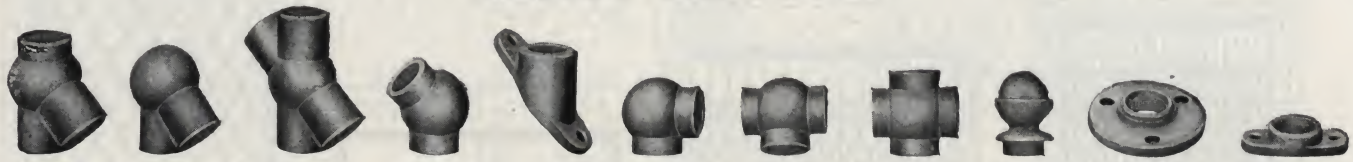
We Manufacture and Erect Complete Pipe and Bridge Railings

It is not our policy to furnish fittings alone.

For over 25 years we have been manufacturing and erecting pipe railings and bridge railings in all localities.

We design railings for any purpose or make them up from architect's specifications.

In many cases these railings are made entirely of pipe and fittings, whereas in other instances they are made of a combination of pipe with bars or other structural shapes.



Tee | Elbow (upper) | Cross | Elbow (lower) | Flange | Elbow | Tee | Cross | Acorn male or female | Rail Flange | Oval Flange

"Vulcan" Standard Railing Fittings

Boardwalk Railing with Lamp Posts

Typical Bridge Railing

Continued on next page

In the railings made solely of pipe and fittings a great variety of conditions can be met and a varied effect can be produced by the use of different types of posts. Some of these different posts are indicated on the following page.

A few different types of railings suitable for use on bridges and approaches and made of pipe and steel shapes are indicated on second page following.

We are, as our name states, a pipe rail manufacturer and a construction company. We will undertake the complete design, manufacture, fabrication and erection of any pipe railing job. We will guarantee that all materials will be as specified, and that the finished job will be the highest quality possible in pipe railings, as regards fit and erection. In addition, all work is guaranteed to give the service for which it is installed.

Contracts executed in any part of the United States or Canada.

VULCAN RAIL & CONSTRUCTION COMPANY

TRADE-MARK

Full Size Sections of Standard Wrought Steel Pipe

GENERAL INFORMATION REGARDING STANDARD WEIGHT PIPE

Nominal size pipe, inches.	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6
Actual inside diameter, inches.	.49	.62	.82	1.04	1.38	1.61	2.06	2.46	3.06	3.56	4.02	4.50	5.04	6.06
Actual outside diameter, inches	.67	.84	1.05	1.31	1.66	1.90	2.37	2.87	3.50	4.00	4.50	5.00	5.56	6.62
Approximate outside, inches...	11/16 —	⅞ —	1 1/16 —	1 5/16	1 11/16 —	1 15/16 —	2⅜	2⅞	3½	4	4½	5	5 9/16	6⅝
Weight per foot, lb.	.56	.84	1.12	1.67	2.24	2.68	3.61	5.74	7.54	9.00	10.66	12.34	14.50	18.76
List price per ft.	$.06	.08½	.11½	.17	.23	.27½	.37	.58½	.76½	.92	1.09	1.27	1.48	1.92

Grand Stand at Ebbet's Field, Brooklyn, N. Y.
All railings and gates supplied by Vulcan Rail & Construction Company

Fur Storage Rooms, Frederick Loeser & Co., Inc., Brooklyn, N. Y.
Similar racks supplied for cold storage rooms for other large department and fur stores

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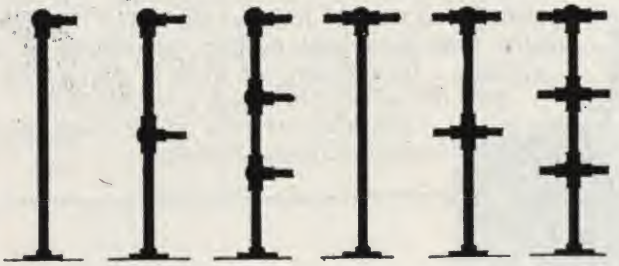


Fig. 1 Fig. 2

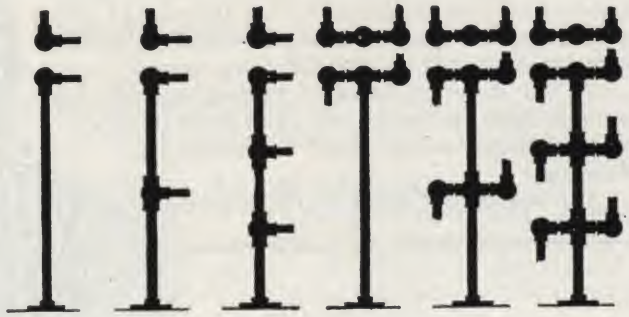


Fig. 3 Fig. 4

Fig. 5

Fig. 6

Fig. 7

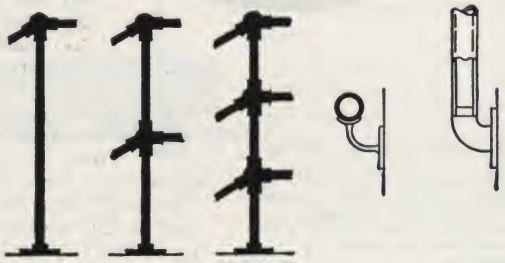


Fig. 8

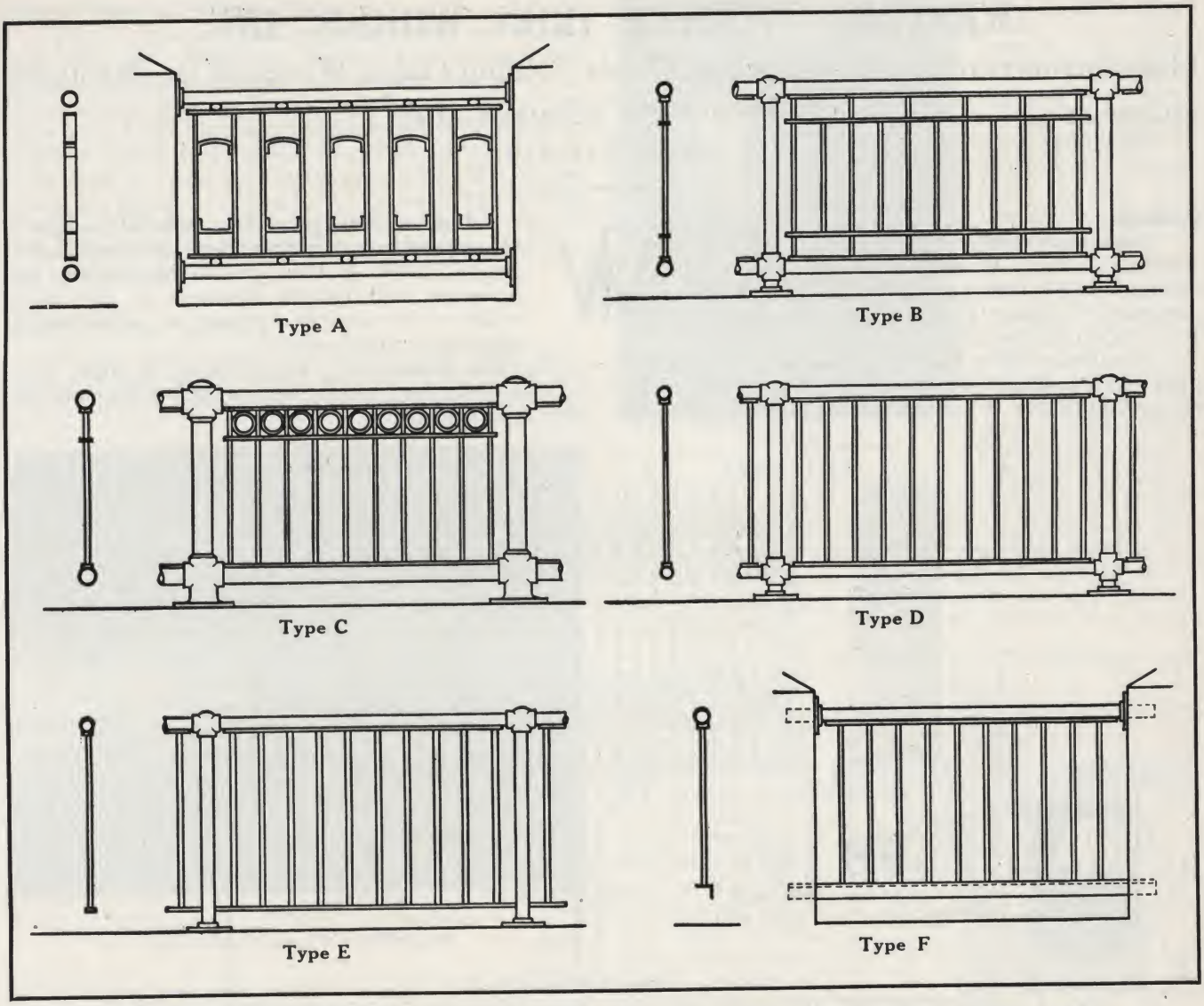
Typical Railing Posts Made with Pipe and Standard "Vulcan" Fittings

Shown above is a group of posts of the types most frequently used in the construction of pipe railing. Although these sketches show posts for one, two and three horizontal rails, the two-line railing is most generally used. However, railing can be made with any number of horizontal rails.

Fig. 1. Level end posts.
Fig. 2. Level line posts.
Fig. 3. Level corner posts (note plan of post).
Fig. 4. Stair landings or platform posts (similar to illustration on our first page).
Fig. 5. Stair starting and landing posts.
Fig. 6. Stair line posts (similar to illustration on our first page).
Fig. 7. Stair landing posts (with side outlets, right or left).
Fig. 8. Stair landing posts where the railings continue level.

Railings with any of the above posts and many others can be quickly made up from the large stock of Standard "Vulcan" Pipe and Fittings continually on hand.

Continued on next page



Various Types of "Vulcan" Bridge Railings

To attempt to show in a small space any considerable number of bridge railing designs is practically impossible, as the various combinations that can be made by the use of pipe, fittings, bars (square and round), flats, channels, angles, etc., is well-nigh inexhaustible.

The designs shown above vary from that in which square or round rods are used for the pickets with a channel top-bar directly under the pipe, and a bar or channel for the bottom member, to more elaborate designs using cast iron posts and introducing rings and other shapes into the railing panels.

Special designs to suit architects' and engineers' requirements will be submitted on request.

Queensborough Bridge, New York, N. Y., Showing Outside Footwalk Railings

We furnished and erected 42,000 ft. of railing, also lamp posts, used along footwalks and car tracks on this bridge

Manhattan Bridge, New York, N. Y., Outside Footwalk Railing

Total of 11 miles of railing furnished and erected by us on this bridge on footwalks, driveway, and elevated tracks

WESTERN WIRE & IRON WORKS, INC.

Manufacturers of Steel and Special Metals Folding Gates, Woven Wire Partitions

TELEPHONE
CANal 6442

1820-1830 South Sangamon Street
CHICAGO, ILL.

Products

IMPROVED STEEL and SPECIAL METALS FOLDING GATES; WOVEN WIRE BANK CAGE, OFFICE and INDUSTRIAL PARTITIONS; BANKERS' APPROVED SLIDING DOOR LOCKS and SPEE-D BALL BEARING HANGERS.

For Woven Wire Door and Window Guards, Skylight and Ventilator Screens and Grilles, see Manufacturers' Index.

Uses—These gates are especially adapted for school hall corridors, bank and public entrances, public lobbies and as safety gates for passenger and freight elevators, or any place where it is essential to have an unobstructed opening during the day.

Special Metals—We are equipped to make folding gates in bronze, nickel silver, monel, aluminum and other special metals.

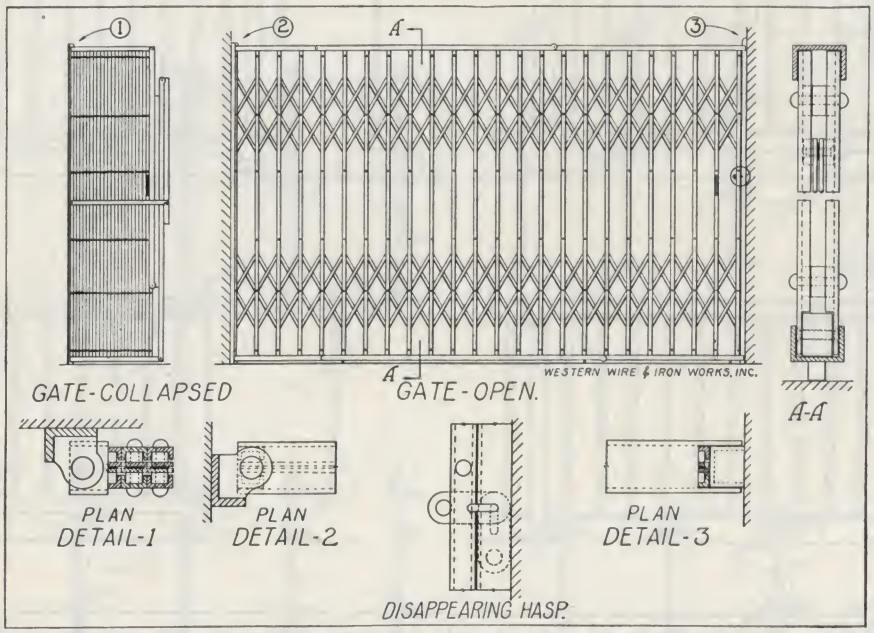


Fig. 1. Single Section Pivoted Vertical Bar Type Folding Gate with Folding Top and Bottom Tracks

Improved Folding Gates

Advantages—The improved vertical bar type folding gate with folding top and bottom tracks assures excellent rigidity and ease of operation, eliminating all side-sway in gates for wide openings and making it possible to have unobstructed openings when gates are not in use.

Using double section gates meeting at center, openings as wide as 20 ft. can be accommodated. Standard height is 7 ft.

Note compactness of gate and top and bottom tracks when gate is collapsed. See Fig. 1.

Specifications for Improved Folding Gates—Furnish and install improved vertical bar type folding gates with folding top and bottom tracks, as made by WESTERN WIRE & IRON WORKS, INC., Chicago, Ill., or equal. Gates to be made of double ¾-in. vertical channels spaced about 5 in. on centers with ⅛x⅝-in. lattice bars riveted between, and arranged with pivots fastened to 1½-in. angles at wall, to allow gates to swing flat against wall (or into recessed wall pockets). Gates to be arranged for padlocks. All material to be steel and painted prime coat gray. See Fig. 1. (If gates are desired of special metal, specify.)

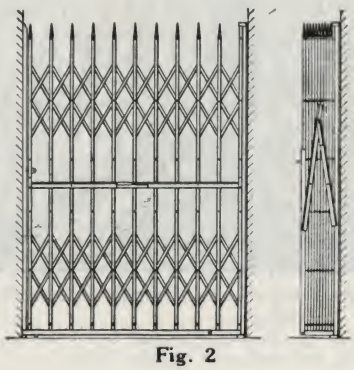


Fig. 2

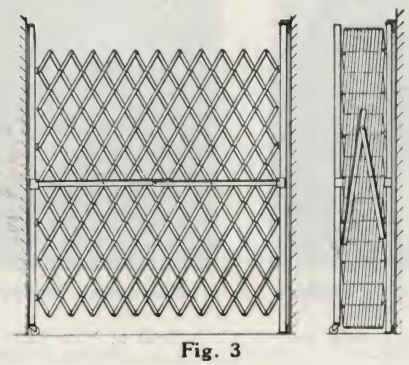


Fig. 3

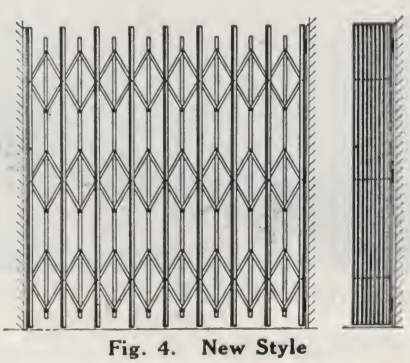


Fig. 4. New Style

Continued on next page

Other Styles of Folding Gates

Fig. 2 shows single section pivoted vertical bar type gate made with ¾-in. channels and equipped with pickets, jackknife stiffener and folding bottom track. Fig. 3 shows single section pivoted diamond lattice type made with ¾-in. channels and equipped with jackknife stiffener and bottom roller. Fig. 4 shows a new style of vertical bar gate made with alternating 1-in. angles and ¾-in. flat bars. This type of gate is very rigid and is recommended for show window protection, freight elevators and very large shipping door openings, employing overhead tracks.

Woven Wire Partitions

We are manufacturers of woven wire mesh partitions for bank cages, offices and industrial uses, such as stock rooms, tool rooms, switchboard enclosures, etc.

Fig. 5
Industrial Woven Wire Partition

Fig. 5 shows industrial partition. Fig. 6 shows office partition with sliding door equipped with the Bankers Approved sliding door lock and Spee-d ball bearing hangers. See Figs. 7 and 8.

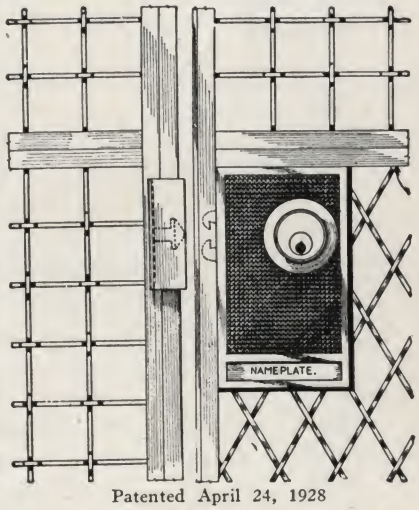
Specifications for Industrial Partitions—Furnish and install Woven Wire Mesh Partitions extending from floor to ceiling, standard construction, made of No. 10 (.135) W&M gauge wire woven into 1½-in. diamond mesh with 1x½x⅛-in. channel iron frames, in sections 5 ft. wide with intermediate vertical flat bar stiffeners spaced not more than 15 ft. apart and securely anchored to floors and ceilings. Partitions to have two 1-in. horizontal channel stiffeners at 3 ft. 6 in. from floor, mortised and tenoned into vertical channels as an integral part of each section. At 8 ft. from floor and each 5 ft. thereafter place horizontal intermediate flat bar stiffeners same size as verticals. As shown on plan, place 4-ft. gravity sliding doors equipped with malleable iron Bankers Approved sliding door cylinder locks and Spee-d ball bearing hangers, as manufactured by Western Wire & Iron Works, Inc., Chicago, Ill. Paint all work dip-coat black enamel paint. Leave all partitions and doors in first class working order.

Note: For heavy duty partitions specify No. 8 (.162) W&M gauge wire, 1¼-in. diamond mesh with 1¼x½x⅛-in. channel iron frames and extra heavy stiffeners.

Specifications for Bank Cage and Office Partitions—Furnish and install Woven Wire Mesh Partitions 7 ft. high constructed of ⅛-in. square wire 1½-in. square mesh press crimp for upper portion, and ⅛-in. round wire 1½-in. diamond mesh press crimp for lower portion, all set in 1x½x⅛-in. channel iron frames with two 1-in. horizontal channel members at 3 ft. 6 in. from floor mortised and tenoned into vertical channels as an integral part of each section. Place 1½-in. square No. 16 gauge seamless steel (or bronze) tubing uprights with bronze floor sockets, at walls, corners, intersections, and at each side of doors. Top rails to be 1½x1½x$\frac{3}{16}$-in. continuous channel with 2x$\frac{3}{16}$-in. removable capping bar to allow placing of electric conduit. As shown on plan, place standard bronze hand-holes and baskets, revolving telephone compartments, and 2-ft. 6-in. gravity sliding doors equipped with bronze Bankers Approved sliding door cylinder locks and bronze Spee-d ball bearing hangers to match as manufactured by Western Wire & Iron Works, Inc., Chicago, Ill. Spray all steel work prime coat of gray paint. Leave all partitions and doors in first class working order.

Fig. 6
Cashier Cage

Note: We are equipped to make bank cages in bronze, nickel silver, monel, aluminum and other special metals.



Patented April 24, 1928

Fig. 7
Bankers Approved Sliding Door Lock

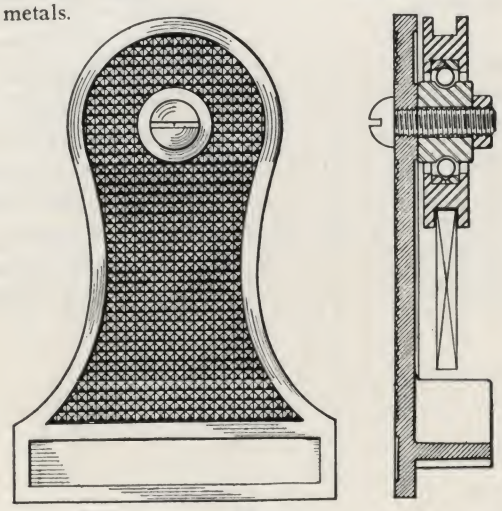


Fig. 8
Spee-d Ball-bearing Hanger

ROOFING

Aluminum Co. of America....B2135
Ambler Asbestos Shingle & Sheathing Co...B2111–2112
American Brass Co. B2138
American Rolling Mill Co....B2136–2137
American Tar Products Co....B2029
Apollo Steel Co....B2139
Bajohr, Carl, Lightning Conductor Co....B2250
Bangor Slate Assn....B2174–2175
Barber Asphalt Co....B2030
Barrell, William L., Co. of N. Y., Inc....B2248–2249
Barrett Co.—
Flashings B2236
Built-up Roofing B2031–2033
Berger Brothers Co....B2140–2141
Bird & Son, inc.—
Built-up Roofing B2034
Asphalt Shingles and Building Paper....B2134
Boston Lightning Rod Co....B2251
Burkett Lightning Rod Co....B2252
Cabot, Samuel, Inc....B2098
Campbell, A. W....B2189
Carey, Philip, Co.—
Built-up Roofing B2079–2091
Asbestos and Asphalt Shingles....B2124–2125
Cartier, M. N., & Sons Co....B2190
Certain-teed Products Corp.—
Asphalt Shingles B2128–2131
Built-up Roofing B2092–2095
Roll Roofing B2028
Chapman Slate Co....B2176
Chase Brass & Copper Co., Inc....B2142–2143
Cheney Co. B2242–2243
Columbian Enameling & Stamping Co....B2192
Copper and Brass Research Assn....B2237–2241
Counter-Flashing Receiver Co....B2244
Creo-Dipt Co., Inc....B2100–2103
Duracolor Corp. B2099
Edham Co., Inc....B2106
Electra Mfg. Co....B2253
Elhide Co. B2104–2105
Emack, John D., Co....B2177–2178
Eternit, Inc. B2126–2127
Figge Co. B2245
Follansbee Brothers Co....B2144–2151
Hawkeye Lightning Rod Co....B2254
Hawthorne Roofing Tile Co....B2226–2229
Hetzel Roofing Products Co....B2247
Hood, B. Mifflin, Brick Co....B2225
Hope, Henry, & Sons....B2153–2156
James Lumber Co....B2107
Jones, Harold K....B2255
Johns-Manville—
Asbestos and Asphalt Shingles....B2117–2123
Built-up Roofing B2096–2097
Klein & Kavanagh....B2160–2161
Knickerbocker Slate Corp....B2179
Knox, R. F., Co....B2246
Levow, David B2191
Ludowici-Celadon Co....B2193–2224
Lyon, Conklin & Co., Inc....B2152
Milcor Steel Co....B2230
Mohawk Asbestos Shingles, Inc....B2113–2116
Mound City Roofing Tile Co....B2231
Murray Tile Co....B2232
National Lead Co....B2157–2159
Newport Rolling Mill Co., Inc....B2162
O'Brien Brothers Slate Co., Inc....B2184
Republic Steel Corp....B2163
Revere Copper and Brass Inc....B2173
Richardson Roofing Co....B2035–2058
Ringle, Jacob, & Son, Inc....B2233–2235
Rising & Nelson Slate Co....B2180–2181
Ruberoid Co.—
Built-up Roofing B2059–2078
Asphalt Shingles B2132–2133
Sheldon, F. C., Slate Co....B2185–2186
Stewart, O. S., Co....B2164–2165
Vendor Slate Co....B2187–2188
Weatherbest Stained Shingle Co., Inc....B2108–2110
Wheeling Metal & Mfg. Co....B2166–2172
Williams, J. W., Slate Co....B2182–2183

CERTAIN-TEED PRODUCTS CORPORATION

ROOFING DIVISION

Manufacturers of Roll Roofing, Felts, Building Papers and Asphalt Coatings

GENERAL OFFICES

100 East 42nd Street, NEW YORK, N. Y.

For Sales Offices, see Gypsum Plaster pages

ROOFING DIVISION PLANTS

ALBANY, N. Y. ANDERSON, IND. CHICAGO, ILL. EAST ST. LOUIS, ILL. KANSAS CITY, MO.
MARSEILLES, ILL. NIAGARA FALLS, N. Y. RICHMOND, CALIF. YORK, PA.

Products

CERTAIN-TEED SMOOTH SURFACED and SLATE SURFACED ROLL ROOFING.

CERTAIN-TEED ASPHALT FELT and DEADENING FELTS.

CERTAIN-TEED ASPHALT ROOF COATING.

TRADE-MARK

CERTAIN-TEED INSULATION and SHEATHING PAPERS.

CERTAIN-TEED PLASTIC CEMENT.

CERTAIN-TEED ASBESTOS ROOF COATING.

For our other Products, see Manufacturers' Index.

Certain-teed Roofing Products

No effort is spared to safeguard the high quality of Certain-teed Roofing products. Careful selection of the best raw materials, rigid supervision during manufacture, and the most advanced methods of production have established the leadership of Certain-teed Roofings wherever superior quality is required.

Certain-teed Roll Roofings and allied products cover the entire range of roofing requirements. These roofs succeed wherever they are used, because each product is adapted to certain conditions, and there is a Certain-teed Roof for every type of building—from the most important structures to temporary shelters.

For complete specifications and information regarding Certain-teed Built-up Roof construction, see Manufacturers' Index for pages.

Distribution

Certain-teed products are handled by jobbers and dealers throughout the United States and also in principal countries throughout the world.

Certain-teed Smooth Surfaced Roll Roofings

Certain-teed Smooth Surfaced Roofing is recommended for use where the highest quality roofing and the most satisfactory service are required. In every corner of the world, this sturdy roofing has weathered many climes and withstood the ravages of passing seasons.

It is the uniform and dependable quality of this product that has won the friendship of leading architects and contractors in many countries. Exceptional durability and lasting protection have built up a world-wide reputation that only a superior product might enjoy.

Certain-teed Smooth Surfaced Roofing is put up in rolls of 108 sq. ft., with nails and cement enclosed. It is packed one square per roll—enough to cover 100 sq. ft. of roof surface with 8 sq. ft. for laps.

No. 1, light, about 35 lb. per square, guaranteed 5 years.
No. 2, medium, about 45 lb. per square, guaranteed 10 years.
No. 3, heavy, about 55 lb. per square, guaranteed 15 years.
No. 4, extra heavy, about 65 lb. per square, guaranteed 15 years.

Certain-teed Mineral Surfaced Roll Roofing

A high grade of asphalt roofing, surfaced with colorful mineral granules in their natural hues. This surface provides additional protection against weathering, and is highly fire-resistant. The colors, moreover, are in line with modern roofing requirements, and require no staining or painting at any time. Suitable for use where a decorative roof is required at minimum cost. Guaranteed ten years.

Put up in rolls of 108 sq. ft.; weights 85 to 90 lb.

Certain-teed Asphalt Felt

Widely used as a waterproof liner under slate, tile and other roofings. Suitable for built-up roof construction. High waterproofing and insulating properties likewise recommend this product for all sheathing and lining purposes where the very best results are desired.

Certain-teed Asphalt Felt is available in the following weights:

No. 15, about 65 lb. per roll, 432 sq. ft.
No. 30, about 60 lb. per roll, 216 sq. ft.

Certain-teed Insulating Paper

A high grade, black insulating paper, used for general sheathing and lining purposes. Saturated and coated with asphalt to insure greater durability and the highest waterproofing qualities. This product is entirely odorless and does not affect food flavors in any way. Widely used in constructing refrigerators, icehouses, dairies, etc., and for lining shipping cases. In sheathing homes it saves fuel in winter and keeps out summer heat during the warm seasons. Frequently laid between subfloors for insulation.

Furnished 36 in. wide in rolls containing approximately 500 sq. ft. Made in two weights: Medium, about 35 lb. per roll; Heavy, about 50 lb. per roll.

Certain-teed Tarred Felt

This product consists of a rag felt thoroughly saturated with cold tar in every way that meets the standard of architects and builders. Tarred felt is principally used in built-up roofs of felt, pitch and gravel. This tarred felt is also used for sheathing residences, store buildings and similar structures. 32 in. wide in following sizes:

No. 12, about 52 lb. per roll, 432 sq. ft.
No. 15, about 65 lb. per roll, 432 sq. ft.
No. 20, about 44 lb. per roll, 216 sq. ft.

Deadening Felt

A thick, durable felt, suitable for laying between double floors and in walls as an insulating agent against sound, heat and cold. It is made in 50-yard rolls 36 in. wide in the following weights:

No. 40, about 40 lb.
No. 50, about 50 lb.
No. 75, about 75 lb.

Certain-teed Asphalt Roof Coating

Resaturates and preserves the life of smooth surfaced roofing. Applied every three or four years it will preserve a roof indefinitely. Also used for protecting metal surfaces of all kinds, as a preservative for rough timber work, and for waterproofing stone and concrete foundations. Certain-teed Roof Coating is strongly adhesive and elastic, and does not crack nor peel off. It will give long and satisfactory service.

AMERICAN TAR PRODUCTS COMPANY

Coal Tar Products for Roofing, Waterproofing, Wood Preserving and Paving

GENERAL OFFICES

Koppers Building, PITTSBURGH, PA.

BRANCH OFFICES

NEW YORK, N. Y., 60 E. 42nd Street
CHICAGO, ILL., Peoples Gas Building
BIRMINGHAM, ALA., Woodward Building

PLANTS

BIRMINGHAM, ALA. FOLLANSBEE, W. VA. KEARNY, N. J. NEW HAVEN, CONN. ST. PAUL, MINN. UTICA, N. Y.
CHICAGO, ILL. HAMILTON, OHIO MILWAUKEE, WIS. PROVIDENCE, R. I. ST. LOUIS, MO. YOUNGSTOWN, OHIO

Products

ATP Roofs.
Bonded for 10 or 20 years, if desired.
Also ATP Flashing.

ATP ROOFS

Features of the ATP Roof

An ATP Roof is a long-lived, low-cost roof built of pure coal-tar-pitch and the highest grade of tarred felt, armored on top with gravel or slag. It withstands severest weather conditions for 20, 30—even 40 years.

ATP Roofs are available with or without a 10 or 20-year guarantee bond. There is a flat charge per square for the bond. (See "Specifications for ATP Roofs"—A.I.P. File 12b11.)

ATP Roofs take Class A Fire Underwriters' rating, the highest rating obtainable.

The gravel or slag on top of an ATP Roof performs the duty of fireproofing. It is therefore not necessary to reduce the waterproofing efficiency of the felt by inserting a fireproof mineral. The gravel or slag armor on top prevents ice, sleet, hail, heavy rains, and wind from damaging the roof and impairing its waterproof qualities. This permits the felt and coal-tar-pitch to devote themselves 100% to the primary duty of waterproofing.

ATP Roofs contain more bitumen than smooth-top roofs. The use of slag or gravel permits the top coating to be applied twice as heavy as is possible on a smooth surface roof. No double or triple-thick felts are used in ATP Roofs. There is a complete mopping of pitch between all plies of felt.

An ATP Roof has considerable insulating value due to the large amount of bitumen, the thorough mopping of ATP Old Style Pitch according to ATP specifications, and because of the quantity of gravel or slag used on the surface.

ATP Roofs are safe against damage from deck movement. Concrete, gypsum and other decks expand and contract, causing considerable damage to certain types of built-up roofs. The high ductility of an ATP Roof insures against cracking.

ATP Roofs require no recoating. Where recoating has to be done, it costs about $1.00 per square every three to five years, and this must be added to the original cost of a smooth-surfaced roof. A pitch and gravel roof has the lowest last cost.

A pitch roof will heal itself at the first warm weather. This is one of the distinctive qualities of coal tar pitch; it welds itself, and seals up any minor cuts, tears, or cracks.

Blisters and gas pockets are extremely rare in roofs built-up of pure coal-tar products. The weight of the gravel armor on top of an ATP Roof prevents pockets of any kind from getting a start.

CLASSIFICATION OF ATP ROOFS

Type of deck	Maximum slope in. per ft.	Flat ATP roof 20-year bond optional		Flat ATP roof 10-year bond optional		Steep ATP roof 10-year bond optional	
		Type	Spec. No.	Type	Spec. No.	Type	Spec. No.
Boards	2	20	1	10	21		
	6					10-S	30
Poured gypsum	2	20	3	10	23		
	6					10-S	32
	¼	20	11				
Precast concrete	1	20	5	10	25		
Precast gypsum	2	20	7	10	27		
	6					10-S	33
Book tile	1	20	9	10	29		
Insulation	1	20	36	10	37		
	6					10-S	34
Poured concrete	1	20	3	10	23		
	6					10-S	32
	¼	20	11				
	1	Promenade tile surface, Specification No. 59					
	¼	Tarmac roof for automobile parking, Specif. No. 60					
Steel		For insulated steel decks use Specification for ATP Roof over Insulation.					

ATP Roofs with Bond

When an ATP Roof with Bond is applied, a responsibility for the roof rests upon the manufacturer for a period of twenty years. (Ten-year-bonds also are available.)

Note that this is not merely a guarantee against defective workmanship and materials. This bond relieves the owner from responsibility of leaks, due to ordinary wear and tear of the elements, for a period of twenty years.

Optional Bond Plan—The American Tar Products Company does not require you to buy a bond in order to obtain the best roofing materials. There is only one grade of ATP materials—guaranteed to be the highest grade manufactured. Any ATP Roof with Bond may be had without bond. In either case, the ATP Roof is identical. However, unless the specifications call for an ATP Roof, the architect, engineer, or owner has no assurance that ATP materials will be used or ATP Specifications followed.

THE BARBER ASPHALT COMPANY

Genasco Bonded Asphalt Built-up Roofing, Flashings, Mastic and Waterproofing

PHILADELPHIA, PA.

NEW YORK, N. Y., Graybar Building
PITTSBURGH, PA., Peoples Savings Bank Building
ST. LOUIS, MO., International Office Building
SAN FRANCISCO, CALIF., Phelan Building
KANSAS CITY, MO., Finance Building
CHICAGO, ILL., Union Trust Building

Products

GENASCO TRINIDAD LAKE ROOFING ASPHALT.
GENASCO ALL RAG STANDARD and EXTRA HEAVY FELTS.
GENASCO ASPHALT MASTIC.
GENASCO ACIDPROOF MASTIC.
GENASCO TRINIDAD LAKE ASPHALT FLUXES.
GENASCO SPECIAL HARDENER for MASTIC.
GENASCO WATERPROOFING ASPHALTS.
GENASCO WATERPROOFING FABRIC.
GENASCO SPANDREL CLOTH.
GENASCO PROTECTIVE PAINTS.
GENASCO PLASTIC CEMENT.

Genasco Trinidad Lake Asphalt Built-up Roofing

Engineering Data—Engineering facts prove a roof constructed of Trinidad Lake Roofing Asphalt and Genasco All Rag Felts contains more waterproofing than is obtained from the same form of construction employing oil asphalt produced from crudes of varying origin, in combination with felts of inferior quality.

Bonds—Genasco Trinidad Lake Asphalt Built-up Roofs will be bonded, when desired, by the United States Fidelity & Guaranty Co. of Baltimore, Md., which guarantees against maintenance expense for 10, 15, 20 years, depending upon type of roofing used. There is, also, a Genasco Flashing covered by a bond, when desired.

Approved Roofing Contractors—To insure the proper application of Genasco Trinidad Lake Asphalt Built-up Roofing, Approved Roofing Contractors, whose selection is based on thoroughness of workmanship and responsibility, have been appointed throughout the country.

Specifications are outlined in chart given below.

Genasco Asphalt Mastic Floors

Where floors must withstand heavy traffic, Genasco Asphalt Mastic Floors give unsurpassed service. Unsatisfactory old floors can be laid over without stopping production.

Genasco Asphalt Mastic Floors are: Resilient—of particular value to employees constantly on their feet. Sanitary—laid in a monolithic sheet, no cracks to catch dirt. Non-absorbent—do not retain odors and particularly desirable in food manufacturing plants. Waterproof—can be flushed without damage or leakage. Also noiseless, dustless, fire-resisting, acidproof and easy to repair.

Genasco Membrane Waterproofing Materials

Over half a century of experience enables us to furnish waterproofing asphalt and fabrics best suited for the most exacting conditions.

Our Engineering Department is eager to co-operate with architects on any problem involving a possible use of asphalt and will gladly recommend specifications to meet specific conditions.

TABULATION OF VARIOUS TYPES OF GENASCO TRINIDAD LAKE ASPHALT BUILT-UP ROOFINGS

Designation	Type of deck	Limitation of roof pitch, in.	Surface finish	Composition: Layers of Genasco all rag felt	Composition: Number of moppings of asphalt	Weight of materials, lbs.: All rag felts	Trinidad Lake Roofing Asphalt	Genasco Concrete Primer	Gravel surfacing	Slag surfacing	Total weight per sq. applied, lbs.: Smooth surfaced	Gravel surfacing	Slag surfacing	Underwriters' Laboratories rating	Term of guaranty bond, years	Specification to be followed for steel decks, gypsum, tile or over insulation
For General Purposes																
Genasco Standard Trinidad	Wood	None	Smooth	1 30-lb. felt (base) lapped 2 in. 2 15-lb. felts lapped 17 in.	3	60	90				150	570	470	A	10	
	Concrete	6	Smooth	3 15-lb. felts lapped 22 in.	4	45	120	10			175	595	495	A	10	Use for steel decks, gypsum, insulation
Genasco 15-year Bonded Roof	Wood	3	Gravel or slag	1 30-lb. felt (base) lapped 2 in. 2 15-lb. felts lapped 17 in.	3	60	110		400	300		570	470	A	15	
	Concrete	3	Gravel or slag	3 15-lb. felts lapped 22 in.	4	45	140	10	400	300		595	495	A	15	Use for steel decks, gypsum, insulation
Genasco 20-year Bonded Roof	Wood	3	Gravel or slag	1 30-lb. felt (base) lapped 2 in. 3 15-lb. felts lapped 22 in.	4	75	140		400	300		615	515	A	20	
	Concrete	3	Gravel or slag	4 15-lb. felts lapped 24½ in.	5	60	170	10	400	300		640	540	A	20	Use for steel decks, gypsum, insulation

Genasco Bonded Flashing—2 layers Genasco Flashing Fabric, 2 moppings asphalt with copper counterflashings.

THE BARRETT COMPANY

Manufacturers of Roofing and Waterproofing Materials

BOSTON, MASS.
FAIRFIELD, ALA.
NEW YORK, N. Y.
MINNEAPOLIS, MINN.
CHICAGO, ILL.
PHILADELPHIA, PA.

THE BARRETT COMPANY, LIMITED, MONTREAL, QUE.

Products

The Barrett Company
TRADE-MARK

ROOFING MATERIALS:

For flat surfaces: BARRETT SPECIFICATION PITCH and BARRETT SPECIFICATION FELT; BLACK DIAMOND PITCH and BLACK DIAMOND FELT. For detailed specifications see Volume I, Barrett Architects' and Engineers' Built-Up Roofing Reference Series.

For steep surfaces: BARRETT SPECIFICATION FELT, BARRETT SPECIFICATION PITCH, ANCHOR ASPHALT, and S. I. S. ROOFING. For detailed specifications see Volume II, Barrett Architects' and Engineers' Built-Up Roofing Reference Series.

Waterproofing:

For foundations, reservoirs, swimming pools, subways, tunnels, floors, etc., special specifications submitted.

Insulating and Building Papers:

For sheathing, lining, etc.

Damp-proofing and Preservative Paints, Wood Preservatives, Flooring.

For Flashings for Brick and Concrete Walls, see Volume III, Barrett Architects' and Engineers' Built-Up Roofing Reference Series; for Roof Leader and Roof-Vent Connections, see Volume IV, Barrett Architects' and Engineers' Built-Up Roofing Reference Series, also see Manufacturers' Index in this volume.

Barrett Specification Roofs
TRADE-MARK

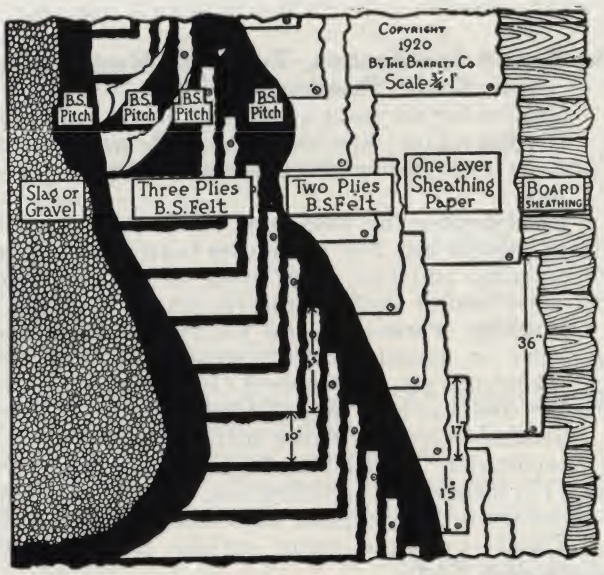


Diagram Showing Barrett Specification, Type "AA" Roof Over Boards
Bonded for 20 years

America's Best-Known Roof—The Barrett Specification

Repeat sales to America's most discriminating roof buyers constitute an impressive demonstration of value—particularly so, considering that Barrett Specification Roofs are by no means lowest in first cost. Within the past decade, 355 Barrett Roofs have been applied on buildings of one of America's greatest public utilities, 57 on plants of a leading shoe manufacturer, 44 on buildings of a leading tobacco company, 57 on buildings of one large baking concern. In almost every industry there is the same marked preference for Barrett Specification construction.

The reasons are easy to understand: roofing materials which have given complete satisfaction for 40, 50 or even 60 years under the most severe service and standards of practice in construction and inspection which set the pace for the entire roofing industry. Barrett originated the famous Barrett Specification, was first to bond roofs, first to establish complete roof inspection service, first to bond flashings and first to establish an organization of approved roofers.

Barrett Specification Roofs are bonded against repair and maintenance expense for 20 years (or 15 years for Type "A" roof) but built to outlast by many years the term of the bonds. In many cities there are Barrett Roofs half a century old and still in first-class condition. Barrett—and Barrett alone—can point to such records. Barrett Specification Roofs carry Class A—base rating—by the National Board of Fire Underwriters. No roof covering retards fire to a greater degree than a Barrett Specification Pitch and Felt roof with a gravel or slag wearing surface.

Only Barrett Approved Roofers, each selected on the basis of his experience, ability and integrity, are authorized to apply Barrett Specification Roofs. Their work is checked by trained Barrett Roof Inspectors who make inspections while the roof is being laid, two years after the work has been completed, and at other times at the request of the building owner.

The Barrett Specification, Type "AA" Roof—for Use over Board Sheathing—5 Plies

Bonded for 20 years. See Note 1.

Incline—This Specification shall not be used where the roof incline exceeds two (2) inches to one (1) foot.

Roof-deck—The roof-deck shall be of seasoned lumber, smooth and free from loose boards, large cracks or knotholes, and free from loose material. If roof-deck is inclined, it shall be properly graded to outlets.

Roofing—***First***—Lay one (1) thickness of sheathing paper or unsaturated felt, weighing not less than five (5) pounds per one hundred (100) square feet, lapping the sheets at least one (1) inch.

Second—Over entire surface lay two (2) plies of Specification Tarred Felt, lapping each sheet seventeen (17) inches over preceding one, and nail as often as is necessary to hold in place until remaining felt is laid.

Continued on next page

Third—Coat the entire surface uniformly with Specification Pitch.

Fourth—Over the entire surface lay three (3) plies of Specification Tarred Felt, lapping each sheet twenty-two (22) inches over preceding one, mopping with Specification Pitch the full twenty-two (22) inches on each sheet, so that in no place shall felt touch felt.

Such nailing as is necessary shall be done so that all nails will be covered by not less than two (2) plies of felt.

Fifth—Over the entire surface pour from a dipper a uniform coating of Specification Pitch into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be from one-quarter (¼) to five-eighths (⅝) inch in size, dry and free from dirt.

General—The felt shall be laid without wrinkles or buckles. Not less than one hundred and fifty (150) pounds of Specification Pitch shall be used for constructing each one hundred (100) square feet of completed roof, and the pitch shall not be heated above 400° Fahr.

The roof shall be applied by a roofing contractor approved by THE BARRETT COMPANY. He shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty issued by the U. S. Fidelity & Guaranty Co., of Baltimore, covering a period of twenty (20) years from date of completion, in accordance with Note No. 1.

20-year Guaranty Bond—***Note No. 1***—THE BARRETT COMPANY will give its 20-year Guaranty Bond on all jobs of 5000 sq. ft. or more, in the United States and Canada, where its Inspection Service is available, providing the roof is laid by a roofing contractor approved by THE BARRETT COMPANY, in strict accordance with the above Specification and subject to Barrett inspection and approval.

Condensed Specification—***Roofing***—Shall be a Barrett Specification Roof, Type "AA," laid in accordance with The Barrett Specification (for use over Board Sheathing) by a roofing contractor approved by THE BARRETT COMPANY. The roofing contractor shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty for twenty (20) years, in accordance with Note No. 1 of said Specification.

The Barrett Specification, Type "AA" Roof—for Use over Concrete—4 Plies

Bonded for 20 years. See Note 1.

Incline—This Specification shall not be used where the roof incline exceeds one (1) inch to one (1) foot.

Roof-deck—The roof-deck shall be smooth, firm, dry, and free from loose material. If roof-deck is inclined, it shall be properly graded to outlets.

Roofing—***First***—Coat the concrete uniformly with Specification Pitch.

Second—Over the entire surface lay four (4) plies of Specification Tarred Felt, lapping each sheet twenty-four and one-half (24½) inches over preceding one, mopping with Specification Pitch the full twenty-four and one-half (24½) inches on each sheet, so that in no place shall felt touch felt.

Third—Over the entire surface pour from a dipper a uniform coating of Specification Pitch, into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be from one-quarter (¼) to five-eighths (⅝) inch in size, dry and free from dirt.

General—The felt shall be laid without wrinkles or buckles. Not less than two hundred (200) pounds of pitch shall be used for constructing each one hundred (100) square feet of completed roof, and the pitch shall not be heated above 400° Fahr.

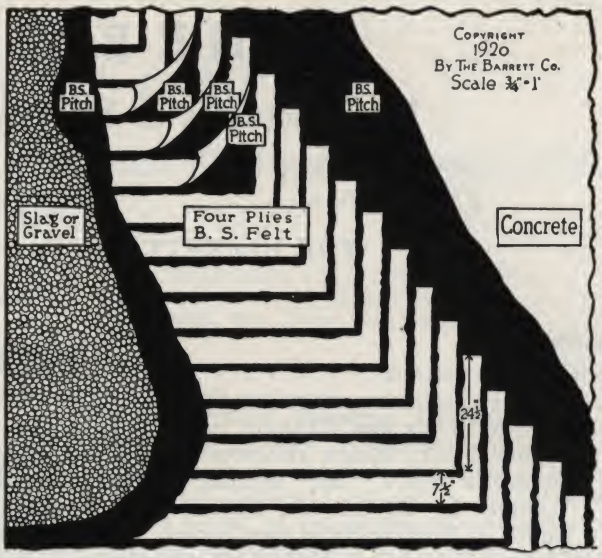


Diagram Showing Barrett Specification, Type "AA" Roof Over Concrete
Bonded for 20 years

The roof shall be applied by a roofing contractor approved by THE BARRETT COMPANY. He shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty issued by the U. S. Fidelity & Guaranty Company, of Baltimore, covering a period of twenty (20) years from date of completion, in accordance with Note No. 1.

20-year Guaranty Bond—***Note No. 1***—THE BARRETT COMPANY will give its 20-year Guaranty Bond on all jobs of 5000 sq. ft. or more, in the United States and Canada, where its Inspection Service is available, providing the roof is laid by a roofing contractor approved by THE BARRETT COMPANY, in strict accordance with the above Specification and subject to Barrett inspection and approval.

Condensed Specification—***Roofing***—Shall be a Barrett Specification Roof, Type "AA," laid in accordance with The Barrett Specification (for use over Concrete) by a roofing contractor approved by THE BARRETT COMPANY. The roofing contractor shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty for twenty (20) years, in accordance with Note No. 1 of said Specification.

The Barrett Specification, Type "A" Roof—for Use over Board Sheathing—4 Plies

Bonded for 10 years. See Note 1.

Incline—This Specification shall not be used where the roof incline exceeds two (2) inches to one (1) foot.

Roof-deck—The roof-deck shall be of seasoned lumber, smooth and free from loose boards, large cracks or knotholes, and free from loose material. If roof-deck is inclined, it shall be properly graded to outlets.

Roofing—***First***—Lay one (1) thickness of sheathing paper or unsaturated felt, weighing not less than five (5) pounds per one hundred (100) square feet, lapping the sheets at least one (1) inch.

Second—Over the entire surface lay two (2) plies of Specification Tarred Felt, lapping each sheet seventeen (17) inches over preceding one, and nail as often as is necessary to hold in place until remaining felt is laid.

Third—Coat the entire surface uniformly with Specification Pitch.

Fourth—Over the entire surface lay two (2) plies of Specification Tarred Felt, lapping each sheet seven-

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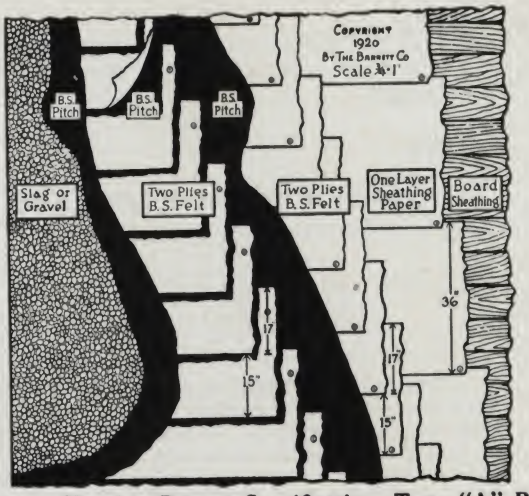


Diagram Showing Barrett Specification, Type "A" Roof Over Boards
Bonded for 10 years

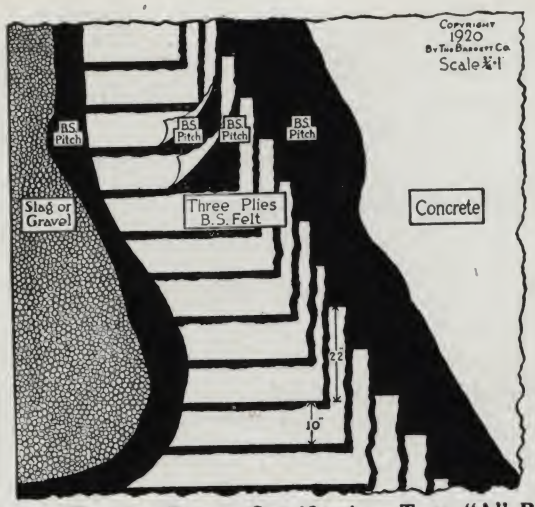


Diagram Showing Barrett Specification, Type "A" Roof Over Concrete
Bonded for 10 years

teen (17) inches over preceding one, mopping with Specification Pitch the full seventeen (17) inches on each sheet so that in no place shall felt touch felt. Such nailing as is necessary shall be done so that all nails will be covered by not less than one (1) ply of felt.

Fifth—Over the entire surface pour from a dipper a uniform coating of Specification Pitch, into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be from one-quarter (¼) to five-eighths (⅝) inch in size, dry and free from dirt.

General—The felt shall be laid without wrinkles or buckles. Not less than one hundred and twenty-five (125) pounds of pitch shall be used for constructing each one hundred (100) square feet of completed roof, and the pitch shall not be heated above 400° Fahr.

The roof shall be applied by a roofing contractor approved by THE BARRETT COMPANY. He shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty issued by the U. S. Fidelity & Guaranty Company, of Baltimore, covering a period of ten (10) years from date of completion, in accordance with Note No. 1.

10-year Guaranty—***Note No. 1***—THE BARRETT COMPANY will give its 10-year Guaranty Bond on all jobs of 5000 sq. ft. or more, in the United States and Canada, where its Inspection Service is available, providing the roof is laid by a roofing contractor approved by THE BARRETT COMPANY, in strict accordance with the above Specification and subject to Barrett inspection and approval.

Condensed Specification—***Roofing***—Shall be a Barrett Specification Roof, Type "A," laid in accordance with The Barrett Specification (for use over Board Sheathing) by a roofing contractor approved by THE BARRETT COMPANY. The roofing contractor shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty for ten (10) years, in accordance with Note No. 1 of said Specification.

The Barrett Specification, Type "A" Roof—for Use Over Concrete—3 Plies

Bonded for 10 years. See Note 1.

Incline—This Specification shall not be used where the roof incline exceeds one (1) inch to one (1) foot.

Roof-deck—The roof-deck shall be smooth, firm, dry, and free from loose material. If roof-deck is inclined, it shall be properly graded to outlets.

Roofing—***First***—Coat the concrete uniformly with Specification Pitch.

Second—Over the entire surface lay three (3) plies of Specification Tarred Felt, lapping each sheet twenty-two (22) inches over preceding one, mopping with Specification Pitch the full twenty-two (22) inches on each sheet so that in no place shall felt touch felt.

Third—Over the entire surface pour from a dipper a uniform coating of Specification Pitch, into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be from one-quarter (¼) inch to five-eighths (⅝) inch in size, dry and free from dirt.

General—The felt shall be laid without wrinkles or buckles. Not less than one hundred and seventy-five (175) pounds of pitch shall be used for constructing each one hundred (100) square feet of completed roof, and the pitch shall not be heated above 400° Fahr.

The roof shall be applied by a roofing contractor approved by THE BARRETT COMPANY. He shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty issued by the U. S. Fidelity & Guaranty Company, of Baltimore, covering a period of ten (10) years from date of completion, in accordance with Note No. 1.

10-year Guaranty Bond—***Note No. 1***—THE BARRETT COMPANY will give its 10-year Guaranty Bond on all jobs of 5000 sq. ft. or more, in the United States and Canada, where its Inspection Service is available, providing the roof is laid by a roofing contractor approved by THE BARRETT COMPANY, in strict accordance with the above Specification and subject to Barrett inspection and approval.

Condensed Specification—***Roofing***—Shall be a Barrett Specification Roof, Type "A," laid in accordance with The Barrett Specification (for use over Concrete) by a roofing contractor approved by THE BARRETT COMPANY. The roofing contractor shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty for ten (10) years, in accordance with Note No. 1 of said Specification.

Roofing for Steep Surfaces

Barrett built-up steep roofing specifications for saw-tooth, monitor, umbrella, butterfly, hopper, plain hip, and other types of steep roof construction. Bonded for 10 years when applied in accordance with Note No. 1 in Volume II, Architects' and Engineers' Built-up Roofing Reference Series.

BIRD & SON, inc.

Built-Up and Roll Roofings

EAST WALPOLE, MASS.

CHICAGO OFFICE AND PLANT: 1472 West 76th Street NEW YORK OFFICE: 295 Fifth Avenue

CANADA: Building Products Ltd., Bird & Son Division, HAMILTON, ONTARIO

For our page on Asphalt Shingles, Insulating Board, and Building Paper, see Manufacturers' Index

Bird Paroid Built-Up Roof

Bird Paroid *Built-Up Roof,* built up of successive layers of asphalt felt, asphalt compound applied hot, and Paroid Cap Sheet, gives a heavy impenetrable mass of absolutely weatherproof materials, capped with the well-known Paroid Smooth Surfaced Roofing. There is no slag or gravel to fall off and clog the gutters.

The illustration and specification which follow are for the most usual type of Paroid Built-Up Roof over sheathing boards. We will furnish on request specifications as follows:

(1) Bird Paroid Built-Up Roof, light, over sheathing boards.
(2) Bird Paroid Built-Up Roof, standard, over sheathing boards. (See specification below.)
(3) Bird Paroid Built-Up Roof, extra heavy, over sheathing boards.
(4) Bird Paroid Built-Up Roof, light, over non-combustible roof decks.
(5) Bird Paroid Built-Up Roof, standard, over non-combustible roof decks.
(6) Bird Paroid Built-Up Roof, extra heavy, over non-combustible roof decks.

Specifications for Bird Paroid Built-Up Roof, Standard for Application Over Sheathing—

Preparation of Sheathing—The roof shall be laid upon seasoned sheathing preferably tongued and grooved, not over 6 in. in width. All rubbish and projections shall be removed from the roof by the contractor preceding the roofer. The ends of all sheathing boards shall rest on rafters or purlins, properly nailed and secured. The sheathing shall be reasonably free from knots and holes, and where holes do occur these shall be covered with metal securely nailed. The roof shall be properly graded to outlets and all drainage connections set to permit the free flow of water. All this work to be done by the general contractor preceding the roofing contractor. Triangular wood strips about 2 in. high shall be installed by owner or general contractor in all angles formed by the roof and a vertical surface.

Flashings—All brick or concrete walls, etc., shall be primed with Bird Asphalt Primer before flashing with the roofing material. Where not otherwise shown on plans, walls and all elevations above the roof such as skylights, curbs, etc., shall be flashed at least 6 in. high. The flashings to be built up in the same manner and of the same material as the roof itself. Flashings shall be reinforced by a base flashing of Bird Cap Sheet 9 in. wide, mopped 6 in. up the wall and 3 in. on the roof. An approved metal counterflashing shall extend down over the wall flashing at least 4 in., and where pipes, vents, etc., come through the roof, they shall be flashed with a lead collar, both to be furnished and installed by the general contractor or owner.

Material—Materials required per 100 sq. ft. of completed roof surface—gross weights:

2 layers Bird 15-lb. Asphalt Felt (36-in. width)	31 lb.
2 layers Bird Built-Up Roof Compound	50 lb.
1 layer Bird Paroid Cap Sheet (coated one side only, 36-in. width)	37½ lb.
Flexible extra large head roofing nails (⅞ in. long)	1¼ lb.
Total weight of finished roof	119¾ lb.

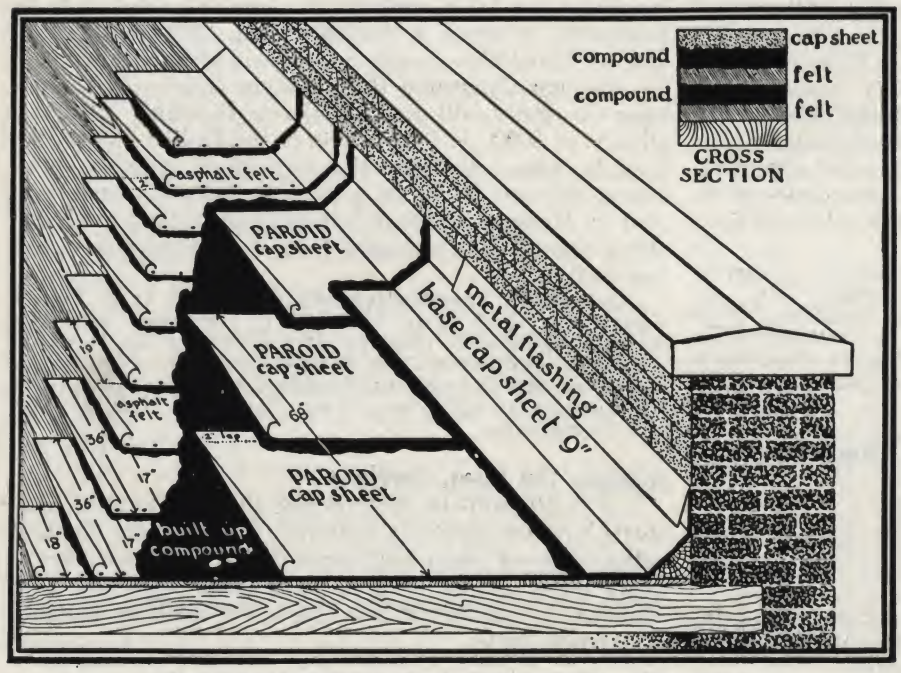
The quantities above stated do not include the material necessary for flashings nor do they include wastage.

Note: Many roofers recommend the use of a layer of sheathing paper to be used next to the sheathing boards. This is especially good over roof boards that contain pitch or sap.

Application—First: A sheet of Bird Asphalt Felt 18 in. wide shall be laid along the lowest edge of the roof. This felt shall be mopped with Bird Compound heated to not less than 400° F. and while hot a second sheet of asphalt felt 36 in. wide shall be rolled into same. Similarly succeeding sheets of asphalt felt 36 in. wide shall be laid lapping each sheet 19 in. until the surface of the roof shall be covered with two layers of asphalt felt mopped together with hot compound, so that felt does not touch felt. Flexible large head roofing nails shall be used, nailing 4 in. apart along the lower edge of each sheet, as applied.

Second: The Bird Asphalt Felt along the lower edge 36 in. wide shall be mopped with Bird Compound heated to not less than 400° F. and while hot a sheet of Bird Paroid Cap Sheet 36 in. wide rolled into same. The cap sheet must follow mop closely to insure a perfect bond. In a similar manner the second and succeeding sheets of Bird Cap Sheet 36 in. wide shall be mopped in, overlapping the preceding sheet 2 in. All cross laps of the cap sheet shall be mopped and lapped 4 in.

The surfaced side of Bird Cap Sheet shall be laid to the weather.



Bird Paroid Built-Up Roof, Standard Over Sheathing

Paroid Roll Roofing

Paroid Roll Roofing is of the highest quality, protected with a coating on both sides and with a special talc surfacing of bright gray color.

Paroid is most satisfactory for specifications for large roof surfaces, such as: barns, freight sheds, train platforms, garages, etc. It may also be specified for low pitch roofs on porches and dormers of all types of residences.

Paroid comes in rolls of either 108 or 216 sq. ft. with lap cement and nails. Made in two weights, 55 and 65 lb. per square. Roofer should apply according to directions enclosed in each roll.

ARCHITECT'S MANUAL

BUILT-UP ROOFS

THE RICHARDSON ROOFING COMPANY
DIVISION OF THE FLINTKOTE COMPANY
NEW YORK, N. Y. BOSTON, MASS. CHICAGO, ILL.
NEW ORLEANS, LA. CINCINNATI, OHIO
ATLANTA, GA. DALLAS, TEX.

Manufacturers of Roofing for a Quarter Century

A quarter of a century's successful experience as one of the foremost manufacturers of roofing products is an indisputable guarantee, not only of the product but of the integrity and practical knowledge of the company who manufacture it.

THE FLINTKOTE COMPANY has been successful because they have always been progressive—eagerly anticipating every forward step in the betterment of their products and the accompanying service to architects, engineers and builders. Toward this end THE FLINTKOTE COMPANY maintains a large force of chemists and engineers whose constant duty is to test and improve Flintkote Roofing Products, and make them constantly better than before. All the quality elements which an actively advancing science and technology are developing are constantly being incorporated in Flintkote products. Enterprising and far-seeing manufacturers are producing vastly superior goods by intelligently studying their processes and adopting methods which produce a uniform product of highest standard.

Eight factories from coast to coast, financial resources, large production, and the most modern equipment and methods, all contribute to the excellence of Flintkote products and service.

ENGINEERING SERVICES

Flintkote Sales Engineers are prepared to furnish definite recommendations as to the correct type of roof to be used with your construction. Their recommendations are based on a thorough background of experience, both from the practical and engineering standpoints of waterproofing.

THE FLINTKOTE COMPANY also maintains a corps of specially trained and experienced roofing engineers at the main offices in Boston, Mass. Any special problem may be referred to them for prompt and thorough investigation and solution.

Much time and money will be saved if roofing work is planned in advance. For example, when property lines interfere, it is necessary to build the wall against the roofing membrane, the membrane being held directly against the brick or concrete which has been built first. Proper planning will often eliminate unnecessary expenditures, and will prevent interference with subsequent roofing work.

Waterproofing cannot be expected to correct poor or faulty construction. It is simply a means of preventing water from entering a structure and it does this by throwing the water to properly placed outlets and drains. Hence the structure should be designed to help accomplish this end most effectively.

When you specify a Richardson Built-up Roof, you can be assured of two things:

First, a pliant, durable, adhesive, waterproofing bitumen, free from destructive elements and absolutely impervious to water.

Second, a felt foundation which, in spite of severe weathering, will hold this bitumen in place.

These, together, fulfill the basic requirements for permanent roofing.

To meet the various problems of a particular roofing installation, architects, engineers, builders and owners are invited to avail themselves of the Company's facilities for information and service.

A FEW REPRESENTATIVE JOBS HAVING RICHARDSON ROOFING

Maine Seaboard Paper Co., Bucksport, Me.
White Mountain Freezer Co., Nashua, N. H.
Shell Eastern Petroleum Products Corp., New Haven, Conn.
South Adams Saving Bank, Adams, Mass.
Clarke University, Atlanta, Ga.
Public Service Electric & Gas Co., Orange, N. J.
Lapp Insulator Co., Leroy, N. Y.
Auburn Motor Car Co., Connersville, Ind.
Belknap Hardware Co., Louisville, Ky.
State Hospital, Columbia, S. C.
Broughton School, Broughton, Pa.
Municipal Building, Green Bay, Wis.
Beaumont Baseball Club Park, Beaumont, Tex.
Wolverine Tube Co., Detroit, Mich.
State Normal School, Normal, Ala.
Shanden Baptist Church, Columbia, S. C.
Pacific Ice Co., Ft. Worth, Tex.
Mart High School, Mart, Tex.
Fifth Avenue Bus Co., New York, N. Y.
Lincoln Dixie Theatre, Chicago, Ill.
Ohio Savings Bank & Trust Co., Toledo, Ohio
Loews Palace Theatre, Indianapolis, Ind.
The Lampton Co., Columbia, Miss.
Anaconda Wire Cable Co., Anderson, Ind.
Toledo Trans Continental Airport, Toledo, Ohio
Municipal Airport, Blackwell, Okla.
Chamber of Cemmerce Building, Indianapolis, Ind.
Ohio State Armory, Toledo, Ohio
Meridian Fertilizer Co., Bossier City, La.
Shell Eastern Petroleum Products Corp., Providence, R. I.
Kansas City Railways Co. Barns, Kansas City, Mo.
Roosevelt Hotel, addition, New Orleans, La.
Theodore Ahrens Trade School, Louisville, Ky
Canal Bank & Trust Co. Building, New Orleans, La.
Shortridge High School, Indianapolis, Ind.
Wilmington Compress & Warehouse Co., Wilmington, N. C.
Swift & Co. Packing Plant, Montgomery, Ala.
Calhoun County Courthouse, Morgan, Ga.
Senator Owen's Building, Muskogee, Okla.
The Boston Store Building, Schenectady, N. Y.
Beaumont Baseball Park, Beaumont, Tex.
McClaren Garage, Detroit, Mich.
Toledo Ice & Coal Co., Toledo, Ohio
The Johnson Building, Huntington, W. Va.
Mangal Body Plant, Louisville, Ky.

Continued on next page

FLINTKOTE ROOFING POLICY AND MATERIALS

Richardson Built-up Roofs are built up on the structure, layer by layer, of materials best suited for the construction. These materials are our own products, and are manufactured under close supervision.

Because of the complete control of manufacture of Viskalt Compound and Richardson Felt-Viskalt Saturated, we are able to furnish the same high grade material, identical in all respects, from all of our shipping points. This uniformity makes it a safe product to specify in any part of the country.

The application of Richardson Built-up Roofs is a very important feature. Richardson Bonded Built-up Roofs are applied by experienced and thoroughly trained roofers, under the supervision of qualified inspectors. This insures you of obtaining a roof built to exact specifications and construction as authorized by the Richardson Roofing Company.

Cost

The Richardson Roofing Company Division of The Flintkote Company recognizes the fact that there are many different classes of buildings for which good roofs are in demand but that for many of these, first cost cannot be allowed to mount too high, either because the construction of the building is of a type that does not warrant a roof of high first cost, or because the cost is in excess of money alloted, or because the intended life of the building is too short. In line with this thought the Richardson Specifications have been made complete, by incorporating the following types of construction:

(1) Richardson Smooth Surfaced Asphalt Roofs
(2) Richardson Gravel or Slag Surfaced Asphalt Roofs
(3) Richardson Mineral Surfaced Asphalt Roofs
(4) Richardson Coal Tar Felt and Pitch Roofs

All of the above roofs will be bonded if desired.

What Is the Best Roof?

Because roofs must withstand a variety of exposure conditions, the Richardson Built-up Specifications on the following pages have been prepared to meet the conditions as far as possible, to which each roof will be subjected.

Before a recommendation is made, certain definite data should be obtained. The following questions should be answered intelligently to permit real practical service:

What is the roof deck going to be—concrete, tile, gypsum or wood sheathing?

What kind of flashing is to be used?

What is the pitch of the roof?

What temperature conditions must the roof stand?

What atmospheric conditions must the roof stand?

Will the roof be subjected to acid conditions, smoke, gas or cinders?

With this information, the specification that will best suit the conditions can be selected. A roof which may be best for an office building, will not be suitable for an industrial building where the incline is greater than two inches to the foot.

RICHARDSON BONDED ROOFS AND FRANCHISED ROOFERS

Richardson Built-up Roofs when applied in strict accordance with printed specifications, and under the supervision of the Inspection Service will be bonded if desired. Depending upon the type of roofing used and upon the conditions, these bonds run for periods of ten, fifteen and twenty years. In connection with the bonding of these built-up roofs, a periodic inspection service is also supplied.

Richardson Roofs will be bonded for every type of construction, whether flat or steep, regardless of the pitch of any section of the roof area. No limitations are placed on bonding roofs of any considerable pitch.

The new Richardson policy further recognizes the fact that the flashings are a critical point of a roof, and have, therefore, decided to issue a "Flashing Endorsement," which, when issued, becomes a part of the "Bond" itself. This feature covers a period of ten years and is issued under the same conditions as the Bond.

All Richardson Built-up Roofs will be laid only by Roofing Contractors approved and franchised by the Richardson Roofing Company. These Contractors have been selected because they possess the requirements of business reliability, thorough experience and careful workmanship to fulfill the Richardson Roofing Specifications. Roofing laid by Richardson Franchise Roofing Contractors gives assurance of satisfactory workmanship and the complete following of the printed specifications.

In regard to bonded built-up roofs, The Richardson Roofing Company stresses the point that the Felt-Viskalt Saturated and the Viskalt Compound called for in the following specifications are made to very exacting formulæ and are, in the opinion of THE FLINTKOTE COMPANY, the best material that it is possible to produce. They are, therefore, specified for all Bonded Roofs. These products are sold at established prices, regardless of whether a bond is furnished or not. All charges for the bond itself is on a "per square" basis, being separate and distinct from the cost of the materials.

Continued on next page

VISKALT ROOFING COMPOUND

Its Importance as the Waterproofing Agent of Built-up Roofs

Scientific investigation has uncovered facts which put the selection of roofing and waterproofing materials on an entirely new basis. A knowledge of these facts will help you to make your future roofing and waterproofing construction more permanent.

According to the science of roof construction, the two basic materials needed to make a permanent roof, are as follows:

(1) A pliant, durable, adhesive, waterproofing bitumen free from destructive elements and absolutely impervious to water.

(2) A felt foundation which, in spite of severe weatherproofing, will permanently hold this bitumen fast to the roof.

In the past, not enough effort was made to develop the waterproofing agent, the bitumen, to fit its particular job. Even though the most capable architect planned and the best engineer applied a theoretically correct system of waterproofing, both of these men would confess that they knew little or nothing about the actual waterproofing agent, the bitumen.

With these facts in mind, the Richardson Research Laboratories concentrated its years of scientific experience to solve the difficulty. The result was Viskalt—a blend of waterproofing bitumen more efficient than had ever been devised.

The Underlying Chemistry of Viskalt

In all waterproofing bitumens, there are certain essential constituents. Up to a few years ago, these were thought to be the backbone of bitumen. Consequently all bitumens were considered alike and no one really knew why, for example, some roofs outlasted others.

But now research has proved that in asphaltic bitumen are certain constituents which, if not properly proportioned, destroy its waterproofing value. Thus the cause of a leaky roof might chemically be explained as follows:

The newly discovered elements tend to break down the waterproofing film and let in the water.

Many asphalts, it is now known, contain high percentages of these harmful elements. Viskalt, on the other hand, is derived from asphaltums which contain a smaller percentage of these harmful properties.

Viskalt is a firm, adhesive waterproofing bitumen and as such fulfills the first basic requirement of permanent waterproofing—a continuous, unbroken layer, absolutely impervious to water.

Every modern structure requires a certain amount of flexibility in each part so as to care for strains and stresses due to wind pressure, ground movement, unusual loads, seasoning, etc. In the past much damage has been done to otherwise excellent structures because the waterproofing cracked and broke down under strain.

Firm—Yet Pliant Under Stress

This all important fact is due to the usual small content of ingredients that evaporate at sun or working temperatures, causing brittleness and subsequent crackings.

Viskalt, when maintained for five hours at a temperature of 325° F. shows an evaporation of less than ½ of 1% and still remains pliant.

Ordinary bitumens crack or crumble when subject to tension or pressure. But Viskalt, as shown by the ductility test, is internally knitted together to resist such strains.

Without the aid of a fluxing agent, ordinary bitumens are not highly adhesive. Viskalt, however, as proved by actual use, binds itself fast both to the felt and to the structure.

Ordinary bitumens are extremely brittle at even 40° F. and flow at summer temperatures. Viskalt, on the contrary, being only slightly susceptible to such ranges of temperature, remains firm yet *pliant under stress.*

Whether your job for Viskalt be on the roof or in the foundation, you may feel absolutely confident that it will remain a continuous, unbroken layer, absolutely impervious to water.

Viskalt Specifications

Melting point (ball and ring)—167° to 175° F.
Penetration at 32° F. (0° C.) 200 gr. 60 sec.—18.
Penetration at 77° F. (25° C.) 100 gr. 5 sec.—35.
Penetration at 115° F. (46° C.) 50 gr. 5 sec.—110.
Ductility at 77° F.—5 cm. (not less than).
Purity (solubility in carbon bisulphite)—99½% (not less than).
Flash point (open cup) 465° F. (not less than).
Weight—approximately 8.7 lb. per gal.
Furnished in 10 gal. containers. Covering capacity approximately 30 lb. (or 3 gal.) per 100 sq. ft.

Viskalt Roofing Compound is manufactured in our refineries, of Asphalt and Asphalt Flux, so tempered as to overcome brittleness and yet retain its weather resisting qualities. Our specifications are rigid and assure the production of a product which meets the most exacting of roofing requirements.

OTHER RICHARDSON ROOFING PRODUCTS

Description of Products Used in Richardson Built-up Roofs

Rex Construction

The use of this product eliminates entirely the handling of gravel or slag for surfacing, and materially reduces the amount of Viskalt to be heated and applied. 17 in. of the width of the sheet is Viskalt Saturated Felt, Viskalt coated and mineral surfaced, and the other 19 in. of the width of the sheet is bare felt, Viskalt Saturated, provided for the cementing of sheet to sheet in the application.

This roofing is furnished in rolls 36 in. wide, 108 sq. ft. each and weigh approximately 50 lb. Sufficient material in each roll to complete one-half square of surface.

Continued on next page

RICHARDSON ROOFING PRODUCTS (Continued)

Available in green, blue-black, and red mineral surfacing. Can also be furnished with chrome yellow and other colored surfacings at a small additional cost. Especially recommended for airport construction.

Richardson Special Base Sheet

The use of this product eliminates the use of a 30-lb. Saturated Felt in built-up roof construction, and insures a better base sheet construction. This product is manufactured with a backing of bare saturated felt, the other side coated and surfaced with talc. Furnished in rolls 36 in. wide, 216 sq. ft. each and weighing approximately 68 lb. Richardson Special Base Sheet is recommended for use in the construction of built-up roofs for application over wood surfaces, for use under slate and tile roofing and for temporary roof coverings.

Copperclad Flashing

Richardson Copperclad Flashing is a preformed flashing material consisting of laminations of Richardson Felt, Viskalt Saturated and Copper, bonded together at the factory with an especially blended and refined bitumen. On account of the elasticity, strength and extreme flexibility of Richardson Copperclad Flashing, it will conform readily and bond securely with hot Viskalt to parapet walls. The danger of cracks and breaks found in ordinary flashing material as a result of misuse, settling of building or movement of roof decks is materially reduced.

SELECTING THE PROPER ROOF FINISH

Conditions Determining the Proper Type of Roofing to Use

In selecting the proper roof finish, the determining factors are as follows:

(1) Base on which roof is to be laid—(Concrete, gypsum, wood, etc.).

(2) Quality of roof—(20-year, 15-year, 10-year, 5-year).

(3) Pitch—(Limitation of type of roof).

(4) Finish—(Smooth, crushed slate, slag, gravel).

CONDENSED CHART AND INDEX OF SPECIFICATIONS—RICHARDSON BUILT-UP ROOFS

Period of guarantee	Specification No.	Page No.	Limitations of roof pitch	Finish
Standard Specifications Non-combustible Roofs (Concrete, Gypsum, etc.)				
20 yr.	A-1-C	5	None	Smooth
20 yr.	A-2-C	6	Up to 6 in. to 1 ft.	Crushed slate
20 yr.	A-3-C	7	Up to 3 in. to 1 ft.	Slag or gravel
20 yr.	A-4-C	..	1 in. to 1 ft.	Tar and slag
15 yr.	B-1-C	5	None	Smooth
15 yr.	B-3-C	7	Up to 3 in. to 1 ft.	Slag or gravel
10 yr.	C-1-C	8	None	Smooth
10 yr.	C-1a-C	9	Up to 3 in. to 1 ft.	Smooth
10 yr.	C-2-C	10	Up to 6 in. to 1 ft.	Crushed slate
10 yr.	C-3-C	11	Up to 3 in. to 1 ft.	Slag or gravel
10 yr.	C-4-C	..	Up to 1 in. to 1 ft.	Tar and slag
Standard Specifications Wood Roofs				
20 yr.	A-1-W	12	None	Smooth
20 yr.	A-2-W	13	Up to 6 in. to 1 ft.	Crushed slate
20 yr.	A-3-W	14	Up to 3 in. to 1 ft.	Slag or gravel
20 yr.	A-4-W	..	Up to 2 in. to 1 ft.	Tar and slag
15 yr.	B-1-W	12	None	Smooth
15 yr.	B-3-W	14	Not over 4 in. to 1 ft.	Slag or gravel
10 yr.	C-1-W	15	None	Smooth
10 yr.	C-2-W	16	Up to 6 in. to 1 ft.	Crushed slate
10 yr	C-3-W	17	Up to 4 in. to 1 ft.	Slag or gravel
10 yr.	C-4-W	..	Up to 2 in. to 1 ft.	Tar and slag
5 yr.	D-1-W	15	None	Smooth
Standard Specifications Steel Roofs*				
20 yr.	A-1-S	19	None	Smooth
20 yr.	A-3-S	..	3 in. to 1 ft.	Slag or gravel
10 yr.	C-1-S	18	None	Smooth
10 yr.	C-3-S	..	3 in. to 1 ft.	Slag or gravel
5 yr	D-1-S	..	None	Smooth
Standard Specifications Over Rigid Insulation, Cork, Celotex, Insulite, Maftex, etc.				
20 yr	A-1-I	20	None	Smooth
20 yr.	A-2-I	..	None	Crushed slate
20 yr.	A-3-I	..	3 in. to 1 ft.	Slag or gravel
10 yr.	C-1-I	19	None	Smooth
10 yr.	C-2-I	..	None	Crushed slate
10 yr.	C-3-I	..	3 in. to 1 ft.	Slag or gravel

*Special specifications for use with insulation will be sent upon request.

For Richardson Copperclad Flashing Construction, see page 21.

Continued on next page

CONCRETE OR POURED GYPSUM DECKS

20-year Roof—Inclines Up to 6 In. to 1 Ft.—Smooth Viskalt Finish

SUPER-VISKALT BUILT-UP ROOF—SPECIFICATION A-1-C

Description of Materials

Primer—The priming coat shall be Viskalt Concrete Primer.

Felt—The five layers of felt shall be Richardson Felt-Viskalt Saturated, weighing about 15 lb. per 108 sq. ft.

Bitumen—The Bitumen shall be Viskalt Roofing Compound delivered to the job in the manufacturer's original container, heated to a temperature of not more than 375° F, uniformly mopped. For each mopping, use 3 gal. (approximately 30 lb.) per 100 sq. ft.

Thermometer—Use a thermometer, as all bituminous materials are easily destroyed by over-heating.

Method of Construction

First—The concrete shall be swept clean and free from all debris. All rough spots shall be smoothed, and all low spots filled to insure proper bond.

Second—A thorough coating of Viskalt Concrete Primer shall be applied and sufficient time (12 to 24 hours) given for it to thoroughly penetrate.

Third—Mop the entire surface with a uniform and thorough coating of Viskalt Roofing Compound, using 3 gal. (approximately 30 lb.) per 100 sq. ft.

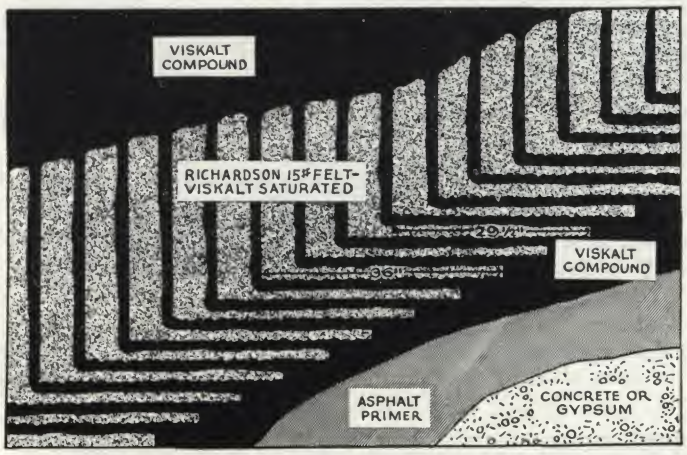
Fourth—Embed in the hot Viskalt Roofing Compound five layers of Richardson Felt-Viskalt Saturated, lapping each layer 29½ in. over the preceding layer, mopping between the laps a heavy coating of Viskalt Roofing Compound so that in no case shall felt touch felt, thus forming a solid and continuous waterproofing membrane.

Fifth—Thoroughly mop the entire surface with a heavy and final coating of Viskalt Roofing Compound, forming a complete homogeneous mass.

Flashings, Flanges, etc.

All flashings shall be constructed in accordance with Richardson Special Flashing Specifications.

All metal flanges, flashings and edgings which are connecting to roofing shall be set in hot Viskalt Roofing Compound on top of at least five plies of felt nailed and double felt stripped, felt strips to be not less than double the width of the metal flange and cemented solidly together and to the flange with Viskalt Roofing Compound.



Waterproofing Walls

All walls, chimneys and other projections shall first be primed with Richardson Concrete Primer, and then mopped sufficiently high with Viskalt Roofing Compound to prevent absorption of moisture or leakage through brick or concrete. The entire fire walls or parapet walls above flashing line shall be given a thorough coating of Viskalt Roofing Compound.

Valleys and Gutters

Reinforce all valleys and gutter by the use of an additional layer of Richardson Felt, Viskalt Saturated, finishing the surface as outlined for final coating.

Note: The above specification is adaptable for decks constructed of cement tile, book tile, precast gypsum slabs and similar monolithic construction. In case of poured and precast gypsum, all felts shall be securely nailed along the back of each sheet as a precautionary measure to insure satisfactory results. When poured concrete, cement tile, or book tile is used on surfaces over 2 inches to the foot, proper nailing facilities should be incorporated in the roof deck.

Bill of Materials Per Square

Concrete Primer (1 gal.)	9 lb.
Six moppings Viskalt Roofing Compound (18 gal.)	162 lb.
Five layers Richardson 15-lb. Felt-Viskalt Saturated	75 lb.
Weight of Completed Roof	246 lb.

Bond

If a Richardson Twenty-year Guaranty Bond is required, the roof shall be inspected by an authorized Richardson Inspector who shall cut the roof as he considers necessary. Such bonds will be given only when the roof is laid by an approved Richardson Franchise Roofer in strict accordance with the above specification. If Richardson Special Flashing Construction is used in conjunction with this specification, we will issue a flashing endorsement covering that part of the roof construction for a period of ten years.

15-year Roof—Inclines Up to 6 In. to 1 Ft.—Smooth Viskalt Finish

VISKALT BUILT-UP ROOF—SPECIFICATION B-1-C

Specification B-1-C is the same as Specification A-1-C above, with the following exceptions:

"Felt" paragraph is changed to read "The four layers of felt," etc

Paragraph **"Fourth"** under **"Method of Construction"** is changed to read, "Embed in the hot Viskalt Roofing Compound four layers of Viskalt Richardson Felt-Viskalt Saturated, lapping each layer 27½ in.," etc.

Fifth line under **"Flashings, Flanges, Etc."** should be changed to ". . . on top of at least four plies of felt . . ." etc.

"Bill of Materials Per Square" should be changed to the following:

Concrete Primer (1 gal.)	9 lb.
Five moppings Viskalt Roofing Compound (15 gal.)	135 lb.
Four layers Richardson 15-lb. Felt-Viskalt Saturated	60 lb.
Weight of completed roof	204 lb.

"Bond" will be the same except "Fifteen-Year" will be substituted for "Twenty-Year."

Continued on next page

CONCRETE OR POURED GYPSUM DECKS

20-year Roof—Inclines Up to 6 In. to 1 Ft.—Crushed Slate Finish

SUPER-REX CONSTRUCTION BUILT-UP ROOFS—SPECIFICATION A-2-C

Description of Materials

Primer—The priming coat shall be Asphalt Concrete Primer.

Felt—The three layers of felt shall be Richardson Felt-Viskalt Saturated, weighing about 15 lb. per 108 sq. ft.

Cap Sheets—The two layers of cap sheets shall be Rex Construction Roofing, 36 in. wide, of which 17 in. is mineral surfaced and the other 19 in. is bare felt to provide a proper nailing and bonding surface. Weight approximately 100 lb. per 100 sq. ft.

Bitumen—The bitumen shall be Viskalt Roofing Compound, delivered to the job in the manufacturer's original container, heated to a temperature of not more than 375° F., and uniformly mopped. For each mopping, use 3 gal. (approximately 30 lb.) per 100 sq. ft.

Thermometer—Use a thermometer, as all bituminous materials are easily destroyed by overheating.

Method of Construction

First—The concrete shall be swept clean and free from all debris. All rough spots shall be smoothed, and all low spots shall be filled to insure proper bond.

Second—A thorough coating of Asphalt Concrete Primer shall be applied, and sufficient time (12 to 24 hours) given for it to thoroughly penetrate.

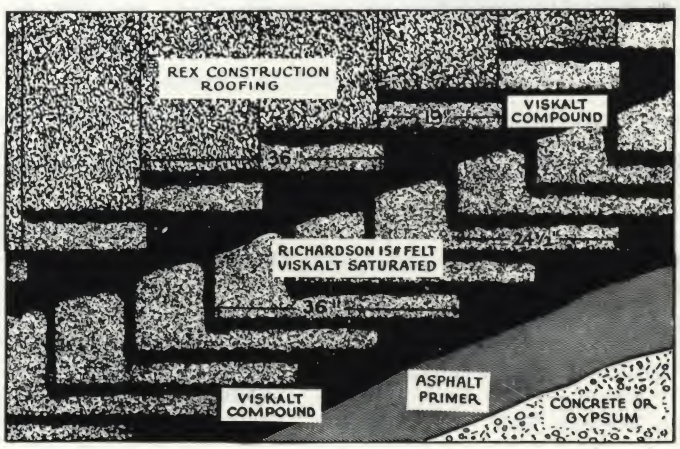
Third—Mop the entire surface with a uniform and thorough coating of Viskalt Roofing Compound, using 3 gal. (approximately 30 lb.) per 100 sq. ft.

Fourth—Embed in the hot Viskalt Roofing Compound three layers of Richardson 15-lb. Felt-Viskalt Saturated, lapping each layer 24½ in. over the preceding layer, mopping between the laps a heavy coating of Viskalt Roofing Compound, so that in no case shall felt touch felt, thus forming a solid and continuous waterproofing membrane.

Fifth—Thoroughly mop the entire surface with a uniform and thorough coating of Viskalt Roofing Compound, using 3 gal. (approximately 30 lb.) per 100 sq ft.

Sixth—Embed in the hot Viskalt Roofing Compound at right angles to the eaves and ridges a starting sheet of asphalt felt 19 in. wide cut from the selvage side of the Rex Construction Roofing, this sheet to be securely held in place by nails fastened to nailing strips provided by contractor in roof deck at ridge.

Seventh—Mop the full width of the 19-in. selvage sheet with hot Viskalt Roofing Compound, and while hot lay the first full course, using a full width 36-in. sheet of Rex Construction Roofing, the mineral edge flush with and parallel to the starting line. Roll down securely to insure a positive bond between the felt and the compound. Each sheet of Rex Construction Roofing should be securely anchored by nailing to the strip provided at the ridge, or high point of roof by contractor. When laps are necessary they shall be overlapped at least 6 in. and carefully cemented together.



Eighth—Mop the full width of the 19-in. selvage side with Viskalt Roofing Compound, into which, while hot, embed a second sheet of Rex Construction Roofing, nailing as described and continue with subsequent sheets until roof is completed. Care should be taken not to spill compound on mineral surface of Rex Construction Roofing. This is absolutely essential, as discoloration of the mineral surface destroys the real effect of the roof.

Base and Counter Flashings

All flashings shall be constructed in accordance with Richardson Special Flashing Specifications.

All metal flanges, flashings and edgings which are connected to roofing shall be set in hot Viskalt Roofing Compound on top of at least three plies of felt and under the Rex Construction Roofing and double felt stripped, felt strips to be not less than double the width of the metal flange and cemented solidly together and to the flange with Viskalt Roofing Compound.

Waterproofing Walls

All walls, chimneys and other projections shall first be primed with Richardson Concrete Primer, and then mopped sufficiently high with Viskalt Roofing Compound to prevent absorption of moisture or leakage through brick or concrete. The entire fire walls or parapet walls above flashing line shall be given a thorough coating of Viskalt Roofing Compound.

Valleys and Gutters

Reinforce all valleys and gutters by the use of an additional layer of Richardson Felt, Viskalt Saturated, finishing the surface as outlined for final coating.

Note: This specification is adaptable for roofs up to 6 in. to the foot and is not recommended for roofs having an incline under 1 in. to the foot. Rex Construction Roofing can be run parallel to the incline of the roof. Furnished in red, green and blue-black Mineral Surfacing.

Bill of Materials Per Square

Asphalt Concrete Primer	9 lb.
Three layers Richardson 15-lb. Felt-Viskalt Saturated	45 lb.
One layer Rex Construction Roofing	100 lb.
Five layers Viskalt Roofing Compound	130 lb.
Weight of complete roof	284 lb.

Bond

If a Richardson Twenty-year Guaranty Bond is required, the roof shall be inspected by an authorized Richardson Inspector, who shall cut the roof as he considers necessary. Such bonds will be given only when the roof is laid by an approved Richardson Franchise Roofer in strict accordance with the above specification. If Richardson Special Flashing Construction is used in conjunction with this specification, we will issue a flashing endorsement covering that part of the roof construction for a period of ten years.

Continued on next page

CONCRETE OR POURED GYPSUM DECKS

20-year Roof—Inclines Not Exceeding 3 In. to 1 Ft.—Slag or Gravel

SUPER-RICHARDSON BUILT-UP ROOFS—SPECIFICATION A-3-C

Description of Materials

Primer—The priming coat shall be Asphalt Concrete Primer.

Felt—The four layers of felt shall be Richardson Felt-Viskalt Saturated, weighing about 15 lb. per 108 sq. ft.

Bitumen—The bitumen shall be Richardson Flex-A-Tile Asphalt, heated to a temperature of not over 360° F., uniformly mopped. For each mopping use 30 lb. per 100 sq. ft.

Surfacing Material—The surfacing material shall be gravel or slag. 400 lb. of gravel or 300 lb. of slag, from ¼ to ⅝ in. in size shall be used for each 100 sq. ft. of surfacing. It shall be dry and free from dirt.

Thermometer—Use a thermometer, as all bituminous materials are easily destroyed by overheating.

Method of Construction

First—The concrete shall be swept clean and free from all debris. All rough spots shall be smoothed and all low spots filled to insure proper bond.

Second—A thorough coating of Asphalt Concrete Primer shall be applied and sufficient time (12 to 24 hours) given for it to thoroughly penetrate.

Third—Over the primed surface, apply a thorough coating of hot Richardson Flex-A-Tile Asphalt, using approximately 40 lb. per 100 sq. ft.

Fourth—Embed in the hot Richardson Flex-A-Tile Asphalt four layers of Richardson 15-lb. Felt-Viskalt Saturated, lapping each layer 27½ in. over the preceding layer, mopping between the laps a heavy coating of Richardson Flex-A-Tile Asphalt, so that in no place shall felt touch felt, thus forming a solid and continuous waterproofing membrane.

Fifth—Pour from a dipper a uniform coating of Richardson Flex-A-Tile Asphalt, using approximately 50 lb. per 100 sq. ft., into which, while hot, embed 400 lb. of gravel or 300 lb. of slag.

Base and Counter Flashings

All flashings shall be constructed in accordance with Richardson Special Flashing Specifications.

All metal flanges, flashings or edgings which are connected with the roofing shall be set in hot Richardson Flex-A-Tile Asphalt on top of at least four plies of felt, nailed and double felt stripped, felt strips to be not less than double the width of the metal flange and cemented solidly together and to the flange with Richardson Flex-A-Tile Asphalt.

Waterproofing Walls

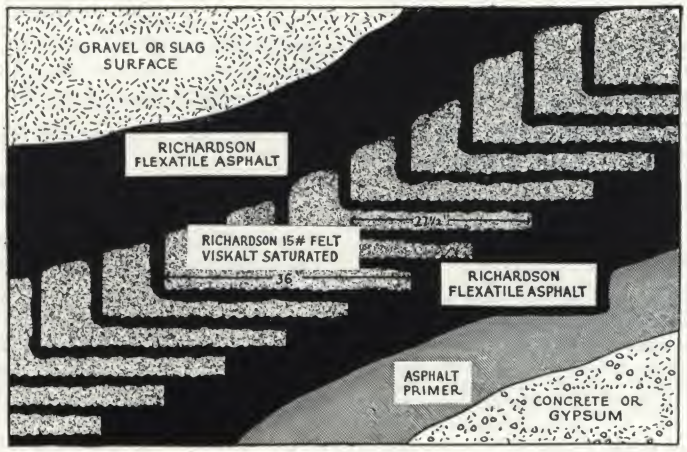
All walls, chimneys and other projections shall first be primed with Richardson Concrete Primer, and then mopped sufficiently high with Viskalt Roofing Compound to prevent absorption of moisture or leakage through brick or concrete. The entire fire walls or parapet walls above flashing line shall be given a thorough coating of Richardson Flex-A-Tile Asphalt.

Valleys and Gutters

Reinforce all valleys and gutters by use of an additional layer of Richardson Felt-Viskalt Saturated, finishing the surface as outlined for final coating.

Bill of Materials Per Square

Asphalt Concrete Primer	9 lb.
Four layers Richardson 15-lb. Felt-Viskalt Saturated	60 lb.
Five layers Richardson Flex-A-Tile Asphalt	180 lb.
Gravel	400 lb.
Weight of completed roof	649 lb.



Bond

If a Richardson Twenty-year Guaranty Bond is required, the roof shall be inspected by an authorized Richardson Inspector, who shall cut the roof as he considers necessary, such cuts to be made before the gravel or slag is applied. Such bonds will be given only when the roof is laid by an approved Richardson Franchise Roofer in strict accordance with the above specification. If Richardson Special Flashing Construction is used in conjunction with this specification, we will issue a flashing endorsement covering that part of the roof construction for a period of ten years.

15-year Roof—Inclines Not Exceeding 3 In. to 1 Ft.—Slag or Gravel

MEDIUM-RICHARDSON BUILT-UP ROOFS—SPECIFICATION B-3-C

Specification B-3-C is the same as A-3-C with the following exceptions:

The paragraph **"Felt"** should be changed to read:

"There shall be used one layer of Richardson Felt-Viskalt Saturated, weighing not less than 30 lb. per 108 sq. ft., and two layers of Richardson Felt-Viskalt Saturated, weighing not less than 15 lb. per 108 sq. ft."

Under **"Method of Construction"** insert in place of the **"Third"** and **"Fourth"** paragraphs the following:

"Third—Cover the entire surface with a layer of Richardson 30-lb. Felt-Viskalt Saturated, lapping each sheet not less than 2 in. over the preceding sheet, nailing every 6 in. along the laps, and staggering nails 1'1 in. apart down the center of the sheet. Care must be taken to see that the nails are solidly seated and not driven between the boards.

"Fourth—Mop the entire surface with a uniform and thorough coating of Richardson Flex-A-Tile Asphalt, using approximately 30 lb. per 100 sq. ft.

"Fifth—Embed into the hot Richardson Flex-A-Tile Asphalt two layers of Richardson 15-lb. Felt-Viskalt Saturated, lapping each layer 17 in. over the preceding layer, mopping between the laps a heavy coating of Richardson Flex-A-Tile Asphalt, so that in no place shall felt touch felt, thus forming a solid and continuous waterproofing membrane."

Change the **"Fifth"** paragraph of Specification A-3-C to **"Sixth."**

Change the fifth line under the heading **"Base and Counter Flashings"** to read " . . . on top of at least three plies of felt . . . "

"Bill of Materials Per Square" should be changed to:

Asphalt Concrete Primer	9 lbs.
One layer Richardson 30-lb. Felt-Viskalt Saturated	30 lb.
Two layers Richardson 15-lb. Felt-Viskalt Saturated	30 lb.
Four layers Richardson Flex-A-Tile Asphalt	140 lb.
Gravel	400 lb.
Weight of completed roof	609 lb.

"Bond" will be the same except **"Fifteen-year"** will be substituted for "Twenty-year."

Continued on next page

CONCRETE OR POURED GYPSUM DECKS

10-year Roof—Inclines Up to 6 In. to 1 Ft.—Smooth Viskalt Finish

STANDARD VISKALT BUILT-UP ROOFS—SPECIFICATION C-1-C

Description of Materials

Primer—The priming coat shall be Asphalt Concrete Primer.

Felt—There shall be used three layers of Richardson Felt-Viskalt Saturated, weighing approximately 15 lb. per 108 sq. ft.

Bitumen—The bitumen shall be Viskalt Roofing Compound, delivered to the job in the manufacturer's original container, heated to a temperature of not more than 375° F., uniformly mopped. For each mopping use 3 gal. (approximately 30 lb.) per 100 sq. ft.

Thermometer—Use a thermometer, as all bituminous materials are easily destroyed by over-heating.

Method of Construction

First—The concrete slab shall be swept clean and free from all debris. All rough spots shall be smoothed and all low parts properly filled to insure adhesion.

Second—A thorough coating of Asphalt Concrete Primer shall be applied by a brush and sufficient time (12 to 24 hours) given for it to thoroughly penetrate the surface.

Third—Mop the entire surface with a uniform and thorough coating of Viskalt Roofing Compound, using 3 gal. (approximately 30 lb.) per 100 sq. ft.

Fourth—Embed in the hot Viskalt Roofing Compound three layers of Richardson 15 lb. Felt-Viskalt Saturated, lapping each layer 24½ in. over preceding one, mopping between each sheet a thorough coating of Viskalt Roofing Compound, so that in no place shall felt touch felt, and forming a solid and continuous waterproofing membrane.

Fifth—Thoroughly cover the entire surface with a uniform and final coating of Viskalt Roofing Compound, uniformly mopped.

Note: When application is intended over concrete decks where slope exceeds 2 in. to the foot, suitable means for nailing must be provided.

When application is to be over gypsum roof decks application is to be made as over concrete, nailing each sheet in addition thereto 6 in. from the upper edge; nails to be spaced not more than 2 ft. apart and shall not be longer than ⅞ in. and driven through flat tin discs.

Base and Counter Flashings

All flashings shall be constructed in accordance with Richardson Special Flashing Specifications.

All metal flanges, flashings and edgings which are connected to the roofing shall be set in hot Viskalt Roofing Compound on top of three plies of felt, nailed and double felt stripped, felt strips to be not less than double the width of the metal flange and cemented solidly together and to the flange with Viskalt Roofing Compound.

Waterproofing Walls

All walls, chimneys and other projections shall first be primed with Richardson Concrete Primer, and then mopped sufficiently high with Viskalt Roofing Compound to prevent absorption of moisture or leakage through brick or concrete. The entire fire walls or parapet walls above flashing line shall be given a thorough coating of Viskalt Roofing Compound.

Valleys and Gutters

Reinforce all valleys and gutters by the use of an additional layer of Richardson Felt-Viskalt Saturated, finishing the surfaces as outlined for final coating.

Bill of Materials Per Square

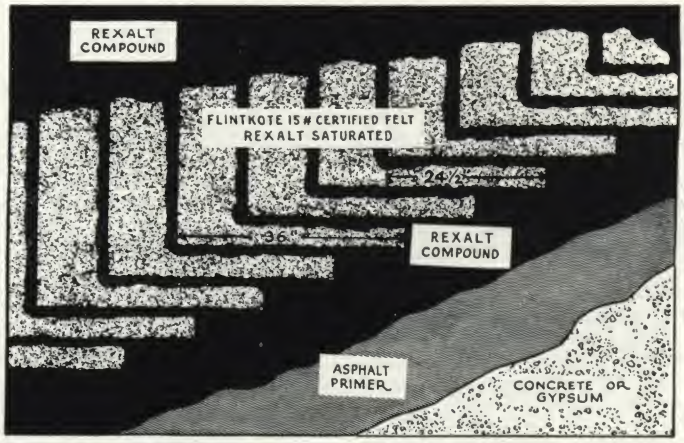
Three layers Richardson 15 lb. Felt-Viskalt Saturated	45 lb.
Four layers Viskalt Roofing Compound (12 gal.)	108 lb.
One coating Asphalt Concrete Primer (1 gal.)	9 lb.
Weight of completed roof	162 lb

Bond

If a Richardson Ten-year Guaranty Bond is required, the roof shall be inspected by an authorized Richardson Inspector, who shall cut the roof as he considers necessary. Such bonds will be given only when the roof is applied by a Richardson Franchise Roofer and in strict accordance with the above specification. If Richardson Special Flashing Construction is used in conjunction with this specification we will issue a flashing endorsement covering that part of the roof construction for a period of ten years.

Abbreviated Specification—10 year roof.

Roofing to be Richardson Standard Viskalt Roof.



Specification C-1-C—Applied in accordance with manufacturer's complete specifications for use over concrete or gypsum decks.

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CONCRETE OR POURED GYPSUM DECKS

10-year Roofs—Inclines Up to 3 In. to 1 Ft.—Smooth Viskalt Finish

STANDARD VISKALT BUILT-UP ROOFS—SPECIFICATION C-1A-C

Description of Materials

Primer—The priming coat shall be Asphalt Concrete Primer.

Felt—There shall be used one layer of Richardson Felt-Viskalt Saturated, weighing not less than 30 lb. per 108 sq. ft., and two layers of Richardson Felt-Viskalt Saturated, weighing not less than 15 lb. per 108 sq. ft.

Bitumen—The bitumen shall be Viskalt Roofing Compound heated to a temperature or not more than 375° F., uniformly mopped. For each mopping use 3 gal. (approximately 30 lb.) per 100 sq. ft.

Thermometer—Use a thermometer, as all bituminous materials are easily destroyed by over-heating.

Method of Construction

First—The concrete slab shall be swept clean and free from all debris. All rough spots shall be smoothed and all low parts properly filled to insure adhesion.

Second—A thorough coating of Viskalt Concrete Primer shall be applied by a brush and sufficient time (12 to 24 hours) given for it to thoroughly penetrate the surface.

Third—Mop the entire surface with a uniform and thorough coating of Viskalt Roofing Compound, using 3 gal. (approximately 30 lb.) per 100 sq. ft.

Fourth—Embed in the hot Viskalt Roofing Compound one layer of Richardson 30 lb. Felt-Viskalt Saturated, lapping each sheet 2 in. over preceding one.

Fifth—Mop the surface with a uniform and thorough coating of Viskalt Roofing Compound, using 3 gal. (approximately 30 lb.) per 100 sq. ft.

Sixth—Embed in the hot Viskalt Roofing Compound two layers of Richardson 15 lb. Felt-Viskalt Saturated, lapping each sheet 19 in. over preceding one, mopping between the sheets a heavy coating of Viskalt Roofing Compound, so that in no place shall felt touch felt, thus forming a solid and continuous waterproofing membrane.

Seventh—Thoroughly mop the entire surface with a uniform coating of Viskalt Roofing Compound, forming a complete homogeneous mass.

Flashings, Flanges, etc.

All flashings shall be constructed in accordance with Richardson Special Specifications.

All metal flanges, flashings and edgings which are connected to the roofing shall be set in hot Viskalt Roofing Compound on top of at least four plies of felt, nailed and double felt stripped, felt strips to be not less than double the width of the metal flange and cemented solidly together and to the flange with Viskalt Roofing Compound.

Waterproofing Walls

All walls, chimneys and other projections shall first be primed with Richardson Concrete Primer, and then mopped sufficiently high with Viskalt Roofing Compound to prevent absorption of moisture or leakage through brick or concrete. The entire fire walls or parapet walls above flashing line shall be given a thorough coating of Viskalt Roofing Compound.

Valleys and Gutters

Reinforce all valleys and gutters by the use of an additional layer of Richardson Felt-Viskalt Saturated, finishing the surface as outlined for final coating.

Note: The above specification is adaptable for decks constructed of cement tile, book tile, precast gypsum slabs and similar monolithic construction. In case of poured and precast gypsum, all felts shall be securely nailed along the back of each sheet as a precautionary measure to insure satisfactory results. When poured concrete, cement tile or book tile is used on surfaces over two (2) in. to the foot, proper nailing facilities should be incorporated in the roof deck.

Bill of Materials Per Square

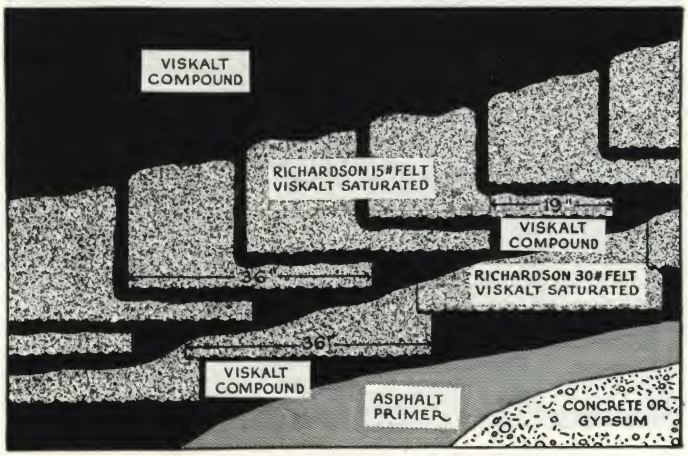
One gallon Viskalt Concrete Primer	9 lb.
One layer Richardson 30 lb. Felt-Viskalt Saturated	30 lb.
Two layers Richardson 15 lb. Felt-Viskalt Saturated	30 lb.
Twelve gallons Viskalt Roofing Compound	108 lb.
Weight of completed roof	177 lb.

Bond

If a Richardson Ten-year Guaranty Bond is required, the roof shall be inspected by an authorized Richardson Inspector, who shall cut the roof as he considers necessary. These cuts to be made before the gravel or slag is applied. Such bonds shall be given only when the roof is laid by an approved Richardson Franchise Roofer and in strict accordance with the above specification. If Richardson Special Flashing Construction is used in conjunction with this specification we will issue a flashing endorsement covering that part of the roof for a period of ten years.

Note: This specification particularly adapted to winter laying, where weather conditions do not permit entire completion of roof, but is essential to thoroughly waterproof the deck to permit completion of interior construction.

Simply apply the 30-lb. base sheet and thoroughly mop. Complete the roof when weather conditions permit.



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CONCRETE OR POURED GYPSUM DECKS

10-year Roofs—Inclines Up to 6 In. to 1 Ft.—Crushed Slate

STANDARD REX CONSTRUCTION BUILT-UP ROOFS—SPECIFICATION C-2-C

Description of Materials

Primer—The priming coat shall be Asphalt Concrete Primer.

Felts—The felts used shall be Richardson Felt-Viskalt Saturated, weighing approximately 15 lb. per 108 sq. ft.

Cap Sheets—The two layers of cap sheets shall be Rex Construction Roofing 36 in. wide of which 17 in. is mineral surfaced and 19 in. is bare felt, to provide a proper nailing and bonding surface. Weight approximately 100 lb. per 100 sq. ft.

Bitumen—The bitumen shall be Viskalt Roofing Compound, delivered to the job in the manufacturer's original container, heated to a temperature of not more than 375° F., uniformly mopped. For each mopping use 3 gal. (approximately 30 lb.) per 100 sq. ft.

Thermometer—Use a thermometer, as all bituminous materials are easily destroyed by over-heating.

Method of Construction

First—The concrete slab shall be swept clean and free from all debris. All rough spots shall be smoothed and all low spots properly filled to insure adhesion. It shall be properly graded to all outlets.

Second—A thorough coating of Asphalt Concrete Primer shall be applied by a brush and sufficient time (12 to 24 hours) given for it to thoroughly penetrate the surface.

Third—Mop the entire surface with a uniform and thorough coating of Viskalt Roofing Compound, using 3 gal. (approximately 30 lb.) per 100 sq. ft.

Fourth—Embed in the hot Viskalt Roofing Compound two layers of Richardson 15-lb. Felt-Viskalt Saturated, lapping each sheet 19 in. over preceding one, mopping between laps a thorough coating of Viskalt Roofing Compound, so that in no place shall felt touch felt, thus forming a solid and continuous waterproofing membrane.

Fifth—Thoroughly mop the entire surface with a heavy and uniform mopping of Viskalt Roofing Compound, using 3 gal. (approximately 30 lb.) per 100 sq. ft.

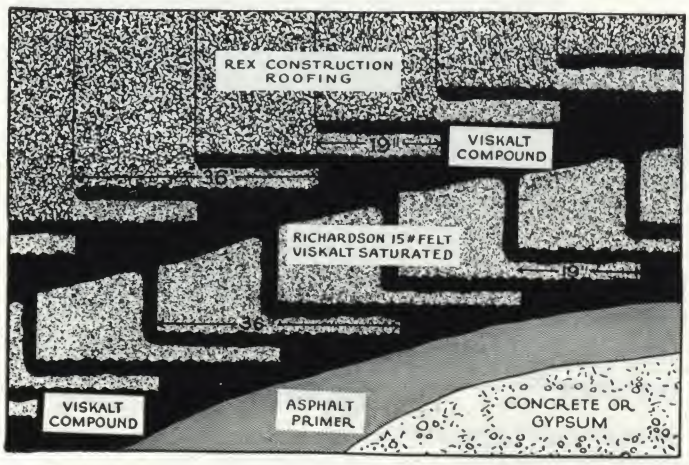
Sixth—A starting sheet of Asphalt Felt 19 in. wide, cut from the selvage side of the Rex Construction Roofing, shall be laid in the hot Viskalt Roofing Compound, securely held in place by nails used as often as necessary.

Seventh—Mop the full width of the 19-in. starting sheet with hot Viskalt Roofing Compound, and, while hot, lay the first full course, using a full width 36-in. sheet of Rex Construction Roofing, the mineral-surfaced edge flush with and parallel to the starting line. Each sheet of Rex Construction Roofing shall be securely fastened by staggering nails along the selvage side of the sheet. Nails should be spaced from 8 to 12 in., depending upon the incline of the roof. Where end laps are necessary, they shall be overlapped 6 in. and throughly cemented together.

Eighth—Mop the full width of the 19-in. selvage side with Viskalt Roofing Compound, into which, while hot, embed a second sheet of Rex Construction Roofing, nailing as described and continue with subsequent sheets until roof is completed. Care should be taken not to spill compound on mineral surface of Rex Construction Roofing. This is absolutely essential, as discoloration of the mineral surface destroys the real effect of the roof.

Note: When application is intended over Concrete Decks where slope exceeds 2 in. to the foot, suitable means for nailing must be provided.

When application is to be over Gypsum Roof Decks, application is to be made as over concrete, nailing each sheet in addition thereto 6 in. from the upper edge; nails to be spaced not more than 2 ft. apart.



Flashings, Flanges, etc.

All flashings shall be constructed in accordance with Richardson Special Flashing Specifications.

All metal flanges, flashings and edgings which are connected to the roofing shall be set in hot Viskalt Roofing Compound on top of the three plies of felt, nailed and double felt stripped; felt strips to be not less than double the width of the metal flange and cemented solidly together and to the flange with Viskalt Roofing Compound.

Waterproofing Walls

All walls, chimneys and other projections shall first be primed with Richardson Concrete Primer, and then mopped sufficiently high with Viskalt Roofing Compound to prevent absorption of moisture or leakage through brick or concrete. The entire fire walls or parapet walls above flashing line shall be given a thorough coating of Viskalt Roofing Compound.

Valleys and Gutters

Reinforce all valleys and gutters by the use of an additional layer of Richardson Felt-Viskalt Saturated, finishing the surfaces as outlined for final coating.

Note: This specification is adaptable for roofs up to 6 in. to the foot, and is not recommended for roofs having an incline under 1 in. to the foot. Rex Construction Roofing can be run parallel to the incline of the roof. Furnished in red, green and blue-black Mineral Surfacing.

Bill of Materials Per Square

Two layers Richardson 15-lb. Felt-Viskalt Saturated	30 lb.
One coat Asphalt Concrete Primer	9 lb.
Four layers Viskalt Roofing Compound (12 gal.)	108 lb.
One layer Rex Construction Roofing (2 rolls)	100 lb.
Weight of completed roof	247 lb.

Bond

If a Richardson Ten-year Guaranty Bond is required, the roof shall be inspected by an authorized Richardson Inspector, who shall cut the roof as he deems necessary. Such bonds will be given only when the roof is laid by a Richardson Franchise Roofer, and in strict accordance with the above specification. If Richardson Special Flashing Construction is used in conjunction with this specification we will issue a flashing endorsement covering that part of the roof construction for a period of ten years.

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CONCRETE OR POURED GYPSUM DECKS

10-year Roofs—Inclines Not Exceeding 3 In. to 1 Ft.—Gravel or Slag Finish

STANDARD RICHARDSON BUILT-UP ROOFS—SPECIFICATION C-3-C

Description of Materials

Primer—The priming coat shall be Asphalt Concrete Primer.

Felt—There shall be used three layers of Richardson Felt-Viskalt Saturated, weighing approximately 15 lb. per 108 sq. ft.

Bitumen—The bitumen shall be Richardson Flex-A-Tile Asphalt, heated to a temperature of not more than 360° F., uniformly mopped. For each mopping use approximately 30 lb. per 100 sq. ft.

Surfacing Material—The surfacing material shall be slag or gravel. 400 lb. of gravel or 300 lb. of slag, from ¼ to ⅝ in. in size, shall be used for each 100 sq. ft. of surfacing. It shall be dry and free from dirt.

Thermometer—Use a thermometer, as all bituminous materials are easily destroyed by over-heating.

Method of Construction

First—The deck must be swept clean and free from all debris. It shall be dry, firm and clean, free from all rough and low spots and properly graded to the outlets.

Second—A thorough coating of Asphalt Concrete Primer shall be applied by a brush and sufficient time (12 to 24 hours) given for it to thoroughly penetrate the surface.

Third—Mop the entire surface with a uniform and thorough coating of Flex-A-Tile Asphalt, using approximately 40 lb. per 100 sq. ft.

Fourth—Embed in the hot Flex-A-Tile Asphalt three layers of Richardson 15 lb. Felt-Viskalt Saturated, lapping each sheet 24½ in. over the preceding one, mopping between each layer a thorough coating of Flex-A-Tile Asphalt, so that in no place shall felt touch felt, thus forming a solid and continuous waterproofing membrane.

Pour from a dipper a uniform coating of hot Flex-A-Tile Asphalt, using approximately 50 lb. per 100 sq. ft., into which, while hot, embed 400 lb. of gravel or 300 lb. of slag per square, uniformly spread and broomed.

Note: When application is intended over concrete decks where slope exceeds 2 inches to the foot, suitable means for nailing must be provided.

When application is to be over gypsum roof decks application is to be made as over concrete, nailing each sheet in addition thereto 6 in. from the upper edge; nails to be spaced not more than 2 ft. apart and shall not be longer than ⅞ in. and driven through flat tin discs.

Base and Counter Flashings

All flashings shall be constructed in accordance with Richardson Special Flashing Specifications.

All metal flanges, flashings and edgings which are connected to the roofing shall be set in hot Flex-A-Tile Asphalt on top of the three plies, securely fastened and double felt stripped, the felt strips to be not less than double the width of the metal flange and cemented solidly together and to the flange with Richardson Flex-A-Tile Asphalt.

Waterproofing Walls

All walls, chimneys and other projections shall first be primed with Richardson Concrete Primer, and then mopped sufficiently high with Viskalt Roofing Compound to prevent absorption of moisture or leakage through brick or concrete. The entire fire walls or parapet walls above flashing line shall be given a thorough coating of Richardson Flex-A-Tile Asphalt.

Valleys and Gutters

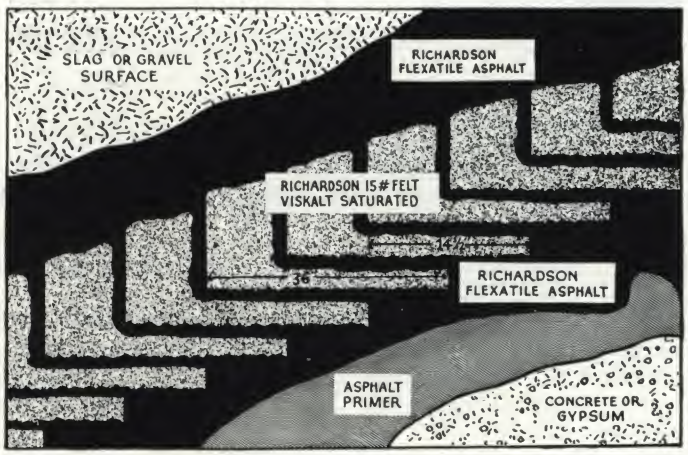
Reinforce all valleys and gutters by the use of an additional layer of Richardson Felt-Viskalt Saturated, finishing the surfaces as outlined for final coating.

Bill of Materials Per Square

Three layers Richardson 15 lb. Felt-Viskalt Saturated	45 lb.
One coating Viskalt Concrete Primer (1 gal.)	9 lb.
Flex-A-Tile Asphalt	150 lb.
Gravel	400 lb.
Weight of completed roof	604 lb.

Bond

If a Richardson Ten-year Guaranty Bond is required, the roof shall be inspected by an authorized Richardson Inspector, who shall cut the roof as he deems necessary. Such cuts shall be made prior to embedding of surfacing material. Such bonds will be given only when the roof is applied by a Richardson Franchise Roofer, and in strict accordance with the above specification. If Richardson Special Flashing Construction is used in conjunction with this specification we will issue a flashing endorsement covering that part of the roof construction for a period of ten years.



Abbreviated Specifications 10-year Roof—Roofing to be Standard Richardson Built-up Roof.

Specification C-3-C—Applied in strict accordance with manufacturer's complete specifications. For use over concrete or gypsum deck.

Continued on next page

WOOD DECKS

20-year Roof—Inclines Up to 6 In. to 1 Ft.—Smooth Finish

SUPER-VISKALT BUILT-UP ROOFS—SPECIFICATION A-1-W

Description of Materials

Base Sheet—The base sheet shall be Richardson Special Base Sheet weighing about 34 lb. per square.

Felt—The four layers of felt shall be Richardson Felt-Viskalt Saturated, weighing over 15 lb. per 108 sq. ft.

Bitumen—The bitumen shall be Viskalt Roofing Compound, delivered to the job in the manufacturer's original container, heated to a temperature of not more than 375° F., uniformly mopped.

For each mopping use 3 gal. (approximately 30 lb.) per 100 sq. ft.

Thermometer—Use a thermometer, as all bituminous materials are easily destroyed by over-heating.

Method of Construction

First—The deck must be swept clean and free from debris. It will be constructed of seasoned lumber free from knot holes, large cracks and loose boards.

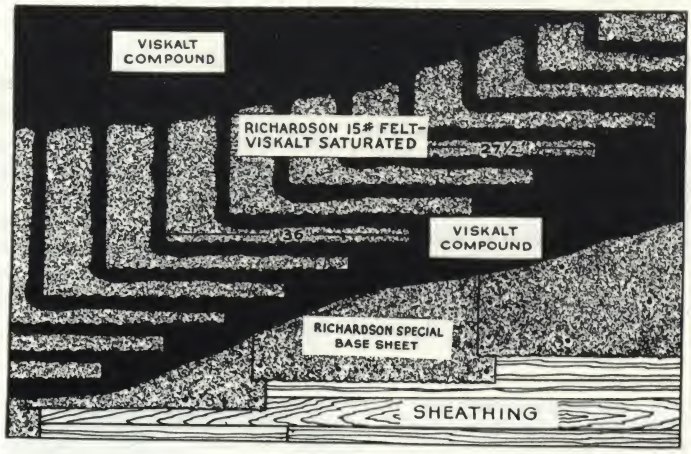
The roof shall be properly graded to the outlets.

Second—Cover the entire surface with a layer of Richardson Special Base Sheet, lapping each sheet not less than 2 in. over the preceding sheet, nailing over 6 in. along the laps and staggering nails 11 in. apart down the center of the sheet. Care must be taken to see that the nails are solidly seated, and not driven between the boards. The base sheet should be unwound and laid with a finished surface next to the wood deck.

Third—Mop the entire surface with a uniform and thorough coating of Viskalt Roofing Compound, using 3 gal. (approximately 30 lb.) per 100 sq. ft.

Fourth—Embed in the hot Viskalt Roofing Compound four layers of Richardson Felt-Viskalt Saturated, lapping each layer 24½ in. over the preceding layer, mopping between the laps a heavy coating of Viskalt Roofing Compound, thus forming a solid and continuous waterproofing membrane.

Fifth—Thoroughly mop the entire surface with a uniform coating of Viskalt Roofing Compound, forming a complete homogeneous mass.



Flashings, Flanges, etc.

All flashings shall be constructed in accordance with Richardson Special Flashing Specifications.

All metal flanges, flashings and edgings which are connected to roofing shall be set in hot Viskalt Roofing Compound on top of at least five plies of felt, nailed and double felt stripped; felt strips to be not less than double the width of the metal flange and cemented solidly together and to the flange with Viskalt Roofing Compound.

Waterproofing Walls

All walls, chimneys and other projections shall first be primed with Richardson Concrete Primer, and then mopped sufficiently high with Viskalt Roofing Compound to prevent absorption of moisture or leakage through brick or concrete. The entire fire walls or parapet walls above flashing line shall be given a thorough coating of Viskalt Roofing Compound.

Valleys and Gutters

Reinforce all valleys and gutters by the use of an additional layer of Richardson Felt-Viskalt Saturated, finishing the surfaces as outlined for final coating.

Bill of Materials Per Square

One layer Richardson Special Base Sheet	34 lb.
Four layers 15-lb. Richardson Felt-Viskalt Saturated	60 lb.
Five layers Viskalt Roofing Compound (15 gal.)	135 lb.
Weight of completed roof	229 lb

Bond

If a Richardson Twenty-year Guaranty Bond is required, roof shall be inspected by an authorized Richardson Inspector who shall cut the roof as he considers necessary. Such bonds shall be given only when the roof is laid by an approved Richardson Franchise Roofer in strict accordance with the above specification. If Richardson Special Flashing Construction is used in conjunction with this specification, we will issue a flashing endorsement covering that part of the roof construction for a period of 10 years.

15-year Roof—Inclines Up to 6 In. to 1 Ft.—Smooth Finish

VISKALT BUILT-UP ROOFS—SPECIFICATION B-1-W

Specification B-1-W is the same as A-1-W with the following exceptions:

The paragraph **"Felt"** should be changed to read, "The three layers of felt, etc."

Under **"Methods of Construction"** the first line in the paragraph **"Fourth"** should be changed to, "Embed in the hot Viskalt Roofing Compound three layers of Richardson Felt-Viskalt Saturated, lapping each layer 22½ in.," etc.

The fifth line under **"Flashings, Flanges, Etc."** should be changed to read "... on top of at least four plies of felt ..."

For the **"Bill of Materials Per Square"** substitute the following:

One layer Richardson Special Base Sheet	34 lb.
Three layers 15-lb. Richardson Felt-Viskalt Saturated	45 lb.
Four layers Viskalt Roofing Compound (12 gal.)	108 lb.
Weight of completed roof	187 lb

"Bond" will be the same except "Fifteen-year" will be substituted for "Twenty-year."

Continued on next page

WOOD DECKS

20-year Roofs—Inclines Up to 6 In. to 1 Ft.—Crushed Slate

SUPER-REX CONSTRUCTION BUILT-UP ROOFS—SPECIFICATION A-2-W

Description of Materials

Base Sheet—The base sheet shall be Richardson Special Base Sheet, weighing about 34 lb. per square.

Felt—The two layers of felt shall be Richardson Felt-Viskalt Saturated, weighing about 15 lb. per 108 sq. ft.

Cap Sheets—The two layers of cap sheets shall be Rex Construction Roofing 36 in. wide, of which 17 in. is mineral surfaced and the other 19 in. is bare felt, to provide a proper nailing and bonding surface. Weight approximately 100 lb. per 100 sq. ft.

Bitumen—The bitumen shall be Viskalt Roofing Compound, delivered to the job in the manufacturer's original container, heated to a temperature of not more than 375° F., uniformly mopped. For each mopping use 3 gal. (approximately 30 lb.) per 100 sq. ft.

Thermometer—Use a thermometer, as all bituminous materials are easily destroyed by over-heating.

Method of Construction

First—The deck must be swept clean and free of all debris. It shall be constructed of seasoned lumber, free from knot holes, large cracks and loose boards. The roof deck shall be properly graded to the outlets.

Second—Cover the entire surface with a layer of Richardson Special Base Sheet, lapping each sheet not less than 2 in. over the preceding sheet, nailing every 6 in. along the laps, and staggering nails 11 in. apart down the center of the sheet. Care must be taken to see that the nails are solidly seated and not driven between the boards. The Base Sheet should be unwound and laid with a finished surface next to the wood deck.

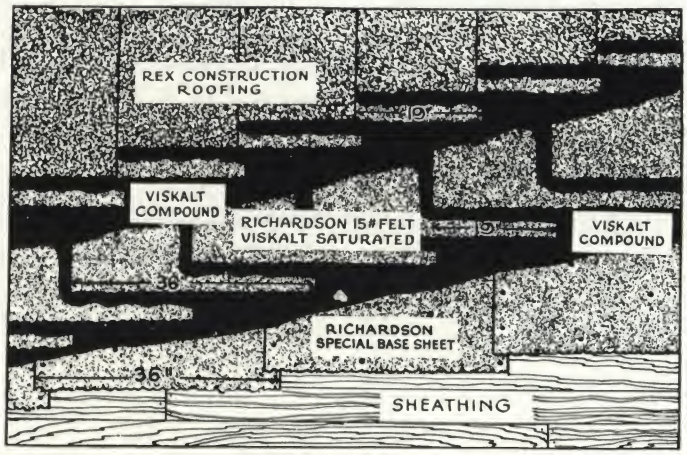
Third—Mop the entire surface with a uniform and thorough coating of Viskalt Roofing Compound, using 3 gal. (approximately 30 lb.) per 100 sq. ft.

Fourth—Embed in the hot Viskalt Roofing Compound two layers of Richardson 15-lb. Felt-Viskalt Saturated, lapping each sheet 19 in. over the preceding layer, mopping between the laps a heavy coating of Viskalt Roofing Compound, thus forming a solid and continuous waterproofing membrane.

Fifth—Thoroughly mop the entire surface with a heavy and uniform mopping of Viskalt Roofing Compound, using 3 gal. (approximately 30 lb.) per 100 sq. ft.

Sixth—A starting sheet of Asphalt Felt 19 in. wide, cut from the selvage side of the Rex Construction Roofing, shall be laid in a mopping of Viskalt Roofing Compound, this sheet to be securely held in place by nails used as often as necessary.

Seventh—Mop the full width of the 19-in. starting sheet with hot Viskalt Roofing Compound, and while hot lay the first full course, using a full width 36-in. sheet of Rex Construction Roofing, the mineral surfaced edge flush with and parallel to the starting line. Each sheet of Rex Construction Roofing shall be securely fastened by staggering nails along the selvage side of the sheet. Nails should be spaced from 8 in. to 12 in., depending upon the incline of the roof. Where end laps are necessary, they shall be overlapped 6 in. and thoroughly nailed and cemented together.



Eighth—Mop the full width of the 19-in. selvage side with Viskalt Roofing Compound, into which, while hot, embed a second sheet of Rex Construction Roofing, nailing as described and continue with subsequent sheets until roof is completed. Care should be taken not to spill compound on mineral surface of Rex Construction Roofing. This is absolutely essential, as discoloration of the mineral surface destroys the real effect of the roof.

Base and Counter Flashings

All flashings shall be constructed in accordance with Richardson Special Flashing Specifications.

All metal flanges, flashings and edgings which are connected to roofing shall be set in hot Viskalt Roofing Compound under Rex Construction Roofing and on top of two plies of felt, nailed and double felt stripped, the felt strips to be not less than double the width of the metal flange and cemented solidly together and to the flange with Viskalt Roofing Compound.

Waterproofing Walls

All walls, chimneys and other projections shall first be primed with Richardson Asphalt Primer, and then mopped sufficiently high with Viskalt Roofing Compound to prevent absorption of moisture or leakage through brick or concrete. The entire fire walls or parapet walls shall be given a thorough coating of Viskalt Roofing Compound.

Valleys and Gutters

Reinforce all valleys and gutters by use of an additional layer of Richardson Felt-Viskalt Saturated, finishing the surfaces as outlined for final coating.

Note: This specification is adaptable for roofs up to 6 in. to 1 ft.; not recommended for roofs having an incline under 1 in. to 1 ft. On sloping roofs, Rex Construction can be run parallel with the incline of the roof.

Bill of Materials Per Square

One layer Richardson Special Base Sheet	34 lb.
Two layers Richardson 15-lb. Felt-Viskalt Saturated	30 lb.
Four layers Viskalt Roofing Compound (12 gal.)	108 lb.
One layer Rex Construction Roofing (2 rolls)	100 lb.
Weight of completed roof	272 lb.

Bond

If a Richardson Twenty-year Guaranty Bond is required, the roof shall be inspected by an authorized Richardson Inspector who shall cut the roof as he considers necessary. Such bonds will be given only when the roof is laid by an approved Richardson Franchise Roofer in strict accordance with the above specification.

If Richardson Special Flashing Construction is used in conjunction with this specification we will issue flashing endorsement covering that part of the roof construction for a period of ten years.

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WOOD DECKS

20-year Roofs—Inclines Up to 3 In. to 1 Ft.—Crushed Slate

SUPER-RICHARDSON BUILT-UP ROOFS—SPECIFICATION A-3-W

Description of Materials

Felt—There shall be used one layer of Richardson Felt-Viskalt Saturated, weighing not less than 30 lb. per 108 sq. ft. and three layers of Richardson Felt-Viskalt Saturated, weighing not less than 15 lb. per 108 sq. ft.

Bitumen—The bitumen shall be Richardson Flex-A-Tile Asphalt heated to a temperature of not over 360° F., uniformly mopped. For each mopping use 30 lb. per 100 sq. ft.

Surfacing Material—The surfacing material shall be gravel or slag. 400 lb. of gravel or 300 lb. of slag from ¼ to ⅝ in. inside shall be used for each 100 sq. ft. of surfacing. It shall be dry and free from dirt.

Thermometer—Use a thermometer, as all bituminous materials are easily destroyed by over-heating.

Method of Construction

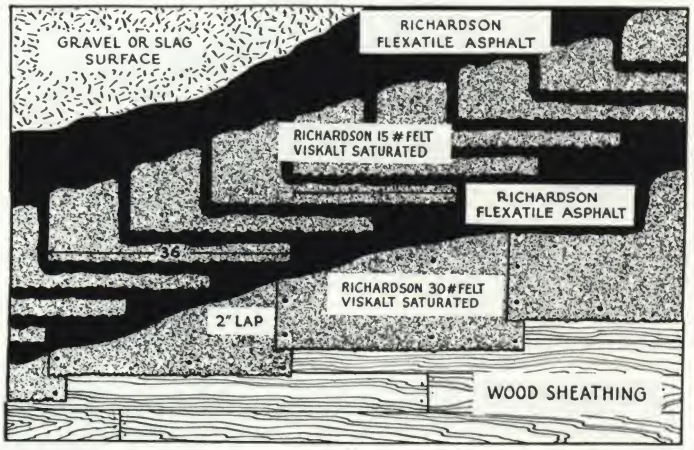
First—The deck must be swept clean and free from all debris. It shall be constructed of seasoned lumber, free from knot holes, large cracks and loose boards. The roof deck shall be properly graded to the outlets.

Second—Cover the entire surface with a layer of Richardson 30 lb. Felt-Viskalt Saturated, lapping each sheet not less than 2 in. over the preceding sheet, nailing every 6 in. along the laps, and staggering nails 11 in. apart down the center of the sheet. Care must be taken to see that the nails are solidly seated and not driven between the boards.

Third—Mop the entire surface with a uniform and thorough coating of Richardson Flex-A-Tile Asphalt, using approximately 30 lb. per 100 sq. ft.

Fourth—Embed into the hot Richardson Flex-A-Tile Asphalt three layers of Richardson 15 lb. Felt-Viskalt Saturated, lapping each layer 24½ in. over the preceding layer, mopping between the laps a heavy coating of Richardson Flex-A-Tile Asphalt, so that in no place shall felt touch felt, thus forming a solid and continuous waterproofing membrane.

Fifth—Pour from a dipper a uniform coating of Richardson Flex-A-Tile Asphalt, using approximately 50 lb. per 100 sq. ft., into which, while hot, embed 400 lb. of gravel or 300 lb. of slag.



Base and Counter Flashings

All flashings shall be constructed in accordance with Richardson Special Flashing Specifications.

All metal flanges, flashings and edgings which are connected to roofing shall be set in hot Richardson Flex-A-Tile Asphalt on top of at least four plies of felt, nailed and double felt stripped, felt strips to be not less than double the width of the metal flange and cemented solidly together and to the flange with Richardson Flex-A-Tile Asphalt.

Waterproofing Walls

All walls, chimneys and other projections shall first be primed with Richardson Concrete Primer, and then mopped sufficiently high with Viskalt Roofing Compound to prevent absorption of moisture or leakage through brick or concrete. The entire fire walls or parapet walls above flashing line shall be given a thorough coating of Richardson Flex-A-Tile Asphalt.

Valleys and Gutters

Reinforce all valleys and gutters by the use of an additional layer of Richardson Felt-Viskalt Saturated, finishing the surfaces outlined for final coating.

Bill of Materials Per Square

One layer Richardson 30 lb. Felt-Viskalt Saturated	30 lb.
Three layers Richardson 15 lb. Felt-Viskalt Saturated	45 lb.
Four layers Richardson Flex-A-Tile Asphalt	140 lb.
Gravel	400 lb.
Weight of completed roof	615 lb.

Bond

If a Richardson Twenty-year Guaranty Bond is required the roof shall be inspected by an authorized Richardson Inspector, who shall cut the roof as he considers necessary. Such cuts shall be made before any gravel or slag is applied. Such bonds will be given only when the roof is applied by an approved Richardson Franchise Roofer in strict accordance with the above specification. If Richardson Special Flashing Construction is used in conjunction with this specification we will issue a flashing endorsement covering that part of the roof construction for a period of ten years.

15-year Roofs—Inclines Not Over 4 In. to 1 Ft.—Gravel or Slag

REX CONSTRUCTION BUILT-UP ROOFS—SPECIFICATION B-3-W

Specification B-3-W is the same as Specification A-3-W with the following exceptions:

The paragraph **"Felt"** should be changed to read: "There shall be four layers of Richardson Felt-Viskalt Saturated, weighing not less than 15 lb. per 108 sq. ft.

The paragraph **"Second"** should be changed to read: "Cover the entire surface with a layer of Richardson 15 lb. Felt, etc."

Change **"Bill of Materials Per Square"** to the following:

Four layers Richardson 15 lb. Felt-Viskalt Saturated	60 lb.
Four layers Richardson Flex-A-Tile Asphalt	140 lb.
Gravel	400 lb.
Weight of completed roof	600 lb.

"Bond" will be the same except "Fifteen-year" will be substituted for "Twenty-year."

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WOOD DECKS

10-year Roofs—Inclines Up to 6 In. to 1 Ft.—Smooth Finish

STANDARD VISKALT BUILT-UP ROOFS—SPECIFICATION C-1-W

Description of Materials

Felt—There shall be used one layer of Richardson Felt-Viskalt Saturated, weighing not less than 30 lb. per 108 sq. ft., and two layers of Richardson Felt-Viskalt Saturated, weighing not less than 15 lb. per 108 sq. ft.

Bitumen—The bitumen shall be Viskalt Roofing Compound, delivered to the job in the manufacturer's original container, heated to a temperature of not more than 375° F., uniformly mopped. For each mopping use 3 gal. (approximately 30 lb.) per 100 sq. ft.

Thermometer—Use a thermometer, as all bituminous materials are easily destroyed by over-heating.

Method of Construction

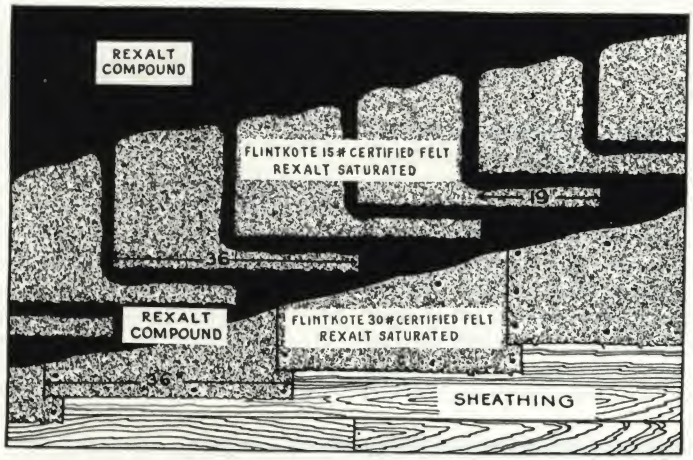
First—The deck must be swept clean and free from all debris. It shall be constructed of seasoned lumber free from knot holes, large cracks and loose boards. The roof shall be properly graded to the outlets.

Second—Cover the entire surface with a layer of Richardson 30-lb. Felt-Viskalt Saturated, lapping each sheet not less than 2 in. over preceding sheet, nailing every 6 in. along the laps, and staggering nails 11 in. apart down the center of the sheet. Care must be taken to see that the nails are solidly seated and not driven between the boards.

Third—Mop the entire surface with a uniform and thorough coating of Viskalt Roofing Compound, using 3 gal. (approximately 30 lb.) per 100 sq. ft.

Fourth—Embed in the hot Viskalt Roofing Compound two layers of Richardson 15-lb. Felt-Viskalt Saturated, lapping each sheet 19 in. over the preceding one, mopping between the sheets a heavy coating of Viskalt Roofing Compound, so that in no place shall felt touch felt, thus forming a solid and continuous waterproofing membrane.

Fifth—Thoroughly mop the entire surface with a uniform coating of Viskalt Roofing Compound, forming a complete homogeneous mass.



Base and Counter Flashings

All flashings shall be constructed in accordance with Richardson Special Flashing Specifications.

All metal flanges, flashings and edgings which are connected to the roofing shall bet set in hot Viskalt Roofing Compound on top of at least four plies of felt nailed and double felt stripped, felt strips to be not less than double the width of the metal flange and cemented solidly together and to the flange with Viskalt Roofing Compound.

Waterproofing Walls

All walls, chimneys and other projections shall first be primed with Richardson Concrete Primer, and then mopped sufficiently high with Viskalt Roofing Compound to prevent absorption of moisture or leakage through brick or concrete. The entire fire walls or parapet walls above flashing line shall be given a thorough coating of Viskalt Roofing Compound.

Valleys and Gutters

Reinforce all valleys and gutters by the use of an additional layer of Richardson Felt-Viskalt Saturated, finishing the surface as outlined for final coating.

Bill of Materials Per Square

One layer Richardson 30-lb. Felt-Viskalt Saturated.....	30 lb.
Two layers Richardson 15-lb. Felt-Viskalt Saturated....	30 lb.
Three layers Viskalt Roofing Compound (9 gal.).....	81 lb.
Weight of completed roof.....	141 lb.

Bond

If a Richardson Ten-year Guaranty Bond is required, roof shall be inspected by an authorized Richardson Inspector, who shall cut the roof as he considers necessary. Such bonds shall be given only when the roof is laid by an approved Richardson Franchise Roofer in strict accordance with the above specification. If Richardson Special Flashing Construction is used in conjunction with this specification we will issue a flashing endorsement covering that part of the roof construction for a period of ten years.

5-Year Roofs—Inclines Up to 6 In. to 1 Ft.—Smooth Finish

MEDIUM VISKALT BUILT-UP ROOFS—SPECIFICATION D-1-W

Specification D-1-W is the same as Specification C-1-W with the following exceptions:

The paragraph **"Felt"** is preceded by a paragraph titled **"Base Sheet"** which reads as follows: "The Base Sheet shall be a Richardson Special Base Sheet weighing approximately 34 lb. per square."

The paragraph **"Felt"** shall be changed to read: "The Felt shall be Richardson Felt-Viskalt Saturated, weighing not less than 15 lb. per 108 sq. ft."

Under **"Method of Construction,"** the second paragraph should read: "Cover the entire surface with one layer of Richardson Special Base Sheet, lapping not less than 2 in., etc."

The paragraph **"Fourth"** should be changed to read: "Embed in the hot Viskalt Roofing Compound a layer of Richardson Felt-Viskalt Saturated, lapping it not less than 3 in."

The fifth line under **"Base and Counter Flashing"** should be changed to read: "on top of at least two plies of felt."

Change **"Bill of Materials"** to the following:

One layer of Richardson Special Base Sheet	34 lb.
One layer Richardson Felt-Viskalt Saturated.....	15 lb.
Two layers Viskalt Roofing Compound (6 gal.)	54 lb.
Weight of completed roof.....	103 lb.

Continued on next page

WOOD DECKS

10-year Roofs—Inclines Up to 6 In. to 1 Ft.—Crushed Slate

STANDARD REX CONSTRUCTION BUILT-UP ROOFS—SPECIFICATION C-2-W

Description of Materials

Base Sheet—The base sheet shall be K-B Sheathing Paper —40 lb. per 500 sq. ft.

Felt—The two layers of felt shall be Richardson Felt-Viskalt Saturated, weighing approximately 15 lb. per 108 sq. ft.

Cap Sheets—The two layers of cap sheets shall be Rex Construction Roofing 36 in. wide, of which 17 in. is mineral surfaced and 19 in. is bare felt, to provide proper bonding surface. Weight approximately 100 lb. per 100 sq. ft.

Bitumen—The bitumen shall be Viskalt Roofing Compound, delivered to the job in the manufacturer's original container, heated to a temperature of not more than 375° F., uniformly mopped.

Thermometer—Use a thermometer, as all bituminous materials are easily destroyed by over-heating.

Method of Construction

First—The deck must be swept clean and free from all debris. It shall be constructed of seasoned lumber, free from knot holes, large cracks and loose boards. The roof shall be properly graded to the outlets.

Second—Cover the entire surface with a layer of K-B Sheathing Paper, lapping each sheet 2 in. over preceding one and securely nailing at laps.

Third—Cover the entire surface with two layers of Richardson 15-lb. Felt-Viskalt Saturated, lapping each sheet 19 in. over preceding layer, securely nailing the back of each sheet every 6 in., 2 in. from the edge of the sheet.

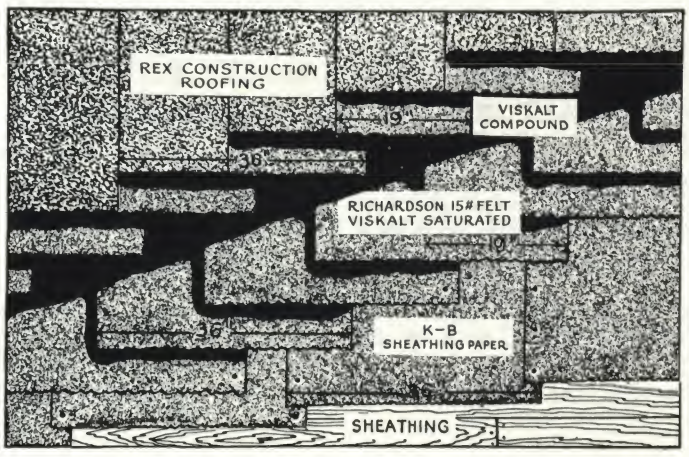
Fourth—Mop each 19-in. lap with a uniform coating of Viskalt Roofing Compound, using 3 gal. (approximately 30 lb.) per 100 sq. ft.

Fifth—Mop over the entire surface a uniform coating of Viskalt Roofing Compound, using 3 gal. (approximately 30 lb.) per 100 sq. ft.

Sixth—A starting sheet of Asphalt Felt 19 in. wide, cut from the selvage side of the Rex Construction Roofing, shall be laid in a mopping of Viskalt Roofing Compound, this sheet to be securely held in place by nails used as often as necessary.

Seventh—Mop the full width of the 19-in. starting sheet with hot Viskalt Roofing Compound and, while hot, lay the first full course, using a full width of 36-in. sheet of Rex Construction Roofing, the mineral surfaced edge flush with and parallel to the starting line. Each sheet shall be securely fastened by staggering nails along the selvage side of the sheet. Nails should be spaced from 8 to 12 in. apart, depending upon the incline of the roof. Where end laps are necessary, they shall be overlapped 6 in. and thoroughly nailed and cemented together.

Eighth—Mop the full width of the 19-in. selvage side with Viskalt Roofing Compound, into which, while hot, embed a second sheet of Rex Construction Roofing, nailing as described and continue with subsequent sheets until roof is completed. Care should be taken not to spill compound on mineral surface of Rex Construction Roofing. This is absolutely essential, as discoloration of the mineral surface destroys the real effect of the roof.



Base and Counter Flashings

All flashings shall be constructed in accordance with Richardson Special Flashing Specifications.

All metal flanges, flashings and edgings which are connected to roofing shall be set in hot Viskalt Roofing Compound under Rex Construction Roofing, and on top of two plies of felt, nailed and double felt stripped, the felt strips to be not less than double the width of the metal flange and cemented solidly together and to the flange with hot Viskalt Roofing Compound.

Waterproofing Walls

All walls, chimneys and other projections shall first be primed with Richardson Concrete Primer, and then mopped sufficiently high with Viskalt Roofing Compound to prevent absorption of moisture or leakage through brick or concrete. The entire fire walls or parapet walls above flashing line shall be given a thorough coating of Viskalt Roofing Compound.

Valleys and Gutters

Reinforce all valleys and gutters by the use of an additional layer of Richardson Certified Felt-Viskalt Saturated, to be applied before Rex Construction Roofing.

Note: This specification is adaptable for roofs up to 6 in. to 1 ft., and not recommended for roofs having an incline under 1 in. to 1 ft. On sloping roofs, Rex Construction can be run parallel with the incline of the roof.

Bill of Materials Per Square

One layer K-B Sheathing Paper	8 lb.
Two layers Richardson 15-lb. Felt-Viskalt Saturated	30 lb.
Three layers Viskalt Roofing Compound (9 gal.)	81 lb.
One layer Rex Construction Roofing (2 rolls)	100 lb.
Weight of completed roof	219 lb.

Bond

If a Richardson Ten-year Guaranty Bond is required, the roof shall be inspected by an authorized Richardson Inspector, who shall cut the roof as he considers necessary. Such bonds will be given only when the roof is applied by a Richardson Franchise Roofer in strict accordance with the above specification.

If Richardson Special Flashing Construction is used in conjunction with this specification we will issue a flashing endorsement covering that part of the roof construction for a period of ten years.

Continued on next page

WOOD DECKS

10-year Roofs—Inclines Not Exceeding 4 In. to 1 Ft.—Gravel or Slag

STANDARD RICHARDSON BUILT-UP ROOFS—SPECIFICATION C-3-W

Description of Materials

Felt—There shall be used one layer of Richardson Felt-Viskalt Saturated, weighing not less than 30 lb. per 108 sq. ft., and two layers of Richardson Felt-Viskalt Saturated, weighing not less than 15 lb. per 108 sq. ft.

Bitumen—The bitumen shall be Richardson Flex-A-Tile Asphalt, heated to a temperature of not over 360 degrees F., uniformly mopped. For each mopping use 30 lb. per 100 sq. ft.

Surfacing Material—The surfacing material shall be gravel or slag 400 lb. of gravel or 300 lb. of slag ranging from ¼ to ⅝ in in size shall be used for each 100 sq. ft. of surfacing It shall be dry and free from dirt.

Thermometer—Use a thermometer, as all bituminous materials are easily destroyed by over-heating.

Method of Construction

First. The deck must be swept clean and free from all debris. It shall be constructed of seasoned lumber free from knot holes, large cracks and loose boards. The roof deck shall be properly graded to the outlets.

Second: Cover the entire surface with a layer of Richardson 30 lb. Felt-Viskalt Saturated, lapping each sheet not less than 2 in. over preceding one, nailing every 6 in. along the laps, and staggering nails 11 in. apart down the center of the sheet. Care must be taken to see that the nails are soildly seated and not driven between the boards.

Third: Mop the entire surface with a uniform and thorough coating of Richardson Flex-A-Tile Asphalt, using approximately 30 lb. per 100 sq. ft.

Fourth: Embed in the hot Richardson Flex-A-Tile Asphalt two layers of Richardson 15 lb. Felt-Viskalt Saturated, lapping each layer 19 in. over the preceding one, mopping between the laps a heavy coating of Richardson Flex-A-Tile Asphalt, so that in no place shall felt touch felt, thus forming a solid and continuous waterproofing membrane.

Fifth: Pour from a dipper a uniform coating of Richardson Flex-A-Tile Asphalt, using approximately 50 lb. per 100 sq. ft., into which, while hot, embed 400 lb. of gravel or 300 lb. of slag.

Base and Counter Flashings

All flashings shall be constructed in accordance with Richardson Special Flashing Specifications.

All metal flanges, flashings and edgings which are connected to roofing shall be set in hot Flex-A-Tile Asphalt on top of four plies of felt, nailed and double felt stripped, felt strips to be not less than double the width of the metal flange and cemented solidly together and to the flange with Flex-A-Tile Asphalt.

Waterproofing Walls

All walls, chimneys and other projections shall first be primed with Richardson Concrete Primer, and then mopped sufficiently high with Viskalt Roofing Compound to prevent absorption of moisture or leakage through brick or concrete. The entire fire walls or parapet walls above flashing line shall be given a thorough coating of Richardson Flex-A-Tile Asphalt.

Valleys and Gutters

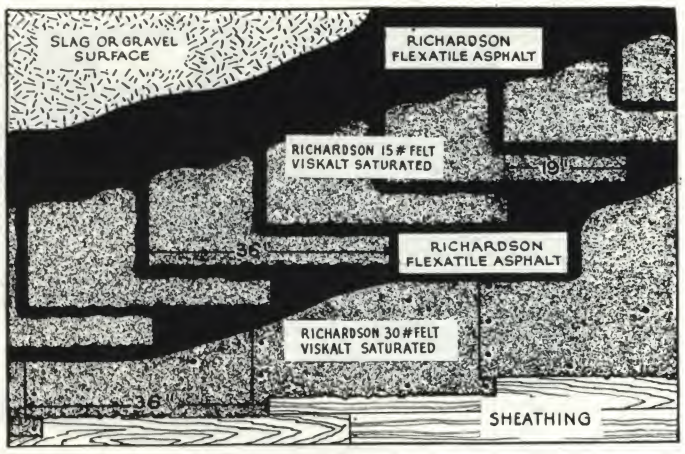
Reinforce all valleys and gutters by the use of an additional layer of Richardson Certified Felt-Viskalt Saturated, finishing the surfaces as outlined for final coating.

Bill of Materials Per Square

One layer Richardson 30 lb. Felt-Viskalt Saturated	30 lb.
Two layers Richardson 15 lb. Felt-Viskalt Saturated	30 lb.
Three layers Richardson Flex-A-Tile Asphalt	110 lb.
Gravel	400 lb.
Weight of completed roof	570 lb.

Bond

If a Richardson Ten-year Guaranty Bond is required, the roof shall be inspected by an authorized Richardson Inspector, who shall cut the roof as he considers necessary. Such cuts shall be made before the application of gravel or slag. Such bonds will be given only when the roof is applied by a Richardson Franchise Roofer and in strict accordance with the above specification If Richardson Special Flashing Construction is used in conjunction with this specification we will issue a flashing endorsement covering that part of the roof construction for a period of ten years.



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STEEL DECKS

10-year Roof—Inclines Up to 6 In. to 1 Ft.—Smooth Finish

STANDARD VISKALT BUILT-UP ROOFS—SPECIFICATION C-1-S

General Information

This specification calls for three layers of Richardson 15-lb. Felt-Viskalt Saturated, laid and bonded to the "Steel Roof Decks," as specified under "Application."

Richardson Felt-Viskalt Saturated is put up in rolls of 432 sq. ft. each and weighs approximately 60 lb. per roll, or 15 lb. per 108 sq. ft. All felt is 36 in. wide.

Strips of felt cut to a width of 6 in. are used to close connecting joints where cross joints occur; also where roofing sheets connect with wall flashings, etc.

Asphalt

This type of roof requires approximately 12 gal. (108 lb.) of Viskalt Roofing Compound per 100 sq. ft. of roof surface.

Three gallons of Viskalt Roofing Compound per square is used for bonding first sheet of felt to the steel deck.

The two additional sheets of felt require three moppings of Viskalt Roofing Compound, or a total of 12 gal. to each 100 sq. ft. of 3-Ply Built-up Roof.

Flashing and Edging

Richardson Copperclad Flashing material is used for edging and counterflashing work on account of its great tensile strength, flexibility and durability. This material can be furnished in strips of various widths, rolls containing 50 lineal feet.

Work Proposed

This specification contemplates furnishing all materials and labor required to apply roofing and base flashings exclusive of any metal work.

Application

The steel deck shall be mopped with Viskalt Roofing Compound, into which, while hot, embed 3 layers of Richardson Felt-Viskalt Saturated, cementing solidly between the sheets so at no place shall felt touch felt; each sheet to overlap previous sheet, leaving 11 in. exposed and making a continuous 3-ply.

The felt may be run with the pitch or crosswise of the pitch of the roof, depending upon the prevailing conditions in connection with the type of building or roof surface to be covered.

The felt must be unrolled and set into the Viskalt Roofing Compound while the Viskalt Compound is hot in order to insure a perfect bond.

Allow all roofing sheets from the main deck to turn up on vertical walls from 2 to 3 in.

Lay a strip of Felt 6 in. wide, uncemented over expansion joint at ridge, cementing the roof sheets over same.

Nails (large head) are to be used along edging strips and other points where necessary.

Gutters

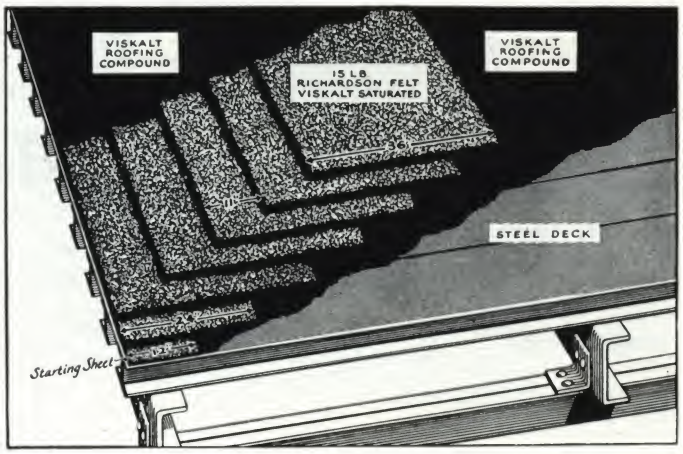
All gutters, valleys, etc., to be completed with 3 plies of Richardson Felt-Viskalt Saturated Built-up Roof construction, in addition to reinforcing strips of felt.

All gutters and valley sheets to extend to the main roofing surface sufficiently to connect with the roofing felt extending from the main deck. All to be applied as specified under "Application."

Flashing

Lay a strip of Richardson Felt-Viskalt Saturated, 12 in. wide in the angle of all walls, allowing 6 in. to extend up the vertical surfaces and 6 in. on the main deck. The roofing felt from the main deck to be applied over this angle strip extending up the steel vertical wall from 2 to 3 in. high. On top of the roofing sheets from the main deck, set in separately 3 layers of felt, cut to a width of 12 in. solidly cemented together and to the underlying surface with hot Viskalt Compound.

The material used for counterflashing, Richardson Copperclad Flashing material, is furnished in strips to the steel erector and set in place by him in the steel wall or sill sheet before erection. This counterflashing strip to extend down the steel wall and out on the main roof deck at least 6 in., being mopped solid thereto with Viskalt Roofing Compound. Felt strips to be cemented over the connecting laps, both on the steel wall and where the counterflashing extends out on the main deck. All cross or end laps to be at least 3 in. and cemented solidly with Viskalt Compound and stripped with felt.



Eave and Gable Flashing

Apply the Richardson edging material so that it extends approximately ½ in. below steel membrane, bent at right angles and nailed into nailing bead on 2-in. centers by means of large head galvanized nails.

Edging material is to be laid in hot Viskalt Roofing Compound, and joints to have 4-in. lap and sealed.

Application and materials for gable edgings are the same as above with the exception that the edging material is to be applied over the top of the Built-up Roof to which a felt strip is added over the lap for additional protection.

Roof Finish

The entire surface of the roofing applied shall be mopped with Viskalt Roofing Compound applied hot and spread to a uniform finish.

Alternate Roof Finish

A protective coating of Richardson Emulsified Asphalt Roof Coating (liquid asphalt C-13 H.P.C.) shall be brushed or sprayed on cold using approximately 5 gal. for each 100 sq. ft. of roof surface. Richardson Emulsified Asphalt Roof Coating can be applied on damp surfaces with absolute success and certainty.

Notice to Owner or General Contractor—Attention must be given the following items:

All steel decks must be free from grease, dirt, oil, etc., and the weather surfaces properly coated.

All loose chips, nails or rubbish must be removed and the surface swept clean and maintained in such condition for the application of the Richardson Built-up Roof.

All sharp angles to be rounded out so as to avoid rough, sharp edges that would damage the roofing.

The general contractor is to supply and properly install all necessary sheet metal work, including downspouts, flashings for vent pipes, etc., so as to allow for the proper grading of roof.

Bill of Materials Per Square

Richardson Felt-Viskalt Saturated..... 45 lb.
Viskalt Roofing Compound (12 gal.).....108 lb.

Weight per square of completed roof.....153 lb.

When "Insulation" is required the following specifications will cover the application of this material.

The "Steel Deck" shall be insulated with an approved insulating material, which shall be set in hot Viskalt Roofing Compound, and where necessary attached to the "deck" by means of approved fastening.

To assure perfect bond, no more area shall be mopped than will permit the laying of insulation while the Viskalt Compound is hot.

No more insulation shall be laid than can be fully waterproofed and sealed at edges during one day's operation.

Care must be taken to protect insulation from moisture prior to laying and during application.

On pitched roofs, with roof pitch over 3 in. in 12 in., all insulation shall be mechanically fastened to the "Steel Deck" with approved "Insulation" cleats. The cleat must be driven into the web of the supporting members, without puncturing the "Steel Deck"

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Recommended Commercial Roof Insulation

Semi-flexible materials: Similar to flax and rye fibre, in sheet form.

Semi-rigid materials: Similar to cork, rock wool, etc., in board form.

Rigid Fibrous Materials: Similar to wood pulp and sugar cane, in sheet form.

It is the experience of manufacturers of roofing, that "Steel Decks" provide a most satisfactory base over which to apply insulations and waterproofing coverings. A "Steel Deck" insulated and waterproofed, is economical in that its lightness in weight allows for more economical design of supporting steel.

Note: Although the Richardson Roofing Company does not manufacture and market commercial "Insulation" or "Steel Decks," co-operation with the manufacturers of insulating materials and steel roof decks is an approved policy, for the purpose of preparing complete data, specifications, etc.

Bond

If a Richardson Ten-year Guaranty Bond is required, the roof shall be inspected by an authorized Richardson Inspector who shall cut the roof as he considers necessary. Such bonds will be given only when the roof is laid by an Approved Richardson Franchise Roofer in strict accordance with the above specification. If Richardson Special Flashing Construction is used in conjunction with this specification, we will issue a flashing endorsement covering that part of the roof construction for a period of ten years.

STEEL DECKS

20-year Roofs—Inclines Up to 6 In. to 1 Ft.—Smooth Finish

BUILT-UP ROOFS—SPECIFICATION A-1-S

This specification is the same as Specification C-1-S with the following exceptions:

The paragraph **"General Information"** should be changed to read "This specification calls for five layers of Richardson 15 lb. Felt-Viskalt Saturated laid and bonded to the 'Steel Roof Decks' as specified under 'Application.'"

The third paragraph under **"Application"** should be changed to read: "The four additional sheets of felt require five moppings of Viskalt Roofing Compound, or a total of eighteen gallons to each 100 sq. ft. of 5-ply Built-up Roof."

The first paragraph under **"Application"** should be changed to read: "The steel deck shall be mopped with Viskalt Compound into which, while hot, embed five layers of Richardson Felt-Viskalt Saturated, cementing solidly between the sheets so at no place shall felt touch felt; each sheet to overlap the previous sheet 29½ in. and making a continuous 5-ply."

The first paragraph under **"Gutters"** should be changed to: "..... to be completed with five plies, etc."

The last sentence of the first paragraph under **"Flashing"** should be changed to: "..... set in separately five layers of felt."

Change **"Bill of Materials per Square"** to the following:

Richardson Felt-Viskalt Saturated..... 75 lb.
Viskalt Roofing Compound (18 gal.).....162 lb.

Weight per square of complete roof....237 lb.

"Bond" will be the same except "Twenty-Year" will be substituted for "Ten-Year."

DECKS OF RIGID INSULATION, CORK, CELOTEX, INSULITE, MAFTEX, ETC.

10-year Roofs—Inclines Up to 6 In. to 1 Ft.—Smooth Finish

STANDARD VISKALT BUILT-UP ROOFS— SPECIFICATION C-1-I

General Information

This specification calls for one layer of 30 lb. and two layers of Richardson 15-lb. Felt-Viskalt Saturated, laid and bonded to the "insulation" as specified under "Application."

Richardson Felt-Viskalt Saturated is put up in rolls of 216 and 432 sq. ft. each and weighs approximately 60 lb. per roll, or 30 lb. and 15 lb. per 108 sq. ft. All felt is 36 in. wide.

Strips of felt cut to a width of 6 in. are used to close connecting joints where cross joints occur; also where roofing sheets connect with wall flashings, etc.

Asphalt

This type of roof requires approximately 12 gal. (108 lb.) of Viskalt Roofing Compound per 100 sq. ft. of roof surface, exclusive of material required for cementing "insulation" to deck, if such is required.

Three gal. of Viskalt Roofing Compound per square is used for bonding first sheet of felt to the "insulation."

The two additional sheets of felt require three moppings of Viskalt Roofing Compound, or a total of 12 gal. to each 100 sq. ft. of completed roof.

Flashing and Edging

Richardson Copperclad flashing material is used for edging and counterflashing work on account of its great tensile strength, flexibility and durability.

Work Proposed

This specification contemplates furnishing all materials and labor required to apply roofing and base flashings exclusive of any metal work.

Application

After the "insulation" has been installed, in accordance with the requirements for its application, mop the entire surface with Viskalt Roofing Compound, into which, while hot, embed a layer of Richardson 30-lb. Felt-Viskalt Saturated, cementing solidly to the insulating material. Thoroughly coat the surface of the 30-lb. felt, into which, while hot, embed two layers of Richardson 15-lb. Felt-Viskalt Saturated, cementing solidly between the sheets so as no place shall felt touch felt; each sheet to overlap previous sheet, leaving 17 in. exposed and making a continuous two-ply.

The felt must be unrolled and set into the Viskalt Roofing Compound, while hot, in order to insure proper bond.

Allow all roofing sheets from the main deck to turn up on vertical surfaces from 2 to 3 in.

Lay a strip of felt 12 in. wide, at right angles to all walls, as a flashing reinforcement prior to installation of flashing construction.

Nails (large heads) are to be used where necessary.

Gutters

All gutters, valleys, etc., to be completed with four plies of Richardson Felt-Viskalt Saturated Built-up Roof construction, in addition to reinforcing strips of felt.

All gutters and valley sheets to extend to the main roofing surface sufficiently to connect with the roofing felt extending from the main deck. All to be applied as specified under "Application."

Flashing

Lay a strip of Richardson Felt-Viskalt Saturated, 12 in. wide in the angle of all walls, allowing 6 in. to extend on the vertical surfaces and 6 in. on the main roof. The roofing felt from the main roof to be applied over this angle strip, extending on the vertical wall, from 2 to 3 in. On top of the roofing sheets from the roof proper, set in separately three layers of felt, cut to a width of 12 in., solidly cemented together and to the underlying surfaces with hot Viskalt Compound, 6 in. extending up all vertical surfaces and 6 in. out onto roof proper.

The material used for counterflashing, Richardson Copperclad Flashing material, is furnished in strips to the Mason Contractor and set in place by him in the brick wall during course of construction. This counterflashing strip to extend down the

Continued on next page

vertical wall and out on the main roof deck at least 8 in., being mopped solidly thereto with Viskalt Roofing Compound. All walls to be thoroughly primed with Asphalt Primer to insure proper bond. Felt strips to be cemented over connecting laps, both on the wall and where the counter-flashing extends out on main roof.

Roof Finish

The entire surface of the roofing applied shall be mopped with Viskalt Roofing Compound applied hot and spread to a uniform finish.

Alternate Roof Finish

A protective coating of Richardson Emulsified Asphalt Roof Coating (liquid asphalt C-13 H.R.C.) shall be brushed or sprayed on cold, using approximately 5 gal. for each 100 sq. ft. of roof surface. Richardson Emulsified Asphalt Roof Coating can be applied on damp surfaces with absolute success and certainty.

Bill of Materials Per Square

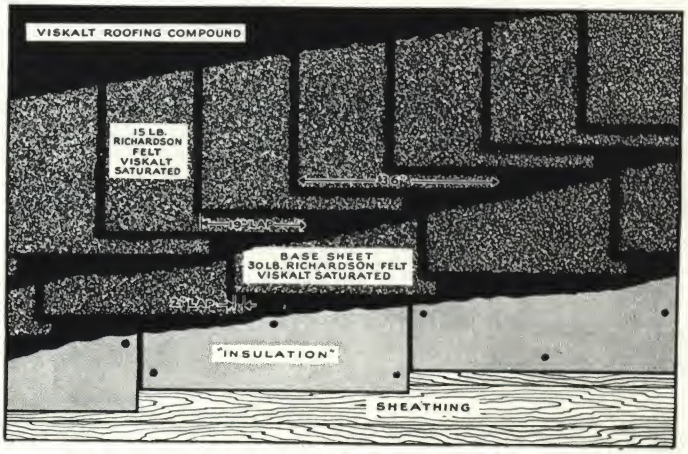
Richardson Felt-Viskalt Saturated..... 60 lb.
Viskalt Roofing Compound (12 gal.).....108 lb.
Weight per square of completed roof.....168 lb.

Application of "Insulation"—***Over Wood Deck***—The surface of the roof deck shall be broomed clear of all dirt and loose material and any loose boarding shall be properly nailed down. Over the entire roof area apply "Insulation Board" bringing edges to a moderate contact and securing each board in place by nailing along all edges and through the center of the sheet with large-headed and 1½-in. roofing nails. The course of nails through the center of the board shall be well driven. Nails shall be spaced 12 in. on center.

Where more than one layer of "Insulation Board" is used, each layer shall break joints with the preceding layer. Where multiple layers are used, nails of sufficient length to provide for a secure anchorage to the underlying deck shall be used. In such laminated or multiple layer construction, all nailing shall be done through the surface of the final board. For application of roof covering follow specifications as written above.

Over Concrete, Gypsum or Cement Tile—The deck shall be reasonably smooth, dry and well cured, and the surface of the roof cleared of all dirt and loose materials. Rough uneven surfaces will not provide a suitable base to receive the "Insulation," and the finished surface shall be subject to the approval of the Architect and acceptable to the Roofing Contractor before work will be started. The deck shall first receive a coat of asphalt primer. Mop with hot Viskalt Roofing Compound, using not less than 3 gal. per square, sufficient area to provide complete embedment of board used. Complete adhesion shall be obtained by carefully pressing down all edges into mopping of hot Viskalt Roofing Compound.

Where "Insulation Board" is to be applied in more than one layer, the top surface of each layer shall be coated with a uniform mopping of Viskalt Roofing Compound and all boards shall be thoroughly embedded and shall be laid with all joints broken or offset with respect to the joints of the preceding layer, and all edges of the board shall be completely coated. At no time shall boards be laid with alternate layers at right angles or crosswise with each other. Only as much board shall be laid over the roof area as can be covered and protected by the roof covering in any one day. The application of the roof covering shall be in accordance with "Application" as specified above.



Recommended Commercial Roof Insulation

Semi-flexible materials: Similar to flax and rye fibre, in sheet form.

Semi-rigid materials: Similar to cork, rock wool, etc., in board form.

Rigid fibrous materials: Similar to wood pulp and sugar cane fibre, in sheet form.

Note: Although the Richardson Roofing Company does not manufacture and market commercial "Insulation," co-operation with the manufacturers of insulating materials is an approved policy, for the purpose of preparing data, specifications, etc.

Bond

If a Richardson Ten-year Guaranty Bond is required, the roof shall be inspected by an authorized Richardson Inspector who shall cut the roof as he considers necessary. Such bonds will be given only when the roof is laid by a Richardson Franchise Roofer and in strict accordance with this specification. If Richardson Special Flashing Construction is used in conjunction with this specification, we will issue a flashing endorsement covering that part of the roof construction for a period of ten years.

DECKS OF RIGID INSULATION, CORK, CELOTEX, MAFTEX, ETC.

20-year Roof—Inclines Up to 6 In. to 1 Ft.—Smooth Finish

BUILT-UP ROOFS—SPECIFICATION A-1-I

This specification is the same as Specification C-1-I with the following exceptions:

The paragraph **"General Information"** should be changed to read: "This specification calls for five layers of 15 lb. Richardson Felt-Viskalt Saturated, etc."

The first paragraph under **"Asphalt"** should be changed to read: "This type of roof requires approximately 20 gal. of Viskalt, etc."

The third paragraph under **"Asphalt"** should be changed to read: "The four additional sheets of felt require five moppings of Viskalt Roofing Compound, or a total of 20 gal. to each 100 sq. ft. of completed roof."

Under **"Application"** the first paragraph should be changed to read: ".....", while hot, embed five layers of Richardson 15 lb. Felt-Viskalt Saturated, cementing solidly to the insulating material. Lap each layer 29½ in. over the preceding layer, mopping between the laps a heavy coating of Viskalt Roofing Compound so that in no case shall felt touch felt."

The first paragraph **"Gutters"** should be changed to read: "..... to be completed with five plies of etc."

Under **"Flashing"** the last sentence of first paragraph should read: "....., set in separately five layers of felt, etc."

Change **"Bill of Materials per Square"** to the following:

Richardson Felt-Viskalt Saturated..... 75 lb.
Viskalt Roofing Compound (18 gal.).....162 lb.
Weight per square of completed roof...237 lb.

"Bond" will be the same except "Twenty-Year" will be substituted for "Ten-Year."

Continued on next page

RICHARDSON COPPERCLAD FLASHING CONSTRUCTION

General

Richardson Copperclad Flashing is applicable to either new or old brick walls. It is similar in principle to the familiar types of metal cap and base flashings, with the exception that the metal is not entirely depended upon for watertightness.

Richardson Copperclad Flashing provides for expansion and contraction. It is unaffected by climatic conditions, and needs no painting. It is simple to install, and can be set in place by the roofer or mason contractor, depending on the type of flashing required.

Richardson Copperclad Flashing can be used with all types of roofs, whether it be an Asphalt, Asbestos, or Tar and Gravel.

Description

Richardson Copperclad Roof Flashing is a preformed flashing material consisting of laminations of Richardson Felt-Viskalt Saturated, and Copper, bonded together at the factory with an especially blended and refined bitumen.

Richardson Felt-Viskalt Saturated is a long fibred felt possessing extreme strength and elasticity. It is particularly adapted for flashing work when used in conjunction with Richardson Copperclad Flashing.

On account of the elasticity, strength and extreme flexibility of Richardson Copperclad Flashing, it will conform readily and bond securely with hot Viskalt to parapet walls. The danger of cracks and breaks found in ordinary flashing material as a result of misuse, settling of building or movement in roof deck, is materially reduced.

Richardson Copperclad Roof Flashing is furnished in 50 ft. rolls. This material can be readily cut on the job to fit any type of flashing requirement.

Installation

Richardson Copperclad Flashing is prepared ready for insertion into the wall, or, in case of new work, it can be installed in the brick wall during course of construction by the mason contractor.

First—Provide a raggle in the brick wall by raking mortar out of joint to a depth of 2 in., or insert a chamfered wood strip about ½ in. wide and 2 in. deep. Richardson Copperclad Flashing shall be used in all raked mortar joints.

Alternate: Richardson Copperclad Flashing may be furnished to mason contractor who shall build it into the wall during course of construction. Flashing shall be set in the wall so that it shall extend 7 in. into the wall and on a line not more than 11 in., nor less than 6 in. above the roof level.

Second—On all vertical surfaces where Copperclad Flashing is to be installed (if roof deck is of boards), the base sheet or sheets used in constructing the roof shall extend 4 in. up the vertical surfaces, and all additional layers of felt used in the roofing shall be cut off at the angle of roof deck and vertical surfaces. All layers of felt used in the roofing (if roof deck is of concrete), shall be cut at the angle of the roof deck and vertical surfaces.

Third—Set in the angle three layers of Richardson Felt-Viskalt Saturated, cemented solidly together and to the underlying surfaces with Viskalt Compound. These three layers of felt shall be set in separately and shall extend up to the raked joint or within 1 in. of flashing built in the wall.

Fourth—Over the vertical surface of the felt, mop a uniform coating of Viskalt Compound, and fill the raked joint with Plastic Cement.

Fifth—The lower edge of the Copperclad Flashing shall be cut to correspond with the rake of the roof deck at the wall angle. The Copperclad Flashing shall be set in place while Viskalt Compound is still hot. If Copperclad Flashing is built in wall turn down over the felt reinforcement into the hot Viskalt Compound. If Copperclad Flashing is used in raked mortar joint, insert the cut edge into the joint of the brick wall, securely fasten in place with mastic wedge or wood lath set in hot Viskalt Compound or Plastic Cement, and thoroughly embed the flashing into the underlying hot Viskalt Compound. All laps and corners must be firmly secured. All end laps and laps at stepped joints shall not be less than 6 in. wide and sealed with hot Viskalt Compound or Plastic Cement.

Note: In case of concrete wall Copperclad Flashing must be built in during course of construction, or provision must be made in wall for raggle to receive the flashing.

Flashing Sawtooth, Monitor and Skylight Curbs

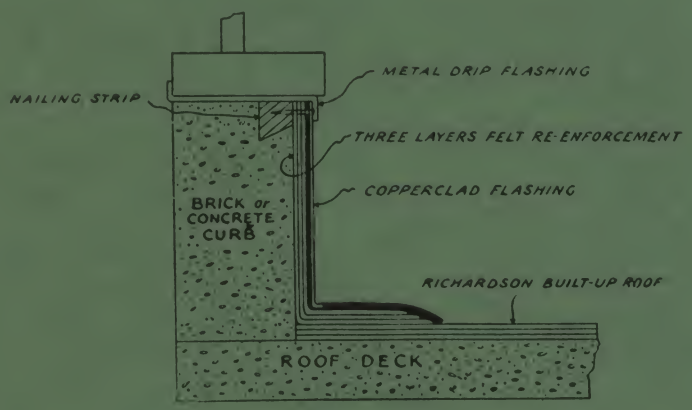
Sawtooth Curbs—The felt reinforcement shall be installed as described in the "application" of Copperclad Flashings. A full width sheet of Copperclad Flashing shall be firmly embedded and shall extend from the underside of sill down to the valley and out onto the roof at least 4 in. All laps and corners must be firmly secured. All end laps shall be at least 6 in. and sealed with Plastic Cement.

Monitor Curbs—Use same construction as for sawtooth curbs.

Skylight Curbs—The same felt reinforcement shall be used as for sawtooth or monitor curb construction. The Copperclad Flashing shall be firmly embedded into a mopping of Viskalt Compound, and shall extend over the top of curb to within 1 in. of the inner edge of curb and down to the roof deck and out on the surface at least 4 in. All laps and corners must be firmly secured. All end laps shall be at least 6 in. and sealed with Plastic Cement. All nail heads must be covered with Plastic Cement.

Flashing Endorsement

If Richardson Copperclad Flashing construction is used in conjunction with Richardson Built-up Roof Specifications, we will furnish a flashing endorsement covering that part of the roof construction for a period of ten years.



RICHARDSON
ROOFING
REG. U. S.
PAT. OFF.

ASPHALT PRODUCTS · SHINGLES · ROOFINGS
FLINTKOTE
"PROTECTION"

GENUINE

RU-BER-OID

BONDED BUILT-UP ROOFS

Asbestos

Asphalt

CONTINENTAL ROOFING MILLS	RUBEROID MILLS	SAFEPACK MILLS	H. F. WATSON MILLS

Divisions of

The RUBEROID Co.

Offices: New York - Chicago - Boston (Millis) - Erie - Baltimore - Mobile

Coal Tar, Pitch and Felt

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GENUINE RUBEROID BONDED BUILT-UP ROOFS

Asbestos—Coal Tar Pitch and Felt—Asphalt

Through the association of four great roofing companies, THE RUBEROID CO., with over 38 years of experience in manufacturing quality roofing products, is now in a position to supply Ruberoid Bonded Built-up Roofs in all of the popular types, Asbestos, Coal Tar Pitch and Felt, and Asphalt.

The materials entering into the construction of all of these types of built-up roofs are produced in the factories of THE RUBBEROID CO., under formulæ developed by Ruberoid engineers as a result of their many years' experience in manufacturing quality roofing products.

Embraced in these three types of built-up roofs, are specifications supplying roofs to meet the kind of construction any condition may impose.

Ruberoid Bonded Built-up Roofs provide the architect, builder and owner a guarantee, both as to workmanship and material, for 10, 15 or 20 years, according to the specifications used.

These roofs are applied only by approved roofing contractors, and the guarantee is backed by a National Surety Bond.

Every architect has knowledge as to the type of roof best adapted to local climatic conditions, building construction, etc. Realizing this, THE RUBEROID CO. is impartial. They supply them all.

Tabulated below is a chart showing the specifications most generally in use for various types of roofs—the guarantees applying and other necessary information.

CHART OF RUBEROID BONDED ROOFS, SPECIFICATIONS AND WEIGHTS

Roofing Specifications									Surfaces to be roofed		
Specification number	Guaranty bond, term of years	Underwriters' classification	Maximum slope inches per foot	Number of plies—membrane	Membrane material	Weight in pounds of plies of membrane per 100 sq. ft.	Cementing material	Finished surface material	Board sheathing	Precast gypsum blocks	Poured concrete Poured gypsum Precast concrete tile Book tile *Steel decks
100	10	B	6	3	Asphalt felt Asbestos felt	1–30 2–15	Bonded asphalt	Bonded asphalt	×		
101	10	A	6	3	Asphalt felt Asbestos felt	1–30 2–15	Bonded asphalt	Bonded asphalt		×	×
150	15	A	6	3	Asbestos felt	1–60 2–15	Bonded asphalt	Bonded asphalt	×		
151	15	A	2	4	Tarred felt	4–15	Coal tar pitch	Gravel or slag	×	×	
152	15	A	1	3	Tarred felt	3–15	Coal tar pitch	Gravel or slag			×
153	15	A	4	4	Asphalt felt	4–15	Asphalt	Gravel or slag	×	×	
154	15	A	3	3	Asphalt felt	3–15	Asphalt	Gravel or slag			×
200	20	A	6	4	Asbestos	1–60 3–15	Bonded asphalt	Bonded asphalt	×		
201	20	A	6	3	Asbestos	1–60 2–15	Bonded asphalt	Bonded asphalt		×	×
202	20	A	2	5	Tarred felt	5–15	Coal tar pitch	Gravel or slag	×	×	
203	20	A	1	4	Tarred felt	4–15	Coal tar pitch	Gravel or slag			×
204	20	A	3	5	Asphalt felt	5–15	Asphalt	Gravel or slag	×	×	
205	20	A	3	4	Asphalt felt	4–15	Asphalt	Gravel or slag			×
206	20	A	1	5	Tarred felt	5–15	Coal tar pitch	Promenade tile	Concrete only		

*For Steel Deck roofing see special conditions on last page of specifications.

There will be found on the following pages detailed Ruberoid Bonded Built-up Roof specifications. Should supplementary information be desired, or should there be a roofing problem resulting from unusual conditions, our Engineering Department is always glad to be of help. Simply write or phone any of the offices listed below.

OFFICES OF THE RUBEROID CO.

BALTIMORE, MD., Highlandtown P. O. Box 102
CHICAGO, ILL., 5333 South Western Avenue
ERIE, PA., P. O. Box 494-495
MILLIS, MASS.
MOBILE, ALA., P. O. Box 1567
NEW YORK, N. Y., 95 Madison Avenue

Continued on next page

ASBESTOS FELT AND ASPHALT FELT, SMOOTH FINISH ROOF
For Use Over Board Sheathing

For Inclines Not Exceeding 6-In. per Ft. (Not to Be Used on True Level Decks)

SPECIFICATION NO. 100—10-YEAR BOND

Underwriters' Laboratories Class B Rating

The roofing shall be a Ruberoid Bonded Roof carrying a 10-year Guaranty Bond, installed in accordance with conditions and specifications as hereinafter set forth.

Definitions

Unless otherwise specifically stated in any case, the terms hereunder listed shall be construed in accordance with definitions as follows:

Manufacturer—Ruberoid Mills division of THE RUBEROID Co., whose main office is at No. 95 Madison Avenue, New York, N. Y.

Contractor—The contractor for roofing work.

Asphalt—Ruberoid Bond Roofing Asphalt.

Asphalt Felt—Ruberoid No. 30 Asphalt Felt.

Asbestos Felt—Ruberoid No. 15 Asphalt-saturated Asbestos Felt.

Work by Others

The roof deck must be constructed of seasoned lumber, dressed on upper side, dry and free from large cracks and knot holes. Roof boards must be securely nailed in place, leaving no nail heads above the wood surfaces. Surfaces must be properly graded to outlets and cant strips provided in the angle formed between the roof and vertical surfaces.

General Requirements Applying to the Contractor

The contractor must be approved by the manufacturer.

The contractor shall inspect the board surfaces and shall not proceed with roofing work until all defects reasonably apparent by proper inspection and which might injure the roofing, have been remedied by others. The contractor assumes responsibility for existing under-surfaces as to their fitness to receive roofing when he proceeds with his work.

Roof surfaces shall be swept clean and free of all loose material before proceeding with roofing work.

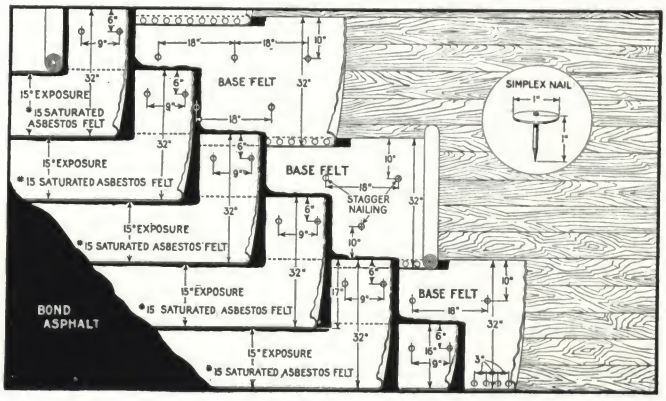
The contractor shall afford all necessary facilities for inspections by the manufacturer.

Specifications for Laying Roofing

First—Lay one ply of Asphalt Felt, lapping sheets 2-in. at edges and not less than 6-in. at end laps. Seal the laps with asphalt cement and nail at 3-in. intervals along the lap and at 18-in. intervals along lines 10-in. from each edge of each sheet, the latter nails being staggered. This felt shall be turned up not less than 4-in. along all walls and vertical surfaces.

Second—Over the entire surface lay two plies of Asbestos Felt, embedding each sheet in Asphalt, lapping each sheet 17-in. over the preceding one and rolling each sheet immediately behind the mop to insure proper adhesion of all strips. Mopping and rolling shall be so done as to secure a continuous bed of asphalt, of uniform thickness. In no place shall felt touch felt. Each sheet shall be nailed along the back edge only from 3-in. to 6-in. down, at intervals of approximately 9-in. These felts shall be cut off at the angle of the roof deck and all vertical surfaces.

Third—Over the entire surface mop a uniform coating of Asphalt, using not more than 20 lb. per 100 sq. ft.



Materials and Workmanship

Not less than the following quantities of materials shall be used in constructing each 100 sq. ft. of roofing:

One ply Ruberoid No. 30 Asphalt Felt	31 lb.
Two plies Ruberoid No. 15 Saturated Asbestos Felt	32 lb.
Ruberoid Bond Roofing Asphalt	75 lb.
Simplex nails	2 lb.
Total approximate weight, 100 sq. ft.	140 lb.

Felt shall be laid without wrinkles or buckles. It shall be rolled immediately behind the hot mop and firmly embedded by brooming the felt. Asphalt shall not be heated to exceed 450° F.

All nailing of roofing to board surfaces shall be done with Simplex flat head roofing nails or with ⅞-in. galvanized roofing nails, driven through flat tin discs.

All roofing work shall be done to the satisfaction and approval of the manufacturer.

General Notes

***Note 1*—Insulated Roofs**—If this roof is applied over insulating material, the insulation must be firm, capable of withstanding traffic without crushing, and of a type that will retain nails. Provision must be made that no more insulation shall be laid at one time than can be promptly protected by roofing in the event of sudden weather changes. A felt cut-off shall be mopped along the edge of insulation at a distance not greater than one width of the insulating material from parapet walls, curbs and other openings.

***Note 2*—Leader Heads, Vents, etc.**—Leader heads, vents, and other openings shall be furnished with metal flanges of sufficient width to permit proper connections with the roofing. If not so furnished an exception of responsibility will be taken for any leaks which may develop immediately adjacent. Flanges of scuppers, gutters, gravel guards, finishing or edging strips, leader heads and vents shall be set on top of all felts, nailed and double felt stripped.

Bonds

This contractor shall furnish the Manufacturer's Surety Bond Guaranty as issued by the National Surety Company of New York, N. Y., covering a period of 10 years from date of completion of the work.

Note: This guarantee is not given on jobs of less than 50 squares, nor in such portions of the United States as are not covered by the Manufacturer's Inspection Service.

Continued on next page

ASBESTOS FELT AND ASPHALT FELT, SMOOTH FINISH ROOF

For Use Over Poured Concrete, Poured Gypsum, Gypsum Block, Precast Concrete Tile or Book Tile

For Inclines Not Exceeding 6-In. per Ft. (Not to Be Used on True Level Decks)

SPECIFICATION NO. 101—10-YEAR BOND

Underwriters' Laboratories Class A Rating

The roofing shall be a Ruberoid Bonded Roof carrying a 10-year guaranty bond, installed in accordance with conditions and specifications as hereinafter set forth.

Definitions

Unless otherwise specifically stated in any case, the terms hereunder listed shall be construed in accordance with definitions as follows:

Manufacturer—Ruberoid Mills division of THE RUBEROID Co., whose main office is at No. 95 Madison Avenue, New York, N. Y.

Contractor—The contractor for roofing work.

Asphalt—Ruberoid Bond Roofing Asphalt.

Asphalt Felt—Ruberoid No. 30 Asphalt Felt.

Asbestos Felt—Ruberoid No. 15 Asphalt-saturated Asbestos Felt.

Primer—Ruberoid Concrete Primer.

Work by Others

The roof deck must be thoroughly dry, smooth and free from loose material, and must be properly graded to outlets.

For inclines exceeding 3-in. to the foot, if the deck is of concrete, wood nailing strips must be provided at proper intervals.

Coves shall be provided in the angle between the roof and the vertical surfaces.

Where Book Tile is used, the surface of the tile must be covered with portland cement mortar 1-in. thick with a smooth and even finish.

Where gypsum blocks are required for nailing, they must be solid blocks.

General Requirements Applying to the Contractor

The contractor must be approved by the manufacturer.

The contractor shall inspect the base surfaces and shall not proceed with roofing work until all defects reasonably apparent by proper inspection and which might injure the roofing, have been remedied by others. The contractor assumes responsibility for existing under-surfaces as to their fitness to receive roofing when he proceeds with his work.

Roof surfaces shall be swept clean and free of all loose material before proceeding with roofing work.

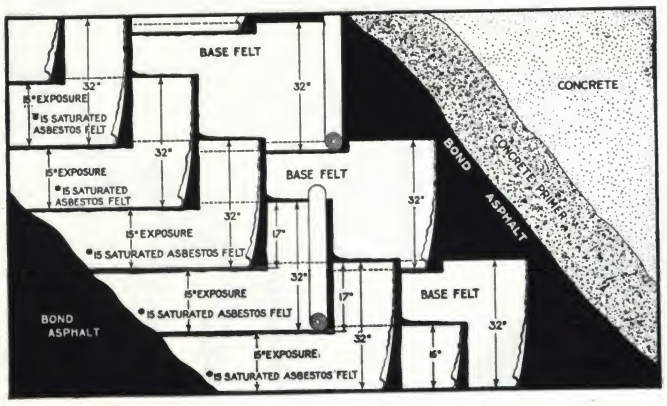
The contractor shall afford all necessary facilities for inspection by the manufacturer.

Specifications for Laying Roofing

First—Coat the entire surface with Primer applied cold, allowing same to dry thoroughly. Where plastic material is used to caulk the joints of blocks, the coating of primer shall be held back 2-in. from all joints.

Second—Over the entire surface lay one ply of Asphalt Felt in Roofing Asphalt, lapping each sheet 2-in. over the preceding one at edges and not less than 6-in. at end laps. Roll each sheet immediately behind the mop to insure proper adhesion of all sheets. Mopping and rolling shall be so done as to secure a continuous bed of asphalt of uniform thickness. In no place shall felt touch felt or roof deck. Felts shall be cut off at the angle of the roof deck and all vertical surfaces.

On inclines exceeding 3-in. to the foot these sheets shall be nailed at intervals of 9-in. along the lap into the nailing strips.



Note: Where poured gypsum or precast gypsum blocks are used, all three plies of felt shall be nailed as specified in the case of board decks.

Third—Over the entire surface lay in asphalt two plies of Asbestos Felt, lapping each sheet 17-in. over the preceding one, rolling each sheet immediately behind the mop to insure a uniform coating of hot asphalt. In no place shall felt touch felt.

On inclines exceeding 3-in. to the foot, sheets shall be nailed at intervals of 12-in. along the nailing strips or back edge.

These felts shall be cut off at the angle of the roof deck and vertical surfaces.

Fourth—Over the entire surface mop a uniform coating of asphalt, using not more than 20 lb. per 100 sq. ft.

Materials and Workmanship

Not less than the following quantities of materials shall be used in constructing each 100 sq. ft. of roofing:

Ruberoid Concrete Primer (1 gal.)	10 lb.
One ply Ruberoid No. 30 Asphalt Felt	31 lb.
Two plies Ruberoid No. 15 Asphalt-saturated Asbestos Felt	32 lb.
Ruberoid Bond Roofing Asphalt	110 lb.
Total approximate weight 100 sq. ft.	183 lb.

Felt shall be laid without wrinkles or buckles. It shall be rolled immediately behind the hot mop and firmly embedded by brooming the felt. Asphalt shall not be heated to exceed 450° F.

All nailing or roofing shall be done with Simplex flat head roofing nails or with ⅞-in. galvanized roofing nails, driven through flat tin discs.

All roofing work shall be done to the satisfaction and approval of the manufacturer.

General Notes

***Note 1*—Insulated Roofs**—If this roof is applied over insulating material, the insulation must be firm, capable of withstanding traffic without crushing, and of a type that will retain nails. Provisions must be made that no more insulation shall be laid at one time than can be promptly protected by roofing in the event of sudden weather changes. A felt cut-off shall be mopped along the edge of insulation at a distance not greater than one width of the insulating material from parapet walls, curbs and other openings.

***Note 2*—Leader Heads, Vents, Etc.**—Leader heads, vents and other openings shall be furnished with metal flanges of sufficient width to permit proper connections with the roofing. If not so furnished an exception of responsibility will be taken for any leaks which may develop immediately adjacent. Flanges of scuppers, gutters, gravel guards, finishing or edging strips, leader heads and vents shall be set on top of all felts, nailed and double felt stripped.

Bond

This contractor shall furnish the Manufacturer's Surety Bond Guaranty as issued by the National Surety Company of New York, N. Y., covering a period of 10 years from date of completion of the work.

Note: This guarantee is not given on jobs of less than 50 squares, nor in such portions of the United States as are not covered by the Manufacturer's Inspection Service.

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ASBESTOS AND ASPHALT MATERIALS, SMOOTH FINISH ROOF

For Use Over Board Sheathing

For Inclines Not Exceeding 6-In. per Ft. (Not to Be Used on True Level Decks)

SPECIFICATION NO. 150—15-YEAR BOND

Underwriters' Laboratories Class A Rating

The roofing shall be a Ruberoid Bonded Roof carrying a 15-year guaranty bond, installed in accordance with conditions and specifications as hereinafter set forth.

Definitions

Unless otherwise specifically stated in any case, the terms hereunder listed shall be construed in accordance with definitions as follows:

Manufacturer—Ruberoid Mills division of THE RUBEROID Co., whose main office is at No. 95 Madison Avenue, New York, N. Y.

Contractor—The contractor for roofing work.

Asphalt—Ruberoid Bond Roofing Asphalt.

Asbestos Base Felt—Ruberoid No. 60 Asbestos Base Felt.

Asbestos Felt—Ruberoid No. 15 Asphalt-saturated Asbestos Felt.

Work by Others

The roof deck must be constructed of seasoned lumber, dressed on upper side, dry and free from large cracks and knot holes. Roof boards must be securely nailed in place, leaving no nail heads above the wood surfaces. Surfaces must be properly graded to outlets, and cant strips provided in the angle formed between the roof and vertical surfaces.

General Requirements Applying to the Contractor

The contractor must be approved by the manufacturer.

The contractor shall inspect the roof surfaces and shall not proceed with roofing work until all defects reasonably apparent by proper inspection and which might injure the roofing, have been remedied by others. The contractor assumes responsibility for existing under-surfaces as to their fitness to receive roofing when he proceeds with his work.

Roof surfaces shall be swept clean and free of all loose material before proceeding with roofing work.

The contractor shall afford all necessary facilities for inspections by the manufacturer.

Specifications for Laying Roofing

First—Lay one ply of Asbestos Base Felt, lapping each sheet 2-in. at edges and not less than 6-in. at end laps. Sealing the laps with asphalt cement and nail at 3-in. intervals along the lap, and also at intervals of 18-in. on a line 10-in. from each edge of the sheet, staggering the nails. This felt shall be turned up not less than 4-in. along all walls and vertical surfaces.

Second—Over the entire surface embed in Asphalt two plies of Asbestos Felt lapping each sheet 17-in. over the preceding one and rolling each sheet immediately behind the mop to insure a uniform coating of hot asphalt so that in no place shall felt touch felt. Each sheet shall be nailed along the back edge from 3 to 6-in. down at intervals of approximately 9-in. These felts shall be cut off at the angle of the roof deck and all walls or vertical surfaces.

Third—Over the entire surface mop a uniform coating of Asphalt, using not more than 20 lb. per 100 sq. ft.

Materials and Workmanship

Not less than the following quantities of materials shall be used in constructing each 100 sq. ft. of roofing:

One ply Ruberoid No. 60 Asbestos Base Felt	60 lb.
Two plies Ruberoid No. 15 Asphalt-saturated Asbestos Felt	32 lb.
Ruberoid Bond Roofing Asphalt	75 lb.
Simplex Nails	2 lb.
Total approximate weight 100 sq. ft.	169 lb.

Felt shall be laid without wrinkles or buckles. It shall be rolled immediately behind the hot mop and firmly embedded by brooming the felt. Asphalt shall not be heated to exceed 450° F.

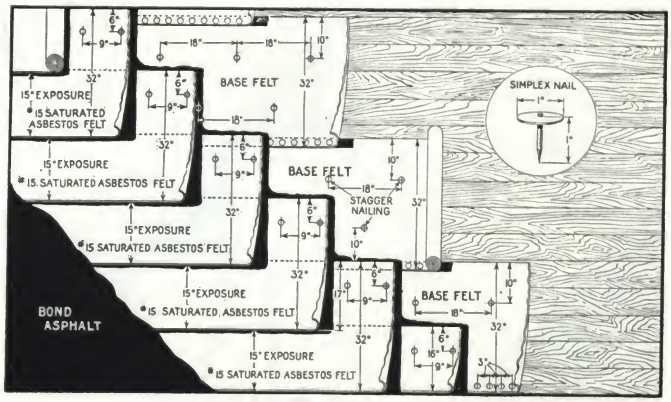
All nailing of roofing to board surfaces shall be done with Simplex flat head roofing nails or with ⅞-in. galvanized roofing nails, driven through flat tin discs.

All roofing shall be done to the satisfaction and approval of the manufacturer.

General Notes

***Note 1*—Insulated Roofs**—If this roof is applied over insulating material, the insulation must be firm, capable of withstanding traffic without crushing, and of a type that will retain nails. Provisions must be made that no more insulation shall be laid at one time than can be promptly protected by roofing in the event of sudden weather changes. A felt cut-off shall be mopped along the edge of insulation at a distance of not greater than one width of the insulating material from parapet walls, curbs and other openings.

***Note 2*—Leader Heads, Vents, etc.**—Leader heads, vents, and other openings shall be furnished with metal flanges of sufficient width to permit proper connections with the roofing. If not so furnished an exception of responsibility will be taken for any leaks which may develop immediately adjacent. Flanges of scuppers, gutters, gravel guards, finishing or edging strips, leader heads and vents shall be set on top of all felts, nailed and double felt stripped.



Bond

This contractor shall furnish the Manufacturer's Surety Bond Guaranty as issued by the National Surety Company of New York, N. Y., covering a period of 15 years from date of completion of the work.

Note: This guarantee is not given on jobs of less than 50 squares, nor in such portions of the United States as are not covered by the Manufacturer's Inspection Service.

Continued on next page

COAL TAR PITCH AND TARRED FELT, GRAVEL OR SLAG FINISH ROOF

For Use Over Board Sheathing and Precast Gypsum Blocks

For Inclines Not Exceeding 2-In. per Ft.

SPECIFICATION NO. 151—15-YEAR BOND

Underwriters' Laboratories Class A Rating

The roofing shall be a Ruberoid Bonded Roof carrying a 15-year guaranty bond, installed in accordance with conditions and specifications as hereinafter set forth.

Definitions

Unless otherwise specifically stated in any case, the terms hereunder listed shall be construed in accordance with definitions as follows:

Manufacturer—Ruberoid Mills division of THE RUBEROID Co., whose main office is at No. 95 Madison Avenue, New York, N. Y.

Contractor—The contractor for roofing work.

Tarred Felt—Ruberoid No. 15 Tarred Felt.

Coal Tar Pitch—Ruberoid Coal Tar Pitch.

Work by Others

If over boards, the roof deck shall be constructed of seasoned lumber, smooth and securely nailed, and free from large cracks or knot holes. It shall be properly graded to outlets and swept clean and free from all loose material.

Where gypsum blocks are required for nailing they must be solid blocks.

General Requirements Applying to the Contractor

The contractor must be approved by the manufacturer.

The contractor shall inspect the roof surfaces and shall not proceed with roofing work until all defects, reasonably apparent by proper inspection and which might injure the roofing, have been remedied by others. The contractor assumes responsibility for existing under-surfaces as to their fitness to receive roofing when he proceeds with his work.

Roof surfaces shall be swept clean and free of all loose material before proceeding with roofing work.

The contractor shall afford all necessary facilities for inspections by the manufacturer.

Specifications for Laying Roofing

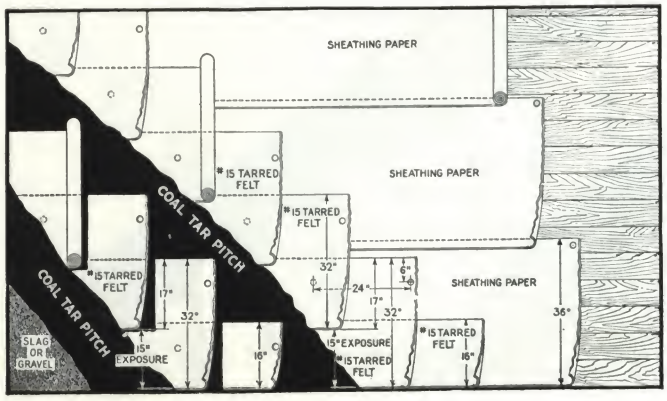
First—Lay one thickness of sheathing paper, weighing not less than 5 lb. per 100 sq. ft., lapping the sheets at least 1-in. If Precast Gypsum Block is used, sheathing paper may be omitted.

Second—Over the entire surface lay two plies of Tarred Felt, lapping each sheet 17-in. over the preceding one, and turning up these felts not less than 4-in. along all vertical surfaces. Nail as often as is necessary to secure, until the remaining felt is laid.

Third—Coat the entire surface uniformly with Coal Tar Pitch.

Fourth—Over the entire surface lay two plies of Tarred Felt, lapping each sheet 17-in. over the preceding one, mopping with Coal Tar Pitch the full 17-in. on each sheet, so that in no place shall felt touch felt. The back edge of each sheet shall be nailed at intervals of 24-in. at a distance not greater than 6-in. from back edge of sheet. Such nailing as is necessary shall be done so that all nails are covered by not less than one ply of felt. The felts shall be cut off at the angle of the roof deck and walls or vertical surfaces.

Fifth—Over the entire surface pour a uniform coating of Coal Tar pitch into which, while hot, embed not less than 400 lb. of gravel or 300 lb. of slag for each 100 sq. ft. The gravel or slag shall be ¼-in. to ⅝-in. in size, dry and free from dirt. If the roof is applied during cold weather, or the slag or gravel is damp, it shall be heated and dried immediately before application.



Materials and Workmanship

Not less than the following quantities of materials shall be used in constructing each 100 sq. ft. of roof area:

One-layer Sheathing Paper	5 lb.
Four plies Ruberoid No. 15 Tarred Felt	65 lb.
Ruberoid Coal Tar Pitch	125 lb.
Simplex nails	1 lb.
Roofing gravel	400 lb.
or	
Roofing slag	300 lb.
Total approximate weight... gravel surface	596 lb.
Total approximate weight... slag surface	496 lb.

Felt shall be laid without wrinkles or buckles. Pitch shall not be heated to exceed 400° F.

All nailing of roofing shall be done with Simplex flat head roofing nails or with ⅞-in. galvanized roofing nails, driven through flat tin discs.

All roofing shall be done to the satisfaction and approval of the manufacturer.

General Notes

***Note 1*—Insulated Roofs**—If this roof is applied over insulating material, the insulation must be firm, capable of withstanding traffic without crushing, and of a type that will retain nails. Provisions must be made that no more insulation shall be laid at one time than can be promptly protected by roofing in the event of sudden weather changes. A felt cut-off shall be mopped along the edge of insulation at a distance of not greater than one width of the insulating material from parapet walls, curbs, and other openings.

***Note 2*—Leader Heads, Vents, etc.**—Leader heads, vents, and other openings shall be furnished with metal flanges of sufficient width to permit proper connections with the roofing. If not so furnished an exception of responsibility will be taken for any leaks which may develop immediately adjacent. Flanges of scuppers, gutters, gravel guards, finishing or edging strips, leader heads and vents shall be set on top of all felts, nailed and double felt stripped.

Bond

This contractor shall furnish the Manufacturer's Surety Bond Guaranty as issued by the National Surety Company of New York, N. Y., covering a period of 15 years from date of completion of the work.

Note: This guarantee is not given on jobs of less than 50 squares, nor in such portions of the United States as are not covered by the Manufacturer's Inspection Service.

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COAL TAR PITCH AND TARRED FELT, GRAVEL OR SLAG FINISH ROOF

For Use Over Poured Concrete, Poured Gypsum, Precast Concrete Tile or Book Tile

For Inclines Not Exceeding 1-In. per Ft.

SPECIFICATION NO. 152—15-YEAR BOND

Underwriters' Laboratories Class A Rating

The roofing shall be a Ruberoid Bonded Roof carrying a 15-year guaranty bond, installed in accordance with conditions and specifications as hereinafter set forth.

Definitions

Unless otherwise specifically stated in any case, the terms hereunder listed shall be construed in accordance with definitions as follows:

Manufacturer—Ruberoid Mills division of THE RUBEROID Co., whose main office is at No. 95 Madison Avenue, New York, N. Y.

Contractor—The contractor for roofing work.

Tarred Felt—Ruberoid No. 15 Tarred Felt.

Coal Tar Pitch—Ruberoid Coal Tar Pitch.

Work by Others

The roof deck shall be thoroughly dry, smooth and free from loose material, and properly graded to outlets.

Where Book Tile is used the surface of the tile shall be covered with portland cement mortar 1-in. thick with smooth and even finish.

General Requirements Applying to the Contractor

The contractor must be approved by the manufacturer.

The contractor shall inspect the roof surfaces and shall not proceed with roofing work until all defects, reasonably apparent by proper inspection and which might injure the roofing, have been remedied by others. The contractor assumes responsibility for existing under-surfaces as to their fitness to receive roofing when he proceeds with his work.

Roof surfaces shall be swept clean and free of all loose material before proceeding with roofing work.

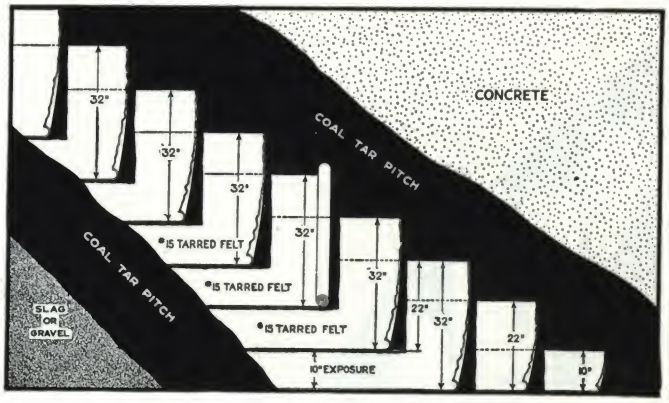
The contractor shall afford all necessary facilities for inspection by the manufacturer.

Specifications for Laying Roofing

First—Coat the deck uniformly with Coal Tar Pitch. If Precast Concrete Tile is used, the surface shall be spot or strip mopped.

Second—Over the entire surface lay three plies of Tarred Felt lapping each sheet 22-in. over the preceding one and mopping with Coal Tar Pitch the full 22-in. on each sheet so that in no place shall felt touch felt. The felt shall be cut off at the angle of the roof deck and walls or vertical surfaces.

Third—Over the entire surface pour a uniform coating of Coal Tar Pitch into which, while hot, embed not less than 400 lb. of gravel or 300 lb. of slag for each 100 sq. ft. The gravel or slag shall be from ¼-in. to ⅝-in. in size, dry and free from dirt. If the roof is applied during cold weather, or slag or gravel is damp, it shall be heated and dried immediately before application.



Materials and Workmanship

Not less than the following quantities of materials shall be used in constructing each 100 sq. ft. of roof area:

Three plies Ruberoid No. 15 Tarred Felt	50 lb.
Ruberoid Coal Tar Pitch	175 lb.
Roof gravel	400 lb.
or	
Roofing Slag	300 lb.
Total approximate weight.. gravel surface	625 lb.
Total approximate weight.. slag surface	525 lb.

All felt shall be laid without wrinkles or buckles. Pitch shall not be heated to exceed 400° F.

All roofing shall be done to the satisfaction and approval of the manufacturer.

General Notes

Note 1—**Insulated Roofs**—If this roof is applied over insulating material, the insulation must be firm, capable of withstanding traffic without crushing, and of a type that will retain nails. Provisions must be made that no more insulation shall be laid at one time than can be promptly protected by roofing in the event of sudden weather changes. A felt cut-off shall be mopped along the edge of insulation at a distance of not greater than one width of the insulating material from parapet walls, curbs and other openings.

Note 2—**Leader Heads, Vents, Etc.**—Leader heads, vents and other openings shall be furnished with metal flanges of sufficient width to permit proper connections with the roofing. If not so furnished an exception of responsibility will be taken for any leaks which may develop immediately adjacent. Flanges of scuppers, gutters, gravel guards, finishing or edging strips, leader heads and vents shall be set on top of all felts, nailed and double felt stripped.

Bond

This contractor shall furnish the Manufacturer's Surety Bond Guaranty as issued by the National Surety Company of New York, N. Y., covering a period of 15 years from date of completion of the work.

Note: This guarantee is not given on jobs of less than 50 squares, nor in such portions of the United States as are not covered by the Manufacturer's Inspection Service.

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ASPHALT FELT AND ASPHALT, GRAVEL OR SLAG FINISH ROOF

For Use Over Board Sheathing and Precast Gypsum Block

For Inclines Not Exceeding 4-In. per Ft.

SPECIFICATION NO. 153—15-YEAR BOND

Underwriters' Laboratories Class A Rating

The roofing shall be a Ruberoid Bonded Roof carrying a 15-year guaranty bond, installed in accordance with conditions and specifications as hereinafter set forth.

Definitions

Unless otherwise specifically stated in any case, the terms hereunder listed shall be construed in accordance with definitions as follows:

Manufacturer—Ruberoid Mills division of The Ruberoid Co., whose main office is at No. 95 Madison Avenue, New York, N. Y.

Contractor—The contractor for roofing work.

Asphalt—Ruberoid Roofing Asphalt.

Asphalt Felt—Ruberoid No. 15 Asphalt Felt.

Work by Others

If over boards, the roof deck shall be constructed of seasoned lumber, smooth and securely nailed, and free from large cracks or knot holes. It shall be properly graded to outlets and swept clean and free from all loose material.

Where gypsum blocks are required for nailing they must be solid blocks.

General Requirements Applying to the Contractor

The contractor shall inspect the roof surfaces and shall not proceed with roofing work until all defects, reasonably apparent by proper inspection and which might injure the roofing, have been remedied by others. The contractor assumes responsibility for existing under-surfaces as to their fitness to receive roofing when he proceeds with his work.

Roof surfaces shall be swept clean and free of all loose material before proceeding with roofing work.

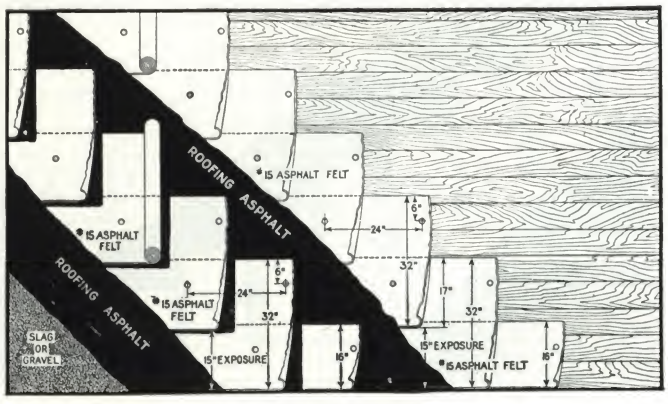
The contractor shall afford all necessary facilities for inspections by the manufacturer.

Specifications for Laying Roofing

First—Over the entire surface lay two plies of Asphalt Felt, lapping each sheet 17-in. over the preceding one and turning these felts up not less than 4-in. along all vertical surfaces. Nail as often as is necessary to secure, until the remaining felt is laid.

Second—Over the entire surface embed in Asphalt two plies of Asphalt Felt, lapping each sheet 17-in. over the preceding one, rolling each sheet immediately behind the mop to insure a uniform coating of hot Asphalt so that in no place shall felt touch felt. Each sheet shall be nailed 6-in. from the back edge at intervals of 24-in. These felts shall be cut off at the angle of the roof deck and all walls or vertical surfaces.

Third—Over the entire surface spread a uniform coating of Asphalt into which, while hot, embed not less than 400 lb. of gravel or 300 lb. of slag per 100 sq. ft. Gravel or slag must be approximately ¼-in. to ⅝-in. in size, dry and free from dirt If roof is applied during cold weather, or slag or gravel is damp, it shall be heated and dried immediately before application.



Materials and Workmanship

Not less than the following quantities of materials shall be used in constructing each 100 sq. ft. of roof area:

Fo · plies Ruberoid No. 15 Asphalt Felt	62 lb.
Ruberoid Roofing Asphalt	100 lb.
Simplex nails	1 lb.
Roofing gravel	400 lb.
or	
Roofing slag	300 lb.
Total approximate weight { gravel surface	563 lb.
Total approximate weight { slag surface	463 lb.

Felt shall be laid without wrinkles or buckles. Asphalt shall not be heated to exceed 450° F.

All nailing of roofing shall be done with Simplex flat head roofing nails or with ⅞-in. galvanized roofing nails, driven through flat tin discs.

All roofing shall be done to the satisfaction and approval of the manufacturer.

General Notes

Note 1—**Insulated Roofs**—If this roof is applied over insulating material, the insulation must be firm, capable of withstanding traffic without crushing, and of a type that will retain nails. Provisions must be made that no more insulation shall be laid at one time than can be promptly protected by roofing in the event of sudden weather changes. A felt cut-off shall be mopped along the edge of insulation at a distance of not greater than one width of the insulating material from parapet walls, curbs and other openings.

Note 2—**Leader Heads, Vents, etc.**—Leader heads, vents, and other openings shall be furnished with metal flanges of sufficient width to permit proper connection with the roofing. If not so furnished an exception of responsibility will be taken for any leaks which may develop immediately adjacent. Flanges of scuppers, gutters, gravel guards, finishing or edging strips, leader heads and vents shall be set on top of all felts, nailed and double felt stripped.

Bond

This contractor shall furnish the Manufacturer's Surety Bond Guaranty as issued by the National Surety Company of New York, N. Y., covering a period of 15 years from date of completion of the work.

Note: This guarantee is not given on jobs of less than 50 squares, nor in such portions of the United States as are not covered by the Manufacturer's Inspection Service.

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ASPHALT FELT AND ASPHALT, GRAVEL OR SLAG FINISH ROOF

For Use Over Poured Concrete, Poured Gypsum, Precast Concrete Tile or Book Tile

For Inclines Not Exceeding 3-In. per Ft. (Not to Be Used on True Level Decks)

SPECIFICATION NO. 154—15-YEAR BOND

Underwriters' Laboratories Class A Rating

The roofing shall be a Ruberoid Bonded Roof carrying a 15-year guaranty bond, installed in accordance with conditions and specifications as hereinafter set forth.

Definitions

Unless otherwise specifically stated in any case, the terms hereunder listed shall be construed in accordance with definitions as follows:

Manufacturer—Ruberoid Mills division of THE RUBEROID Co., whose main office is at No. 95 Madison Avenue, New York, N. Y.

Contractor—The contractor for roofing work.

Asphalt—Ruberoid Roofing Asphalt.

Asphalt Felt—Ruberoid No. 15 Asphalt Felt.

Concrete Primer—Ruberoid Concrete Primer.

Work by Others

The roof deck shall be thoroughly dry, smooth and free from lose material, and properly graded to outlets.

Where Book Tile is used the surface of the tile shall be covered with portland cement mortar 1-in. thick with smooth and even finish.

General Requirements Applying to the Contractor

The contractor must be approved by the manufacturer.

The contractor shall inspect the roof surfaces and shall not proceed with roofing work until all defects, reasonably apparent by proper inspection and which might injure the roofing, have been remedied by others. The contractor assumes responsibility for existing under-surfaces as to their fitness to receive roofing when he proceeds with his work.

Roof surfaces shall be swept clean and free of all loose material before proceeding with roofing work.

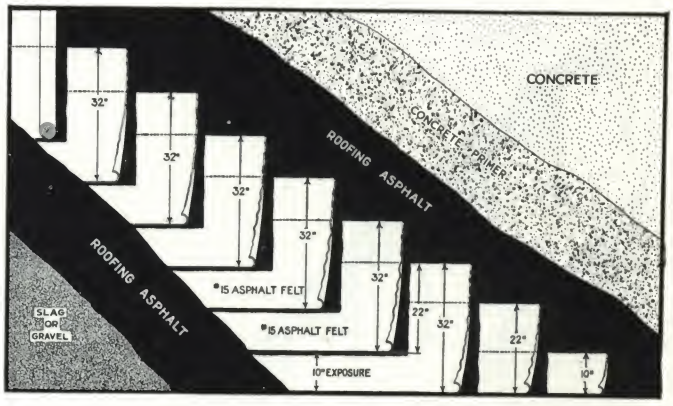
The contractor shall afford all necessary facilities for inspections by the manufacturer.

Specifications for Laying Roofing

First—Coat the entire surface with Concrete Primer applied cold and allow same to dry thoroughly. Where plastic material is used to caulk the joints of the blocks, the coating of primer shall be held back 2-in. from all joints.

Second—Over the entire surface embed in Asphalt three plies of Asphalt Felt, lapping each sheet 22-in. over the preceding one, rolling each sheet immediately behind the mop to insure a uniform coating of hot Asphalt, so that in no place shall felt touch felt. All felts shall be cut off at the angle of the roof deck and walls or vertical surfaces.

Third—Over the entire surface spread a uniform coating of Asphalt into which, while hot, embed not less than 400 lb. of gravel or 300 lb. of slag per 100 sq. ft. Gravel or slag must be approximately ¼ in. to ⅝ in. in size, thoroughly dry and free from dust or foreign matter. If roof is applied during cold weather, or the slag or gravel is damp, it shall be heated and dried immediately before application.



Materials and Workmanship

Not less than the following quantities of materials shall be used in constructing each 100 sq. ft. of roof area:

Ruberoid Concrete Primer (1 gal.)	10 lb.
Three plies Ruberoid No. 15 Asphalt Felt	47 lb.
Ruberoid Roofing Asphalt	125 lb.
Roofing gravel	400 lb.
or	
Roofing slag	300 lb.
Total approximate weight... gravel surface	582 lb.
slag surface	482 lb.

The felt shall be laid without wrinkles or buckles, and the asphalt shall not be heated to exceed 450° F.

All roofing shall be done to the satisfaction and approval of the manufacturer.

General Notes

***Note 1*—Insulated Roofs**—If this roof is applied over insulating material, the insulation must be firm, capable of withstanding traffic without crushing, and of a type that will retain nails. Provisions must be made that no more insulation shall be laid at one time than can be promptly protected by roofing in the event of sudden weather changes. A felt cut-off shall be mopped along the edge of insulation at a distance of not greater than one width of the insulating material from parapet wall, curbs and other openings.

***Note 2*—Leader Heads, Vents, Etc.**—Leader heads, vents, and other openings shall be furnished with metal flanges of sufficient width to permit proper connections with the roofing. If not so furnished an exception of responsibility will be taken for any leaks which may develop immediately adjacent. Flanges of scuppers, gutters, gravel guards, finishing or edging strips, leader heads and vents shall be set on top of all felts, nailed and double felt stripped.

Bond

This contractor shall furnish the Manufacturer's Surety Bond Guaranty as issued by the National Surety Company of New York, N. Y., covering a period of 15 years from date of completion of the work.

Note: This guarantee is not given on jobs of less than 50 squares, nor in such portions of the United States as are not covered by the Manufacturer's Inspection Service.

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ASBESTOS AND ASPHALT MATERIALS, SMOOTH FINISH ROOF

For Use Over Board Sheathing

For Inclines Not Exceeding 6-In. per Ft. (Not to Be Used on True Level Decks)

SPECIFICATION NO. 200—20-YEAR BOND

Underwriters' Laboratories Class A Rating

The roofing shall be Ruberoid Bonded Roof carrying a 20-year guaranty bond, installed in accordance with conditions and specifications as hereinafter set forth.

Definitions

Unless otherwise specifically stated in any case, the terms hereunder listed shall be construed in accordance with definitions as follows:

Manufacturer—Ruberoid Mills division of THE RUBEROID CO., whose main office is at No. 95 Madison Avenue, New York, N. Y.

Contractor—The contractor for roofing work.

Asphalt—Ruberoid Bond Roofing Asphalt.

Asbestos Base Felt—Ruberoid No. 60 Asbestos Base Felt.

Asbestos Felt—Ruberoid No. 15 Asphalt-saturated Asbestos Felt.

Work by Others

The roof deck must be constructed of seasoned lumber, dressed on upper side, dry and free from large cracks and knot holes. Roof boards must be securely nailed in place, leaving no nail heads above the wood surfaces. Surfaces must be properly graded to outlets, and cant strips provided in the angle formed between the roof and vertical surfaces.

General Requirements Applying to the Contractor

The contractor must be approved by the manufacturer.

The contractor shall inspect the roof surfaces and shall not proceed with roofing work until all defects reasonably apparent by proper inspection and which might injure the roofing, have been remedied by others. The contractor assumes responsibility for existing under-surfaces as to their fitness to receive roofing when he proceeds with his work.

Roof surfaces shall be swept clean and free of all loose material before proceeding with roofing work.

The contractor shall afford all necessary facilities for inspections by the manufacturer.

Specifications for Laying Roofing

First—Lay one ply of Asbestos Base Felt, lapping each sheet 2-in. at edges and not less than 6-in. at end laps. Seal the laps with Asphalt cement, and nail at 3-in. intervals along the lap, turning this sheet up not less than 4-in. along all vertical surfaces.

Second—Over the entire surface embed in Asphalt three plies of Asbestos Felt, lapping each sheet 22-in. over the preceding one, rolling each sheet immediately behind the mop to insure a uniform coating of hot Asphalt so that in no place shall felt touch felt. Each sheet shall be nailed along the back edge from 3 to 6-in. down at intervals of approximately 9-in. These felts shall be cut off at the angle of the roof deck and walls or vertical surfaces.

Third—Over the entire surface mop a uniform coating of Asphalt using not more than 20 lb. per 100 sq. ft.

Materials and Workmanship

Not less than the following quantities of materials shall be used in constructing each 100 sq. ft. of roof area:

One ply Ruberoid No. 60 Asbestos Base Felt	60 lb.
Three plies Ruberoid No. 15 Asphalt-saturated Asbestos Felt	48 lb.
Ruberoid Bond Roofing Asphalt	95 lb.
Simplex nails	2 lb.
Total approximate weight per 100 sq. ft.	205 lb.

Felt shall be laid without wrinkles or buckles. It shall be rolled immediately behind the hot mop and firmly embedded by brooming the felt. The Asphalt shall not be heated to exceed 450° F.

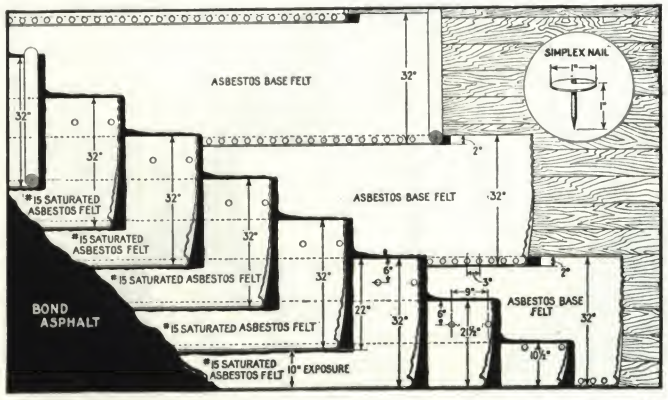
All nailing of roofing to board surfaces shall be done with Simplex flat head roofing nails or with ⅞-in. galvanized roofing nails driven through flat tin discs.

All roofing shall be done to the satisfaction and approval of the manufacturer.

General Notes

Note 1—**Insulated Roofs**—If this roof is applied over insulating material, the insulation must be firm, capable of withstanding traffic without crushing, and of a type that will retain nails. Provisions must be made that no more insulation shall be laid at one time than can be promptly protected by roofing in the event of sudden weather changes. A felt cut-off shall be mopped along the edge of insulation at a distance of not greater than one width of the insulating material from parapet walls, curbs and other openings.

Note 2—**Leader Heads, Vents, Etc.**—Leader heads, vents, and other openings shall be furnished with metal flanges of sufficient width to permit proper connections with the roofing. If not so furnished an exception of responsibility will be taken for any leaks which may develop immediately adjacent. Flanges of scuppers, gutters, gravel guards, finishing or edging strips, leader heads and vents shall be set on top of all felts, nailed and double felt stripped.



Bond

This contractor shall furnish the Manufacturer's Surety Bond Guaranty as issued by the National Surety Company of New York, N. Y., covering a period of 20 years from date of completion of the work.

Note: This guarantee is not given on jobs of less than 50 squares, nor in such portions of the United States as are not covered by the Manufacturer's Inspection Service.

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ASBESTOS AND ASPHALT MATERIALS, SMOOTH FINISH ROOF

For Use Over Poured Concrete, Poured Gypsum, Gypsum Block, Precast Concrete Tile or Book Tile

For Inclines Not Exceeding 6-In. per Ft. (Not to Be Used on True Level Decks)

SPECIFICATION NO. 201—20-YEAR BOND

Underwriters' Laboratories Class A Rating

The roofing shall be a Ruberoid Bonded Roof carrying a 20-year guaranty bond, installed in accordance with conditions and specifications as hereinafter set forth.

Definitions

Unless otherwise specifically stated in any case, the terms hereunder listed shall be construed in accordance with definitions as follows:

Manufacturer—Ruberoid Mills division of THE RUBEROID Co., whose main office is at No. 95 Madison Avenue, New York, N. Y.

Contractor—The contractor for roofing work.

Asphalt—Ruberoid Bond Roofing Asphalt.

Asbestos Base Felt—Ruberoid No. 60 Asbestos Base Felt.

Asbestos Felt—Ruberoid No. 15 Asphalt-saturated Asbestos Felt.

Concrete Primer—Ruberoid Concrete Primer.

Work by Others

The roof deck shall be thoroughly dry, smooth and free from loose material, and properly graded to outlets.

Where Book Tile is used the surface of the tile shall be covered with portland cement mortar 1-in. thick with a smooth and even finish.

Where poured gypsum or precast gypsum blocks are used, all felt shall be nailed as required when the roof deck is of boards. Gypsum blocks for nailing must be solid blocks.

For inclines exceeding 3-in. to the foot, if the deck is of concrete wooden nailing strips must be provided at proper intervals.

Cant strips shall be provided in the angle formed between the roof and vertical surfaces.

General Requirements Applying to the Contractor

The contractor must be approved by the manufacturer.

The contractor shall inspect the roof surfaces and shall not proceed with roofing work until all defects, reasonably apparent by proper inspection and which might injure the roofing, have been remedied by others. The contractor assumes responsibility for existing under-surfaces as to their fitness to receive roofing when he proceeds with his work.

Roof surfaces shall be swept clean and free of all loose material before proceeding with roofing work.

The contractor shall afford all necessary facilities for inspections by the manufacturer.

Specifications for Laying Roofing

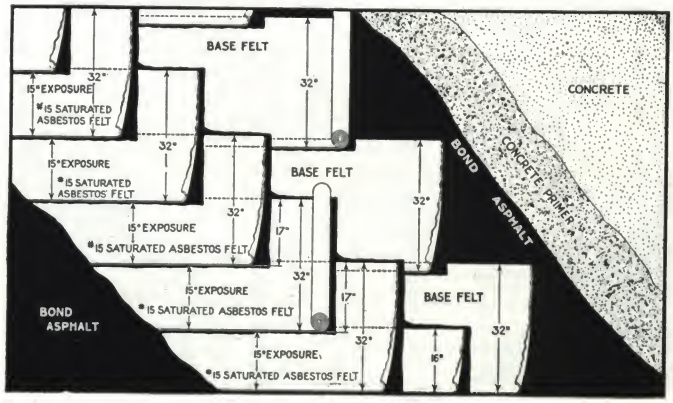
First—Coat the entire surface with Concrete Primer applied cold and allow same to dry thoroughly. Where plastic material is used to caulk the joints of blocks, the coating of primer shall be held back 2-in. from all joints.

Second—Over the entire surface embed in Asphalt one ply of Asbestos Base Felt lapping each sheet 2-in. over the preceding one at edges and not less than 6-in. at end laps. Mop between the laps and nail at intervals of 12-in. along the laps into the nailing strip. All felts shall be cut off at the angle of the roof deck and all walls or vertical surfaces.

Third—Over the entire surface embed in Asphalt two plies of Asbestos Felt, lapping each sheet 17-in. over the preceding one, rolling each sheet immediately behind the mop to insure a uniform coating of hot asphalt so that in no place shall felt touch felt.

On inclines exceeding 3-in. to the foot, these sheets shall be nailed 6-in. from the back edge at intervals of 24-in. All felts shall be cut off at the angle of the roof deck and all walls or vertical surfaces.

Fourth—Over the entire surface mop a uniform coating of Asphalt, using not more than 20 lb. per 100 sq. ft.



Materials and Workmanship

Not less than the following quantities of materials shall be used in constructing each 100 sq. ft. of roof area:

Ruberoid Concrete Primer (1 gal.)	10 lb.
One ply Ruberoid No. 60 Asbestos Base Felt	60 lb.
Two plies Ruberoid No. 15 Asphalt-saturated Asbestos Felt	32 lb.
Ruberoid Bond Roofing Asphalt	110 lb.
Total approximate weight per 100 sq. ft.	212 lb.

Felt shall be laid without wrinkles or buckles. It shall be rolled immediately behind the hot mop and firmly imbedded by brooming the felt.

All nailing of roofing to roof surfaces shall be done with Simplex flat head roofing nails or with 7/8-in. galvanized roofing nails, driven through flat tin discs.

All roofing shall be done to the satisfaction and approval of the manufacturer.

General Notes

***Note 1*—Insulated Roofs**—If this roof is applied over insulating material, the insulation must be firm, capable of withstanding traffic without crushing, and of a type that will retain nails. Provisions must be made that no more insulation shall be laid at one time than can be promptly protected by roofing in the event of sudden weather changes. A felt cut-off shall be mopped along the edge of insulation at a distance of not greater than one width of the insulating material from parapet walls, curbs and other openings.

***Note 2*—Leader Heads, Vents, etc.**—Leader heads, vents, and other openings shall be furnished with metal flanges of sufficient width to permit proper connections with the roofing. If not so furnished an exception of responsibility will be taken for any leaks which may develop immediately adjacent. Flanges of scuppers, gutters, gravel guards, finishing or edging strips, leader heads and vents shall be set on top of all felts, nailed and double felt stripped.

Bond

This contractor shall furnish the Manufacturer's Surety Bond Guaranty as issued by the National Surety Company of New York, N. Y., covering a period of 20 years from date of completion of the work.

Note: This guarantee is not given on jobs of less than 50 squares, nor in such portions of the United States as are not covered by the Manufacturer's Inspection Service.

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COAL TAR PITCH AND TARRED FELT, GRAVEL OR SLAG FINISH ROOF

For Use Over Board Sheathing and Precast Gypsum Blocks

For Inclines Not Exceeding 2-In. per Ft.

SPECIFICATION NO. 202—20-YEAR BOND

Underwriters' Laboratories Class A Rating

The roofing shall be a Ruberoid Bonded Roof carrying a 20-year guaranty bond, installed in accordance with conditions and specifications as hereinafter set forth.

Definitions

Unless otherwise specifically stated in any case, the terms hereunder listed shall be construed in accordance with definitions as follows.

Manufacturer—Ruberoid Mills division of THE RUBEROID Co., whose main office is at No. 95 Madison Avenue, New York, N. Y.

Contractor—The contractor for roofing work.

Tarred Felt—Ruberoid No. 15 Tarred Felt.

Coal Tar Pitch—Ruberoid Coal Tar Pitch.

Work by Others

If over boards, the roof deck shall be constructed of seasoned lumber, smooth and securely nailed, and free from large cracks or knot holes. It shall be properly graded to outlets and swept clean and free from all loose material.

Where gypsum blocks are required for nailing they must be solid.

General Requirements Applying to the Contractor

The contractor must be approved by the manufacturer.

The contractor shall inspect the roof surfaces and shall not proceed with roofing work until all defects, reasonably apparent by proper inspection and which might injure the roofing, have been remedied by others. The contractor assumes responsibility for existing under-surfaces as to their fitness to receive roofing when he proceeds with his work.

Roof surfaces shall be swept clean and free of all loose material before proceeding with roofing work.

The contractor shall afford all necessary facilities for inspection by the manufacturer.

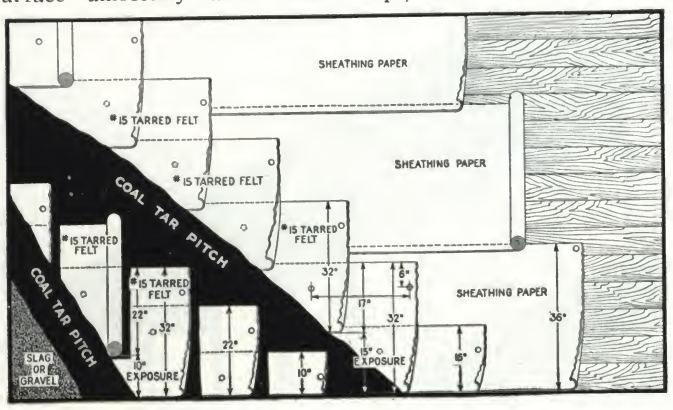
Specifications for Laying Roofing

First—Lay one thickness of sheathing paper, weighing not less than 5 lb. per 100 sq. ft., lapping the sheets at least 1-in. If Precast Gypsum Block is used, sheathing paper may be omitted.

Second—Over the entire surface lay two plies of Tarred Felt, lapping each sheet 17-in. over the preceding one and nailing as often as is necessary to secure, until the remaining felt is laid. These felts shall be turned up not less than 4-in. along all walls or vertical surfaces.

Third—Coat the entire surface uniformly with Coal Tar Pitch.

Fourth—Over the entire surface lay three plies of Tarred Felt, lapping each sheet 22-in. over the preceding one, mopping with Coal Tar Pitch the full 22-in. on each sheet, so that in no place shall felt touch felt. The back edge of the sheet shall be nailed at intervals of 24-in. at a distance not greater than 6-in. from the back edge of the sheet. Such nailing as is necessary shall be done so that all nails are covered by not less than two plies of felt. These felts shall be cut off at the angle of the roof deck and walls or vertical surfaces.



Fifth—Over the entire surface pour a uniform coating of Coal Tar Pitch into which, while hot, embed not less than 400 lb. of gravel or 300 lb. of slag for each 100 sq. ft. The gravel or slag shall be ¼-in. to ⅝-in. in size, dry and free from dirt. If the roof is applied during cold weather or slag or gravel is damp, it shall be heated and dried immediately before application.

Materials and Workmanship

Not less than the following quantities of materials shall be used in constructing each 100 sq. ft. of roof area:

One layer Sheathing Paper	5 lb.
Five plies Ruberoid No. 15 Tarred Felt	80 lb.
Ruberoid Coal Tar Pitch	150 lb.
Simplex nails	2 lb.
Roofing gravel	400 lb.
or	
Roofing slag	300 lb.
Total approximate weight { gravel surface	637 lb.
Total approximate weight { slag surface	537 lb.

The felt shall be laid without wrinkles or buckles, and the pitch shall not be heated to exceed 400° F.

All nailing of roofing shall be done with Simplex flat head roofing nails or with ⅞-in. galvanized roofing nails, driven through flat tin discs.

All roofing shall be done to the satisfaction and approval of the manufacturer.

General Notes

***Note 1*—Insulated Roofs**—If this roof is applied over insulating material, the insulation must be firm, capable of withstanding traffic without crushing, and of a type that will retain nails. Provisions must be made that no more insulation shall be laid at one time than can be promptly protected by roofing in the event of sudden weather changes. A felt cut-off shall be mopped along the edge of insulation at a distance of not greater than one width of the insulating material from parapet walls, curbs and other openings.

***Note 2*—Leader Heads, Vents, etc.**—Leader heads, vents, and other openings shall be furnished with metal flanges of sufficient width to permit proper connections with the roofing. If not so furnished an exception of responsibility will be taken for any leaks which may develop immediately adjacent. Flanges of scuppers, gutters, gravel guards, finishing or edging strips, leader heads and vents shall be set on top of all felts, nailed and double felt stripped.

Bond

This contractor shall furnish the Manufacturer's Surety Bond Guaranty as issued by the National Surety Company of New York, N. Y., covering a period of 20 years from date of completion of work.

Note: This guarantee is not given on jobs of less than 50 squares, nor in such portions of the United States as are not covered by the Manufacturer's Inspection Service.

Continued on next page

COAL TAR PITCH AND TARRED FELT, GRAVEL OR SLAG FINISH ROOF

For Use Over Poured Concrete, Poured Gypsum, Precast Concrete Tile or Book Tile

For Inclines Not Exceeding 1-In. per Ft.

SPECIFICATION NO. 203—20-YEAR BOND

Underwriters' Laboratories Class A Rating

The roofing shall be a Ruberoid Bonded Roof carrying a 20-year guaranty bond, installed in accordance with conditions and specifications as hereinafter set forth.

Definitions

Unless otherwise specifically stated in any case, the terms hereunder listed shall be construed in accordance with definitions as follows:

Manufacturer—Ruberoid Mills division of THE RUBEROID Co., whose main office is at No. 95 Madison Avenue, New York, N. Y.

Contractor—The contractor for roofing work.

Tarred Felt—Ruberoid No. 15 Tarred Felt.

Coal Tar Pitch—Ruberoid Coal Tar Pitch.

Work by Others

The roof deck shall be thoroughly dry, smooth and free from loose material, and properly graded to outlets.

Where Book Tile is used the surface of the tile shall be covered with portland cement mortar 1-in. thick with a smooth and even finish.

General Requirements Applying to the Contractor

The contractor must be approved by the manufacturer.

The contractor shall inspect the roof surfaces and shall not proceed with roofing work until all defects reasonably apparent by proper inspection and which might injure the roofing have been remedied by others. The contractor assumes responsibility for existing under-surfaces as to their fitness to receive roofing when he proceeds with his work.

Roof surfaces shall be swept clean and free of all loose material before proceeding with roofing work.

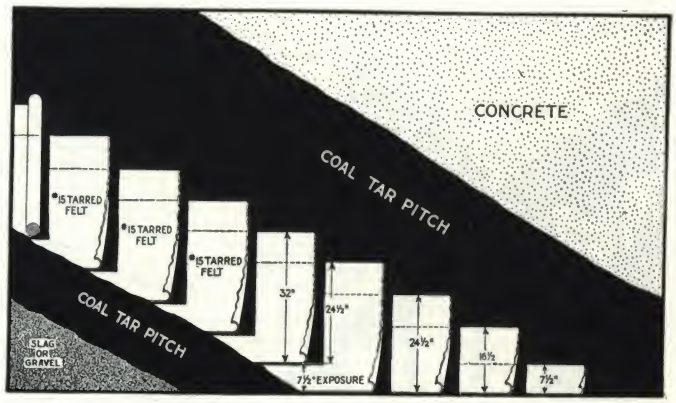
The contractor shall afford all necessary facilities for inspections by the manufacturer.

Specifications for Laying Roofing

First—Coat the roof deck uniformly with Coal Tar Pitch. If Precast Concrete Tile is used, the surface shall be spot or strip mopped.

Second—Over the entire surface lay four plies of Tarred Felt, lapping each sheet 24½-in. over the preceding one and mopping with Coal Tar Pitch the full 24½-in. on each sheet so that in no place shall felt touch felt. These felts shall be cut off at the angle of the roof deck and walls or vertical surfaces.

Third—Over the entire surface pour a uniform coating of Coal Tar Pitch into which, while hot, embed not less than 400 lb. of gravel or 300 lb. of slag for each 100 sq. ft. The gravel or slag shall be from ¼-in. to ⅝-in. in size, dry and free from dirt. If the roof is applied during cold weather, or slag or gravel is damp, it shall be heated and dried immediately before application.



Materials and Workmanship

Not less than the following quantities of materials shall be used in constructing each 100 sq. ft. of roof area:

Four plies Ruberoid No. 15 Tarred Felt	65 lb.
Ruberoid Coal Tar Pitch	200 lb.
Roofing Gravel	400 lb.
or	
Roofing Slag	300 lb.
Total approximate weight { gravel surface	665 lb.
Total approximate weight { slag surface	565 lb.

The felt shall be laid without wrinkles or buckles, and the pitch shall not be heated to exceed 400° F.

All roofing shall be done to the satisfaction and approval of the manufacturer.

General Notes

***Note 1*—Insulated Roofs**—If this roof is applied over insulating material, the insulation must be firm, capable of withstanding traffic without crushing, and of a type that will retain nails. Provisions must be made that no more insulation shall be laid at one time than can be promptly protected by roofing in the event of sudden weather changes. A felt cut-off shall be mopped along the edge of insulation at a distance of not greater than one width of the insulating material from parapet walls, curbs and other openings.

***Note 2*—Leader Heads, Vents, etc.**—Leader heads, vents and other openings shall be furnished with metal flanges of sufficient width to permit proper connections with the roofing. If not so furnished an exception of responsibility will be taken for any leaks which may develop immediately adjacent. Flanges of scupper, gutters, gravel guards, finishing or edging strips, leader heads and vents shall be set on top of all felts, nailed and double felt stripped.

Bond

This contractor shall furnish the Manufacturer's Surety Bond Guaranty as issued by the National Surety Company of New York, N. Y., covering a period of 20 years from date of completion of the work.

Note: This guarantee is not given on jobs of less than 50 squares, nor in such portions of the United States as are not covered by the Manufacturer's Inspection Service.

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ASPHALT FELT AND ASPHALT, GRAVEL OR SLAG FINISH ROOF

For Use Over Board Sheathing and Precast Gypsum Block

For Inclines Not Exceeding 3-In. per Ft.

SPECIFICATION NO. 204—20-YEAR BOND

Underwriters' Laboratories Class A Rating

The roofing shall be a Ruberoid Bonded Roof carrying a 20-year guaranty bond, installed in accordance with conditions and specifications as hereinafter set forth.

Definitions

Unless otherwise specifically stated in any case, the terms hereunder listed shall be construed in accordance with definitions as follows:

Manufacturer—Ruberoid Mills division of THE RUBEROID CO., whose main office is at No. 95 Madison Avenue, New York, N. Y.

Contractor—The contractor for roofing work.

Asphalt—Ruberoid Roofing Asphalt.

Asphalt Felt—Ruberoid No. 15 Asphalt Felt.

Work by Others

If over boards, the roof deck shall be constructed of seasoned lumber, smooth, and securely nailed, and free from large cracks or knot holes. It shall be properly graded to outlets and swept clean and free from all loose material. Where gypsum blocks are required for nailing, they must be solid blocks.

General Requirements Applying to the Contractor

The contractor must be approved by the manufacturer.

The contractor shall inspect the roof surfaces and shall not proceed with roofing work until all defects, reasonably apparent by proper inspection and which might injure the roofing, have been remedied by others. The contractor assumes responsibility for existing under-surfaces as to their fitness to receive roofing when he proceeds with his work.

Roof surfaces shall be swept clean and free of all loose material before proceeding with roofing work.

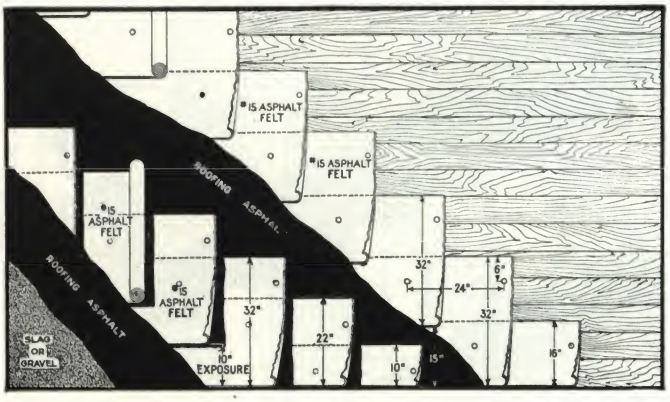
The contractor shall afford all necessary facilities for inspections by the manufacturer.

Specifications for Laying Roofing

First—Over the entire surface lay two plies of Asphalt Felt, lapping each sheet 17-in. over the preceding one and nailing as often as is necessary to secure, until the remaining felt is laid. These felts shall be turned up not less than 4-in. along all walls and vertical surfaces.

Second—Over the entire surface embed in Asphalt three plies of Asphalt Felt, lapping each sheet 22-in. over the preceding one, rolling each sheet immediately behind the mop to insure a uniform coating of hot Asphalt, so that in no place shall felt touch felt. Each sheet shall be nailed along the back edge at intervals of 24-in. These felts shall be cut off at the angle of the roof deck and walls or vertical surfaces.

Third—Over the entire surface spread a uniform coating of Asphalt into which, while hot, embed not less than 400 lb. of gravel, or 300 lb. of slag per 100 sq. ft. Gravel or slag must be approximately ¼-in. to ⅝-in. in size, thoroughly dry and free from dust or foreign matter. If roof is applied during cold weather, or the slag or gravel is damp, it shall be heated and dried immediately before application.



Materials and Workmanship

Not less than the following quantities of materials shall be used in constructing each 100 sq. ft. of roof area:

Five plies Ruberoid No. 15 Asphalt Felt	78 lb.
Ruberoid Roofing Asphalt	125 lb.
Simplex nails	2 lb.
Roofing Gravel	400 lb.
or	
Roofing Slag	300 lb.
Total approximate weight.. gravel surface	605 lb.
Total approximate weight.. slag surface	505 lb.

Felt shall be laid without wrinkles or buckles. Asphalt shall not be heated to exceed 450° F.

All nailing of roofing to board surfaces shall be done with Simplex flat head roofing nails or with ⅞-in. galvanized nails, driven through flat tin discs.

All roofing shall be done to the satisfaction and approval of the manufacturer.

General Notes

***Note 1*—Insulated Roofs**—If this roof is applied over insulating material, the insulation must be firm, capable of withstanding traffic without crushing, and of a type that will retain nails. Provisions must be made that no more insulation shall be laid at one time than can be promptly protected by roofing in the event of sudden weather changes. A felt cut-off shall be mopped along the edge of insulation at a distance of not greater than one width of the insulating material from parapet walls, curbs and other openings.

***Note 2*—Leader Heads, Vents, etc.**—Leader heads vents, and other openings shall be furnished with metal flanges of sufficient width to permit proper connections with the roofing. If not so furnished an exception of responsibility will be taken for any leaks which may develop immediately adjacent. Flanges of scuppers, gutters, gravel guards, finishing or edging strips, leader heads and vents shall be set on top of all felts, nailed and double felt stripped.

Bond

This contractor shall furnish the Manufacturer's Surety Bond Guaranty as issued by the National Surety Company of New York, N. Y., covering a period of 20 years from date of completion of the work.

Note: This guarantee is not given on jobs of less than 50 squares, nor in such portions of the United States as are not covered by the Manufacturer's Inspection Service.

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ASPHALT FELT AND ASPHALT, GRAVEL OR SLAG FINISH ROOF

For Use Over Poured Concrete, Poured Gypsum, Precast Concrete Tile or Book Tile

For Inclines Not Exceeding 3-In. per Ft.

SPECIFICATION NO. 205—20-YEAR BOND

Underwriters' Laboratories Class A Rating

The roofing shall be a Ruberoid Bonded Roof carrying a 20-year guaranty bond, installed in accordance with conditions and specifications as hereinafter set forth.

Definitions

Unless otherwise specifically stated in any case, the terms hereunder listed shall be construed in accordance with definitions as follows:

Manufacturer—Ruberoid Mills division of THE RUBEROID Co., whose main office is at No. 95 Madison Avenue, New York, N. Y.

Contractor—The contractor for roofing work.

Concrete Primer—Ruberoid Concrete Primer.

Asphalt Felt—Ruberoid No. 15 Asphalt Felt.

Asphalt—Ruberoid Roofing Asphalt.

Work by Others

The roof deck shall be thoroughly dry, smooth, and free from loose material, and properly graded to outlets.

Where Book Tile is used the surface of the tile shall be covered with portland cement mortar 1-in. thick with a smooth and even finish.

General Requirements Applying to the Contractor

The contractor must be approved by the manufacturer.

The contractor shall inspect the roof surfaces and shall not proceed with roofing work until all defects, reasonably apparent by proper inspection and which might injure the roofing, have been remedied by others. The contractor assumes responsibility for existing under-surfaces as to their fitness to receive roofing when he proceeds with his work.

Roof surfaces shall be swept clean and free of all loose material before proceeding with roofing work.

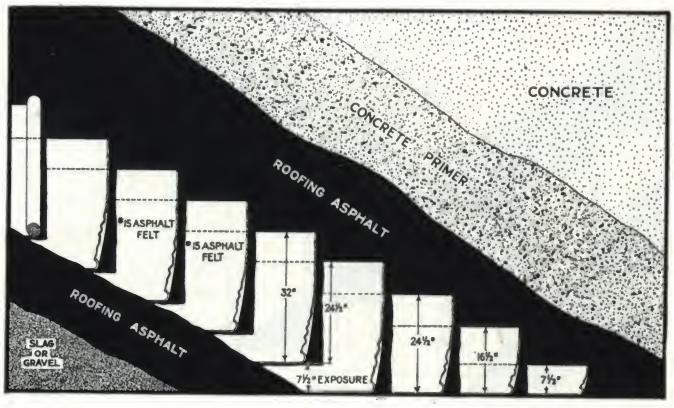
The contractor shall afford all necessary facilities for inspections by the manufacturer.

Specifications for Laying Roofing

First—Coat the entire surface with Concrete Primer applied cold and allow same to dry thoroughly. Where plastic material is used to caulk the joints of blocks, the coating of primer shall be held back 2-in. from all joints.

Second—Over the entire surface embed in Asphalt four plies of Asphalt Felt, lapping each sheet 24½-in. over the preceding one, rolling each sheet immediately behind the mop to insure a uniform coating of hot asphalt so that in no place shall felt touch felt. All felts shall be cut off at the angle of the roof deck and walls or vertical surfaces.

Third—Over the entire surface spread a uniform coating of Asphalt into which, while hot, embed not less than 400 lb. of gravel or 300 lb. of slag per 100 sq. ft. Gravel or slag must be approximately ¼-in. to ⅝-in. in size, thoroughly dry and free from dust or foreign matter. If roof is applied during cold weather, or gravel or slag is damp, it shall be heated and dried immediately before application.



Materials and Workmanship

Not less than the following quantities of materials shall be used in constructing each 100 sq. ft. of roof area:

Ruberoid Concrete Primer (1 gal.)	10 lb.
Four plies Ruberoid No. 15 Asphalt Felt	62 lb.
Ruberoid Roofing Asphalt	150 lb.
Roofing Gravel	400 lb.
or	
Roofing Slag	300 lb.
Total approximate weight... Gravel surface	622 lb.
Total approximate weight... Slag surface	522 lb.

Felt shall be laid without wrinkles or buckles, and the asphalt shall not be heated to exceed 450° F.

All roofing shall be done to the satisfaction and approval of the manufacturer.

General Notes

***Note 1*—Insulated Roofs**—If this roof is applied over insulating material, the insulation must be firm, capable of withstanding traffic without crushing, and of a type that will retain nails. Provisions must be made that no more insulation shall be laid at one time than can be promptly protected by roofing in the event of sudden weather changes. A felt cut-off shall be mopped along the edge of insulation at a distance of not greater than one width of the insulating material from parapet walls, curbs, and other openings.

***Note 2*—Leader Heads, Vents, etc.**—Leader heads, vents and other openings shall be furnished with metal flanges of sufficient width to permit proper connections with the roofing. If not so furnished an exception of responsibility will be taken for any leaks which may develop immediately adjacent. Flanges of scuppers, gutters, gravel guards, finishing or edging strips, leader heads, and vents shall be set on top of all felts, nailed and double felt stripped.

Bond

This contractor shall furnish the Manufacturer's Surety Bond as issued by the National Surety Company of New York, N. Y., covering a period of 20 years from date of completion of work.

Note: This guarantee is not given on jobs of less than 50 squares, nor in such portions of the United States as are not covered by the Manufacturer's Inspection Service.

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COAL TAR PITCH AND TARRED FELT ROOF

For Use Over Concrete Under Promenade Tile

For Inclines Not Exceeding 1-In. per Ft.

SPECIFICATION NO. 206—20-YEAR BOND

Underwriters' Laboratories Class A Rating

The roofing shall be a Ruberoid Bonded Roof carrying a 20-year guaranty bond, installed in accordance with conditions and specifications as hereinafter set forth.

Definitions

Unless otherwise specifically stated in any case, the terms hereunder listed shall be construed in accordance with definitions as follows:

Manufacturer—Ruberoid Mills division of THE RUBEROID Co., whose main office is at No. 95 Madison Avenue, New York, N. Y.

Contractor—The contractor for roofing work.

Tarred Felt—Ruberoid No. 15 Tarred Felt.

Coal Tar Pitch—Ruberoid Coal Tar Pitch.

Work by Others

The roof deck shall be thoroughly dry, smooth, and free from loose material, and properly graded to outlets.

General Requirements Applying to the Contractor

The contractor must be approved by the manufacturer.

The contractor shall inspect the roof surfaces and shall not proceed with roofing work until all defects reasonably apparent by proper inspection and which might injure the roofing, have been remedied by others. The contractor assumes responsibility for existing under-surfaces as to their fitness to receive roofing when he proceeds with his work.

Roof surface shall be swept clean and free of all loose material before proceeding with roofing work.

The contractor shall afford all necessary facilities for inspection by the manufacturer.

Specifications for Laying Roofing

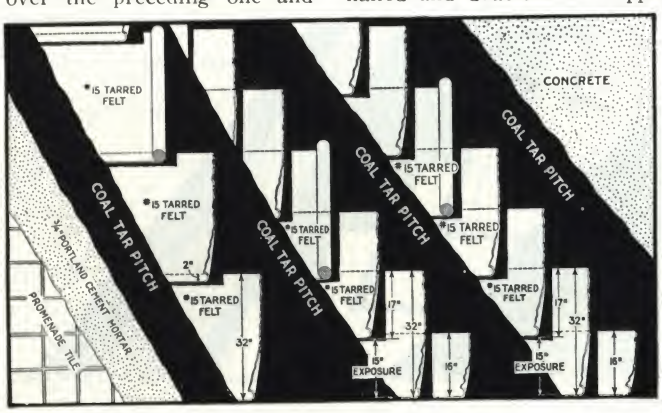
First—Coat the roof deck uniformly with Coal Tar Pitch.

Second—Over the entire surface lay two plies of Tarred Felt, lapping each sheet 17-in. over the preceding one and mopping with Coal Tar Pitch the full 17-in. on each sheet so that in no place shall felt touch felt. Felt shall be cut off at the angle of the roof deck and walls or vertical surfaces.

Third—Coat the entire surface uniformly with Coal Tar Pitch.

Fourth—Over the entire surface lay two plies of Tarred Felt, lapping each sheet 17-in. over the preceding one and mopping with Coal Tar Pitch the full 17-in. on each sheet so that in no place shall felt touch felt.

Fifth—Before laying the tile, thoroughly sweep the surface of the roof and apply a uniform mopping of Coal Tar Pitch in to which, while hot, lay one ply of Tarred Felt, lapping each sheet 2-in. over the preceding one. Immediately before laying the tile, cover this surface with a uniform mopping of Coal Tar Pitch. No more roof surface shall be covered with this last ply of felt and mopping of pitch than is to be covered at the same time with tile.



Sixth—Over the roofing thus laid apply approximately ¾-in. of portland cement mortar (1 to 3 mix). No more mortar shall be applied at one time than is to be immediately covered with the tile. Into this mortar bed lay Promenade Tile of Vitrified clay or slate as selected and approved by the architect, setting them to show ¼-in. joints. These joints shall be grouted full with portland cement mortar (1 to 2 mix). Expansion joints approximately ¾-in. wide and filled with a plastic material (as approved by the architect) shall be provided between the Promenade Tile and all flashings, and additional expansion joints shall be provided throughout the roof surface as may be necessary to take care of expansion. All expansion joints shall extend through the mortar bed to the top sheet of waterproofing.

Materials and Workmanship

Not less than the following quantities of materials shall be used in constructing each 100 sq. ft. of roof area:

Five plies of Ruberoid No. 15 Tarred Felt	80 lb.
Ruberoid Coal Tar Pitch	225 lb.
Total approximate weight	305 lb.

The felt shall be laid without wrinkles or buckles, and the pitch shall not be heated to exceed 400° F.

All roofing shall be done to the satisfaction and approval of the manufacturer.

General Notes

***Note 1*—Insulated Roofs**—If this roof is applied over insulating material, the insulation must be firm, capable of withstanding traffic without crushing, and of a type that will retain nails. Provisions must be made that no more insulation shall be laid at one time than can be promptly protected by roofing in the event of sudden weather changes. A felt cut-off shall be mopped along the edge of insulation at a distance of not greater than one width of the insulating material from parapet walls, curbs and other openings.

***Note 2*—Leader Heads, Vents, etc.**—Leader heads, vents and other openings shall be furnished with metal flanges of sufficient width to permit proper connections with the roofing. If not so furnished an exception of responsibility will be taken for any leaks which may develop immediately adjacent. Flanges or scuppers, gutters, gravel guards, finishing or edging strips, leader heads and vents shall be set on top of all felts, nailed and double felt stripped.

Bond

This contractor shall furnish the Manufacturer's Surety Bond Guaranty as issued by the National Surety Company of New York, N. Y., covering a period of 20 years from date of completion of the work.

Note: This guarantee is not given on jobs of less than 50 squares, nor in such portions of the United States as are not covered by the Manufacturer's Inspection Service.

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RUBEROID BONDED ROOFS

Over Steel Decks

Including Any of the Following:

ASBESTOS FELT AND ASPHALT FELT, SMOOTH FINISH
SPECIFICATION NO. 101—10-YEAR BOND

COAL TAR PITCH AND TARRED FELT, GRAVEL OR SLAG FINISH
SPECIFICATION NO. 152—15-YEAR BOND

ASPHALT FELT AND ASPHALT, GRAVEL OR SLAG FINISH
SPECIFICATION NO. 154—15-YEAR BOND

ASBESTOS AND ASPHALT MATERIALS, SMOOTH FINISH
SPECIFICATION NO. 201—20-YEAR BOND

COAL TAR PITCH AND TARRED FELT, GRAVEL OR SLAG FINISH
SPECIFICATION NO. 203—20-YEAR BOND

ASPHALT FELT AND ASPHALT, GRAVEL OR SLAG FINISH
SPECIFICATION NO. 205—20-YEAR BOND

Any of the above types of roofing may be laid over steel decks, subject to conditions as hereinafter stipulated.

Steel Decks for Roofs of Buildings—The steel deck must be overlaid with a proper insulating material which is firm, capable of withstanding traffic without crushing and of a type and thickness that will retain nails.

If the incline is under 2-in. to the foot, the insulating material may be secured to the deck by mopping it in with a high melting point asphalt.

If the incline is over 2-in. to the foot, the insulating material must be secured in place by sheet metal screws, clips or other satisfactory device.

Steel Decks for Roofs over Open Sheds, etc.—Provided that a Pitch, Felt and Gravel Roof is not used and the incline does not exceed ½-in. per foot the insulation may be omitted on steel decks for roofs over such open structures as loading platforms, train sheds, etc.

Specifications

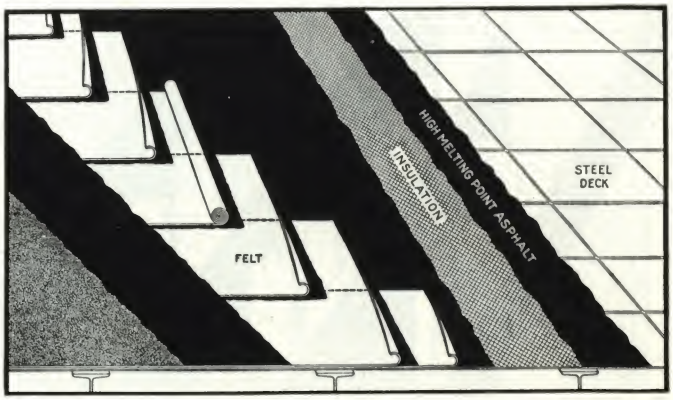
The specifications for the form of roofing which may be selected from the above list of types shall be the same as that hereinbefore set forth under the respective specification number stipulated.

Note: It will be observed that these specifications are for use over concrete in each case.

Bond

Subject to the above conditions THE RUBEROID CO. will furnish its surety bond guaranty as issued by the National Surety Co. of New York for any of the above types of roofing and for the period which applies to each type respectively.

Note: This guarantee is not given on jobs of less than 50 squares, nor in such portions of the United States as are not covered by the Manufacturer's Inspection Service.



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REPRESENTATIVE LIST OF LARGE BUILT-UP ROOFING INSTALLATIONS

Applied on Prominent Buildings Throughout the Country

Owner and Address	Number of Squares	Kind of Felt	Architect	Roofer
General Motors Co., Pontiac, Mich.	12000	Asphalt	Austin Co., Chicago	Michigan Roofing Co.
Caterpillar Tractor Co., Peoria, Ill.	8500	Tarred and Asphalt	Austin Co., Chicago	J. W. Bushell Co.
Dodge Bros. Co., Detroit, Mich.	6700	Asphalt	Albert Kahn, Detroit	C. R. Woolensack Corp.
Ford River Rouge Plant, Detroit, Mich.	5200	Asphalt	Albert Kahn, Detroit	John D. Busch & Sons, Inc.
Hall Printing Co., Chicago, Ill.	5000	Asbestos	Weiss & Weistadt, Chicago	Luse-Stevenson Co.
Ford Motor Co., Hegewisch, Ill.	4000	Asphalt	Albert Kahn, Detroit	Chicago Roofing & Supply Co.
Ford Motor Co., Ironwood, Mich.	4000	Asphalt		Chicago Roofing & Supply Co.
Armour Leather Co., Williamsport, Pa.	3000	Asphalt	Company	W. E. Probst & Son
Chrysler Plymouth Plant, Detroit, Mich.	3000	Asphalt	Albert Kahn, Detroit	Schreiber Roofing Co.
Crane Co., Chicago, Ill.	3000	Asbestos	Graham, Anderson, Probst, & White, Chicago	Luse-Stevenson Co., also Walter Johnson
National Plate Glass Co., Ottawa, Ill.	3000	Asbestos		Chicago Roofing & Supply Co.
Graham-Paige Co., Evansville, Ind.	2700	Asphalt		Graham Asbestos Co., Indianapolis, Ind.
J. I. Case Co., Racine, Wis.	2500	Combination	Owners	T. M. Hughes Roofing Co.
Libby-Owens Glass Co., Detroit, Mich.	2500	Combination	Lockwood, Green & Co., Boston, Mass.	Schreiber Roofing Company
Merchandise Mart Building, Chicago, Ill.	2250	Asbestos	Graham, Anderson, Probst & White, Chicago	Esko Roofing Company
Armour Leather Co., Richwood, W. Va.	1320	Asphalt	Company Engineer	W. E. Probst & Son, Williamsport, Pa.
Libby-Owens Sheet Glass Co., Toledo, Ohio	1304	Asbestos	Company Engineer	John Voegli Co.
Belle City Malleable Iron Co., Racine, Wis.	1235	Asphalt	Owners	Hughes Roofing Co.
Standard Stoker Co., Erie, Pa.	1200	Asbestos		McCreary Roofing Co.
Chevrolet Motor Co., Flint, Mich.	1113	Asbestos	Wright & Nice Co., Flint, Mich.	Gillett Asbestos Company, Cleveland, Ohio
Lycoming Mfg. Co., Williamsport, Pa.	1069	Asphalt	Company	W. E. Probst & Son
Mars, Inc., Chicago, Ill.	1069	Asphalt	Austin Co., Chicago	Chicago Roofing & Supply Co.
Atlantic Coast Line R. R., Montgomery, Ala.	1060	Asbestos	Company Engineers	C. H. Johnson
Standard Sanitary Mfg. Co., Tiffin, Ohio	1042	Asbestos	Geo. W. Netches	Gillett Asbestos Co., Cleveland, Ohio
Chevrolet Motor Co., Flint, Mich.	1000	Asphalt	Wright & Nice Co., Flint, Mich.	Schreiber Roofing Co., Detroit, Mich.
Cudahy Bros. Co., Cudahy, Wis.	1000	Asphalt	Owners	F. J. A. Christiansen, Milwaukee, Wis.
Ford Motor Co., River Rouge, Mich.	1000	Asphalt		Schreiber Roofing Co., Detroit, Mich.
Johnson Motors Co., Waukegan, Ill.	1000	Tarred	Austin Co.	Chicago Roofing & Supply Co.
Empire State Pickling Co., Phelps, N. Y.	900	Combination	Company Engineers	Finster Bros, Rome, N. Y.
International Harvester Co., Topeka, Kan.	900	Asphalt	Owners	Knickerbocker Roofing & Paving Co., Chicago, Ill.
Armour Leather Co., Parsons, W. Va.	875	Asphalt	Company Engineers	W. E. Probst & Son, Williamsport, Pa.
C. M. & St. P. R. R., Milwaukee, Wis.	858	Tarred	Owners	J. F. Ege Roofing Co., Oskosh, Wis.
Allaphane Plant, Buffalo, N. Y.	794	Asbestos		Chicago Roofing & Supply Co.
Duncan Mills, Greenville, S. C.	686	Asbestos	J. E. Linine & Co.	Gillett Asbestos Co., Cleveland, Ohio
Michigan Car Shops, Detroit, Mich.	675	Asphalt	M. C. Ry. Co.	J. D. Candler Roofing Co.
Dunkirk Radiator Co., Dunkirk, N. Y.	650	Combination	Company Engineers	McCreary Roofing Co., Erie, Pa.
Susquehanna Silk Mills, Jersey Shore, Pa.	640	Asbestos		W. E. Probst & Son, Williamsport, Pa.
Academy High School, Erie, Pa.	600	Coal Tar	Myers & Johnson	McCreary Roofing Co.
Firestone Tire & Rubber Co., Akron, Ohio	544	Asbestos	Osborne Engineering Co., Cleveland, Ohio	Gillett Asbestos Co., Cleveland, Ohio
N. Y. C. R. R. Co., Collinwood, Ohio	490	Asbestos	Company Engineers	Byerlyte Co., Cleveland, Ohio
Curtiss Airport Corporation, Valley Stream, N. Y.	455	Asphalt	Kenneth Franzheim, New York, N. Y.	J. J. Fisher Co., Inc., Brooklyn, N. Y.
Curtiss Airport Corporation, Valley Stream, N. Y.	452¼	Asphalt	Kenneth Franzheim, New York, N. Y.	Astoria Sheet Metal Works, Astoria, N. Y.
Truscon Steel Co., Youngstown, Ohio	436	Asbestos	Company Engineers	Gillett Asbestos Co., Cleveland, Ohio
U. S. Gypsum Co., Akron, Ohio	250	Asbestos		Chicago Roofing & Supply Co.
Reading Railroad Co., Reading, Pa.	450	Asbestos	Company	Benj. Foster Co., Philadelphia, Pa.
American Carbon Corp., Chicago, Ill.	600	Asphalt	Austin Co., Chicago	Chicago Roofing & Supply Co.
American League Ball Park, Chicago, Ill.	800	Asphalt	Osborn Engineering Co., Cleveland, Ohio	Jacobson Roofing Co.
Illinois National Guard Armory, Chicago, Ill.	700	Asbestos	Perkins, Chatham, Hammond, Chicago	Knauf & Weber
Civic Opera House, Chicago, Ill.	1200	Coal Tar and Asbestos	Graham, Anderson, Probst & White, Chicago	Chicago Roofing & Supply Co.
International Harvester Co., East Moline, Ill.	600	Asphalt	Owner	Knickerbocker Roofing & Paving Co., Chicago

GENUINE

RU-BER-OID

BUILT-UP ROOFS

THE PHILIP CAREY COMPANY

LOCKLAND, CINCINNATI, OHIO

GENERAL OFFICES AND MAIN FACTORY: CINCINNATI, OHIO
OTHER FACTORIES: FRANKLIN, OHIO AND PLYMOUTH MEETING, PA.
ASBESTOS MINE: EAST BROUGHTON, QUEBEC

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ROOF SURFACING FOR SOUTHERN AND WESTERN TERRITORIES

Built-up roofs surfaced with Carey Dur-A-Seal Slate Surfaced Cap Sheet, slag or gravel, are especially recommended for use in extreme southern and western territories. Both past performance and laboratory research have definitely proven the super merit of Carey Dur-A-Seal Slate Surfaced Cap Sheet in resisting the detrimental effect of the sun's ray on built-up roofing.

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In addition, hundreds of Carey Authorized Roofers at convenient locations

For other Carey Products, see Manufacturers' Index

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CAREY PREPARATION AND REQUIREMENTS OF ROOF DECKS

(Construction and proper conditioning of roof decks must be performed by others and is not a part of any roofing contract)

Proper roof deck construction is of vital importance to the successful application of roof coverings. Uniformity of roof slope to drains, adequate number and size of drains, proper placing and setting of drains, freedom from moisture and smoothness and firmness of roof deck are most essential attributes of satisfactory roof construction.

Wood Decks—The roof deck shall be constructed of well-seasoned lumber not less than $\frac{13}{16}$ in. in thickness.

Tongue and groove boards are recommended but not absolutely essential to good construction on buildings that are plastered or otherwise sealed on the underside to prevent excessive air-suction.

Boards must be dry, smooth, free from large knot holes and laid close together. Any existing cracks larger than ¼ in. in width or large knot holes shall be covered with tin or other suitable metal properly nailed in place before roofing is applied.

Boards shall be properly cut to assure solid bearing on all purlins. All sheathing boards must be surface nailed with at least two nails per 6-in. board width to each purlin or rafter, in addition to any blind nailing.

Sheathing Span—Maximum span of $\frac{13}{16}$-in. sheathing shall not be more than 24 in. In territories where roof is subjected to dead weight on account of snow load, span distance should be decreased to 20 in. Standard engineering practice shall determine span distance for sheathing boards of greater thickness, based on the same ratio used above in determining span for $\frac{13}{16}$-in. sheathing, or otherwise conforming to "Southern Pine Manual of Standard Wood Construction."

Poured Concrete or Gypsum Decks—All roof deck surfaces shall be smooth, dry, firm and free from marked depressions or projections in the plane of the roof surface.

Roof deck must be free from frost, loose sand or laitence (a scum of light chalky material) also be free from scaling as the result of frozen mix.

Any existing irregularities in the smoothness of deck must be rectified by rounding sharp corners, removing high spots and filling low spots with mortar thoroughly bonded to the deck.

Decks of Concrete and Gypsum Tile, Precast Gypsum, and Concrete Slabs or Blocks—Surfaces between slabs, tile or blocks, shall be even and be pointed between the slabs with mortar, so that pointing will be flush with the slab surface, resulting in a firm even base for roofing.

If one slab sets higher than another it must be reset or leveled off to a satisfactory cove with suitable mortar or plastic and be well bonded to the surface.

Book Tile—Surface of book tile deck must be well set, smooth, and free from depressions; otherwise, a screed coat of concrete at least 1 in. in thickness must be applied.

Steel Decks—Steel decks shall be manufactured in accordance with manufacturer's standard design and so proportioned that the sum of the dead and live loads shall not cause a tension stress per net section in excess to the unit stress of 18,000 lb. per sq. in.

Sections formed in the sheets shall provide rigidity and strength so that the maximum deflection shall not exceed 1-250 of the span when uniformly distributed and concentrated loads are considered. All eaves and gables shall be enclosed with an approved form of steel nailing bead enabling the roofer to secure composition edge flashing at the bottom edges of the eaves and gables.

Alignment of the eaves and gables in the horizontal and vertical planes of eaves shall be straight and free from waves and deflection and be in one continuous straight line.

All intersections of decks, such as ridges and valleys, shall be securely fastened by means of steel plates to assure a continuous and unbroken surface.

Steel deck must be free from perforations which will allow hot asphalt to drip through the deck and shall be free from bolt heads, purlin clips, insulation cleats or other objectionable projections.

All decks and fixtures must be painted with a shop coat of paint in order to assure a satisfactory bonding surface for roofing materials. In case metal surfaces are not properly painted at time of erection, same shall be painted in a manner satisfactory to the roofing contractor, by the steel erection contractor.

Proper devices for fastening roofing insulation shall be provided by the steel deck manufacturer on all roof decks having a pitch exceeding 3 in. in 12. Proper fastenings shall also be furnished by others for securing base flashings in place on vertical surfaces, in addition to the regular bond of hot asphalt provided by the roofing contractor.

Insulated Roof Decks—Celotex, cork or other standard roof insulations possessing similar characteristics, are suitable surface for the application of Carey Built-Up Roofings.

All roof insulations shall be protected from the weather before and during application and must be absolutely dry, of uniform thickness, true and free from objectionable warp or curled edges at the time of application.

Roof deck must be dry at the time insulation is applied. The number of squares of insulation applied must be confined to the number of squares of finished roofing that can be completed each day.

Edges of the finished roof section shall be sealed at the end of each day's work by mopping an 18-in. wide sheet of 15-lb. felt parallel with the edge of the finished roof—lapping 6 in. over the finished roof area and 12 in. over the roof deck in order to thoroughly protect the applied insulation from moisture.

If insulation is applied by others, insulation contractors must co-operate to the fullest extent with roofing contractor and their application work shall be properly timed so that all insulation applied each day can be covered with the completed Built-Up Roofing specification. Insulation must not be laid when weather conditions are unsuitable for roofing work.

The surface of the applied insulation must be free from dust, unevenness and moisture before roofing is applied. If the insulation is applied by others, the expense for any labor or material necessary for thus conditioning the surface of the insulation shall be borne by the contractor applying the insulation.

Condition of roof deck at the time of application of insulation must conform with "Carey Preparation and Requirements of Roof Decks."

Insulation laid in advance of the application of the finished roofing and protected from moisture with a top mopping of asphalt will not be considered as a suitable surface for the application of roofing or adequate protection from moisture unless the top mopping of asphalt is a flood coat of proper evenness and thickness to eliminate any voids where water can seep into the insulation. The surface of the insulation must also be free from dust and moisture at the time the asphalt is applied and the asphalt used shall be either Carey Asphalt or asphalt approved by Carey; that will blend with the bonding coat of asphalt when the roofing is applied.

Nailing Strips—On all hard-surfaced, non-combustible decks, proper wood-nailing strips should be provided as follows:

On steep surfaces, provisions should be made for anchoring the sheets by imbedding wood-nailing strips into the surface at the ridge.

Where metal base flashings, drip edges, gravel stops, or eave strips are specified, provision should also be made for nailing or fastening them to the deck with nails by inserting proper keyed wood-nailing strips in the deck, set flush with the surface of the deck.

Pitch of Roof Deck—Carey Built-Up roofs can be successfully applied on properly constructed roof decks varying in pitch from a dead level to half pitch.

Our Engineering Department should be consulted regarding the proper specifications to be used on anything approaching either of the extreme pitches.

The uniformity of pitch or incline in the roof deck is far more important than the amount of pitch or incline. Roof deck should have proper slope or incline to the drains, allowing water to flow freely into the down spouts and gutters. Drains should be set sufficiently low to assure free flow of water.

Cant Strips—Carey Elastite Preformed Mastic Flashing Blocks or Wood Cant Strips should be inserted in all angles formed between the roof surface and vertical walls, to insure proper cove in angles for the application of flashing.

Roof Deck Expansion Joints—Proper expansion joints shall be provided and installed by the general contractor to take care of excessive contraction and expansion in roof deck.

Final Preparation—Before the roofer starts work on the deck, it should be dry, free of all rubbish, debris and snow, and be broom cleaned.

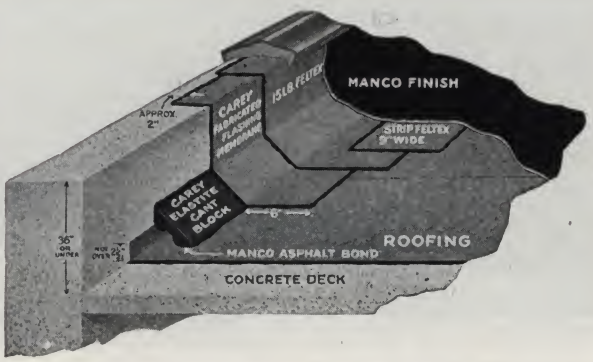
Continued on next page

CAREY APPROVED FLASHING DETAILS

Carey Approved Flashing Detail No. 1

Recommended for use on brick or concrete parapet walls not exceeding 36 in. in height on which coping is to be applied

The construction of Carey Flashing Detail No. 1 assures a watertight connection to the built-up roof proper, at the same time waterproofing the entire parapet wall. This is without doubt the most satisfactory method of flashing parapet walls 36 in. or under in height.

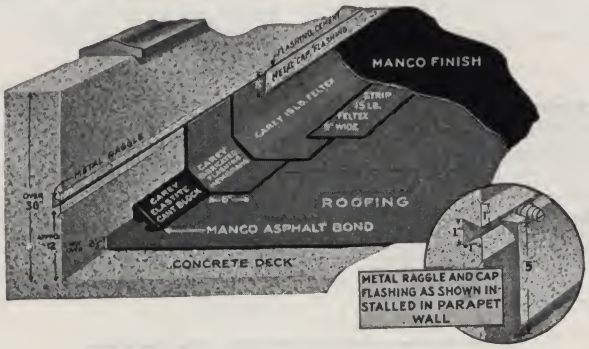


Alternate—Wood Cant Strip. The use of a wood cant strip in place of Carey Elastite Cant Block is permitted providing a diagonal half of a 4x4 is used and an extra strip, 12 in. wide, of Carey Fabricated Flashing Membrane is laid parallel with the cant strip in addition to and before regular system of flashing is installed.

Carey Approved Flashing Detail No. 2

Recommended for use on concrete parapet walls exceeding 36 in. in height

This flashing detail is recommended in concrete walls over 36 in. in height where Carey Raggle Block is not used. This gives very good flashing construction at a minimum expense. The metal raggle is nailed to wood form before concrete is poured and remains a permanent fixture.

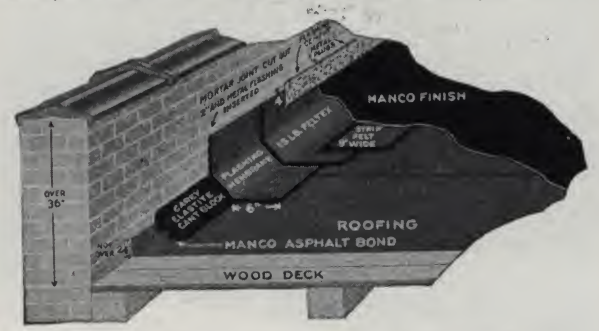


Alternate—Wood Cant Strip. The use of a wood cant strip in place of Carey Elastite Cant Block is permitted providing a diagonal half of a 4x4 is used and an extra strip, 12 in. wide, of Carey Fabricated Flashing Membrane is laid parallel with the cant strip in addition to and before regular system of flashing is installed.

Carey Approved Flashing Detail No. 3

Recommended for use on brick parapet walls exceeding 36 in. in height

We recommend this flashing detail for use in brick parapet walls over 36 in. in height where Carey Raggle Block is not used. It is one of the most common flashing details followed in every day practice and is specified universally by architects and engineers.

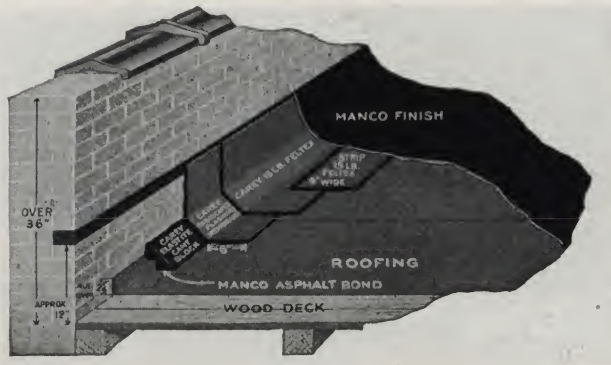


Alternate—Wood Cant Strip. The use of a wood cant strip in place of Carey Elastite Cant Block is permitted providing a diagonal half of a 4x4 is used and an extra strip, 12 in. wide, of Carey Fabricated Flashing Membrane is laid parallel with the cant strip in addition to and before regular system of flashing is installed.

Carey Approved Flashing Detail No. 4

Recommended for use on brick parapet walls exceeding 36 in. in height

Carey Elastite Raggle Block is constructed of a preformed, bituminous mastic furnished in two sections, top and bottom section. These sections are designed to hold flashing material permanently in place. They are built in the brick parapet wall at the time the wall is constructed. When the flashing is installed the top section is removed and the flashing bonded in place over the lower section, after which the upper section is wedged back into position. The wedge-shaped construction of the blocks and the locking device grips the flashing permanently in place and tends to eliminate loosening, sagging and buckling of the flashings.



Alternate—Wood Cant Strip. The use of a wood cant strip in place of Carey Elastite Cant Block is permitted providing a diagonal half of a 4x4 is used and an extra strip, 12 in. wide, of Carey Fabricated Flashing Membrane is laid parallel with the cant strip in addition to and before the regular system of flashing is installed.

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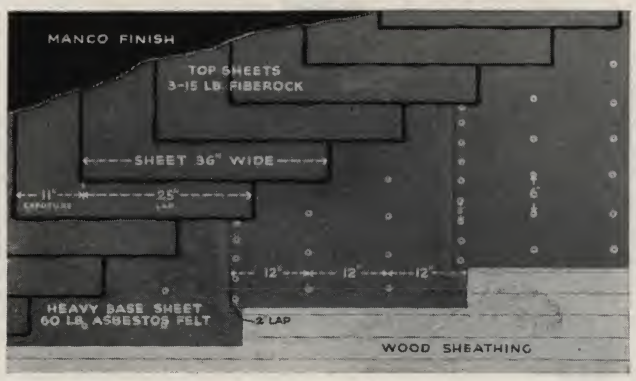
CAREY 20-YEAR ASBESTOS BUILT-UP ROOF SPECIFICATIONS

Fiberock Content Approximately 105 Lbs. per Square

Wood Deck Specification No. 30-W-20



This roof consists of a heavy 60-lb. Asbestos Asphalt impregnated, coated and surfaced Base Sheet, lapped 2 in. and secured to the deck along the laps with nails driven through flat tin caps, spaced approximately 3 in. apart. In addition, 2 rows of nails shall be run parallel to the laps through the center of the sheets, nailed approximately 6 in. apart and 12 in. from either edge. The surface of this Base Sheet is then mopped with Carey Asphalt into which, while hot, are laid three layers of 15-lb. Asbestos Fiberock Felt, 36 in. wide, cemented solid between the sheets so that at no point shall felt touch felt; each sheet to overlap the previous sheet 25 in., leaving 11 in. exposed.

Roof Finish—The entire surface of the roof shall be mopped with Carey Asphalt applied hot. This surface coating of asphalt shall be mopped over all completed roof areas at the end of each day's work.

Bond or Guaranty—A 20-year Surety Bond or Manufacturer's Guaranty, covering both material and workmanship will be furnished with this roof subject to the current provisions governing the furnishing of Carey Bonds or Guaranties.

Insulated Deck—If insulation is to be applied to deck before application of Built-up Roof, specification shall be designated as 30-X-W-20, and the following changes in specification followed:

The roof surface shall first be covered with a light sheet of Asphalt Saturated and Coated Felt lapped 2 in. and secured to the deck by occasional nailing. Over the top of this sheet, one or more layers of roof insulation shall be applied according to manufacturer's specifications. The Base Sheet of the Built-up Roof construction shall then be bonded to the insulation with a 35-lb. mopping of hot Carey Asphalt in the place of nailing to the deck as indicated in regular specification. The rest of the Built-Up Roof construction shall be applied as indicated in Specification 30-W-20.

Poured Gypsum Deck, Specification No. 30-G-20

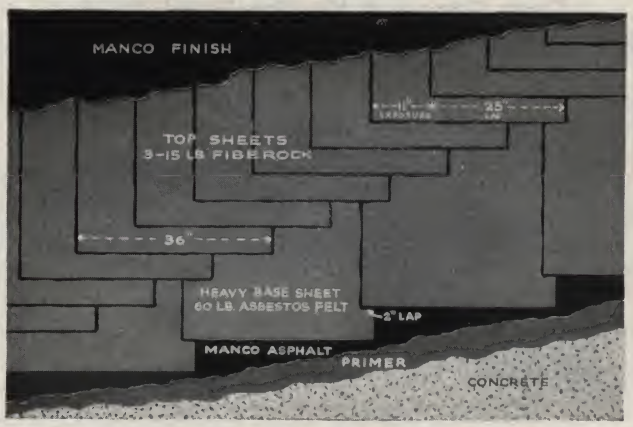
This Carey 20-year Asbestos Specification applied over Gypsum deck, shall be designated as Specification No. 30-G-20, and the following changes noted:

The entire specification shall be applied as outlined in Specification No. 30-W-20 except that 1¾ in. No. 10 gauge, bright roofing nails, driven through flat tin caps, shall be used to secure the heavy Base Sheet to the deck proper.

Approximate Amount of Asphalt Used per Mopping per 100 Sq. Ft. of Roof Surface

(a) Between plies of felt and for coating top surface of smooth finish roofs..... 25 lbs.
(b) For bonding insulation to deck, together, or roofing to insulation..... 35 lbs.
(c) For bonding roofing directly to primed concrete deck or shop painted steel deck..... 35 lbs.
(d) As a top flood coat when slag or gravel is to be embedded .....50 to 60 lbs.

Concrete Deck Specification No. 30-C-20



This Carey 20-year Asbestos Specification applied over concrete deck, shall be designated as Specification No. 30-C-20, and the following changes noted:

Concrete deck shall first be primed with Carey Asphalt primer, applied cold and thoroughly brushed in. After the Primer dries, mop the surface with Carey Asphalt, into which, while hot, shall be embedded the Base Sheet, lapping same 2 in. The top plies of felt and surfacing shall be applied the same as indicated in Specification No. 30-W-20.

Insulated Deck—If insulation is to be applied to deck before application of Built-Up Roof, specification shall be designated as 30-X-C-20, and the following changes noted:

After the application of the Primer as indicated above, mop the surface with Carey Asphalt into which, while hot, lay one or more layers of roof insulation, applied according to manufacturer's specifications. The surface of the insulation shall then be mopped with Carey Asphalt into which, while hot, shall be embedded the Base Sheet, lapping same 2 in. The top plies of felt and surfacing shall be applied as outlined in Specification No. 30-W-20.

Steel Deck with Insulation, Specification No. 30-X-S-20

This Carey 20-year Asbestos Specification with insulation applied over steel deck, shall be designated as Specification No. 30-X-S-20, and the following changes noted:

Roof deck shall first be mopped with Carey Asphalt into which, while hot, lay one or more layers of roof insulation, applied according to manufacturer's specifications. The surface of the insulation shall then be mopped with Carey Asphalt into which, while hot, shall be embedded the Base Sheet, lapping same 2 in. The top plies of felt and surfacing shall be applied the same as indicated in Specification No. 30-W-20.

Omission of Insulation—If insulation is omitted, the specification shall be designated as 30-S-20, and the following changes noted:

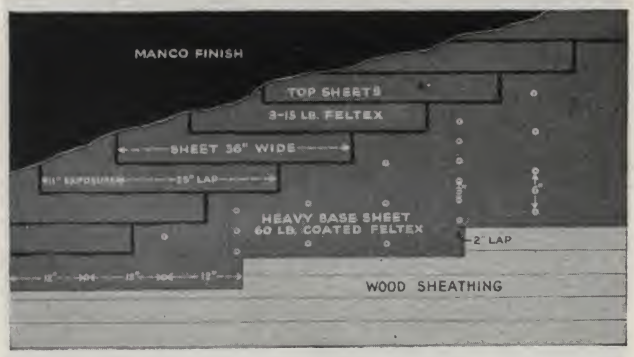
The Base Sheet shall be bonded directly to steel deck with a mopping of hot Carey Asphalt, lapping sheet 2 in. The top plies of felt and surfacing shall be applied as indicated in Specification No. 30-W-20.

Continued on next page

CAREY 20-YEAR FELTEX BUILT-UP ROOF SPECIFICATIONS

Feltex Content, Approximately 105 Lbs. per Square

Wood Deck Specification No. 40-W-20



This roof consists of a heavy 60-lb. Feltex Asphalt saturated, coated and surfaced Base Sheet, lapped 2 in. and secured to the deck with nails driven through flat tin caps, spaced approximately 3 in. apart. In addition, two rows of nails shall be run parallel to the laps through the center of the sheets, nailed approximately 6 in. apart and 12 in. from either edge. The surface of this Base Sheet is then mopped with Carey Asphalt into which, while hot, are laid three layers of 15-lb. Feltex Felt, 36 in. wide, cemented solid between the sheets so that at no point shall felt touch felt; each sheet to overlap the previous sheet 25 in., leaving 11 in. exposed.

Roof Finish—The entire surface of the roof shall be mopped with Carey Asphalt applied hot. This surface coating of asphalt shall be mopped over all completed roof areas at the end of each day's work.

Bond or Guaranty—A 20-year Surety Bond or Manufacturer's Guaranty, covering both material and workmanship, will be furnished with this roof subject to the current provisions governing the furnishing of Carey Bonds or Guaranties.

Insulated Deck—If insulation is to be applied to deck before application of Built-up Roof, specification shall be designated as No. 40-X-W-20 and the following changes in specification followed:

The roof surface shall first be covered with a light sheet of Asphalt Saturated and Coated Felt lapped 2 in. and secured to the deck by occasional nailing. Over the top of this sheet one or more layers of roof insulation shall be applied according to manufacturer's specifications. The Base Sheet of the Built-up Roof construction shall then be bonded to the insulation with a 35-lb. mopping of hot Carey Asphalt in the place of nailing to the deck as indicated in regular specification. The rest of the Built-up Roof construction shall be applied as indicated in Specification No. 40-W-20.

Poured Gypsum Deck Specification No. 40-G-20

This Carey 20-year Feltex Specification applied over a gypsum deck shall be designated as Specification No. 40-G-20, and the following changes noted:

The entire specification shall be applied as outlined in Specification No. 40-W-20 except that 1¾ in., No. 10 gauge, bright roofing nails, driven through flat tin caps, shall be used to secure the heavy Base Sheet to the deck proper.

Approximate Amount of Asphalt Used per Mopping, per 100 Sq. Ft. of Roof Surface

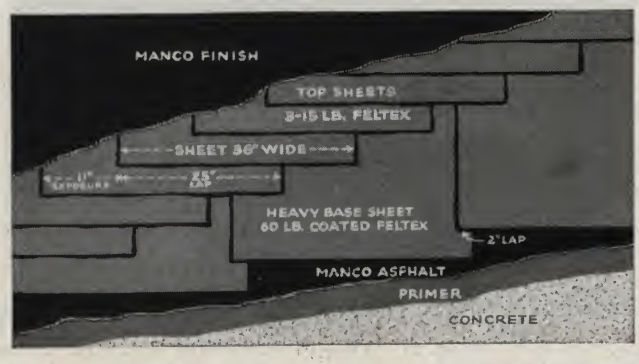
(a) Between plies of felt and for coating top surface of smooth finish roofs..... 25 lbs.

(b) For bonding insulation to deck, together, or roofing to insulation..... 35 lbs.

(c) For bonding roofing directly to primed concrete deck or shop painted steel deck..... 35 lbs.

(d) As a top flood coat when slag or gravel is to be embedded..... 50 to 60 lbs.

Concrete Deck Specification No. 40-C-20



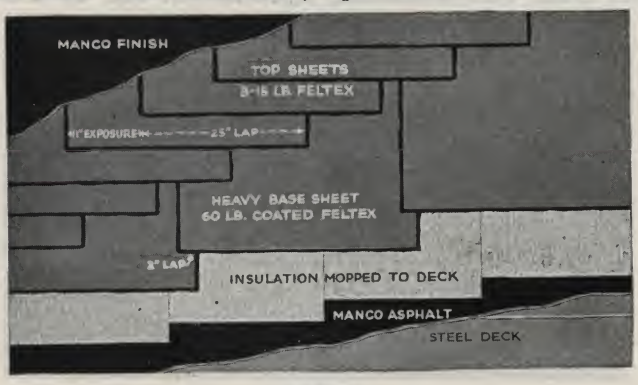
This Carey 20-year Feltex Specification applied over concrete deck shall be designated as Specification No. 40-C-20, and the following changes noted:

The concrete deck shall first be primed with Carey Asphalt Primer applied cold and thoroughly brushed in. After the Primer dries, mop the surface with Carey Asphalt into which, while hot, shall be embedded the Base Sheet, lapping same 2 in. The top plies of felt and surfacing shall be applied the same as indicated in Specification No. 40-W-20.

Insulated Deck—If insulation is to be applied to deck before application of Built-up Roof, specification shall be designated as No. 40-X-C-20, and the following changes noted:

After the application of the Primer, as indicated above, mop the surface with Carey Asphalt into which, while hot, lay one or more layers of roof insulation applied according to manufacturer's specifications. The surface of the insulation shall then be mopped with Carey Asphalt into which, while hot, shall be embedded the Base Sheet, lapping same 2 in. The top plies of felt and surfacing shall be applied as outlined in Specification No. 40-W-20.

Steel Deck With Insulation, Specification No. 40-X-S-20



This Carey 20-year Feltex Specification with insulation applied over steel deck shall be designated as Specification No. 40-X-S-20, and the following changes noted:

Roof deck shall first be mopped with Carey Asphalt into which, while hot, lay one or more layers of roof insulation applied according to manufacturer's specifications. The surface of the insulation shall then be mopped with Carey Asphalt into which, while hot, shall be embedded the Base Sheet, lapping same 2 in. The top plies of felt and surfacing shall be applied the same as indicated in Specification No. 40-W-20.

Omission of Insulation—If insulation is omitted, specification shall be designated as No. 40-S-20, and the following changes noted:

The Base Sheet shall be bonded directly to steel deck with a mopping of hot Carey Asphalt, lapping sheet 2 in. The top plies of felt and surfacing shall be applied as indicated in Specification No. 40-W-20.

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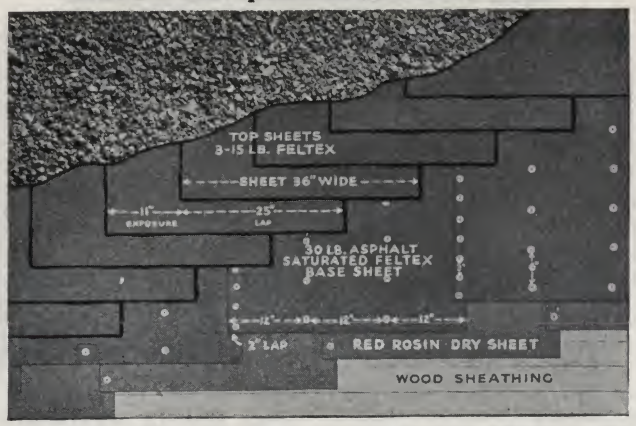
CAREY 20-YEAR FELTEX BUILT-UP ROOF SPECIFICATIONS

Slag or Gravel Finish

Wood Deck Specification No. 43-W-20



Designed for application over wood deck where pitch does not exceed 2 in. per ft. This roof consists of a Red Rosin Dry Sheet secured to deck over which is applied a 30-lb. Asphalt Saturated Feltex Base Sheet lapped 2 in. and secured to the deck, along the laps, with galvanized nails and flat tin caps spaced approximately 3 in. apart. In addition, two rows of nails are run parallel to the laps through the center of sheets, spaced approximately 6 in. apart and 12 in. from either edge. The surface of this Base Sheet is then mopped with Carey Asphalt into which, while hot, are laid 3 layers of 15-lb. Asphalt Saturated Feltex, 36 in. wide, cemented solid between the sheets so that at no point shall felt touch felt; each sheet to overlap the previous sheet 25 in., leaving 11 in. exposed.

Roof Finish—Over the entire surface of the roof, pour from a dipper, a uniform coating of Carey Asphalt, into which, while hot, embed not less than 400 lbs. of gravel or 300 lbs. of slag for each 100 sq. ft. The slag or gravel shall be dry and free from dirt.

Steep Pitch Exceeding 2 In. in 12 In.—On all roof decks having a pitch exceeding 2 in. to the foot, Slate Surfaced Cap Sheet shall be used.

Bond or Guaranty—A 20-year Surety Bond or Manufacturer's Guaranty, covering both material and workmanship, will be furnished with this roof subject to the current provisions governing the furnishing of Carey Bonds or Guaranties.

Insulated Wood Decks—If insulation is to be applied to deck before application of Built-up Roof, the specification shall be designated as 43-X-W-20 and the following changes in specification followed:

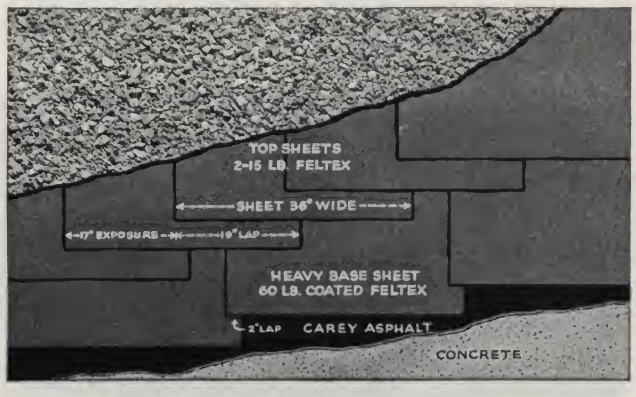
Roof surface shall first be covered with a light sheet of Asphalt Saturated and Coated Felt, lapped 2 in. and secured to the deck by occasional nailing. Over the top of this sheet, one or more layers of roof insulation shall be applied according to manufacturer's specification. The Base Sheet of Built-up Roof construction shall then be bonded to the insulation with a 35-lb. mopping of hot Carey Asphalt in the place of nailing to the deck as indicated in regular specification. The rest of the Built-up Roof construction shall be applied as indicated in Specification 43-W-20.

Poured Gypsum Deck, Specification No. 43-G-20

This Carey 20-year Feltex Specification applied over a gypsum deck shall be designated as Specification No. 43-G-20, and the following changes noted:

The entire specification shall be applied as outlined in Specification No. 43-W-20 except that 1¾-in. No. 10 gauge bright roofing nails, driven through flat tin caps, shall be used to secure the heavy Base Sheet to the deck proper, and a 40-lb. Saturated and Coated Base Sheet shall be substituted for the 30-lb. Feltex Base Sheet and Red Rosin Dry Sheet omitted.

Concrete Deck Specification No. 41-C-20



Designed for application over concrete where pitch does not exceed 2 in. per ft. The roof surface shall first be mopped with Carey Asphalt into which, while hot, lay one 60-lb. Carey Feltex Base Sheet, lapping all sheets not less than 2 in. The surface of the applied Base Sheet shall then be mopped with Carey Asphalt into which, while hot, shall be laid two layers of 15-lb. Feltex, 36 in. wide, cemented solid between the sheets so that at no point shall felt touch felt; each sheet to overlap the previous sheet 19 in., leaving 17 in. exposed.

Roof Finish—Over the entire surface of the roof, pour from a dipper a uniform coating of Carey Asphalt into which, while hot, embed not less than 400 lbs. of gravel or 300 lbs. of slag for each 100 sq. ft. The slag or gravel shall be dry and free from dirt.

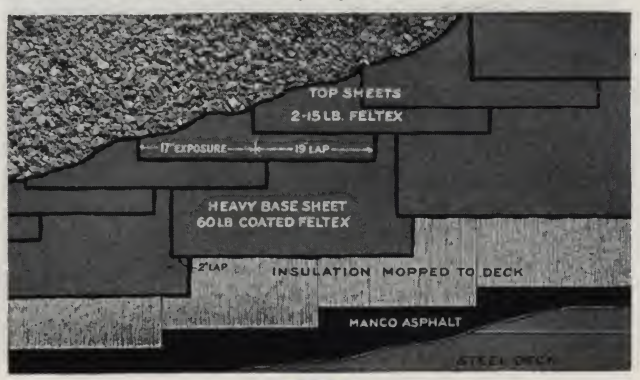
Steep Pitch Exceeding 2 In. in 12 In.—On all roof decks, having a pitch exceeding 2 in. to the foot, a Slate Surfaced Cap Sheet shall be used.

Bond or Guaranty—A 20-year Surety Bond or Manufacturer's Guaranty, covering both material and workmanship, will be furnished with this roof subject to the current provisions governing the furnishing of Carey Bonds or Guaranties

Insulated Deck—If insulation is to be applied to deck before application of Built-up Roof, specification shall be designated as 41-X-C-20, and the following changes in specification followed:

The roof surface shall first be mopped with Carey Asphalt into which, while hot, lay one or more layers of roof insulation applied according to manufacturer's specifications. The Base Sheet of the Built-up Roof construction shall then be bonded to the insulation with a 35-lb. mopping of hot Carey Asphalt, lapping all sheets not less than 2 in. The rest of the Built-up Roof construction shall be applied as indicated in Specification 41-C-20.

Steel Deck with Insulation, Specification No. 41-X-S-20



This Carey 20-year Feltex Specification with insulation, applied over steel deck, shall be designated as Specification No. 41-X-S-20, and the following changes noted:

Roof deck shall first be mopped with Carey Asphalt into which, while hot, lay one or more layers of roof insulation, applied according to manufacturer's specifications. The surface of the insulation shall then be mopped with Carey Asphalt into which, while hot, shall be embedded the Base Sheet, lapping same 2 in. The top plies of felt and surfacing shall be applied the same as indicated in Specification No. 41-C-20.

Omission of Insulation—If insulation is omitted, specification shall be designated as 41-S-20, and the following changes noted:

The Base Sheet shall be bonded directly to steel deck with a mopping of hot Carey Asphalt, lapping sheet 2 in. The top plies of felt and surfacing shall be applied as indicated in Specification No. 41-C-20.

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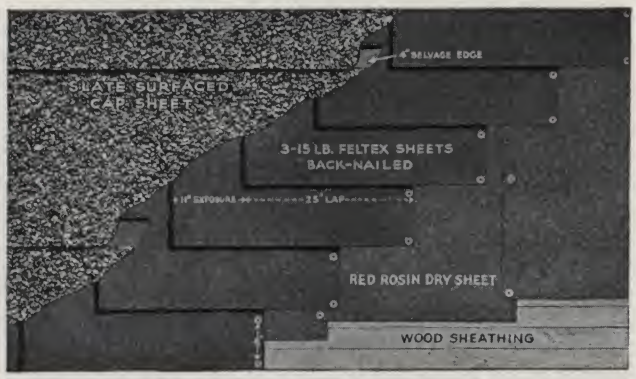
CAREY 20-YEAR FELTEX BUILT-UP ROOF SPECIFICATIONS

Dur-A-Seal Slate Surfaced Cap Sheet

Wood Deck Specification No. 44-W-20



Designed for application over wood sheathing where pitch exceeds 1 in. per ft. This Built-up Roof specification consists of a Red Rosin Dry Sheet secured to deck over which is applied three plies of 15-in. Feltex, 36 in. wide, lapped 25 in., mopped solid between the laps with hot Carey Asphalt, and secured to the deck by nails driven through flat tin caps along the upper edge of the sheet on 6-in. centers (back-nailing method). Over the top of, and at right angles to, the 3-ply Feltex construction, shall be bonded with a mopping of hot Carey Asphalt, a 75 to 80-lb. Carey Dur-A-Seal Slate Surfaced Cap Sheet, lapping same 4 in. on selvage edge along longitudinal seams—end seams to be lapped 6 in.

Roof Finish—The slate surfacing on the cap sheet shall act as a roof finish and wearing surface—no surface mopping of asphalt is required.

Bond or Guaranty—A 20-year Surety Bond or Manufacturer's Guaranty, covering both material and workmanship, will be furnished with this roof subject to the current provisions governing the furnishing of Carey Bonds or Guaranties.

Insulated Deck—If insulation is to be applied to deck before application of Built-up Roof, specification shall be designated as No. 44-X-W-20, and the following changes in specification noted:

Roof surface shall first be covered with a light sheet of Asphalt Saturated and Coated Felt, lapped 2 in. and secured to the deck by occasional nailing. Over the top of this sheet, one or more layers of roof insulation shall be applied according to manufacturer's specifications. To the surface of the roof insulation shall then be bonded the three 15-lb. Feltex sheets, lapping same 25 in., after which the Dur-A-Seal Slate Surfaced Cap Sheet shall be applied as indicated in Specification No. 44-W-20.

Poured Gypsum Deck, Specification No. 44-G-20

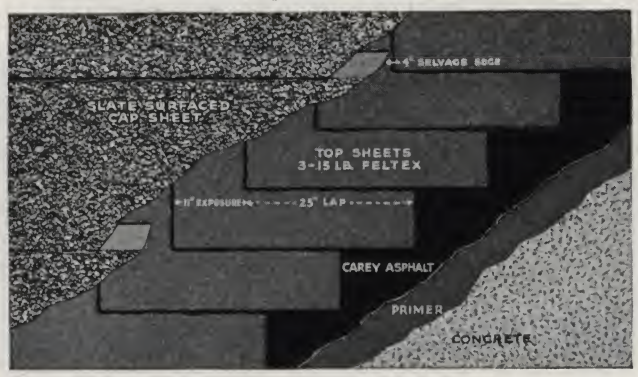
This Carey 20-year Feltex Specification applied over gypsum deck, shall be designated as Specification No. 44-G-20, and the following changes noted:

Specification consists of a 40-lb. Saturated and Coated Base Sheet, lapped 2 in. and secured to deck with 1¾-in. No. 10 gauge, bright roofing nails, over which two 15-lb. Feltex sheets shall be bonded with hot asphalt lapped 19 in. Over the top of these sheets shall then be applied a 75-80-lb. Dur-A-Seal Slate Surfaced Cap Sheet, applied as indicated in Specification No. 44-W-20.

Approximate Amount of Asphalt Used per Mopping per 100 Sq. Ft. of Roof Surface

(a) Between plies of felt and for coating top surface of smooth finish roofs..... 25 lbs.
(b) For bonding insulation to deck, together, or roofing to insulation..... 35 lbs.
(c) For bonding roofing directly to primed concrete deck or shop painted steel deck..... 35 lbs.
(d) As a top flood coat when slag or gravel is to be embedded.....50 to 60 lbs.

Concrete Deck Specification No. 44-C-20



This Carey 20-year Feltex Specification applied over concrete deck, shall be designated as Specification No. 44-C-20, and the following changes noted:

Concrete deck shall first be primed with Carey Asphalt Primer applied cold and thoroughly brushed in. After the Primer dries, mop the surface with Carey Asphalt into which, while hot, shall be laid the three 15-lb. Feltex Sheets, lapped 25 in., mopped solid to the deck, and between the laps with hot Carey Asphalt, after which the Dur-A-Seal Slate Surfaced Cap Sheet shall be applied as indicated in Specification No. 44-W-20.

Insulated Deck—If insulation is to be applied to deck before application of Built-up Roof, specification shall be designated as No. 44-X-C-20, and the following changes noted:

After the application of the Primer as indicated above, mop the surface with Carey Asphalt into which, while hot, shall be laid one or more layers of roof insulation applied according to manufacturer's specifications. To the surface of the roof insulation shall then be bonded the three 15-lb. Feltex Sheets, mopped solid to the insulation and between the laps with hot Carey Asphalt, lapping sheets 25 in., after which the Dur-A-Seal Slate Surfaced Cap Sheet shall be applied as indicated in Specification No. 44-W-20.

Steel Deck with Insulation, Specification No. 44-X-S-20

This Carey 20-year Feltex Specification with insulation, applied over steel deck, shall be designated as Specification No. 44-X-S-20, and the following changes noted:

Roof deck shall first be mopped with Carey Asphalt into which, while hot, lay one or more layers of roof insulation applied according to manufacturer's specifications. To the surface of the roof insulation shall then be bonded the three 15-lb. Feltex Sheets, mopped solid to the insulation and between the laps with hot Carey Asphalt, lapping sheets 25 in., after which the Dur-A-Seal Slate Surfaced Cap Sheet shall be applied as indicated in Specification No. 44-W-20.

Omission of Insulation—If insulation is omitted, specification shall be designated as No. 44-S-20, and the following changes noted:

The three 15-lb. Feltex Sheets shall be bonded directly to the steel deck, mopped solid to the deck and between the laps with hot Carey Asphalt, lapping sheets 25 in., after which the Dur-A-Seal Slate Surfaced Cap Sheet shall be applied as indicated in Specification No. 44-W-20.

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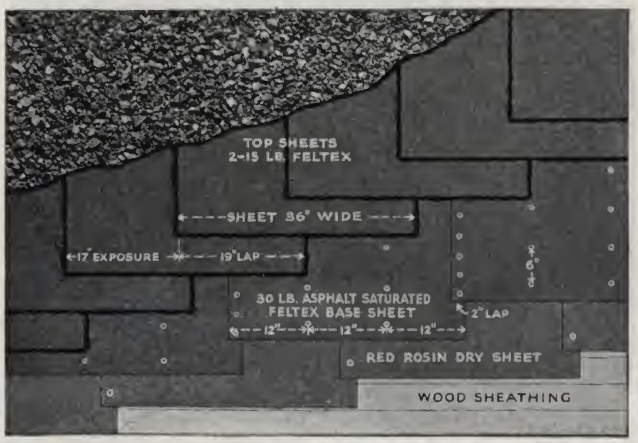
CAREY 15-YEAR FELTEX BUILT-UP ROOF SPECIFICATIONS

Slag or Gravel Finish

Wood Deck Specification No. 43-W-15



Designed for application over wood sheathing where pitch does not exceed 2 in. per ft. This roof consists of a Red Rosin Dry Sheet secured to the deck over which is applied a 30-lb. Asphalt Saturated Feltex Base Sheet lapped 2 in. and secured to the deck, along the laps, with galvanized nails and flat tin caps spaced approximately 3 in. apart. In addition, two rows of nails are run parallel to the laps through the center of sheets, spaced approximately 6 in. apart —12 in. from either edge. The surface of this Base Sheet is then mopped with Carey Asphalt into which, while hot, are laid two layers of 15-lb. Asphalt Saturated Feltex, 36 in. wide, cemented solid between the sheets so that at no point shall felt touch felt; each sheet to overlap the previous sheet 19 in., leaving 17 in. exposed.

Roof Finish—Over the entire surface of the roof, pour from a dipper a uniform coating of Carey Asphalt, into which, while hot, embed not less than 400 lbs. of gravel or 300 lbs. of slag for each 100 sq. ft. The slag or gravel shall be dry and free from dirt.

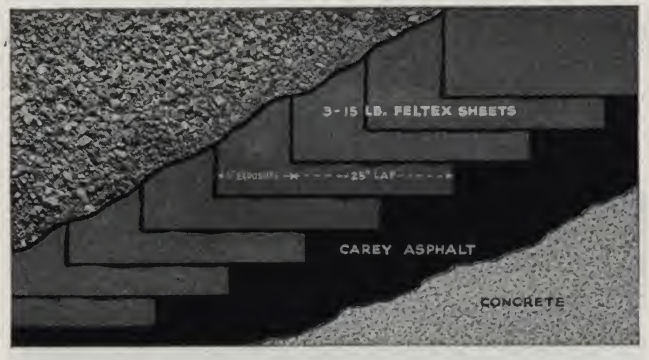
Steep Pitch Exceeding 2 In. in 12 In.—On all roof decks having a pitch exceeding 2 in. to the foot, Slate Surfaced Cap Sheet shall be used.

Bond or Guaranty—A 20-year Surety Bond or Manufacturer's Guaranty, covering both material and workmanship, will be furnished with this roof subject to the current provisions governing the furnishing of Carey Bonds or Guaranties.

Insulated Decks—If insulation is to be applied to deck before application of Built-up Roof, the Specification shall be designated as No. 43-X-W-15 and the following changes in specification followed:

Roof surface shall first be covered with a light sheet of Asphalt Saturated and Coated Felt, lapped 2 in. and secured to the deck by occasional nailing. Over the top of this sheet, one or more layers of roof insulation shall be applied according to manufacturer's specification. The Base Sheet of the Built-up Roof construction shall then be bonded to the insulation with a 35-lb. mopping of hot Carey Asphalt in the place of nailing to the deck as indicated in regular specification. The rest of the Built-up Roof construction shall be applied as indicated in Specification No. 43-W-15.

Concrete Deck Specification No. 42-C-15



Designed for application over concrete where pitch does not exceed 2 in. per ft. The roof surface shall first be mopped with Carey Asphalt into which, while hot, shall be laid three layers of 15-lb. Feltex, 36 in. wide, cemented solid between the sheets so that at no point shall felt touch felt; each sheet to overlap the previous sheet 25 in., leaving 11 in. exposed.

Roof Finish—Over the entire surface of the roof, pour from a dipper a uniform coating of Carey Asphalt, into which, while hot, embed not less than 400 lbs. of gravel or 300 lbs. of slag for each 100 sq. ft. The slag or gravel shall be dry and free from dirt.

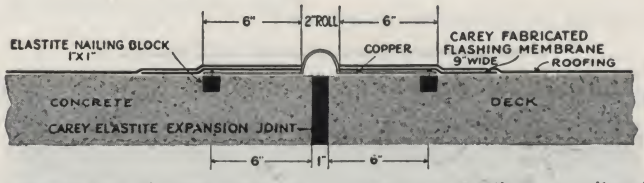
Steep Pitch Exceeding 2 In. in 12 In.—On all roof decks having a pitch exceeding 2 in. to the ft., a Slate Surfaced Cap Sheet shall be used.

Bond or Guaranty—A 15-year Surety Bond or Manufacturer's Guaranty, covering both material and workmanship, will be furnished with this roof subject to the current provisions governing the furnishing of Carey Bonds or Guarantees.

Insulated Deck—If insulation is to be applied to deck before application of Built-up Roof, specification shall be designated as No. 42X-C-15, and the following changes in specification followed:

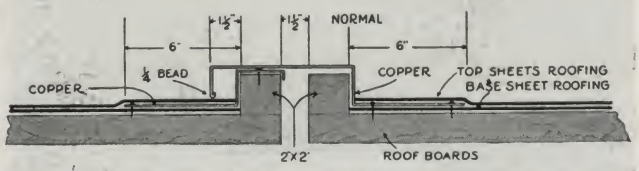
Roof surface shall first be mopped with Carey Asphalt into which, while hot, shall be laid one or more layers of roof insulation, applied according to manufacturer's specifications. To the surface of the roof insulation, shall then be bonded the three 15-lb. Feltex sheets as indicated in Specification No. 42-C-15.

Roof Expansion Joints



This Expansion Joint is recommended for use in connection with concrete roof deck construction. It is designed to take care of contraction and expansion in the roof slab. The Expansion Joints should be placed at various intervals in the roof slab as specified by the architect, depending upon the unsupported distance between purlins of the roof joints and the thickness of the roof slab.

This type of Expansion Joint is also recommended where the concrete roof deck rests directly on the transverse carrying partitions thus tending to eliminate transverse cracks in the roof slab at these points caused by settling or vibration of the carrying portion.



This Expansion Joint is recommended for use at the crown of arched roof construction where the span exceeds 30 ft. in length. It is also recommended for use on shed roofs or canopies and should be placed at consistent intervals on the roof deck on a line parallel with the pitch of the roof.

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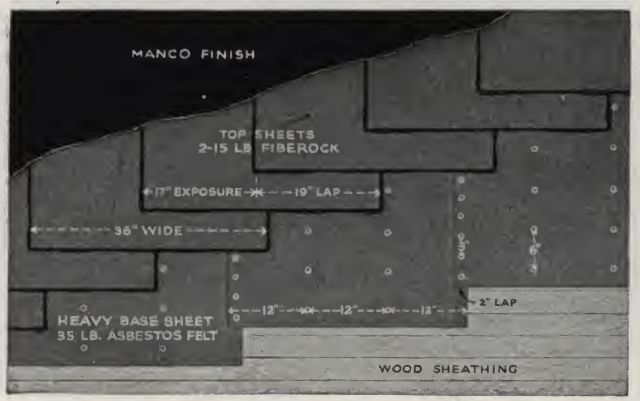
CAREY 10-YEAR ASBESTOS BUILT-UP ROOF SPECIFICATIONS

Fiberock Content, Approximately 65 Lbs. per Square

Wood Deck Specification No. 30-W-10



Designed for application over wood sheathing. This roof consists of a 35-lb. asbestos asphalt impregnated Base Sheet, lapped 2 in. and secured to the deck along the laps with galvanized nails and flat tin caps spaced approximately 3 in. apart. In addition, two rows of nails are run parallel to the laps through the center of sheets, nailed approximately 6 in. apart and 12 in. from either edge. The surface of this Base Sheet is then mopped with Carey Asphalt into which, while hot, are laid two layers of 15-lb. Asbestos Fiberock Felt, 36 in. wide, cemented solid between the sheets so that at no point shall felt touch felt; each sheet to overlap the previous sheet 19 in., leaving 17 in. exposed.

Roof Finish—The entire surface of the roof shall be mopped with Carey Asphalt applied hot. This surface coating of asphalt shall be mopped over all completed roof areas at the end of each day's work.

Bond or Guaranty—A 10-year Surety Bond or Manufacturer's Guaranty, covering both material and workmanship, will be furnished with this roof subject to the current provisions governing the furnishing of Carey Bonds or Guaranties.

Insulated Deck—If insulation is to be applied to deck before application of Built-up Roof, specification shall be designated as No. 30-X-W-10 and the following changes in specification followed:

The roof surface shall first be covered with a light sheet of Asphalt Saturated and Coated Felt lapped 2 in. and secured to the deck by occasional nailing. Over the top of this sheet, one or more layers of roof insulation shall be applied according to manufacturer's specifications. The Base Sheet of the Built-up Roof construction shall then be bonded to the insulation with a 35-lb. mopping of hot Carey Asphalt in the place of nailing to the deck as indicated in regular specification. The rest of the Built-up Roof construction shall be applied as indicated in Specification No. 30-W-10.

Poured Gypsum Deck Specification No. 30-G-10

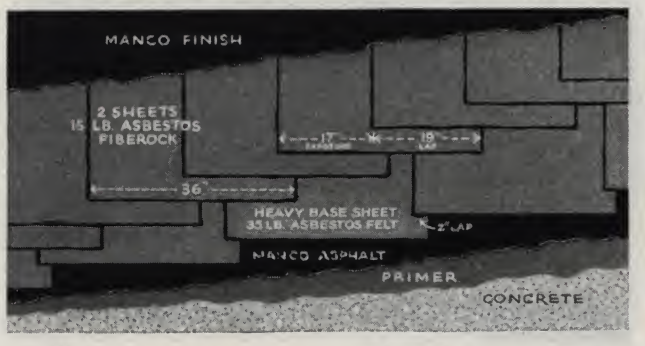
This Carey 10-year Asbestos Specification applied over gypsum deck, shall be designated as Specification No. 30-G-10, and the following changes noted:

The entire specification shall be applied as outlined in Specification No. 30-W-10 except that 1¾-in. No. 10 gauge bright roofing nails driven through flat tin caps shall be used to secure the heavy Base Sheet to the deck proper.

Approximate Amount of Asphalt Used per Mopping, per 100 Sq. Ft. of Roof Surface

(a) Between plies of felt and for coating top surface of smooth finish roofs..... 25 lbs.
(b) For bonding insulation to deck, together, or roofing to insulation..... 35 lbs.
(c) For bonding roofing directly to primed concrete deck or shop painted steel deck..... 35 lbs.
(d) As a top flood coat when slag or gravel is to be embedded .....50 to 60 lbs.

Concrete Deck Specification No. 30-C-10



This Carey 10-year Asbestos Specification applied over concrete deck shall be designated as Specification No. 30-C-10, and the following changes noted:

Concrete deck shall first be primed with Carey Asphalt Primer applied cold and thoroughly brushed in. After the Primer dries, mop the surface with Carey Asphalt into which, while hot, shall be embedded the Base Sheet, lapping same 2 in. The top plies of felt and surfacing shall be applied the same as indicated in Specification No. 30-W-10.

Insulated Deck—If insulation is to be applied to deck before application of Built-up Roof, specification shall be designated as No. 30-X-C-10, and the following changes noted:

After the application of the Primer as indicated above, mop the surface with Carey Asphalt into which, while hot, lay one or more layers of roof insulation, applied according to manufacturer's specifications. The surface of the insulation shall then be mopped with Carey Asphalt into which, while hot, shall be embedded the Base Sheet, lapping same 2 in. The top plies of felt and surfacing shall be applied as outlined in Specification No. 30-W-10.

Steel Deck with Insulation, Specification No. 30-X-S-10

This Carey 10-year Asbestos Specification with insulation applied over steel deck shall be designated as Specification No. 30-X-S-10, and the following changes noted:

Roof deck shall first be mopped with Carey Asphalt into which, while hot, lay one or more layers of roof insulation, applied according to manufacturer's specifications. The surface of the insulation shall then be mopped with Carey Asphalt into which, while hot, shall be embedded the Base Sheet, lapping same 2 in. The top ply of felt and surfacing shall then be applied, lapping sheet 2 in.

Omission of Insulation—If insulation is omitted, specification shall be designated as No. 30-S-10, and the following changes noted:

The Base Sheet shall be bonded directly to the steel deck with a mopping of hot Carey Asphalt, lapping sheets 2 in. The top ply of felt and surfacing shall then be applied, lapping sheet 2 in.

Continued on next page

CERTAIN-TEED PRODUCTS CORPORATION

ROOFING DIVISION

Specifications for Built-Up Roofing

GENERAL OFFICES
100 East 42nd Street
NEW YORK, N. Y.

For Sales Offices, see Gypsum Plaster pages
For Our Other Products, see Manufacturers' Index

CERTAIN-TEED BUILT-UP ROOFS

Advantages—Roofs built up of Certain-teed asphalt roofing and asphalt cement have many advantages over the old-fashioned coal-tar, pitch and gravel roofs. They can be used on roof decks ranging from flat to vertical surfaces, and are particularly well adapted to sawtooth skylights and valley construction.

TRADE-MARK

Maintenance—Certain-teed Built-up Roofs are practically free of maintenance costs. At the end of the guarantee period, these Certain-teed Roofs can generally be resurfaced with hot asphalt, which prolongs their life for many additional years. This resurfacing process when repeated at certain intervals makes the roof last indefinitely.

Principal Types—We have developed several principal types of built-up asphalt roofs. We recommend these roofs for any type of building upon which a composition roof can be applied.

When the very best roof is desired, we recommend Certain-teed Type "A" and Type "B" Construction Roofs.

Specifications for Certain-teed Type "A" Construction Roof

Guaranteed 15 Years

Note: This specification is applicable where the roof surfaces are of wood sheathing boards, concrete, gypsum tile, cement tile, book tile or steel deck; also for roofs of any pitch, from flat decks to vertical walls; sawtooth roof construction and valleys.

General—All roof (and side wall) surfaces, where indicated or the drawings, shall be covered with Certain-teed Type "A" Construction Roofing in strict accordance with these specifications and the special instructions of the manufacturer.

The surface of all roofs will be left smooth, firm, dry, properly graded to gutters and outlets and free from large cracks or knotholes by the Contractor for Carpenter Work (where the roof deck is of wood) or by the Contractor placing Concrete Construction (where the roof deck is of concrete) ready to receive the work under this contract. Carefully broom and examine all surfaces to be roofed, removing all dirt and debris before applying any materials.

Should any defects or imperfections be found in the construction, this Contractor shall report same to the General Contractor (Owner) to have same corrected before placing any materials.

Note: The required materials and workmanship for the surfaces to receive roofing should be included in the specifications for Mason and Carpenter Work.

Materials—The material shall be two sheets of No. 1 Certain-teed Roofing, weighing 30 lb. to the roll of 108 sq. ft., single thickness, and one sheet (the cap sheet) No. 2 Certain-teed Roofing, weighing 40 lb. to the roll of 108 sq. ft., single thickness, and not less than 150 lb. of Certain-teed Asphalt Cement to the 100 sq. ft. of roof area.

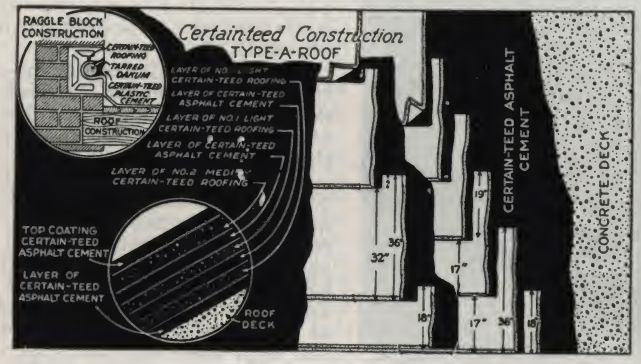
Application—Beginning at the low point of the roof deck, lay one-half sheet of No. 1 Certain-teed Roofing, mopping same to the roof deck with Certain-teed Asphalt Cement applied at a temperature of approximately 350° F., mopping the underneath side of the sheet being laid, its full width, as well as the roof deck. Then lay the second sheet, full width, so that the edge comes even with the outside edge of the half sheet, mopping the underneath side of this sheet its full width, as well as the top surface of the sheet previously laid. Lay the third sheet so that it laps over the second sheet 1 in. more than half its width, mopping both the underneath side of this sheet its full width, and the top surface of the sheet previously laid. In the same manner lay the succeeding layers, completing the roof with the same lap, so that the entire area has two thicknesses of Certain-teed Roofing and 4 moppings of Certain-teed Asphalt Cement at every point. Then lay the cap sheet of No. 2 Certain-teed Roofing, starting at the original low point, mopping the underneath side of this sheet its full width, as well as the top surface of the sheet previously laid. Lap this cap sheet 4 in., thus having 3 thicknesses of roofing and 6 moppings of Certain-teed Asphalt Cement at every point. Finally, the entire top surface shall be mopped over with a uniform coat of hot Certain-teed Asphalt Cement.

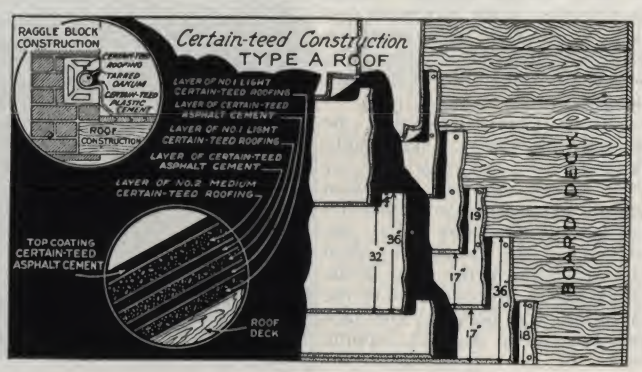
or

Note: In cases where the roof surfaces are of board sheathing, the following paragraphs should be substituted:

Materials—The material shall be two sheets of No. 1 Certain-teed Roofing, weighing 30 lb. to the roll of 108 sq. ft., single thickness, and one sheet (the cap sheet) No. 2 Certain-teed Roofing, weighing 40 lb. to the roll of 108 sq. ft., single thickness, and not less than 120 lb. of Certain-teed Asphalt Cement to the 100 sq. ft. of roof area.

Application—Beginning at the low point of the roof deck, lay one-half sheet of No. 1 Certain-teed Roofing, nailing with two rows of ⅞-in. large-head roofing nails, staggered, on the upper or back half of the sheet. Lay the second sheet of roofing, full width, so that the edge comes even with the outside edge of the half sheet, mopping the underneath side of this sheet its full width, as well as the top surface of the sheet previously laid, with Certain-teed Asphalt Cement applied at a temperature of approximately 350° F. Lay the third sheet so that it laps over the second sheet 1 in. more than half its width, mopping both the underneath side of this sheet its full width and the top surface of the sheet previously laid. In the





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same manner lay the succeeding layers, completing the roof with the same lap, so that the entire area has 2 thicknesses of Certain-teed Roofing and 2 moppings of Certain-teed Asphalt Cement at every point. Then lay the cap sheet of No. 2 Certain-teed Roofing, starting at the original low point, mopping the underneath side of this sheet its full width, as well as the top surface of the sheet previously laid. Lap the cap sheet 4 in., thus having 3 thicknesses of roofing and 4 moppings of Certain-teed Asphalt Cement at every point. Finally, the entire top surface shall be mopped over with a uniform coat of hot Certain-teed Asphalt.

Flashings—Base flashings shall be constructed by extending the roofing up the wall approximately 6 in., reinforcing with a band of No. 3 Certain-teed Roofing approximately 6 in. wide and securing the top edge with standard roofing cleats, unless otherwise specified or shown on the detailed drawings.

Notes: The following notes regarding various types of flashings are suggested for architects' consideration. When other than the above specified flashing is desired the Mason and Carpenter Specifications should include the proper provisions to receive the type of flashing selected, also the above paragraph (Flashings) should be revised accordingly.

Certain-teed flashings can be counterflashed with sheet metal or entered into raggle blocks. If Certain-teed flashing is entered into raggle blocks, same shall be calked in with tarred oakum and pointed with Certain-teed Plastic Cement. For brick walls, we recommend 50 lb. Certain-teed counterflashing, 12 in. wide, be laid up in the third or fourth course of brick above the roof line by the bricklayer, to be used as counterflashing by the roofer. All concrete or tile walls extending above the roof line, where raggle block or metal counterflashing is not provided, shall have a wood nailing strip embedded 6 or 8 in. above the roof line, so that the top edge of flashing can be permanently secured. The drip edge of concrete decks, vertical walls and curbs, shall be provided with wood nailing strips.

Identification and Labels—The materials above mentioned, shall bear the registered Certain-teed labels of the manufacturer, the CERTAIN-TEED PRODUCTS CORPORATION.

Guarantee—The Contractor, as a condition precedent to final payment, shall execute a written guarantee, guaranteeing the above specified roof for a period of fifteen (15) years from date of completion against all defects in material and workmanship furnished by said roofing contractor, and any such defects shall be repaired free of cost to the Owner. This guarantee does not extend to remote or proximate damages, if any, sustained by purchaser, and the repairing of said roof free of cost as aforesaid shall liquidate guarantor's liability hereunder.

Specifications for Certain-teed Type "B" Construction Roof

Guaranteed 10 Years

Note: This specification is applicable where the roof surfaces are of wood sheathing boards, concrete, gypsum tile, cement tile, book tile or steel deck; also for roofs of any pitch, from flat decks to vertical walls; sawtooth roof construction and valleys.

General—All roofs (and side wall) surfaces, where indicated on the drawings, shall be covered with Certain-teed Type "B" Construction Roofing in strict accordance with these specifications and the special instruction of the manufacturer.

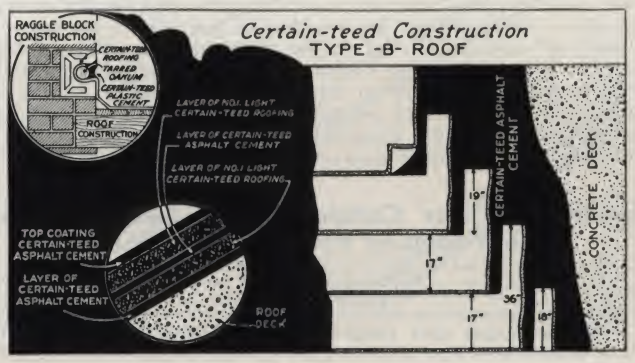
The surface of all roofs will be left smooth, firm, dry, properly graded to gutters and outlets and free from large cracks or knotholes by the Contractor for Carpenter Work (where the roof deck is of wood) or by the Contractor placing concrete construction (where the roof deck is of concrete) ready to receive the work under this contract. Carefully broom and examine all surfaces to be roofed, removing all dirt and debris before applying any materials.

Should any defects or imperfections be found in the construction, this contractor shall report same to the General Contractor (Owner) to have same corrected before placing any materials.

Note: The required materials and workmanship for the surfaces to receive roofing should be included in the specifications for Mason and Carpenter Work.

Material—The material shall be 2 sheets of No. 1 Certain-teed Roofing, weighing 30 lb. to the roll of 108 sq. ft., single thickness, and not less than 120 lb. of Certain-teed Asphalt Cement to the 100 sq. ft. of roof area.

Application—Beginning at the low point of the roof deck, lay one-half sheet of No. 1 Certain-teed Roofing, mopping same to the roof deck with Certain-teed Asphalt Cement applied at a temperature of approximately 350 degrees F., mopping the underneath side of the sheet being laid, its full width, as well as the roof deck. Then lay the second sheet, which is 36 in. wide, so that the edge comes even with the outside edge of the half sheet, mopping the underneath side of this sheet its full width, as well as the top surface of the sheet previously laid. Lay the third sheet so that it laps over the second sheet 1 in. more than half its width, mopping both the underneath side of this sheet its full width, and the top surface of the sheet previously laid. In the same manner lay the succeeding layers, completing the roof with the same lap, so that the entire area has two thicknesses of Certain-teed Roofing and 4 moppings of Certain-teed Asphalt Cement at every point. Finally, the entire top surface shall be mopped over with a uniform coat of hot Certain-teed Asphalt Cement.



or

Note: In cases where the roof surfaces are of board sheathing, the following paragraphs should be substituted:

Materials—The material shall be 2 sheets of No. 1 Certain-teed Roofing weighing 30 lb. to the roll of 108 sq. ft., single thickness, and not less than 90 lb. of Certain-teed Asphalt Cement to the 100 sq. ft. of roof area.

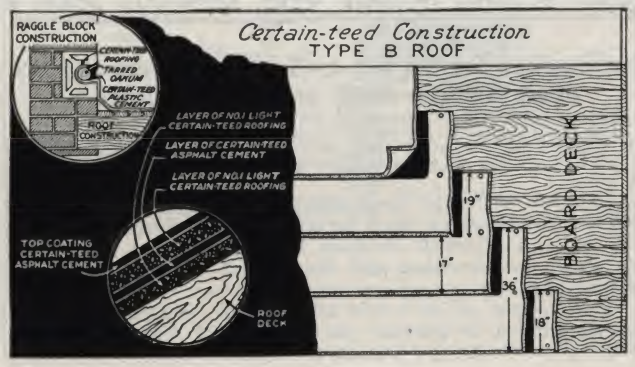
Application—Beginning at the low point of the roof deck, lay one-half sheet of No. 1 Certain-teed Roofing, nailing with two rows of 7/8-in. large-head roofing nails, staggered, on the upper or back half of the sheet. Lay the second sheet of roofing, full width, so that the edge comes even with the outside edges of the half sheet, mopping the underneath side of this sheet its full width, as well as the top surface of the sheet previously laid with Certain-teed Asphalt Cement applied at a temperature of approximately 350 degrees F. Lay the third sheet so that it laps over the second sheet 1 in. more than half its width, mopping both the underneath side of this sheet its full width and the top surface of the sheet previously laid. In the same manner lay the succeeding layers, completing the roof with the same lap, so that the entire area has 2 thicknesses of Certain-teed Roofing and 2 moppings of Certain-teed Asphalt Cement at every point. Finally, the entire top surface shall be mopped over with a uniform coat of hot Certain-teed Asphalt Cement.

Flashings—Base flashings shall be constructed by extending the roofing up the wall approximately 6 in., reinforcing with a band of No. 3 Certain-teed Roofing approximately 6 in. wide and securing the top edge with standard roofing cleats, unless otherwise specified or shown on the detailed drawings.

Notes: The following notes regarding various types of flashings are suggested for architects' consideration. When other than the above specified flashing is desired the Mason and Carpenter Specifications should include the proper provisions to receive the type of flashing selected; also the above paragraph (Flashings) should be revised accordingly.

Certain-teed flashings can be counterflashed with sheet metal or entered into raggle blocks. If Certain-teed flashing is entered into raggle block, same shall be calked in with tarred oakum and pointed with Certain-teed Plastic Cement. For brick walls, we recommend 50 lb. Certain-teed counterflashing, 12 in. wide, be laid up in the third or fourth course of brick above the roof line by the bricklayer, to be used as counterflashing by the roofer. All concrete or tile walls extending above the roof line, where raggle block or metal counterflashing is not provided shall have a wood nailing strip embedded 6 to 8 in. above the roof line, so that top edge of flashing can be permanently secured. The drip edge of concrete decks, vertical walls and curbs, shall be provided with wood nailing strips.

See illustration on second page following.



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Identification and Labels—The materials above mentioned shall bear the registered Certain-teed labels of the manufacturer, the CERTAIN-TEED PRODUCTS CORPORATION.

Guarantee—The Contractor, as a condition precedent to final payment, shall execute a written guarantee, guaranteeing the above specified roof for a period of ten (10) years from date of completion against all defects in material and workmanship furnished by said roofing contractor, and any such defects shall be repaired free of cost to the Owner. This guarantee does not extend to remote or proximate damages, if any, sustained by purchaser, and the repairing of said roof free of cost as aforesaid shall liquidate guarantor's liability hereunder.

Certain-teed Asphalt Felt and Asphalt Built-up Roof on Wood and Masonry Surface

Guaranteed 10 Years

This is a form of roofing employed over wood sheathing, concrete, gypsum, cement tile, book tile, steel deck, etc., of any pitch, from a comparatively flat deck to the vertical wall, and is especially recommended for saw-tooth skylight construction and valleys.

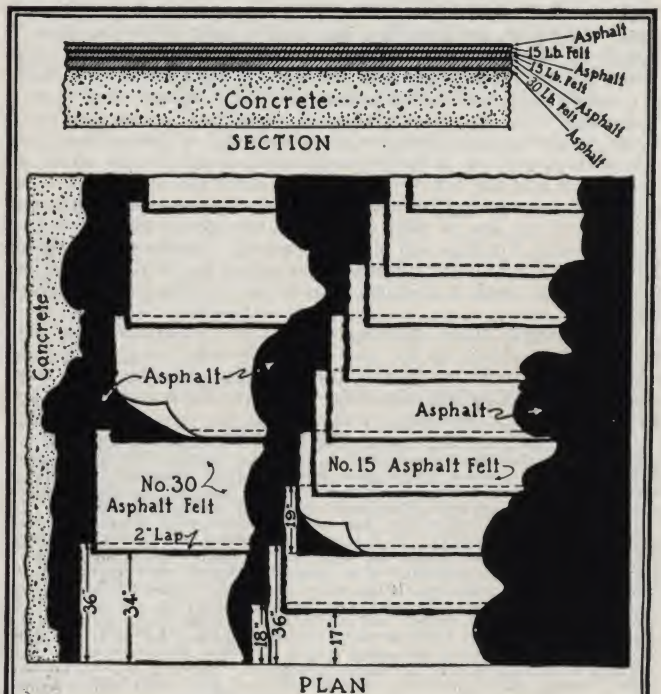
The roof decks must be smooth and dry, and evenly graded to gutters and outlets. Wood surfaces must be well seasoned and well nailed.

Asphalt Felt and Asphalt Built-up Roof over masonry is composed of the following, per square of roof area.

No. 30 Asphalt Saturated Felt per square	30 lb.
No. 15 Asphalt Saturated Felt per square (2 layers 15 lb. each)	30 lb.
Certain-teed Asphalt Cement	120 lb.
Total	180 lb.
When Asphalt Primer is required	1 gal.

Asphalt Felt and Asphalt Built-up Roof over wood is composed of the following, per square of roof area.

No. 30 Asphalt Saturated Felt per square	30 lb.
No. 15 Asphalt Saturated Felt per square (2 layers 15 lb. each)	30 lb.
Certain-teed Asphalt Cement	90 lb.
Total	150 lb.



CERTAIN-TEED ASPHALT FELT AND ASPHALT BUILT-UP ROOF APPLIED OVER CONCRETE DECK

Specifications for Certain-teed Asphalt Felt and Asphalt Built-up Roof on Masonry Surface

Notes: This roof is guaranteed for 10 years.

This specification is applicable where the roof surfaces are of concrete, gypsum tile, cement tile, book tile, steel deck, etc.; also for roofs of any pitch, from flat decks to vertical walls; sawtooth roof construction and valleys.

General—All roof (and side wall) surfaces, where indicated on the drawings, shall be covered with Certain-teed Asphalt Felt and Asphalt Built-up Roofing in strict accordance with these specifications and the special instructions of the manufacturer.

The surface of all roofs will be left smooth, firm, dry, properly graded to gutters and outlets and free from large cracks by the Contractor placing the concrete construction ready to receive the work under this contract. Carefully broom and examine all surfaces to be roofed, removing all dirt and debris before applying any materials.

Should any defects or imperfections be found in construction, this Contractor shall report same to the General Contractor (Owner) to have same corrected before placing any materials.

Note: The required materials and workmanship for the surfaces to receive roofing should be included in the specifications for Mason Work.

Material—The material shall be one sheet of No. 30 Certain-teed Asphalt Felt, weighing approximately 30 lb. per 108 sq. ft., single thickness, and 2 sheets of No. 15 Certain-teed Asphalt Saturated Rag Felt, weighing approximately 15 lb. per 108 sq. ft., single thickness (the felt shall be 36 in. wide), and not less than 120 lb. of Certain-teed Asphalt Cement to the 100 sq. ft. of roof area. Asphalt to be applied at a temperature of approximately 350 degrees F.

Note: Where a priming coat is desired on the surfaces to be covered, include the following paragraph under above heading (Material):

(For the priming coat use not less than one gal. to 100 sq. ft. of Certain-teed Liquid Asphalt Cement, applied cold.)

Application—All surfaces to be covered shall receive a priming coat of Certain-teed Liquid Asphalt Cement, applied cold and well brushed in, using not less than 1 gal. to 100 sq. ft. Primer shall be allowed to dry before applying the hot asphalt.

Note: If primer is not desired, omit the above paragraph.

Beginning at the low point of the roof deck, lay one layer of 30 lb. Certain-teed Asphalt Felt, lapping each sheet 2 in., mopping same to the roof deck with approximately 30 lb. Certain-teed Asphalt Cement to the square. Over the 30 lb. Asphalt Saturated Felt thus laid, mop approximately 30 lb. of Certain-teed Asphalt Cement to the square, into which, while hot, lay 2 layers of 15 lb. Certain-teed Asphalt Felt (starting with one-half sheet), lapping each sheet 19 in. and mopping between sheets the full width of the lap with Certain-teed Asphalt Cement, using approximately 30 lb. of asphalt per square. Over the entire surface of the felt thus laid, mop a uniform coat of Certain-teed Asphalt Cement, using approximately 30 lb. of asphalt per square. This final or top coating shall be applied as the work progresses so that the felt shall not be left exposed.

Flashings—Base flashings shall be constructed by extending the felt up the wall not less than 6 in. Over the base flashing mop a strip of 15 lb. Asphalt Saturated Felt approximately 6 in. wide, the top edge of the felt shall be secured with a standard roofing cleat, unless otherwise specified or shown on the detailed drawings.

Notes: The following notes regarding various types of flashings are suggested for architects' consideration. When other than the above specified flashing is desired the Mason and Carpenter Specifications should include the proper provisions to receive the type of flashing selected, also the above paragraph (Flashings) should be revised accordingly.

Base flashings can be counterflashed with sheet or metal or entered into raggle blocks. If the asphalt felt base flashing is entered into raggle blocks, it shall be calked in with tarred oakum and pointed up with Certain-teed Plastic Cement. All concrete or tile walls extending above the roof line where raggle block or metal counterflashing is not provided, shall have a wood nailing strip embedded 6 or 8 in. above the roof line so that the top edge of the flashing can be permanently secured.

Identification and Labels—The materials above mentioned, shall bear the registered Certain-teed label of the manufacturer, the CERTAIN-TEED PRODUCTS CORPORATION.

Guarantee—The Contractor, as a condition precedent to final payment, shall execute a written guarantee, guaranteeing the above specified roof for a period of ten years from date of completion against all defects in material and workmanship furnished by said roofing contractor, and any such defects shall be repaired free of cost to the Owner. This guarantee does not extend to remote or proximate damages, if any, sustained by purchaser, and the repairing of said roof free of cost as aforesaid shall liquidate guarantor's liability hereunder.

Specifications for Certain-teed Asphalt Felt and Asphalt Built-up Roof on Board Sheathing

Notes: This roof is guaranteed for 10 years.

This specification is applicable where the roof surfaces are of wood sheathing; also for roofs of any pitch, from flat decks to vertical walls; sawtooth roof construction and valleys.

General—All roof (and side wall) surfaces, where indicated on the drawings, shall be covered with Certain-teed Asphalt

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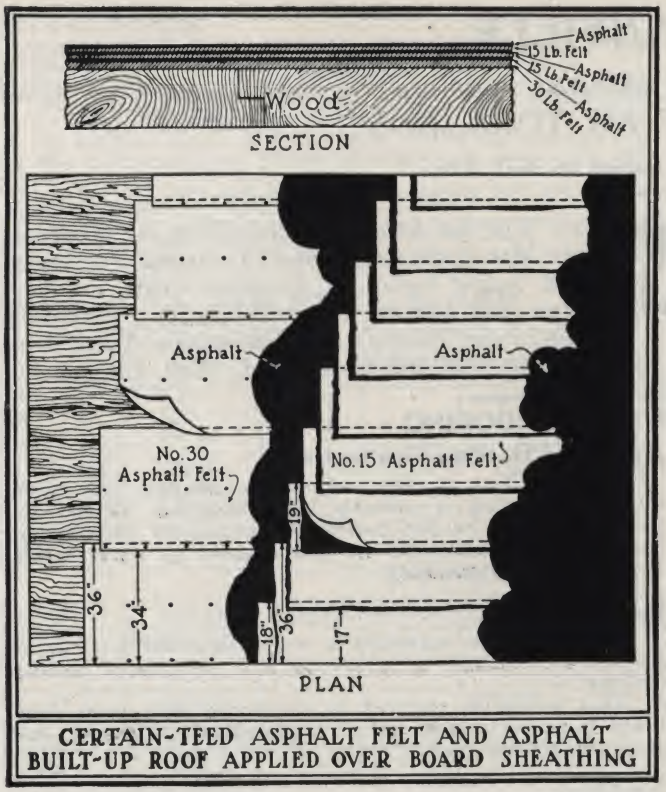


CERTAIN-TEED ASPHALT FELT AND ASPHALT BUILT-UP ROOF APPLIED OVER BOARD SHEATHING

Felt and Asphalt Built-up Roofing in strict accordance with these specifications and the special instructions of the manufacturer.

The surface of all roofs will be left smooth, firm, dry, properly graded to gutters and outlets and free from large cracks or knotholes by the Contractor for Carpenter Work ready to receive the work under this contract. Carefully broom and examine all surfaces to be roofed, removing all dirt and debris before applying any materials.

Should any defects or imperfections be found in the construction, this Contractor shall report same to the General Contractor (Owner) to have same corrected before placing any materials.

Note: The required materials and workmanship for the surfaces to receive roofing should be included in the specifications for Carpenter Work.

Material—The material shall be one sheet of No. 30 Certain-teed Asphalt Felt, weighing approximately 30 lb. per 108 sq. ft., single thickness, and 2 sheets of No. 15 Certain-teed Asphalt Saturated Rag Felt, weighing approximately 15 lb. per 108 sq. ft., single thickness (the felt shall be 36 in. wide), and not less than 90 lb. of Certain-teed Asphalt Cement to the 100 sq. ft. of roof area. Asphalt to be applied at a temperature of approximately 350 degrees F.

Application—Beginning at the low point of the roof deck, lay one layer of 30 lb. Certain-teed Asphalt Felt, lapping each sheet 2 in. and nailing through the laps and longitudinal centers with large-head, barbed roofing nails, 12 in. on center. Over the 30 lb. Asphalt Saturated Felt thus laid, mop approximately 30 lb. of Certain-teed Asphalt Cement, into which, while hot, lay 2 layers of 15 lb. Certain-teed Asphalt Felt (starting with one-half sheet), lapping each sheet 19 in. and mopping between sheets the full width of the lap with Certain-teed Asphalt Cement, using approximately 30 lb. of asphalt per square.

Over the entire surface of the felt thus laid, mop a uniform coat of Certain-teed Asphalt Cement, using approximately 30 lb. of asphalt per square. This final or top coating shall be applied as the work progresses so that the felt shall not be left exposed.

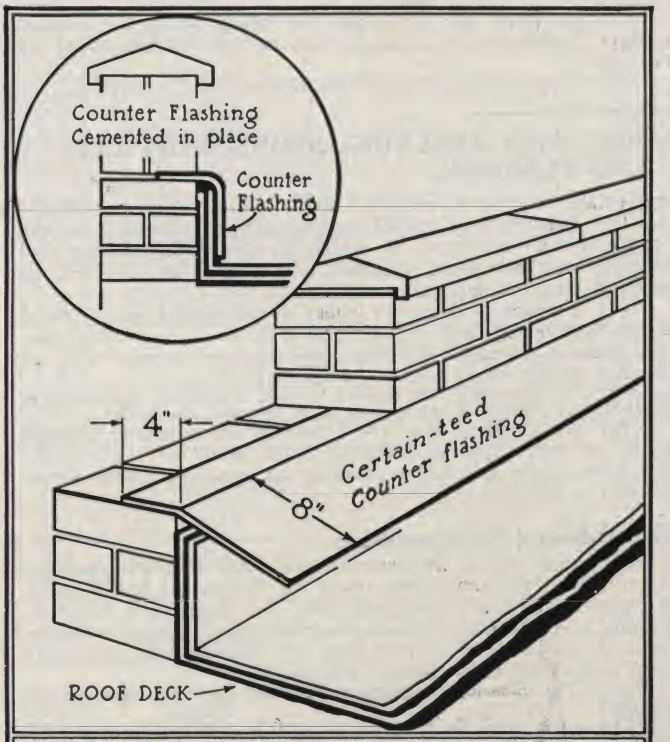
Flashings—Base flashings shall be constructed by extending the felt up the wall not less than 6 in. Over the base flashing mop a strip of 15 lb. Asphalt Saturated Felt approximately 6 in. wide, the top edge of the felt shall be secured with a standard roofing cleat, unless otherwise specified or shown on the detailed drawings.

Notes: The following notes regarding various types of flashings are suggested for architects' consideration. When other than the above specified flashing is desired the Mason and Carpenter Specifications should include the proper provisions to receive the type of flashing selected, also the above paragraph (Flashing) should be revised accordingly.

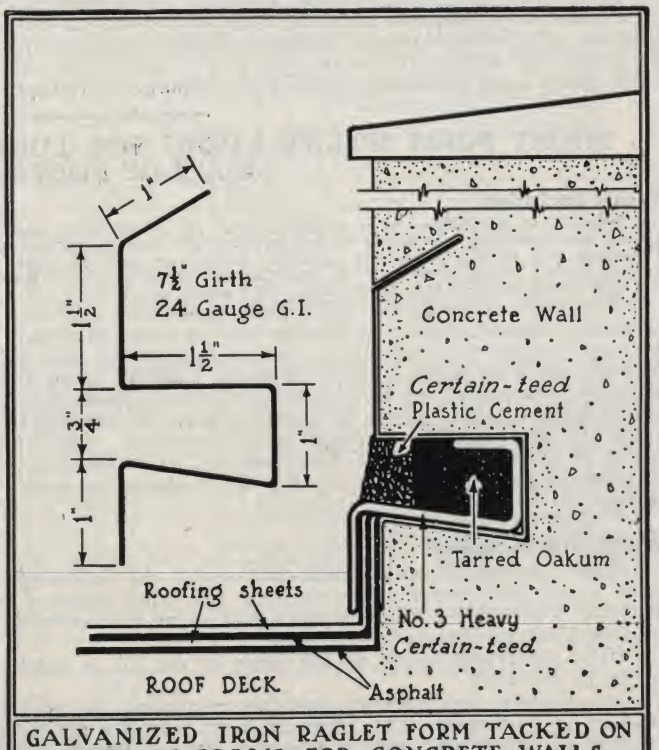
Base flashings can be counterflashed with sheet metal or entered into raggle blocks. If the asphalt felt base flashing is entered into raggle blocks, it shall be calked in with tarred oakum and pointed up with Certain-teed Plastic Cement. All concrete or tile walls extending above the roof line where raggle block or metal counterflashing is not provided, shall have a wood nailing strip embedded 6 or 8 in. above the roof line so that the top edge of the flashing can be permanently secured.

Identification and Labels—The materials above mentioned shall bear the registered Certain-teed labels of the manufacturer, the CERTAIN-TEED PRODUCTS CORPORATION.

Guarantee—The Contractor, as a condition precedent to final payment, shall execute a written guarantee, guaranteeing the above specified roof for a period of ten (10) years from date of completion against all defects in material and workmanship furnished by said roofing contractor, and any such defects shall be repaired free of cost to the Owner. This guarantee does not extend to remote or proximate damages, if any, sustained by purchaser, and the repairing of roof free of cost as aforesaid shall liquidate guarantor's liability hereunder.



CERTAIN-TEED COUNTER FLASHING FOR BRICK WALLS



GALVANIZED IRON RAGLET FORM TACKED ON INSIDE OF FORMS FOR CONCRETE WALLS

JOHNS-MANVILLE

EXECUTIVE OFFICES
292 Madison Avenue, NEW YORK, N. Y.
For Branch Offices, see Section on Wall Tile

Products

JOHNS-MANVILLE BUILT-UP ROOFING.

Also Packings for all purposes; Refractory Cements; Waterproofing and Dampproofing; Asbestos Ebony; Asbestos and Asphalt Roll-roofing; Rotproof Roofs; Asbestos products of all kinds.

For the following Johns-Manville products, see Manufacturers' Index: Acoustical Treatment and Sound Isolation; Shingles; Celite for concrete and mortar; Home Insulation; Insulating Board and Plaster Lath; Insulations; Tile Flooring; Transite, Flat and Corrugated; Wall Tile.

JOHNS-MANVILLE BUILT-UP ROOFING

Construction

Johns-Manville Built-up Roofings are constructed of successive layers of roofing felts, thoroughly impregnated or saturated with asphalt, which are alternated with layers of asphalt roofing cement. The kind of felt used, either asbestos or rag, and the number of layers vary with the different types of roofing. See Chart. The final surfacing varies with the type of felt used, either smooth surfaced, slag or gravel, or colored crushed slate.

This makes possible selection according to individual preference for desired effect as well as to meet conditions in structure, protective requirements and servic.

Classification

Johns-Manville Built-up Roofings are classified on the basis of the kind of felt and number of layers used in their construction. Roofings made of asbestos felts may be applied to any pitch not involving impossible working conditions and require no slag, gravel or crushed slate surfacing for protection. Roofings made of rag felts are subject to certain pitch limitations and are surfaced for protection either with crushed slate, slag or gravel.

Bonds

All Johns-Manville Built-up Roofings of whatever type will, when desired, be covered by a bond of the National Surety Company, guaranteeing the performance of the particular roof for a period up to twenty years, depending on the type of roofing used. This bond is issued on roofings laid only by Johns-Manville Approved Roofing Contractors and in connection with Johns-Manville inspection service.

Where Johns-Manville Flashing Materials are used in conjunction with Johns-Manville Roofing, a flashing endorsement for a ten-year period will be attached to and become part of bond, under same conditions imposed for bonding of roofing.

Approved Roofing Contractors

Realizing that the best results are obtained only when the proper roofing is correctly laid, Johns-Manville has appointed *approved roofing contractors* throughout the country, basing these appointments on thoroughness of workmanship and financial responsibility.

Inspection

Johns-Manville maintains a corps of inspectors whose services are available in connection with the bonded built-up roofings.

This service is required in connection with every roof which is to be bonded, and is rendered before, during, and after the roofing work.

Insulation

Under certain conditions it is recommended that Johns-Manville Built-up Roofings be laid over a rigid type of insulation such as Johns-Manville Rigid Roofinsul, to prevent condensation and to prevent passage of heat or cold.

Conference with representatives of the Johns-Manville Staff is recommended prior to specification to determine the advisable provisions.

Promenade Tile

When desired certain Johns-Manville Built-up Roofings may be covered with promenade tile. Flashings used therewith under these circumstances must be of sheet metal.

Underwriters' Rating

On the chart will be found the rating which the Underwriters' Laboratories, Inc., has given on certain types of roofings.

This is an indication of their fire-resisting properties.

SHORT FORM SPECIFICATIONS FOR FURNISHING AND APPLYING JOHNS-MANVILLE BUILT-UP ROOFING AND FLASHING

Work Included

Where it is the custom, or it is desired that, the roofing contractor include the furnishing and setting of any or all of the items included in Paragraph (c), under "Work Not Included," such item shall be incorporated under "Work Included," in detail or "in accordance with the standard specification of the (sheet metal, etc.) manufacturer."

The work contemplated under this specification shall include all materials, labor, equipment and services necessary for and reasonably incidental to the installation of Johns-Manville Built-up Roofing, Johns-Manville Flashing (omit if sheet metal base and cap flashing is to be used), Johns-Manville Edging (omit if not to be used: must not be used with gravel or slag surfaced roofing), Roof Insulation (omit if not to be used). Promenade Tile (omit if not to be used), to (*state in detail surfaces to be covered*) as shown on drawings or herein specified.

Work Not Included

Other contractors will furnish and install the following work as specified under other divisions and other specification text which this contractor shall read so as to ascertain what is called for therein:

(The paragraphs which do not apply to the job at hand are to be omitted.)

(a) Furnish and erect all materials composing the roof construction, including cants, coves or fillets, properly graded to drain all water into gutters and roof drains, leaving all surfaces smooth and clean, in a satisfactory condition to receive the roofing, as specified under (state where specified).

(b) Furnish and install nailing strips embedded in the roof and wall structure, to which to secure the roofing and flashing, and all wood grounds, stops, etc., as required, as specified under (*state where specified*).

(c) Furnish and install sheet metal gravel stops, sheet metal flashing required at structural iron work, pipes, flagpoles, etc., passing through the roof, and at roof drains, etc., as specified under (*state where specified*).

Note: If sheet metal cap flashing is used, a complete installation of Johns-Manville base and cap flashing is to be made thereunder.

(d) Where Johns-Manville Flashings are to extend through walls or under coping, properly finish walls to such height and leave ready to receive flashing, as specified under (*state where specified*).

Materials and Workmanship

All work under this specification and contract shall be executed in strict conformity with the "Standard Specification of Johns-Manville for the Furnishing and Applying of Built-up Roofing and Flashing," which standard specification is hereby declared and made a part of this specification with the same force and effect as if written herein in full.

Note: The following paragraph to be added only if a bond is to be furnished.

The work shall be done by a roofing contractor approved by Johns-Manville, subject to their inspection during application, and subsequent approval.

Continued on next page

Type of Roofing

Roofing shall be Type *(state Type Designation, see chart)* Built-up Roofing.

Height of Flashing (Omit if Sheet Metal Base and Cap Flashing Are to Be Used)

The height of flashing on parapet walls shall be *(state whether "not less than eight inches," or "so as to completely cover entire inside face of wall and top of wall under coping to within two inches of outside face" or "not less than eight inches with cap flashing built into and extended through wall to form a dampproof course").*

The height of flashing on high walls shall be *(state whether "same height as on adjoining parapet walls" or "not less than eight inches, with cap flashing built into and extended through wall to form a dampproof course").* Skylight curbs shall be flashed full height.

Promenade Tile (Omit if Not to Be Used)

The roofing shall be overlaid with *(state size, type, etc.)* Promenade tile, set in a portland cement mortar bed.

Roof Insulation (Omit if Not to Be Used)

Roof insulation shall be *(state kind, the number of layers and thickness of each and whether or not a layer of 15 lb. Asbestos Roofing Felt is to be applied under the insulation.* If other than Rigid Roofinsul, state how to be applied).

Guarantee

Note: If desired, on jobs situated in the United States or Canada, in localities where Johns-Manville inspection service is available, the following may be added:

The roofing contractor shall furnish a Johns-Manville *(state term of bond, see chart below)* Guaranty Bond to cover the roofing applied under this contract.

Note: If Johns-Manville Flashing is included, the following may be added: A 10-year flashing endorsement shall be attached thereto to cover the Johns-Manville Flashing applied under this contract.

TABULATION OF VARIOUS TYPES OF JOHNS-MANVILLE BUILT-UP ROOFINGS

SPECIFICATION NUMBER	PAGE REFERENCE	CONSTRUCTION OF DECK	LIMITATION OF ROOF PITCH	SURFACE FINISH	TYPE OF ROOFING FELT INVOLVED	RATING BY UNDERWRITERS LAB. INC.	COMPOSITION: NUMBER OF PLIES OF FELT	COMPOSITION: NO OF ASPHALT MOPPINGS	WEIGHT OF MATERIALS: FELTS	WEIGHT OF MATERIALS: ASPHALT	WEIGHT OF MATERIALS: GRAVEL SURFACING	WEIGHT OF MATERIALS: SLAG SURFACING	TOTAL WEIGHT PER SQ. APPLIED: SURFACED SMOOTH OR WITH CRUSHED SLATE	TOTAL WEIGHT PER SQ. APPLIED: SURFACED WITH GRAVEL	TOTAL WEIGHT PER SQ. APPLIED: SURFACED WITH SLAG	TERM OF GUARANTY BOND YEARS
FOR GENERAL PURPOSES																
100		WOOD	9" PER FOOT MAXIMUM	SMOOTH	ASBESTOS	A	ONE 60 LB. FELT & THREE 15 LB. FELTS	4	105	115			220			20
101		NON-COMBUSTIBLE	"	"	"	A	ONE 60 LB & TWO 15 LB. FELTS	4	90	115			205			20
103		WOOD	"	"	"	A	ONE 60 LB. & TWO 15 LB. FELTS	3	90	85			175			15
200		WOOD	"	"	ASBESTOS AND RAG		ONE 45 LB RAG. & TWO 15 LB ASBESTOS FELTS	3	75	85			160			15
201		NON-COMBUSTIBLE	"	"	"		" " "	4	75	115			190			15
202		WOOD	"	"	"		ONE 30 LB RAG & TWO 15 LB ASBESTOS FELTS	3	60	85			145			10
203		NON-COMBUSTIBLE	"	"	"		" " "	4	60	115			175			10
300		WOOD OR PRECAST GYPSUM	2" PER FOOT MAXIMUM	GRAVEL OR SLAG	RAG	A	FIVE 15 LB FELTS	4	75	160	400	300		635	535	20
301		"	2" TO 4" PER FOOT	SLAG	"	A*	" "	5	75	160		250			485	10
302		NON-COMBUSTIBLE EXCEPT PRECAST GYPSUM	2" PER FOOT MAXIMUM	GRAVEL OR SLAG	"	A	FOUR 15 LB FELTS	5	60	190	400	300		650	550	20
303		"	2" TO 4" PER FOOT	SLAG	"	A*	" "	5	60	160		250			470	10
304		WOOD OR PRECAST GYPSUM	2" PER FOOT MAXIMUM	GRAVEL OR SLAG	"	A	" "	3	60	130	400	300		590	490	15
305		NON COMBUSTIBLE EXCEPT PRECAST GYPSUM	"	"	"	A	THREE 15 LB. FELTS	4	45	160	400	300		605	505	15
FOR USE OVER ROOFINSUL OR OTHER APPROVED RIGID INSULATION																
104		WOOD	9" PER FOOT MAXIMUM	SMOOTH	ASBESTOS	A	FOUR 15 LB. FELTS	5	60	145			205			20
105		NON COMBUSTIBLE	"	"	"	A	" "	5	60	145			205			20
108		STEEL	"	"	"	A	" "	5	60	145			205			20
106		WOOD	"	"	"	B	THREE 15 LB FELTS	4	45	115			160			15
107		NON-COMBUSTIBLE	"	"	"	A	" "	4	45	115			160			15
109		STEEL	"	"	"	A	" "	4	45	115			160			15
500		WOOD	THESE SPECIFICATIONS COVER THE APPLICATION OF JOHNS-MANVILLE RIGID ROOFINSUL OVER THE VARIOUS TYPES OF ROOF DECK CONSTRUCTION DESIGNATED PREPARATORY TO RECEIVING THE ROOFING													
501		NON COMBUSTIBLE														
502		STEEL														
FOR USE WHERE A CRUSHED SLATE SURFACE FINISH IS DESIRED																
400		WOOD OR PRECAST GYPSUM	4" TO 9" PER FOOT	CRUSHED SLATE	RAG	C	TWO 15 LB & TWO 50 LB (SLATEKOTE) FELTS	2	130	60			190			10
401		NON COMBUSTIBLE EXCEPT PRECAST GYPSUM	4" TO 9" PER FOOT	" "	"	C	ONE 15 LB. & TWO 50 LB. (SLATEKOTE) FELTS	3	115	90			205			10
402		WOOD OR PRECAST GYPSUM	1" TO 4" PER FOOT	" "	"	C	THREE 15 LB & TWO 50 LB (SLATEKOTE) FELTS	3	147	120			267			10
403		NON COMBUSTIBLE EXCEPT PRECAST GYPSUM	1" TO 4" PER FOOT	" "	"	C	" " "	4	147	150			297			10
FOR USE UNDER PROMENADE TILE																
112		NON-COMBUSTIBLE	1/4" TO 1/2" PER FOOT	SMOOTH	ASBESTOS	A	TWO LAYERS ROSIN-SIZED PAPER-ONE 60 LB AND TWO 15 LB FELTS	4	90	130			220			20
204		"	"	"	ASBESTOS AND RAG		TWO LAYERS ROSIN-SIZED PAPER - ONE 45 LB. RAG & TWO 15 LB ASBESTOS FELTS	4	75	130			205			10
306		"	"	"	RAG	A	FIVE 15 LB. FELTS	6	75	180			255			5
FOR USE UNDER GRANOLITHIC FINISH																
114		NON-COMBUSTIBLE	1/4" TO 1/2 PER FOOT	SMOOTH	ASBESTOS	A	TWO LAYERS ROSIN SIZED PAPER ONE 60 LB AND THREE 15 LB FELTS	5	105	165			270			10
FOR USE UNDER LIGHT FOOT TRAFFIC NOT WARRANTING THE COST OF PROMENADE TILE ETC.																
102		WOOD NON-COMBUSTIBLE	1" PER FOOT MAXIMUM	SMOOTH	ASBESTOS	A	ONE 60 LB. - THREE 15 LB. & ONE 74 LB. (EXTRA HEAVY FLEXSTONE) FELTS	4 5	179 179	120 150			299 329			20
FOR USE ON SPRAY DECKS																
110		WOOD		SMOOTH	ASBESTOS AND FABRIC		ONE 60 LB FELT - ONE WATERPROOFING FABRIC TWO 15 LB FELTS	4	101	115			216			10
111		NON-COMBUSTIBLE		"	" "		" " "	5	101	145			246			10
FOR USE ON BRINE DECKS																
115		WOOD		SMOOTH	ASBESTOS AND FABRIC		ONE 35 LB. WATERPROOFING FELT ONE WATERPROOFING FABRIC & TWO 15 LB. WATERPROOFING FELTS	4	76	120			196			5
116		NON-COMBUSTIBLE		"	" "		TWO LAYERS 6 LB ASBESTOS PAPER, TWO 15 LB. WATERPROOF FELTS ONE WATERPROOF FABRIC TWO 15 LB WATERPROOF FELTS	6	83	180			263			5

* CLASS A ON PITCHES UP TO AND INCLUDING 3" PER FOOT ONLY

SAMUEL CABOT, INC.

Creosote Stained Shingles

141 Milk Street, BOSTON, MASS.

For Branch Offices and Agencies, see our pages on Stains and Preservatives

Products

CABOT'S CREOSOTE STAINED SHINGLES.

For our pages on Building Insulation and Paints, Stains and Wood Preservatives, see Manufacturers' Index.

Cabot's Creosote Stained Shingles

Description—Grade A, U. S. Dept. of Commerce Standard, red cedar shingles, ready-stained with Cabot's Creosote Shingle and Wood Stains.

Sound live wood; uniform thickness; edge grain; even butts; do not warp or curl. Thoroughly preserved by complete immersion in Cabot's Creosote Shingle and Wood Stains. Sold in original bundles, as packed at the mill, guaranteed full count.

Standard Colors—***Weathering Browns, Light and Dark Bungalow Browns, Bark Brown, Warm Brown; Light and Dark Tile Reds, Maroons, etc..***—A complete range of these handsome and durable colors for roofs and walls.

Light, Dark and Medium Moss Greens—Our moss greens have a richness and depth of color such as can only be produced by the strongest and purest pigments.

Charming House at Portland, Ore.

WALTER CHURCH, Architect

Color effects possible only through the use of Cabot's Creosote Shingle and Wood Stains on roof and siding. Cabot's Quilt is used for insulation

Grays—Our grays give the true natural seashore gray tones.

White Shingles—Cabot's Shingles are also furnished ready-stained with No. 1166 White Primer, to be finished after the shingles are laid, either with (1) a brush coat of No. 1166, (2) one or two brush coats of Cabot's Old Virginia White or (3) one or two coats of Cabot's DOUBLE-WHITE. (See our pages on Stains and Preservatives for description of these materials.)

Cabot's

Creosote Stained

Shingles

Samuel Cabot Inc.

Blended Roofs—All color combinations are blended in the bundle so they can be laid without blending on the job.

"Anteaks" and Irregular Butts—"Royals" treated by our patented machines to give aged and antique effects, and with irregular butts, are sold under our trademark "Anteaks." Irregular butts are also furnished in regular type shingles, all sizes, at slight extra cost.

Samples

Samples of standard colors sent on request.

24-in. "Royals"

18-in. "Perfections"

16-in. "XXXXX"

Cabot's Creosote Stained Shingles

Sizes

24-in. "Royals," 18-in. "Perfections" and 16-in. "XXXXX," the highest grade shingles made, are used exclusively for Cabot's Creosote Stained Shingles.

"Royals" for walls, laid with 10 to 12-in. exposure, are much more artistic than dressed siding, much warmer and the cost is actually lower. "Perfections" and "XXXXX" are the standard regular sized shingles for walls and roofs.

Deliveries

Prompt deliveries from staining plants in Boston, Chicago, Baltimore, Philadelphia, Newark, New Rochelle, Columbus, Cleveland, Los Angeles, Seattle, San Francisco, etc., and from warehouses at all central points.

COVERING CAPACITY OF CABOT'S CREOSOTED SHINGLES, SQUARE FEET PER SQUARE AT VARIOUS EXPOSURES—STANDARD GRADES—RANDOM WIDTHS

	Approx. weights per square, lb.	4-in. exp.	4½-in. exp.	5-in. exp.	5½-in. exp.	6-in. exp.	6½-in. exp.	7-in. exp.	7½-in. exp.	8-in. exp.	8½-in. exp.	9-in. exp.	10-in. exp.	11-in. exp.	12-in. exp.
1 square of 16 in. (4 bun. 20/20 pack)	160	80	90	**100**	110	120	130	140	150	...	...	...	...	...	...
1 square of 18 in. (4 bun. 18/18 pack)	180	...	...	...	**100**	109	120	129	138	148	157	...	...	...	...
1 square of 24 in. (3 bun. 14/14 pack)	167	...	...	...	...	...	...	...	75	80	85	90	**100**	110	120

Note: This table is based on 100 sq. ft. to each square. But Cabot's Shingles are all sold in the original bundles as packed at the shingle mills under the Official Grading and Packing Rules of the Shingle Manufacturers Association and the tables of the Red Cedar Shingle Bureau show that *our* square actually covers from 3% to 8% more than *our* table claims.

DURACOLOR CORPORATION

28-68 North Marion Street
NORTH TONAWANDA, N. Y.
NEW YORK OFFICE, 101 Park Avenue

Product

DURACOLOR COATED SHINGLES for permanent and artistic effect on sidewalls and roofs.

DURACOLOR
COATED SHINGLES

Attainments

Red cedar shingles that offer the maximum in beauty and color durability.

"The Dawn of a New Day for Colored Shingles"

RED CEDAR SHINGLES THAT ARE "COVERED TO STAY COLORED"

Attainments in Color

Recognized attainments in the Duracolor process (patented in United States and Canada) of coloring shingles are the foundation of Duracolor's claim to the architect's attention and favor.

The process is new and obtains results not heretofore economically possible.

Duracolor has unquestionably achieved success in improving upon all those desirable features in colored shingles which tend to artistic effect and durability.

Color Tone

The color tone effect produced by Duracolor Coated Shingles shows all the beauty and richness of the pigments used and gives a solid, substantial appearance which is distinctive, attractive, and interesting.

On the roof or sidewall Duracolor Coated Shingles have a lively and sparkling effect. Color in all its beauty is there to its best advantage.

Durability of Color

Along with this advance in appearance there has been secured the scientifically approved ideal of best protection to the shingle. We believe that Duracolors have the hardest and most durable color treatment yet conceived for shingles, on the face and all edges, and *no color is wasted on the back.* This feature is exclusive with Duracolor.

Manufacture of Shingles

The shingles used are manufactured from the very best grade of 100% vertical grain British Columbia red cedar.

The shingles are carefully sawn in such manner as to present the long grain of the wood to the direction of drainage.

Coloring Process

The Duracolor process provides for the handling of shingles flat and for the application of much more color on the face and edges *only* than is commonly applied to other shingles *all over.*

The shingles are placed on a flat conveyor, the color applied by machinery and pneumatically smoothed out evenly over the surface.

The pigments used are mixed with a specially compounded vehicle and are *baked on.* The conveyor passes the shingles—always remaining in a horizontal position—into an oven where the coating is actually baked on. This treatment results in a thoroughly oxidized thin but hard durable coating which does not alter the texture of the wood surface.

The final coating shows no "tears," ridges, or pockets to interfere with drainage and catch dirt; on the contrary, the surface is so covered that drainage cleanses and brightens the color.

Duracolor "Finished Durawhite" is as permanent without the usual brushcoating at the building as are all other Duracolors.

Quality

Duracolor recognizes but one grade of shingles—the very best. Each and every shingle is inspected, and defective shingles are replaced with perfect ones.

Selection and Sizes

Shingles are of random widths.

Duracolors are made in sixteen standard colors.

Standard packages are in uniform colors or in special variegated color effects to suit the architect's specifications. Sizes are obtainable as follows:

16-in. XXXXX	5 butts to 2	in.
18-in. Eurekas	5 butts to 2	in.
18-in. Perfections	5 butts to 2¼	in.
24-in. No. 1 Royals	4 butts to 2	in.

Package

The shipping package is specially designed—termed *"Protex-Pak"* corrugated carton container—insuring delivery of shingles *at the job* in as good condition as when leaving the factory.

"Protex-Pak" containers are weatherproof and practically waterproof.

Cost

The increase in the cost of Duracolor Coated Shingles above ordinary colored shingles is moderate and commensurate with superior quality.

The effect of the shingled sidewall or roof amounts to considerably more than 50% of the effect of all the features making up the general exterior appearance of the building. Dollars expended for Duracolor Coated Shingles make a difference of hundreds in appearance.

Samples

Send for sample Selector in wood.

CREO-DIPT COMPANY, INC.

Manufacturers of Creo-Dipt Stained Shingles—Stained Under Pressure

GENERAL OFFICES
NORTH TONAWANDA, N. Y.
SALES OFFICES IN PRINCIPAL CITIES

FACTORIES

NORTH TONAWANDA, N. Y. CLEVELAND, OHIO MINNEAPOLIS, MINN. KANSAS CITY, MO.
SEATTLE, WASH. VANCOUVER, B. C.

CANADA: Creo-Dipt Company, Ltd., General Office, TORONTO, ONT.

Products

CREO-DIPT *Stained Shingles* STAINED UNDER PRESSURE

Originators and sole manufacturers of genuine Creo-Dipt Stained Shingles, *stained under pressure,* for roofs and sidewalls.

Creo-Dipt Thatched Stained Shingles to produce the thatched roof effect.

For our pages on Creo-Dipt Dixie White, Creo-Dipt Brushcoat Stains, Creo-Dipt Handi-Ironing Cabinet, and Creo-Dipt Weatherproofed Building Paper, see Manufacturers' Index.

Sold Everywhere by Leading Lumber Dealers

Creo-Dipt Stained Shingles, *stained under pressure,* are carried in stock by lumber dealers in all parts of the United States and Canada. Shipments are made from our plants at North Tonawanda, N. Y.; Cleveland, Ohio; Minneapolis, Minn.; Kansas City, Mo.; Seattle, Wash., and Vancouver, B. C.

Uniform Colors

Creo-Dipts are *stained under pressure,* after which they are given an additional treatment that applies the maximum amount of stain uniformly on the shingle. This means uniform weathering for every color—even the lightest gray shade. The heavy coat of stain prevents the usual pronounced variation in the shade of the timber from showing through, and materially lengthens the shingle's color life.

Packed in Cartons

All Creo-Dipt Stained Shingles, with the exception of Creo-Dipt Pilgrims and Aristocrats, are packed in cartons to keep them clean and free from damage while in transit, in the dealer's stock, and on the job.

Other Creo-Dipt Qualities

Creo-Dipt Stained Shingles are made only from carefully inspected red cedar, with the grain of the wood running 100% straight from top to bottom. Creo-Dipts, because of their straight grain, will lie flat without splitting or curling.

Creo-Dipt Stained Shingles effect considerable fuel savings when used on the sidewalls and roofs. Red cedar is the finest natural insulator, and Creo-Dipts overlap three times, thus giving triple protection against winter cold and summer heat. Owners tell us that the average fuel saving with Creo-Dipts varies between 15% and 25% a year.

Home of Arthur Baer, St. Louis, Mo.

Beverly T. Nelson, Architect

The softly sloping roof gives an air of serenity to this house on which Creo-Dipt 18-inch Perfections stained a weathered gray harmonize perfectly with the soft roof lines. The sidewalls are Creo-Dipt 24-inch Royals laid slightly staggered, and Dixie White Stain is on the chimneys.

Continued on next page

Creo-Dipt Stain is made from the strongest pigments, ground to minute fineness in linseed oil, by our own mills. Creo-Dipt Stained Shingles, with the exception of Dixie White, do not require brushcoating after they are on the building. (See paragraph on Dixie White.)

On Old Homes Too

Many architects are now rebeautifying old homes with Creo-Dipt Stained Shingles laid right over the old siding and roof. Write for photographs.

Sizes and Styles of Creo-Dipt Stained Shingles

Note: In specifying, give the name indicating the thickness in addition to the length of the shingles.

Thatched Effect—Special Creo-Dipt Stained Shingles are furnished for thatch roofs ready for application. Complete instructions and details will be supplied to architects and builders.

Graduated Exposure—The best effect is secured by starting at the eaves with the large Creo-Dipt Aristocrat at wide exposure, working through thinner grades at decreasing exposures up to the ridge.

Blended Color Treatment—Unusual artistic results can be obtained by using several shades of the same color starting with the darkest shade at the eaves, working to the lightest shade at the ridge.

Variegated Effects—Creo-Dipt Stained Shingles can be furnished packed promiscuously in each bundle in any proportion of the various shades which you select.

Dixie White—Creo-Dipt Dixie White is a special Creo-Dipt preparation that gives the true old Colonial flat-white effect—the soft, velvety appearance of whitewash on shingles, brick, stone, siding or stucco. If you prefer Creo-Dipt Dixie White in tints, you can obtain them in ivory, cream, buff and similar colors. Creo-Dipt Stained Shingles which are to be treated with Dixie White or any of its tints are supplied in color No. 207, which is a preparatory treatment. They then require two brushcoats of Dixie White after they have been laid.

Creo-Dipt Aristocrats—24 inches long; random widths; 1 inch in thickness at butt.

Creo-Dipt Pilgrims (Sometimes known as rustics or shakes)—(Hand split) 25 inches long; random widths; average 1 inch in thickness at the butt. (See following pages for complete information on this unusual product.)

Creo-Dipt Ambassadors—(Shakes) 24 inches long; random widths; $\frac{9}{16}$ inch thick; machine grooved on the face but smooth sawn on back.

Creo-Dipt Royals—24 inches long; random widths; ½ inch in thickness at the butt.

Creo-Dipt Perfections—18 inches long; random widths; 5 shingles will measure 2¼ inches in thickness at the butt.

Creo-Dipt Eureka—18 inches long; random widths; 5 shingles will measure 2 inches in thickness at the butt.

Creo-Dipt XXXXX—16 inches long; random widths; 5 shingles will measure 2 inches in thickness at the butt.

Creo-Dipt XXX—16 inches long; random widths; 6 shingles will measure 2 inches in thickness at the butt.

Covering Capacity of Creo-Dipt Stained Shingles

All shingles are sold on the basis of the square (100 square feet).

The table below gives the covering capacity of a square of shingles at various exposures:

Name	Exposure to the weather, in.									
	5	5½	6	6½	7	7½	8	10	10½	11
Aristocrats*	....	....	....	....	....	75	....	100	105	110
Pilgrims*	....	....	....	....	70	75	....	100	105	110
Ambassadors*	....	....	....	....	....	75	....	100	105	110
Royals*	....	....	....	....	....	75	....	100	105	110
Perfections	....	100	111	120	129	138	148	....	....	....
Eurekas	....	100	111	120	129	138	148	....	....	....
XXXXX	100	110	120	130	140	....	....	....	....	....
XXX	100	110	120	130	140	....	....	....	....	....

*These shingles usually laid 10 inches to the weather on sidewalls and 7 or 7½ inches on roofs.

Shades

Creo-Dipt Stained Shingles are manufactured in any color or combination of colors. A color pad, showing a wide choice of shades, will be sent on request. We will make special shades or submit samples without charge.

Creo-Dipt House Owned by W. C. Flint, Flintridge, Cal.

Reginald Johnson, Architect, Los Angeles, Cal.

This illustrates an interesting roof treatment obtained with Creo-Dipt 25-inch Pilgrims hand split on the weathered side and smooth sawn on the back. On this home, Creo-Dipt Pilgrims are laid at a wide exposure with the butts staggered to give uneven shadow lines.

Creo-Dipt Color Pad

This color pad shows the most popular Creo-Dipt shades. Pads will also be made to illustrate special colors, blends and variegations. Have you a Creo-Dipt color pad in your files? If not, ask the Creo-Dipt salesman, or write the Creo-Dipt Advertising Department, North Tonawanda, N. Y.

Continued on next page

Your Protection: The Name "Creo-Dipt" on Every Carton

The Creo-Dipt trade-mark is on every carton for the protection of yourself and your clients. For 20 years leading architects throughout the country have known it as their protection in specifying Creo-Dipts.

In writing specifications, it is recommended that you include the following:

Creo-Dipt Stained Shingles, as manufactured by the CREO-DIPT COMPANY, INC., of North Tonawanda, N. Y., shall be, etc.

Creo-Dipt Service Department

We are continually developing new and unusual combinations. Address your inquiries for further information and illustrated folders to the Service Department, CREO-DIPT COMPANY, INC., North Tonawanda, N. Y. We examine plans carefully in order to estimate the approximate number of squares of Creo-Dipt Stained Shingles required.

There is a trained Creo-Dipt salesman in your territory who always welcomes the opportunity to serve you. Look for the name "Creo-Dipt" in your telephone book.

CREO-DIPT HAND-SPLIT PILGRIMS

(Sometimes known as Rustics or Shakes)

Nature of Product

Creo-Dipt Hand-Split Pilgrims, remarkably beautiful shingles, are hand-split from first growth, live red cedar.

They are 25 inches long and average 1 inch in thickness at the butt, although this varies in individual shingles from ½ to 1¼ inches.

The surface of hand-split Pilgrims is rough and uneven, giving them a lovely ragged texture which is softened by the deep shadow lines of the thick butts.

The backs are smooth-sawn, assuring perfect watertightness when laid according to our specifications.

Uses of Creo-Dipt Hand-Split Pilgrims

Although hand-split shingles date back to the 17th and 18th centuries, Creo-Dipt Hand-Split Pilgrims are by no means limited to the Colonial house but can be used on nearly all styles of architecture.

Creo-Dipt Pilgrims are both a roof and sidewall material. Specifications for all types of construction are given here. You can get them in any color, stained by our patented pressure process, or unstained—just as you prefer.

Write us, or ask our representative for a portfolio of Pilgrim homes and full sized samples stained in the shade you want to use.

Specifications for Creo-Dipt Hand-Split Pilgrims

(Sometimes known as Rustics or Shakes)

A Pilgrim Roof for Arthur C. Webb
Designed by GUY O. KOEPP, Architect, of Carmel-by-the-Sea, Calif. This house has a roof of Creo-Dipt hand-split Pilgrims, stained red.

Roofs

Scope—All pitched roofs as noted on roof plans and elevations shall be covered with Creo-Dipt Hand-Split Pilgrims. (Here specify color number.) These shingles are split from red cedar, averaging 1 inch thick at the butts (thickness may vary from ½ to 1¼ inches), 25 inches long, random widths not less than 4 inches, as manufactured by the CREO-DIPT COMPANY, INC., General Offices, North Tonawanda, N. Y.

Laying of Shingles—Shingles shall be laid in straight courses, exposed 7½ inches to the weather, at which exposure one square covers 75 square feet, over closed sheathing and with a strip of heavy Creo-Dipt Weatherproofed Building Paper cut into 18-inch widths laid in between each course (see Figs. 1 and 3) in the following manner:

Starting at the eaves with a double course of shingles, lay a strip of Creo-Dipt Building Paper 15 inches from the butts, and cover this paper with the next course of shingles laid 7½ inches from butts of starter course, breaking all joints with at least a 2-inch side lap. Proceed in like manner for each course.

Nails—Secure each shingle under the laps with at least two 6d Zinclad nails.

Continued on next page

Fig. 1. Detail of Open Valley Looking from Ridge to Eaves
A. 3-in. splash rib down center of valley.
B. Crimp of ½-inch on outer edge for added safety.

Hips, Ridges, Valleys—All hips and ridges shall be covered with horizontal courses of shingles laid Boston style, exposed 7½ inches and laid over a double thickness of heavy Creo-Dipt Weatherproofed Building Paper.

Valley shingles shall be cut parallel to the valley, forming a gutter not to exceed 6 inches in width. (See Fig. 1.)

Valleys to be made from 20-inch metal flashing with 3-inch splash rib down center and a crimp of ½ inch on outer edges.

(If rounded valleys and mitered hips are desired, use specifications covering these.)

Rounded Valleys and Mitered Hips

These specifications to be used in conjunction with regular specifications.

Hips—Shall be laid tight and mitered, flashed under each course (see Fig. 3) with a metal shingle 8 inches wide and long enough to give a 2-inch head lap, taking care that no nails go through flashing except at extreme outward corners.

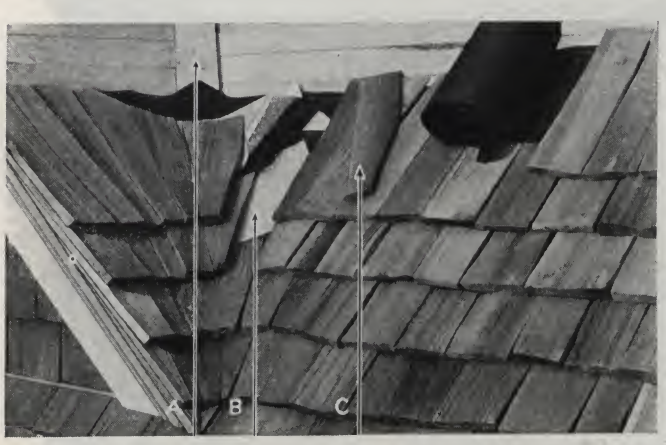


Fig. 2. Detail of Rounded and Closed Valley
A. Small saddle, composed of 1x6 inch, laid up center of valley.
B. Valley flashings between each course, showing a 2-inch head lap and nailing under lap.
C. Shingle removed to show method of cutting with axe to form curve of valley.

Ridges—Shall be laid tight and mitered. Under last course of shingles, at ridge, lay a continuous strip of metal to extend down on both sides 4 inches. Nail the last course close to butts, and toenail at top, taking care that no nails go through flashing at any point.

Valleys—Shall be laid closed and rounded over small saddles built in by carpenter (see Fig. 2). Between each course of shingles, use a strip of metal sufficiently wide to extend at least 8 inches up on either side of valley and long enough to make at least a 2-inch head lap, nailing all valley shingles so that nails will come under lap of flashing.

Wider Exposure Possible in Certain Climates

In some dry climates, such as California, Arizona and New Mexico, Creo-Dipt Pilgrims have been successfully laid on roofs at 10 inches weather exposure at which exposure one square will cover 100 square feet over open sheathing with heavy Creo-Dipt Weatherproofed Building Paper between the courses as described.

Sidewalls

Scope—All sidewall surfaces as noted on elevations shall be covered with Creo-Dipt Pilgrims (here specify color number). These shingles are hand-split from red cedar, averaging 1 inch thick at the butts (thickness may vary from ½ to 1¼ inches), 25 inches long, random

Fig. 3. Various Details of Pilgrim Roof Construction
A. Shingle removed to show 4-inch flanged wall flashing.
B. The first strip of paper laid over starting course 15 inches from butts.
C. Shingle removed to show flashing when hips are mitered.

widths not less than 4 inches, as made by the Creo-Dipt Company, Inc., General Offices, North Tonawanda, N. Y.

Laying of Shingles—Shingles shall be laid in straight courses exposed 10 inches to the weather at which exposure one square covers 100 square feet over solid sheathing and one layer of Creo-Dipt Weatherproofed Building Paper. Starting course shall be doubled. Break all joints with at least a 2-inch side lap.

Note: For best effect, do not cut or trim edges of these shingles. Lay them just as they come, except around openings or corners where close fittings become necessary.

Nails—Secure each shingle under the laps with at least two 5d Zinclad nails.

THE ELHIDE COMPANY

JOHN C. RUNKLE, President

Makers of Elhide Hand-Split Cedar Shingles

CAMBRIDGE, MASS.

Products

Elhide Hand-Split Cedar Shingles.

Also Elhide 20-year Bonded Roof, Gravel or Slag Surface (send for detailed specifications); Elhide Monson Maine Roofing Slate; Elhide Stained Shingles.

TRADE-MARK

Elhide Hand-Split Cedar Shingles

These shingles are rived by hand from the giant red cedars of British Columbia, and resawn to produce a smooth, tight-laying back. The individual character and beautiful texture of each shingle is retained the entire length of its upper surface. When laid on roof or sidewalls the effect produced is unique and wholly delightful, duplicating the oldtime appearance of early Colonial houses found on the Atlantic Seaboard. Cut entirely from edge-grain red cedar, "The Wood Everlasting," Elhide Hand-Split Shingles will not warp or rot, thus insuring a roof or siding of trouble-free permanency.

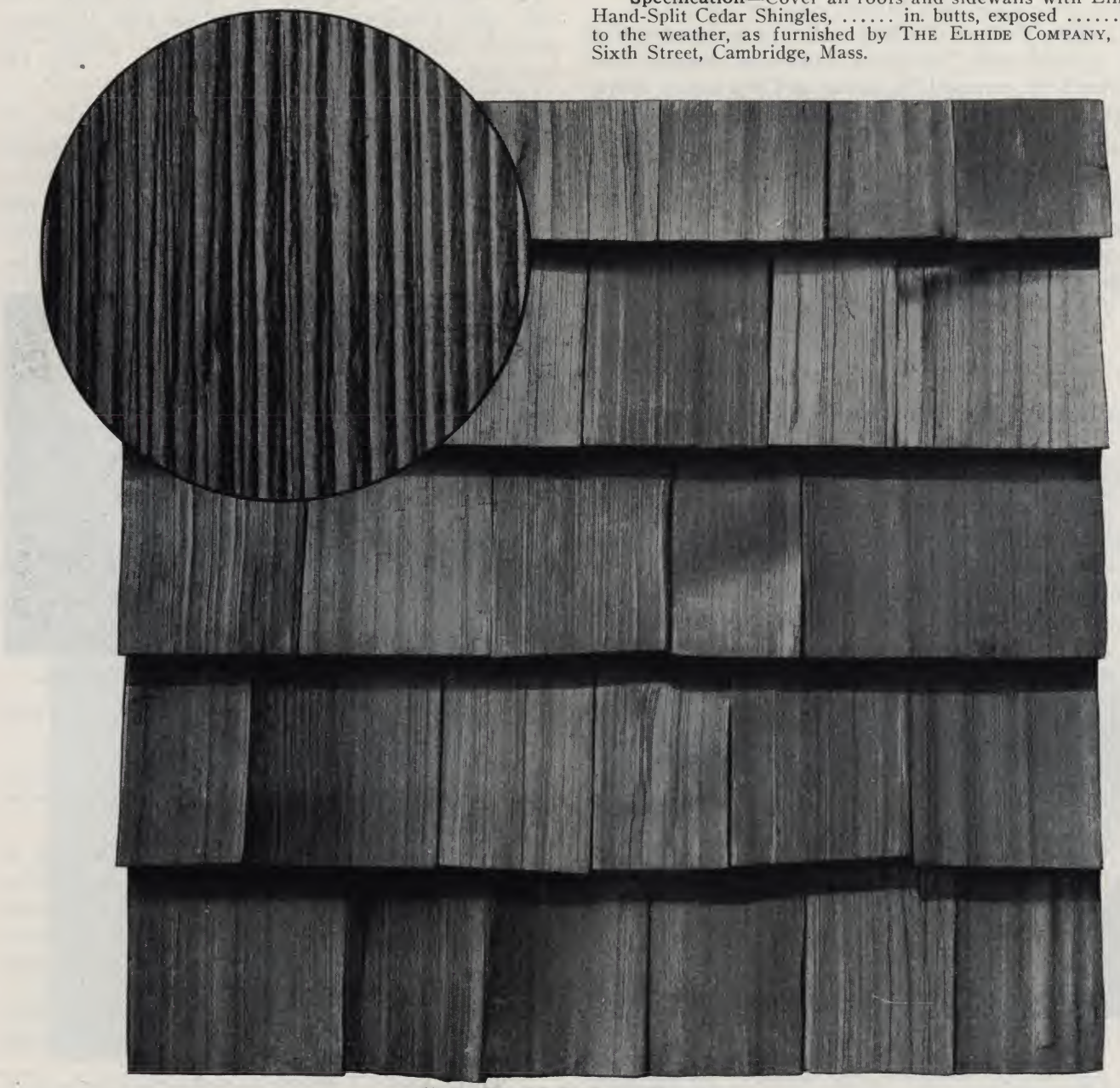
Sizes—25 in. long, random widths, 4 to 12 in. Butts sorted to ½, ¾ and 1 in. in thickness.

Shingles 31 in. long with butts up to 2 in. thick for graduated roofs furnished on order.

Staining—The weathering tint of the natural Elhide Hand-Split Shingle is unusually attractive, but, if desired, we can furnish them creosote-stained to any color.

Samples and Estimates—Sample shingles will be furnished upon request. We shall be pleased to supply suggested layouts, list of representative applications, and estimates of quantities required on any particular building.

Specification—Cover all roofs and sidewalls with Elhide Hand-Split Cedar Shingles, ... in. butts, exposed ..... in. to the weather, as furnished by The Elhide Company, 130 Sixth Street, Cambridge, Mass.



Elhide Hand-Split Cedar Shingles
Patented March 23, 1926

Continued on next page

Graduated Roofs of Elhide Hand-Split Cedar Shingles

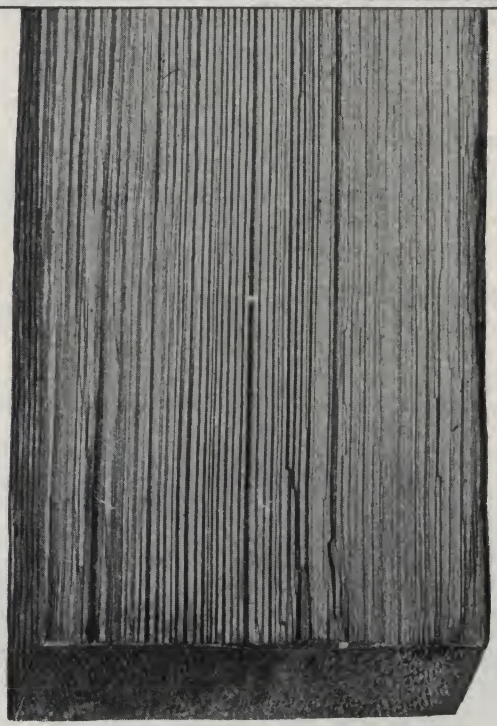
Graduated roofs may be laid with butts 2 in. thick at the eaves, exposed 10 in. to the weather, decreasing to ½-in. butts at the ridge, with an exposure of 6 in. to the weather. Thus for the first time the beautiful texture of a Hand-Split Cedar Shingle may be combined with the massive sturdiness of these extra heavy butts, producing a wooden roof of unprecedented beauty and strength.

As we can furnish these shingles in any length or thickness desired, the layout may be adapted to the requirements of any specific design. The result is a roof of architectural importance, imparting a keynote of character and charm to the entire structure.

Specification

The roof shall be covered with Elhide Hand-Split Cedar Shingles, graduated from 2-in. butts at the eaves to ½-in. butts at the ridge in accordance with layout furnished.

Residence of Miss Marion Niles, Wellesley, Mass.
WALKER, WALKER & KINGSBURY, Boston, Mass., Architects



A Giant Elhide Shingle, 31 In. Long with a Butt 2 In. Thick

A Few Recent Installations

Residences

LOCATION	ARCHITECT
M. T. Brewster, Hackensack, N. J.	Aymar Embury 2nd
H. P. Metcalf, Exeter, R. I.	W. T. Aldrich
R. P. Hazzard, Gardiner, Me.	J. C. & J. H. Stevens
Charles J. McManus, Chatham, Mass.	Edward Sears Read
Samuel Halsey, Sunapee Depot, N. H.	Prentice Sanger
Gilbert Hood, Medford, Mass.	Kilham, Hopkins and Greeley
Henry M. Brooks, Greenwich, Conn.	Oswald C. Hering
Charles H. Wood, Belmont, Mass.	J. Williams Beal Sons
Howard Coonley, Milton, Mass.	Prentice Sanger
Adams Sumner, Garden City, N. Y.	Carl Otto
P. A. Clark, Kingston, N. Y.	Edgar Solomonsky
Charles M. Newcombe, Far Hills, N. J.	Arthur C. Holden Asso.
Burnham Woodward, Darien, Conn.	Davis & Waldorf
J. A. Plummer, Cranford, N. J.	Hollingsworth & Bragdon
Toll Collector, Lake Champlain Bridge, Crown Point, N. Y.	Fay, Spofford & Thorndike
Paul T. Babson, Wellesley, Mass.	George F. Marlowe
Chauffeur's House, Herbert A. Rice, Narragansett Pier, R. I.	Albert Harkness
Leon Leighton, Auburn, Me.	Coombs & Harriman
Donaldson Brown, Fishers Island, N. Y.	Henry Otis Chapman
E. Devereaux, East Hampton, N. Y.	A. C. Jackson
Springfield Exhibition, Springfield, Mass.	Joseph Everett Chandler
E. P. Swenson, Upper Saranac, N. Y.	Godwin, Thompson & Patterson

Boathouse

John Hay Whitney, Manhasset, N. Y.	LaFarge, Warren & Clark

Club House

Country Club, Concord, N. H.	J. F. Larson

THE EDHAM CO., INC.

Manufacturers of Sunfast Stained Red Cedar Shingles

GENERAL OFFICE
MINNESOTA TRANSFER, ST. PAUL, MINN.
MILLS AND FACTORIES: MINNESOTA TRANSFER, MINN., AND VANCOUVER, B. C.
SALES OFFICES IN PRINCIPAL CITIES
Carried by Lumber Dealers Everywhere

Edham KOLORED Shingles

PERMANENT COLORS ON RED CEDAR • IDENTIFIED AND PROTECTED BY THE RED CAPS

TRULY SUNFAST

INDIVIDUALLY SATURATED AND PROCESSED PRESERVING THE COLOR AND THE WOOD

Products

EDHAM KOLORED SUNFAST RED CEDAR SHINGLES for roofs and sidewalls.

EDHAM KOLORED SUNFAST BENT SHINGLES to produce the thatched effect.

Also Edham Kolored Shingle Stains.

Edham Sunfast Process

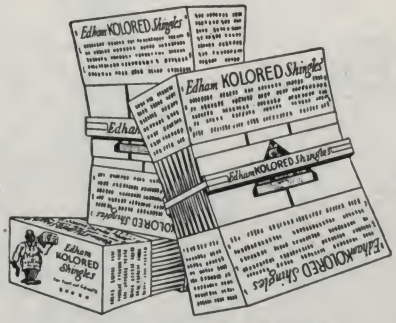
A permanence of color that defies the elements is obtained by the exclusive Sunfast process of staining straight, vertical grain, West Coast red cedar shingles. These colors are immune to atmospheric changes; scorching sun, beating rain, driving sleet have no effect on their beauty. They are non-fading, permanent, and are truly Sunfast.

A Shingle Actually Sunfast

Only Nature's own true mineral colors are used, laboratory tested and scientifically mixed, with linseed and other essential oils in accordance with secret stain formulas. This is the first step in securing permanence of color that is unsurpassed. After thoroughly saturating and brushing the shingles, the linseed oil content of the stain is oxidized by a process of thermometer-controlled treatment by heated air. This produces a "linoleum-like" finish causing positive fixation or adhesion of the color pigment to the wood.

Available in Wide Variety of Sunfast Colors

The appearance of these new shingles actually improves with age, as their soft harmonious colorings are mellowed. Unaffected by acid or alkaline conditions, even when dipped into hot lime or plaster, they will not peel or crack. The colors will not change. They are truly non-fading.



Protected by "Red Cap" Identification

In order that these shingles may arrive on the job, ready to use, every bundle is contained in protective end caps. This protects the face, edges and butts of the shingles while they are being handled in the lumber yard. It keeps the shingles free from lime, cement, dust and dirt until they are ready to be used

Available in green, gray, brown, red and prime white, or a combination of any of these colors, packed in the bundles in the correct proportions, ready for laying.

Covering Capacity

Edham Sunfast Shingles are supplied on the square basis (a square containing sufficient shingles to cover 100 sq. ft.) figured as follows:

Shingle length, in.	Exposed to weather, in.	Bundles to square	Courses
16	5	4	20/20
18	5½	4	18/18
18 (Process Shakes)	7½	3	18/18
*24	10	3	13/14

*Except Supremes, Process Shakes (1-in. butt) and Hand Split Shakes which are packed five bundles 8/8 courses to the square. ½x24 Process Shakes are packed as per table above.

Sizes and Styles

The Edham Kolored Sunfast Shingles can be obtained in a wide variety of sizes and styles, as follows:

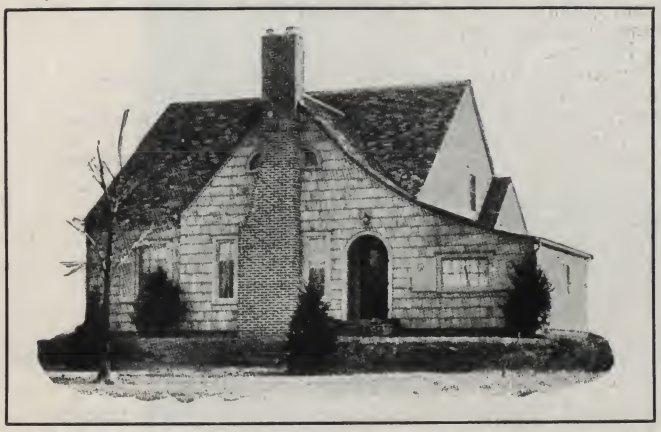
Shingle	Size, in.	Butt, in.
XXX	16	6 to 2
XXXXX	16	5 to 2
Eureka	18	5 to 2
Perfection	18	5 to 2¼
Process Shake	18	9/20
Royal	24	½ and
Supreme	24	1
Process Shake	24	½
Hand Split Shake	25	½ to 1¼

Color and Planning Service

A service department is maintained to co-operate with architects, contractors and builders, color suggestions and layouts supplied without charge. Specify Edham Kolored Sunfast Shingles by full name.

Architects' Sample Pad of Actual Shingles

A request on your letterhead will bring a useful pad of Edham Kolored Sunfast Shingles in the full range of Sunfast colors.



Sunfast Roof and Sidewall Shingles are used for this cottage, which eliminate the need of frequent repainting and assure an unchanging color scheme

Architects can now combine Sunfast Shingles in permanent color effects for delightful exteriors of even the most pretentious residences

ESTABLISHED 1875

JAMES LUMBER COMPANY

"Blue Jay" Hand Made Cypress Shingles

88 Broad Street
BOSTON, MASS.

"Blue Jay" Cypress Shingles

"Blue Jay" Shingles are hand split—riven with the grain—which preserves all the wonderful weather-resisting qualities of heartwood cypress, "The Wood Eternal." No single generation lives long enough to renew a hand split and shaved cypress roof that has been properly laid.

"Blue Jay" Cypress Shingles are made by exactly the same methods as were followed by the pioneers of South Carolina and their slaves, who as far back as 1640 did a thriving business in this line. Some of the roofs on which they were laid in those days are still in service today—weatherproof after nearly three centuries of exposure.

Today, descendants of those same slaves, working in the same southern swamps, are felling selected trees, cutting bolts and with frow, maul and drawshave, are making "Blue Jay" Shingles for American homes.

When split and tapered, they are piled loosely and left to season and to weather in the sun and air. Therefore, as delivered to the job, "Blue Jay" Shingles are already semiweathered.

Further exposure to inland air deepens their wonderful soft brown tones, while along the shore they weather to a silver gray.

To the Colonial type of house, "Blue Jay" Shingles add years—both in appearance and weatherproofness. For other types, or wherever desired, they may be painted or stained.

All "Blue Jay" Shingles are carefully selected, graded and fully guaranteed.

Sizes—"Blue Jay" Cypress Shingles are made in the two sizes most favored in Colonial days and still considered best:

7x24 in., with 5/8-in. butts and 1/8-in. tops
6x20 in., with 1/2-in. butts and 1/8-in. tops
Samples gladly supplied on request.

Laying—For roofing, the larger size should be laid 7 in. to the weather, and the smaller size 6 in. to the weather. For sidewalls, the 7-in. shingles may be placed 8 or even 9 in. to the weather. The 6-in. size should be laid 7 or 8 in. to the weather.

Nailing—Specify copper (1¾ to 2¼ in. in length), "yellow metal" or old-fashioned dipped galvanized nails, 5d or 6d according to exposure. The less the amount of shingle exposed to weather the longer the nail should be. On sidewalls, 4d nails may be used. Prices on nails will be quoted if desired.

Staining—Although "Blue Jay" Shingles never have that "new," "raw" look and never actually require staining—either for appearance or preservative purposes—they may be whitened or colored with paint or any standard stain.

Prices—Prices for "Blue Jay" Shingles loaded on cars Boston, Mass., shipped from stock, are as shown below. Freight and carting additional. Freight to most New England stations will not exceed $1.00 per square; carting not exceeding 10 miles about $1.00 per square.

6x20-in. Shingles*

Laid	6 in. to weather	$17.00 per 100 sq. ft.	covered
Laid	7 in. to weather	14.50 per 100 sq. ft.	covered
Laid	8 in. to weather	13.00 per 100 sq. ft.	covered

7x24-in. Shingles*

Laid	7 in. to weather	$20.75 per 100 sq. ft.	covered
Laid	8 in. to weather	18.00 per 100 sq. ft.	covered
Laid	9 in. to weather	16.00 per 100 sq. ft.	covered
Laid	10 in. to weather	14.50 per 100 sq. ft.	covered

*For recommended exposures, see paragraph "Laying," above.

Prices for points outside of New England furnished upon request, based on shipments made from nearest available stock. Ample supplies always on hand.

Specifying—To obtain the genuine article specify as follows: "For roof and sidewalls use genuine cypress, clear, all heart, hand made, split and shaved shingles, "Blue Jay" Brand, supplied by JAMES LUMBER COMPANY, 88 Broad Street, Boston, Mass.

Sidewalls and Roof of "Blue Jay" Hand Made Cypress Shingles—Residence of Thomas Sanders, Topsfield, Mass.
ANDREWS, JONES, BISCOE & WHITMORE, Architects

WEATHERBEST STAINED SHINGLE COMPANY, INC.

Manufacturers of Weatherbest Red Cedar Stained Shingles

NORTH TONAWANDA, N. Y.

FACTORIES: NORTH TONAWANDA, N. Y., ST. PAUL, MINN., CLEVELAND, OHIO

Products

WEATHERBEST EDGE GRAIN RED CEDAR STAINED SHINGLES for roofs and sidewalls; WEATHERBEST 24-IN. COLONIAL WHITE STAINED SHINGLES; WEATHERBEST THATCHED EFFECT STAINED SHINGLES; WEATHERBEST "DOUBL-THIK" STAINED SHINGLES; WEATHERBEST OLD COLONY HAND RIVED SHAKES; WEATHERBEST BRUSH COAT SHINGLE STAIN.

Used on Roofs and Sidewalls

WEATHERBEST stained shingles are used on sidewalls as well as roofs and are adaptable to practically every type and style of building—from the small cottage or bungalow to the stately country home. The soft, semi-transparent colors add much to the attractiveness of a home. WEATHERBEST stain emphasizes the grain in the wood just enough so that the flat tone of a painted surface is absent. A WEATHERBEST stained shingle roof laid with zinc coated nails will give perfect service for over 50 years.

Reliability

There is nineteen years' experience behind this rigorous policy: *"Not to cheapen materials or process to meet price competition."*

Each bundle of WEATHERBEST stained shingles carries the green WEATHERBEST label and is our guarantee of perfect material and lasting colors.

Quality of Weatherbest Shingles

Only the finest grade of all clear, strictly 100% edge (vertical) grain, red cedar is used in the manufacture of WEATHERBEST stained shingles. Every shingle is perfect from tip to butt. Extreme care is exercised that all shingles are entirely free from any trace of dampness before being subjected to the WEATHERBEST process of staining.

Quality of Weatherbest Stain

WEATHERBEST stain consists of the strongest color pigments obtainable, high grade wood creosote preservatives and pure linseed oil as binder. These ingredients are mixed in our factories by our color and oil experts in the correct proportion to insure colors that are rich and soft in tone, and, above all—*durable.*

Weatherbest Staining Process

All shingles are unbundled at our factories and stained separately—not bundle-dipt as is the case with many other stained shingles. The WEATHERBEST process treats each shingle thoroughly and perfectly. Three shingle-by-shingle inspections occur during the WEATHERBEST process of staining. After staining, the shingles are dried, inspected and any imperfect shingles replaced with good ones, then rebundled to full count.

Always Lie Flat

Because they are 100% edge (vertical) grain and because of the WEATHERBEST preserving solution, WEATHERBEST stained shingles always lie flat. They will not check, crack or curl during their many years of service. The edge grain is also, to a large degree, responsible for the exceptionally long life of WEATHERBEST colors, as edge grain allows the color pigments to enter into the pores of the wood.

Weatherbest Variegated Color Roofs

WEATHERBEST stained shingles in several shades of one color, or different colors, may be used on roofs with decidedly pleasing results. For this purpose, there are standard WEATHERBEST variegated color schemes in browns, greens, reds, grays, etc., worked out to just the correct proportion of colors. No extra labor is required to lay, as the different colored shingles are mixed and then rebundled at our factories so that the carpenter lays them as received. Ask for panels in miniature showing variegated colors.

Weatherbest Sizes, Colors and Covering Capacity

WEATHERBEST stained shingles are furnished in the following sizes:

16 in.	WEATHERBEST XXX	6 butts to 2 in.
16 in.	WEATHERBEST XXXXX	5 butts to 2 in.
16 in.	WEATHERBEST "Doubl-Thik"	5 butts to 3½ in.
18 in.	WEATHERBEST Eurekas	5 butts to 2 in.
18 in.	WEATHERBEST Perfections	5 butts to 2¼ in.
24 in.	WEATHERBEST No. 1 Royals	½ in. butts
24 in.	WEATHERBEST "Doubl-Thik"	1-in. butts

Note: See second following page for sizes of Weatherbest Old Colony Shakes.

The standard WEATHERBEST colors consist of 20 different shades of greens, browns, reds and grays. WEATHERBEST stained shingles are also furnished in a color combination similar to weathered straw for WEATHERBEST thatched effect roofs, and in many variegated color schemes. Special colors are also furnished without extra charge. Color samples on request.

NUMBER OF SQUARE FEET A SQUARE OF WEATHERBEST STAINED SHINGLES WILL COVER WHEN LAID AT VARIOUS EXPOSURES

Length of shingles, inches	Exposure to the weather, inches									
	4½	5	5½	6	6½	7	7½	8	10	11½
16	90	100	110	121	131	141	151	.....	.....	.....
18	.....	.....	100	110	120	129	138	148	.....	.....
24	.....	.....	.....	.....	.....	.....	76	80	100	115

A Weatherbest Home at West Hartford, Conn.
D. S. DOUGLASS, Architect, for JOHN SCANLON & SONS
Roof—WEATHERBEST 16-in. variegated green
Sidewalls—WEATHERBEST 18-in. gray

Continued on next page

24-in. Weatherbest Colonial White Shingles

The large 24-in. heavy butt, WEATHERBEST Colonial white stained shingles are used extensively on sidewalls for the wide course effect. The wide exposures possible (10 in. and 11½ in.), and the pure, non-glaring white of WEATHERBEST Colonial white stain combine to make a sidewall that is far more attractive than the monotonous white of a painted clapboard siding. WEATHERBEST Colonial white stained shingles are first treated at our factories with a filler coat of our No. 500 white preserving stain. After they are laid on the sidewalls, the shingles should then receive two light brush coats of WEATHERBEST Colonial white stain to produce the true whitewashed effect.

Entrance Detail C. L. Marshall Residence, Johnson City, Tenn.
C. G. MITCHELL, Architect
24-in. WEATHERBEST Royals in Colonial White on sidewalls

Weatherbest Standard Specifications

To guard against substitution of inferior material, we advise incorporating the following in specifications:

Shingles: To be (insert size and color and inches exposure to the weather) WEATHERBEST, all clear, all edge grain stained shingles, as manufactured by WEATHERBEST STAINED SHINGLE COMPANY, INC., of North Tonawanda, N. Y., and St. Paul, Minn.

Weatherbest Thatched Straw Effect Roofs

Combining attractiveness with long life, a WEATHERBEST thatched effect stained shingle roof offers the means of a radical but artistic departure from the conventional sharp angle roof.

WEATHERBEST thatched stained shingles are furnished ready for application. They come bent with the grain (lengthwise) to a 20-in. radius for the rounded surface of hips and valleys and for capping the ridges; bent with the grain to a 10-in. radius for the curves or roll at rakes; bent to a 20-in. radius against the grain (crosswise) for the curve at eaves and rounding of ridges, and flat for the flat surfaces of the roofs. On all WEATHERBEST thatched stained shingles except for the double first course at eaves, butts are specially sawn so that when laid, irregular, wavy courses will result.

Weathered Straw Color—Colored in three shades of weathered straw with an occasional spot of dull red and brownish green, this WEATHERBEST color scheme is a true reproduction of weathered straw. The different colored shingles come properly mixed and are laid as received.

WEATHERBEST thatched stained shingles are also furnished in other color combinations if desired. One very pleasing color treatment is the WEATHERBEST method of graduating colors so that a roof may be green at eaves and gradually shade into a brown at ridges. Details of this treatment on request.

Thatched Effect Instruction Book and Service

Full information for constructing a WEATHERBEST thatched effect stained shingle roof is given in our book, "The Construction of WEATHERBEST Thatch Roofs," which is furnished on request.

When thatched effect roofs are specified we ask that a set of plans be sent to us in order that we may estimate the quantities required of the different shingles.

Standard Specifications for a Thatched Effect Roof

The following specifications are standard for a WEATHERBEST thatched effect roof and should form part of the general specifications when this type roof is planned. Adherence to these specifications will insure complete satisfaction in finished roof by avoiding substitution of improperly bent, inferior flat grain shingles.

Special Rafter Construction—All rafter construction at ridges, rakes or gable ends, hips, valleys and eaves is to be in accordance with the instructions and detail drawings appearing in the book, "Construction of WEATHERBEST Thatch Roofs," furnished on request by the WEATHERBEST STAINED SHINGLE COMPANY, INC., of North Tonawanda, N. Y.

Furring of Rafters—(While desirable to accentuate the convex appearance of the roof, it is not entirely essential and may be omitted.) Main rafters to be furred to a height of 5 to 6 in. midway between eaves and ridges, diminishing to nothing at eaves and ridges where it merges with curves. Ridge board to be furred to height of 5 or 6 in. at center of roof diminishing to nothing at apex of gables.

Shingle Lath—Rafters at eaves and ridges and blocking at valleys, hips, rakes or gable ends to be covered with 1x2-in. shingle lath, spaced 1 in. apart, running parallel with rafters at rakes or gable ends, hips and valleys and at right angles to rafters at eaves and ridges.

Roof Shingles—All roof surfaces shall be covered with WEATHERBEST thatch stained shingles as manufactured and supplied by the WEATHERBEST STAINED SHINGLE COMPANY, INC., of North Tonawanda, N. Y., and St. Paul, Minn.

At eaves lay one double course of square butt WEATHERBEST stained shingles bent against the grain. Cover the curve at eaves with WEATHERBEST thatch stained shingles bent against the grain. Flat WEATHERBEST thatch stained shingles are to be used on all flat surfaces of roof and those bent with the grain to a radius conforming with curve for hips and valleys. Cover roll at rakes or gable ends with WEATHERBEST thatch stained shingles bent with the grain to a 10-in. radius. Cover curve of roof on each side of ridge board with WEATHERBEST thatch stained shingles bent against the grain, capping the ridge with those bent with the grain to a 20-in. radius.

Exposure of Shingles—Lay all shingles in irregular, wavy courses following procedure given in WEATHERBEST instruction book. Exposure to be from 1 to 3 in. (average 2 in.) on curve at eaves and 1 to 5 in. (average 3 in.) on all other sections of roof.

Nailing—Nail all shingles bent against the grain (at eaves and ridges) with 6d zinc coated nails, nailing 3 in. from the butt. Shingles on all other portions of the roof to be nailed with 3½d zinc coated nails in regular manner.

Color of Shingles—Color of shingles to be WEATHERBEST weathered straw. (If other color scheme is desired change to color number shown in our samples, or "to match.....")

Residence of E. G. Cunningham, Champaign, Ill.
Designed by MAX N. KEELER
Roof—WEATHERBEST Thatch effect in special variegated brown

Continued on next page

Weatherbest Old Colony Hand Rived Shakes

There is a well defined tendency among the country's architects and home builders to deviate from the too conventional in home building design.

To create the unusual in home architecture calls for careful selection of materials. And in the desire to depart from a too often pronounced symmetry in modern-day building materials, WEATHERBEST Old Colony Genuine Hand Rived Tapered Red Cedar Shakes are being extensively used for roofs and sidewalls.

WEATHERBEST Old Colony shakes are split and tapered by hand in much the same manner as those made by our forefathers, in the East from pine and white cedar; in the South from cypress, and on the Western Coast from red cedar. The lasting qualities of these old-time hand split shakes are well known.

Hand splitting of WEATHERBEST Old Colony red cedar shakes results in a very uneven surface and the grain is perfectly straight. It gives them an artistic unevenness that imparts an old-time atmosphere to a roof or sidewall. But at the same time, WEATHERBEST Old Colony shakes conform with specified measurements in order to meet the more rigid requirements of modern-day architecture. They are available in lengths of 18, 25, 31 and 37 in., the latter allowing a maximum exposure of 18 in. on sidewalls and 12 in. on roofs.

WEATHERBEST shakes are stained any color desired but we suggest that sidewalls be in WEATHERBEST weathered gray or a silver gray color, and for roofs, either a WEATHERBEST variegated brown or weathered gray. We will be only too glad to send full size samples of shakes stained any color desired.

To those desiring the quaintness characteristic of early America, we unhesitatingly recommend these genuine WEATHERBEST Old Colony hand rived shakes for roofs and sidewalls.

Send for illustrated book describing in full WEATHERBEST Old Colony shakes.

Weatherbest Old Colony 18-in. Length

The 18-in. WEATHERBEST Old Colony Shakes are of random widths with an average width of 7 in. The thickness at the butts is from 3/8 to 1/2 in., allowing slight variations over or under in 10%. These shakes are packed 4 bundles to the square, based on laying 8½-in. exposure on sidewalls—6¼ bundles or 1⅞ squares will cover 100 sq. ft. on a roof laid to 5½-in. exposure.

Weight is about 140 lb. per square.

Ralph Hurlburt Residence, Millbrook, Conn.
Showing how WEATHERBEST Old Colony Shakes blend with stone for sidewall treatment

Weatherbest Old Colony 25-inch Length

The 25-in. WEATHERBEST Old Colony shakes are of random widths from 4 to 10 in. with an average of 6 in. The thickness at the butts is from 3/8 to 5/8 in., allowing slight variations over or under in 10%. These shakes are packed 3 bundles to the square based on laying 12-in. exposure on sidewalls—4½ bundles, or 1½ squares, will cover 100 sq. ft. on a roof laid to 8-in. exposures. Weight is about 150 lbs. per square.

Weatherbest Old Colony 31-inch Length

The thickness of the 31-in. WEATHERBEST Old Colony shakes at butts is from 3/4 to 1 in. allowing slight variations over or under in 10%. The 31-in. shakes are packed 3⅓ bundles per square, based on laying to 15-in. exposure on sidewalls—5 bundles, or 1½ squares, will cover 100 sq. ft. on the roof laid 10-in. exposure. Weight is about 165 lbs. per square.

Weatherbest Old Colony 37-inch Length

The thickness of the 37-in. WEATHERBEST Old Colony shakes at butts is 3/4 to 1¼ in. allowing slight variations over or under in 10%. The 37-in. shakes are packed 2⅔ bundles to the square, based on laying to 18-in. exposure on sidewalls—4 bundles, or 1½ squares, will cover 100 sq. ft. on the roof laid 12-in. exposure. Weight is about 200 lbs. per square.

Standard Specifications for Weatherbest Old Colony Sidewalls and Roofs

For Sidewalls—WEATHERBEST Old Colony Genuine Hand Rived Tapered Red Cedar Shakes stained (insert size and color) laid to (insert inches) weather exposure and applied with zinc coated nails over sheathing and building paper.

For Roofs—WEATHERBEST Old Colony Genuine Hand Rived Tapered Red Cedar Shakes stained (insert color and size or variegation) laid to (insert inches) weather exposure and applied with zinc coated nails over tight sheathing and slaters' felt.

Thatch Effect Roof Used Over Old Colony Shake Sidewalls

Could there be a more ideal treatment for the roof and walls of the home or lodge set among the trees? Both roof and walls become an integral part of their surroundings.

For the roof, WEATHERBEST thatch stained shingles can be in either the weathered straw colors, or green or brown in either plain or variegated colors to contrast with the hand rived shakes in lighter shades for the sidewalls.

Write for illustrated book—"The Construction of Weatherbest Thatch Roofs."

E. H. Hubbell Residence, Garden City, N. Y.
R. C. HUNTER, Architect
Sidewalls—WEATHERBEST 24-in. Hand Rived Shakes in Colonial White
Roof—WEATHERBEST 16-in. shingles in special dark gray

AMBLER ASBESTOS SHINGLE & SHEATHING COMPANY

AMBLER, PA. AND ST. LOUIS, MO.

BRANCHES

BOSTON, MASS.	DETROIT, MICH.	PITTSBURGH, PA.
BUFFALO, N. Y.	MINNEAPOLIS, MINN.	ST. LOUIS, MO.
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WEST COAST DISTRIBUTOR: Farrington Engineering Co., LOS ANGELES, CALIF.

Products

Ambler Asbestos Shingles for roofs and sidewalls; Ambler Asbestos Corrugated Roofing and Siding; Ambler Ebonized Asbestos; Asbestos Fireproof Sectional School Buildings.

For our page on Ambler Linabestos (Asbestos) Board, Ambler Asbestos Lumber, Ambler Asbestos Waltile, see Manufacturers' Index.

Specifications

Write Ambler for complete specifications on shingles herein described. Catalogue is available upon request.

The Company and Its Products

This Company supplies all the necessary appurtenances required in the installing of its products. All nails, clips, etc., exposed to the weather are heavy gauge copper, and the concealed nails are triply galvanized. Copper driving nails supplied if desired.

Ambler Asbestos Shingles

Ambler Asbestos Shingles are fireproof and waterproof, made of selected asbestos fibres and portland cement scientifically combined in water and formed under enormous hydraulic pressure. They are made in two general styles—Tapered and Uniform Thick.

Tapered

No. 90 Colonial (9 x 18 in.) Tapered, ¼-in. butt. 190 pieces per square, approximate weight 525 lbs. Random widths of 6, 12 and 18 ins. are available. Colors include Gray Duoface, Pearl Gray, Red, Black, Rustic Blend and Green.

Rustic Blend is the name applied to a special blend of the No. 90 Colonial Shingles consisting of 30% each of three shades of soft Purplish Brown and 10% Buff. Other percentages may be specified if desired.

English Thatch. This type of Ambler Asbestos Shingle has a rough texture and irregular thick butts, producing an unusual and distinctive roof. English Thatch is made in random widths 6½ to 18½ in. and 20 in. long, with a thickness of ½ in. at the butt. Approximate weight per square is 910 lbs.

Uniform Thick

No. 16 American Method (8 x 16 x 5/32 in.) 260 pieces per square, weighing approximately 416 lbs. Colors include Gray Duoface, Pearl Gray, Red, Brown, Black, Purple, Buff and Green.

Gray Duoface *Green* *Pearl Gray* *Red* *Black*

No. 90 Colonial Tapered

Ambler Duoface Process

This is the name applied to the new process which produces a lasting, fadeproof colored Ambler Asbestos Shingle that is reversible and can be laid either side up. On one side the coloring matter is added during the process of manufacture and becomes a part of the shingle itself. The other side is the natural Newport Gray, resulting from the mixture of asbestos fibre and portland cement. The Gray Duoface has on its colored side a pleasing combination of Red, Black and Gray. A wider color range is available by this process, at a price much lower than formerly charged for colored Asbestos Shingles.

No. 4 Honeycomb (16 x 16 x 5/32 in.) 87 pieces per square, weighing approximately 283 lbs. Colors include: Gray Duoface, Pearl Gray, Red, Brown, Black, Purple, Buff and Green.

No. 20 Honeycomb (12 x 12 x 5/32 in.) 162 pieces per square, weighing approximately 292 lbs. Colors include: Gray Duoface, Pearl Gray, Red, Brown, Black and Green.

No. 30 Side Lap. Dutch Method (16¼ x 16¼ x 5/32 in.) 93 pieces per square, weighing approximately 307 lbs. Colors include: Gray Duoface, Pearl Gray, Red, Brown, Black, Purple, Buff and Green.

Continued on next page

**Section of "Rustic Blend" No. 90 Colonial Tapered—
4 shades of Purplish Brown and Buff**

**Section of No. 16 Gray Duoface
American Method**

Distinctive Roofs

Unusual and distinctive effects may be obtained with Ambler Asbestos Shingles by the roofer breaking butts or using random exposures to produce irregular roof lines so popular today on certain types of houses.

Application and Literature

To any one requesting it, a leaflet on "How to Apply Asbestos Shingles" is available. The 1930 Ambler Asbestos Catalogue also carries full instructions as well as detailed descriptions of the various types and illustrations in full color.

Brown *Black* *Buff* *Newport Gray* *Red* *Purple* *Pearl Gray* *Green*

Color Chart of No. 16 American Method

Ambler Asbestos Corrugated Roofing and Siding

This material is made of asbestos fibre and portland cement and is the same as Ambler Asbestos Shingles in its structure and quality. It is made in sheets, 42 ins. wide.

This material is 11/32 in. thick at the ridges and in the valleys, and 9/32 in. thick at center of slope. Corrugations are 2⅝ in., center to center. Sheets are available in lengths of 4, 5, 6, 7, 8 and 8½ ft. Approximate weight, 3¾ lbs. per sq. ft.

Ask for Engineers' Data Sheets for full details.

Ambler Ebonized Asbestos

A sheet material of high dielectric and physical strength, for electrical switchboard and panel work. Write for Electrical Catalogue.

Ambler Asbestos Sectional School Buildings

These fireproof buildings are regular sectional type buildings, made of Ambler Asbestos Lumber, and can be erected in a very short time by local carpenters. Plans and specifications will be furnished upon request.

MOHAWK ASBESTOS SHINGLES, INC.

General Office and Factory
ONEIDA, N.Y.

SALES OFFICES

NEW YORK, N.Y., 101 Park Avenue PHILADELPHIA, PA., 630 Real Estate Building.

DISTRIBUTORS IN ALL PRINCIPAL CITIES

Products

TAPERED ASBESTOS SHINGLES

Mohawk Tapered Asbestos Shingles

Mohawk Shingles are made with a real taper and the butts are available in thicknesses of 3/8, 5/8, and 7/8 of an inch. They are composed of asbestos fiber and portland cement with mineral oxides for the coloring, uniting in one product, qualities usually attributed to several.

They are fireproof for there is absolutely nothing to burn. The combination of asbestos and cement in the Mohawk process gives exceptional insulation, cooler in summer, warmer in winter. They will not crack, chip or exfoliate—age only improves them. The use of mineral oxides is your insurance for permanency in color. When comparative thickness is taken into account, Mohawk Shingles have the advantage of lightness in weight. No climate is too severe a test for them for these shingles have always met every extreme of heat or cold.

The thick butt gives a deep shadow line and the texture is of an interesting roughness. When furnished with the hand-hewn butts or random widths, a further element for variety and originality is available. The combinations of effects are almost unlimited and Mohawk Shingles can be successfully adapted to practically any period of architectural design.

Specifications and Method of Application

Made in standard size, 8″x16″. Random widths 6″, 8″, 10″, 16″. Laid 7″ to the weather. Not less than 2″ headlap. 260 shingles per square. Ordinary roof construction will carry Mohawk Shingles, as they are lighter than natural slate or tile. Mohawk Shingles, 3/8″ butt average a weight of 700 pounds to the square (100 square feet). Average weight of Mohawk Shingles, 5/8″ butt, 850 pounds to the square; 7/8″ butt, 1350 pounds to the square.

Thickness of butts, 3/8″, 5/8″ and 7/8″. Square butts and Rough butts.

Two sets of holes (4 holes) are provided in Mohawk Shingles, instead of the single set of holes as in all other roofing materials. This enables the Mohawk to be laid securely and regularly, no matter where the boards of the roof come underneath.

Roof boards laid in the usual manner, breaking joints and nailing securely, leaving no loose ends. Roofing boards must be well seasoned and preferably of narrow width. Lay one thickness of good quality slater's felt with a 4″ lap, and not less than 10″ lap on hips and valleys. Apply cant strip, lath or other material 3/8″ thick at eaves. Apply one course of Mohawk Tapered Asbestos Shingles cut 11″ from butt as starters parallel with eaves, overhanging the eaves about 1½″. Apply the second course Mohawk Shingles, covering the first course, breaking joints. Then proceed with laying in precisely the same manner as with natural slate or wood shingles, exposing Mohawk Shingles 7″ to the weather. Use only galvanized needle point nails or copper wire roofing nails as recommended by manufacturer. Drive nails flush with Shingle surface, *but not down too tight.*

Hip and Ridge Roll made in all colors in sections 16″ long. Ninety-three sections of Ridge Roll required to cover 100 lineal feet of ridge or hip. Special Hip Tile for hips only laid two pieces to each course, being exposed approximately 4½″ to the weather.

In applying Ridge Roll, use a wood strip one inch by two inches, the one-inch surface to ridge or hip, nailing Ridge Roll to the strip with 3″ lap, using copper clips lapped over the butt of each section.

Make all ridges and hips water-tight before applying hip or ridge roll.

Mohawk Tapered Asbestos Shingles are guaranteed to last a lifetime if applied in accordance with our specifications.

A few of the important Commissions upon which MOHAWKS *have been used*

ARCHITECT	COMMISSION	LOCATION
ELECTUS D. LITCHFIELD	Residence, E. R. Stettinius	Locust Valley, L. I.
BOTTOMLEY, WAGNER AND WHITE	Yorktown Hall	Yorktown, Va.
ARTHUR C. HOLDEN ASSOCIATES	Residence, Arthur C. Holden	Quoque, L. I.
BERTRAM GROSVENOR GOODHUE ASSOCIATES	Dormitories St. Lawrence University	Canton, N. Y.
PERRY, SHAW AND HEPBURN	Restoration of Colonial Williamsburg	Williamsburg, Va.
HEACOCK AND HOKANSON	Upper Darby High School	Upper Darby, Pa.
DEARMOND, ASHMEAD AND BICKLEY	Residence, Roscoe H. Trumbull	Merion, Pa.
THOMAS, MARTIN AND KIRKPATRICK	Christ Lutheran Church	Hazelton, Pa.
WALKER AND WEEKS	Greater Wesleyan College	Macon, Georgia
EDWIN H. CLARK	Residence Alden B. Swift	Chicago, Ill.
ROBERT O. DERRICK	Edison Museum	Dearborn, Michigan
BENJAMIN H. MARSHALL	Lawsonia Club Hotel	Green Lake, Wis.
E. WILLIAM MARTIN	Longwood Gardens, Pierre S. DuPont	Kennett Square, Pa.

Continued on next page

COLOR AND TEXTURE

COLOR,—Nature's gift,—the Artist's tool of interpretation, is, without contest, today's all important thought of the Architect and home-builder, in both exterior and interior. We have left the period of the drab and the dull.

TEXTURE in no sense concedes primary position to Color, but is rather its Complement. For Texture gives Shadow, and Shadow is Color's Depth. Mohawk Shingles are particularly interesting in both Color and Texture.

THE DEVELOPMENT OF THE ROOF

THICK, heavy stones, light, thin stones were the early craftsman's problem. Craftsman's logic dictated the heavy stones be laid at the strongest point,—the eave, supported by the wall. Working upward, the thicknesses were gradually reduced, making use of all available material.

Time, with its deposits of dusts and subsequent rains and snows, eventually caused a washing down of the roof rafters, cleansing the uppermost ridge regions and gradually building up a greater deposit of dust as the eaves were approached. Finally the lowermost eaves became darker in tone than the ridge poles.

In fulfillment of this natural evolution, we so design our roofing layouts, laying at the eaves the thick darker values in color, and without lines of demarkation, gradually change to the lesser weight Mohawks of lighter tones at the ridge poles. Thus is a graduated roof effected, the mass and depth of tone being arranged at the base, giving true perspective.

When autumn toned roofs of varied colors are desired, the soft shades of Mohawks allow a mixture of nearly every color with the other and lend themselves to the Architect's design as readily as water colors.

Much can be accomplished by the roofer with three-eighths inch thick butt Mohawks used thruout the roof and laid in a method similar to that shown in our Panel Three. With the addition of a small amount of five-eighths inch thick butts, a very irregular butt line is developed, giving the impression of a much heavier roof.

Due to their light weight, Mohawks allow an unusual opportunity to greatly increase the roofing unit thickness, and acquire additional texture, without additional weight in roof framing.

REPRODUCTION OF OLD ROOFS

THE method of manufacture used in producing Mohawk Shingles allows for considerable latitude in color and texture.
Where the Architect desires to reproduce some old roof of exceptional beauty and age, whether it be of tile, stone or wood, it is possible to do so with Mohawk Shingles, especially made on order to the Architect's specifications.

We especially urge the Architect to submit to us his own peculiar roofing problems.

ARCHITECTURAL SERVICE

ARCHITECTURAL Service is at all times available to any Architect without additional cost and special layouts and panels will be made for the Architect's approval and forwarded to him upon his request. Estimates and suggestions for roof layouts will likewise be submitted and special material will be gladly manufactured in collaboration with the Architect's design.

COLOR COMBINATION SUGGESTIONS

PANEL NUMBER ONE

50% DARK GRAY...30% BROWN...20% BUFF
100% SQUARE BUTTS
STANDARD 8″ WIDTHS
Graduated from a dark eave to a light ridge
AS SHOWN...100%—⅜″

PANEL NUMBER TWO

20% DARK GRAY...10% BLACK...20% PURPLE...50% BROWN
50% ROUGH and 50% SQUARE BUTTS
RANDOM WIDTHS 6″, 8″, 10″, and 16″
Graduated from a dark eave to a light ridge
AS SHOWN...70%—⅜″, 30%—⅝″

Continued on next page

MOHAWK WILLIAMSBURG TYPE SHINGLES

PANEL TEN

WILLIAMSBURG, oldest settlement in Virginia's historical Tide-water, is being restored to its original Colonial beauty and simplicity. William and Mary College, President John Tyler's home, the Randolph house, and the Court House are some of the buildings that will now stand for generations as architectural and historical shrines.

The early settlers in the Tide-water, in which this old town is located, resorted to the New World's only contribution to roofing at that early period, namely—the wood shingle. In fact, many of the original wood shingles were still upon some of the roofs. Keeping the spirit of this early Colonial period in mind, the Architects decided that the wood shingle, being the original and authentic roof, should once again be resorted to, if not in actuality, at least in appearance. Then too, there was the necessity of using a material that was both fireproof and permanent.

Williamsburg Type Shingles, designed by us in collaboration with the Architect for this commission, are being used thereon. They are hand surfaced to simulate aged wood shingles. Many other historical restorations, likewise homes of Colonial, Georgian and early American Architecture have been roofed with this shingle.

The length is 16″ long, designed for a maximum exposure of 7″, in widths of 5″, 6″, and 8″. The butts are full ⅜″ and the shingle is tapered. Color is black-brown. The weight is 700 lbs. to the square.

Claremont, built about 1660, is a gem of Queen Anne architecture. Note the quaint dormers and very steep roof, Mohawk shingled.

COLOR COMBINATION SUGGESTIONS

PANEL NUMBER THREE

50% BROWN...25% PURPLE...25% RED
50% ROUGH and 50% SQUARE BUTTS
RANDOM WIDTHS of 6″, 8″, 10″, and 16″
Laid slightly irregular
AS SHOWN...50%—⅜″, 30%—⅝″, 20%—⅞″

PANEL NUMBER FOUR

20% DARK GRAY...10% BLACK...20% RED...10% BUFF...
40% BROWN
50% ROUGH and 50% SQUARE BUTTS
RANDOM WIDTHS of 6″, 8″, 10″, and 16″
Laid very irregular, requiring 20% additional material
AS SHOWN...50%—⅜″, 30%—⅝″, 20%—⅞″

Continued on next page

MOHAWKSTONNE

STONE is probably the oldest form of roofing, having been in use earlier than tile or slate. Its earliest known use is in Luxor Temple in Ancient Egypt where portions of the roof were covered with large stone flags. Particularly do we find it in certain sections of England and France, while its use was considerable in the Alpine District. Many of the colleges and old buildings in Oxford and in the Cotswolds are roofed with slabs of stone.

In England particularly do we find roofs of stone, indications showing its use as a roofing even earlier than the period covered by the Roman occupation of England. It has gradually disappeared in most recent building construction due to its cost, weight and impractibility of handling and cutting.

Mohawkstonne, a new and exclusive development, duplicating in effect the old stone roofs, particularly those of the softer variety of which the edges weathered considerably and the tints of color were of extreme softness. Mohawkstonne is made in five tints which are intermixed thruout the roof and are of such extreme softness that they mutually blend without a sharp variegation. The colors are merely tints of Greystonne, Bluestonne, Brownstonne, Buffstonne, and Redstonne, and the thicknesses vary from a full $\frac{7}{8}''$ to $1''$ down to a $\frac{3}{8}''$ to $\frac{1}{2}''$. The widths are random and the material is tapered, a thing that could not be accomplished in natural stone roofs, so that the roof lays perfectly tight. It weighs but 800 lbs. to the square, which is less than half of natural stone roofing. It can be readily cut upon the roof for fitting and does not require anything other than ordinary roof construction. The cost of application is very low and Mohawkstonne will provide a long desired roof.

MOHAWK FLOORING AND FLAGGING

MOHAWK Flooring and Flagging, produced in the same colors as Mohawk Shingles, give the Architect the opportunity to reproduce in interior and exterior floors, entrances, terraces, and walks, the soft color tones available heretofore in natural stone only. The stone-like texture of this material prevents slipping and, if desired, the completed floor can be rubbed to a smooth marble-like surface, resulting in an increased depth of color. It can be furnished in squares and rectangles and definite pattern schemes and designs can be easily worked out as shown in the illustration.

Special care should be given to the foundation. For interiors use a firm concrete or wooden base. The material can be nailed directly to a wood floor, the joints filled with cement and nail heads covered. For exteriors use a concrete or a well-tamped soil or cinder base. A proper foundation is important to obtain a level floor.

Square edges, in several thicknesses and lightness of weight make it adaptable to various conditions at low cost of installation. Shipments can be made with reasonable promptness.

SPECIFICATIONS

Thickness	Sizes	Approximate Weight
$1''$	$16'' \times 16''$, $8'' \times 16''$, $8'' \times 8''$	10 lbs. per sq. ft.
$\frac{3}{4}''$	$16'' \times 16''$, $8'' \times 16''$, $8'' \times 8''$	$7\frac{1}{2}$ lbs. per sq. ft.
$\frac{1}{2}''$	$8'' \times 8''$	5 lbs. per sq. ft.

JOHNS-MANVILLE

EXECUTIVE OFFICES
292 Madison Avenue, NEW YORK, N. Y.

For Branch Offices, see section on Wall Tile

Products

JOHNS-MANVILLE RIGID ASBESTOS SHINGLES.
JOHNS-MANVILLE ASPHALT SHINGLES.

Also Packings for all purposes; Refractory Cements; Waterproofing and Dampproofing; Asbestos Ebony; Asbestos and Asphalt Roll Roofing; Rotproof Roofs; Asbestos Products of all kinds.

For the following Johns-Manville products, see Manufacturers' Index: Acoustical Treatment and Sound Isolation; Built-up Roofing; Celite for concrete and mortar; Home Insulation; Insulating Board and Plaster Lath; Insulations; Tile Flooring; Transite, Flat and Corrugated; Wall Tile.

JOHNS-MANVILLE RIGID ASBESTOS SHINGLES

J-M Rigid Asbestos Shingles are made of a combination of asbestos fibre and Portland cement united under great hydraulic pressure. They are fireproof and their durability is unaffected by climatic exposure.

They are manufactured in various sizes for application in three styles broadly known as the American Method, Dutch Lap Method, and Hexagonal Method of laying shingles. Included are shingles of uniform or tapered thickness, smooth or rough texture, applicable in one uniform color or in two or more colors blended. The application of the American Method shingles, like other roofing materials of shingle form, may be varied to obtain effects ranging from those in which the lines of the butts appear straight and entirely regular, to those in which the units appear to have been placed entirely at random, with no definite scheme of regularity having been followed. Eaves starters, eaves shingles, ridge and hip shingles, and ridge roll are provided as required by the various styles and varieties.

Color

These shingles are produced in a wide range of colorings which have been the subject of exhaustive experiment, test, and study, to realize the qualities of color which will appeal and be in harmonious relation with other materials used in construction, and with natural surroundings. They admit a most effective "tie" between house and surrounding shrubbery, trees and landscape. Colors have been greatly improved by recent experiment, the shingles now offered being exceedingly mellow and rich in that characteristic which painters call "quality."

The range covers shingles in Mottled Gray, Mottled Blue Black, two shades of Mottled Red, Mulberry, three shades of Mottled Green and differing shades of Brown, enabling the architect to blend these colors in effective proportions for schemes of variegated coloring.

In developing its color range Johns-Manville has sought to produce variegated effects without too sharply contrasting hues and shades and which offer a wider choice than that found in natural quarry products. This gives greater latitude for harmonious treatment.

The Cornwall and Cotswold Blends procurable in the No. 5 shingle are furnished on special order only, requiring six weeks for delivery. All others are stock items immediately available.

Adaptability

Included in the Johns-Manville line is the Salem Gray shingle which has been developed to meet the traditional demand for a material which will produce the effect of the weathered, hand hewn, wood shingle roofs of early New England. To recapture and make permanent the beauty of an earlier product is a very different matter from appropriating the effects of another material for purposes of cheap substitution. The Salem Gray shingle offered by Johns-Manville is a fireproof, indestructible shingle, offering in texture and color the weathered effect of an old wood shingle roof.

Where it is desired that the roof bear the appearance of great weight, pronounced texture and butt lines or the interesting irregularity produced through the use of random thicknesses of the units, the American Method Nos. 190 and 200 may be used, either alone or in combination. These shingles, being ½ and ¾ in. thick, respectively, have roughly beveled or spalled edges which emphasize the texture, and give most interesting effects of light and shade over the entire roof area.

Where economy is a governing factor, the Dutch Lap or the Hexagonal Methods may be employed. Due to the shape and size of the units and the manner in which they are assembled, these shingles provide full protection with the use of the minimum amount of material and weight. This makes possible their availability at a relatively low cost. The Dutch Lap Method is particularly interesting in this respect in that it shows horizontal lines, a familiar characteristic of the American Method, rather than diagonal lines characteristic of the Hexagonal Method. With this added quality the cost of the Dutch Lap Method is only slightly in excess of that of the Hexagonal Method.

Re-roofing

For many years, Johns-Manville has advocated, in connection with re-roofing projects, the application of rigid asbestos shingles directly over existing wood shingles. This practice has been followed so successfully that we do not hesitate to recommend it to the architect.

There are instances, of course, where this procedure is inadvisable but in the great majority of cases the condition of the old wood shingles is such as will provide a proper foundation for the new shingles. The many advantages enjoyed where the removal of the existing wood shingles is unnecessary will be readily appreciated, and by simple preparatory alterations in the existing work the resulting job will not bear any evidence of the presence of the old roof covering.

Continued on next page

No attempt has been made in the specifications following to cover the items peculiar to a re-roofing job. With the exception of the elimination of the use of felt under the shingles and the necessity of using a longer shingle nail, the application of the shingles in this type of work is unchanged. It is suggested that the architect, in preparing plans and specifications involving re-roofing over old wood shingles, include instructions and details to obtain the results desired. For this purpose an additional paragraph is appended to the Short Form Specification, which can be used where re-roofing is to be included.

Limitations of Roof Pitch

It is recommended that surfaces which are to receive rigid asbestos shingles be pitched not less than 4 in. to the foot where the American Method shingles are to be used and not less than 5 in. to the foot for the Hexagonal or Dutch Lap Methods.

Underwriters' Rating

The American Method Shingles carry Underwriters' Class "A" label for all varieties. Hexagonal and Dutch Lap Method Shingles carry Underwriters' Class "B" label.

SHORT FORM SPECIFICATIONS FOR FURNISHING AND APPLYING JOHNS-MANVILLE RIGID ASBESTOS SHINGLES

Work Included*

The work contemplated under this specification shall include all materials, labor, equipment and services necessary for and reasonably incidental to the installation of Johns-Manville Rigid Asbestos Shingles to *(state in detail surfaces to be covered)* as shown on drawings or herein specified.

Work Not Included*

Other contractors will furnish and install the following work as specified under other divisions and other specification text which this contractor shall read so as to ascertain what is called for therein:

(a) Furnish and install all materials composing the roof construction leaving all surfaces smooth and clean, in a satisfactory condition to receive the roofing, omitting the installation of the sheathing at the eaves of dormer roofs where they intersect the main roof until after the shingles have been applied on the main roof, as specified under *(state where specified)*.

(b) Furnish and install fascia or crown moulding to project above the roof sheathing sufficient to give the proper "cant" required by the thickness of the shingles, as specified under *(state where specified)*.

Or furnish and install parallel and flush with the eaves a "cant" strip of suitable size to give the proper "cant" required by the thickness of the shingles, as specified under *(state where specified)*.

(c) Furnish and install on all hips and ridges, furring strips of suitable size and shape to receive the ridge and hip finish shingles or ridge roll, as specified under *(state where specified)*.

(d) Furnish and install all flashings, sheet metal valleys, gutter linings, eaves troughs or hung gutters, leaders and all other sheet metal work in connection with the asbestos shingle roof not definitely specified herein, as specified under *(state where specified)*.

(e) Sheet metal of proper dimensions for such flashings as must necessarily be installed during the application of the asbestos shingles, shall be furnished by other contractors as specified under *(state where specified)* to be installed by the roofing contractor.

*Where it is the custom or it is desired that the Roofing Contractor include the furnishing and setting of any or all of the items included in paragraph under "Work Not Included," such items shall be incorporated under "Work Included," in detail or "in accordance with the standard specification of the *(sheet metal, etc.)* manufacturer."

The flashing requirements of an asbestos shingle roof are similar both from the standpoint of materials used and method of application to that of a roof covered with wood shingles or slate, etc. The selection of the material to be used is left to the architect, it being recommended that copper or other non-corrodible sheet metal be used, installed in accordance with the standard specifications of the manufacturer. The question as to whether the flashing is to be included by the roofing contractor or others is also left to the architect, it being understood that the setting of certain flashings must be done by the former as covered in Paragraph (e)

Note: *Where the job involves re-roofing over existing wood shingles the following should be added if the construction described is desired.*

(f) Remove existing wood shingles adjoining the gable rakes for a width of approximately 4 or 6 in. and install in place thereof a wood strip of the same width and of the approximate thickness of the existing wood shingle roof. Install in all open valleys to the full width, wood strips of the approximate thickness of the existing wood shingle roof to bring such areas to the same plane as the existing roof.

Materials and Workmanhip

All work under this specification and contract shall be executed in strict conformity with the "Standard Specification of Johns-Manville for the Furnishing and Applying of Rigid Asbestos Shingles," which standard specification is hereby declared and made a part of this specification with the same force and effect as if written herein in full.

Felt

Before applying the asbestos shingles herein specified, all surfaces shall be covered with Johns-Manville *(state whether "Asbestos Slaters' Felt weighing approximately 15 lb. per 108 sq. ft." or "Asbestos Waterproofing Felt weighing approximately 35 lb. per 108 sq. ft.")*

Note: *The following is to be included if the shingles are to be applied by the American Method:*

Shingles

Shingles shall be *(state catalogue number and color, or proportions of colors)* Rigid Asbestos Shingles, of *(state whether "random" or "standard")* widths, and shall be applied with the butts *(state whether "aligned" or "staggered")*.

(If to be applied in more than one color the following shall be added:

"The shingles shall be applied with the colors mixed as directed by the architect, in the proportions specified.")

Ridge and Hip Finish

All ridges and hips shall be finished *(state whether "Boston Method" or "mitred" or "with Johns-Manville Ridge Roll)*.

Valleys

All valleys shall be *(state whether "open" or "closed")*.

Fasteners

Each shingle shall be secured with not less than two *(state whether "copper" or "hot dipped galvanized iron")* shingle nails (the following to be added only if ridge roll is to be used) and each section of ridge roll shall be secured with two nails driven through one copper ridge roll fastener.

Note: *The following is to be included if the shingles are to be applied by the Hexagonal Method or the Dutch Lap Method.*

Continued on next page

Shingles

Shingles shall be .....
State catalog number and color, or proportions of colors.
Rigid Asbestos Shingles.

(If to be applied in more than one color the following shall be added:

"The shingles shall be applied with the colors mixed as directed by the Architect, in the proportions specified.")

Ridge and Hip Finish

All ridges and hips shall be finished .....
State whether "Boston Method" or "with Johns-Manville Ridge Roll".

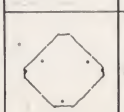
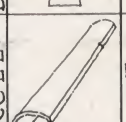
Valleys

All valleys shall be open.

Fasteners

Each shingle shall be secured with not less than two.... .....shingle nails
State whether "copper" or "hot dipped galvanized iron"
and one copper storm anchor (the following to be added only if ridge roll is to be used). Each section of ridge roll shall be secured with two nails driven through one copper ridge roll fastener.

TABULATION OF VARIOUS TYPES OF JOHNS-MANVILLE RIGID ASBESTOS SHINGLES

METHOD OF APPLICATION AND SHAPE		CATALOG NO. OF SHINGLE		SIZE	THICKNESS	COLOR	APPROX. WEIGHT PER SQUARE APPLIED	WEATHER EXPOSURE	NO. OF SHINGLES REQUIRED PER SQUARE	GALVANIZED SHINGLE NAILS REQUIRED PER SQ.	COPPER STORM ANCHORS REQ. PER SQUARE	CATALOG NO. OF EAVES STARTER OR EAVES STARTER AND EAVES SHINGLE TO BE USED	NO. OF STARTERS REQUIRED PER 100 LIN. FT.
AMERICAN		NO. 5		STANDARD 8" X 16" RANDOM 6"-8"-10" & 16" x 16" * *	1/4" TAPERED	MOTTLED GRAY MOTTLED BLUEBLACK MOTTLED RED SHADES 1 & 2 MULBERRY MOTTLED GREEN SHADES 1-2-3 GREEN VENEER-ROUGH TEXTURE SOLID RED-ROUGH TEXTURE CORNWALL BLEND SHADES 1-2 & 3 [red in color tone] COTSWOLD BLEND SHADES 1-2 & 3 [green in color tone]	555 570 570 570 570 545 545 570 570	7"	260 †	2 1/2 LB. 1 1/4" Nails ††	NONE	NO. 51 [OR NO. 5 SHINGLES WITH HEADS CUT OFF MAY BE USED]	71
		NO. 10		8" x 16"	3/16" UNIFORM	MOTTLED GRAY MOTTLED BLUEBLACK MOTTLED RED	460 480 480	7"	260	2 1/2 LB. 1 1/4" Nails ††	NONE	NO. 51	71
		NO. 55		STANDARD 8" x 16" RANDOM 6"-8"-10" & 16" x 16" * *	5/16" ± & 7/16" ± TAPERED STANDARD ASSORTMENT 1/3 of 7/16" ± 2/3 of 5/16" ±	SALEM GRAY	710	7"	260 †	3 LB. 1 1/2" Nails ††	NONE	USE NO. 55 SHINGLES WITH HEADS CUT OFF	150 †
		NO. 190		6"-9"-12" AND 18" x 18" * *	1/2" TAPERED	COLORBLENDE - SHADE NO'S 1-2-3 & 4 SOLID RED-ROUGH TEXTURE MOTTLED BLUEBLACK	940	8"	204 †	2 3/4 LB 1 1/2" Nails ††	NONE	USE NO. 190 SHINGLES WITH HEADS CUT OFF	134
		NO. 200		6"-9"-12" AND 18" x 18" * *	3/4" TAPERED	COLOR-BLENDE SHADE NO'S 1-2-3 & 4 SOLID RED-ROUGH TEXTURE MOTTLED BLUEBLACK	1370	8"	204 †	3 1/2 LB. 2" Nails ††	NONE	USE NO. 200 SHINGLES WITH HEADS CUT OFF	134
DUTCH-LAP		NO. 40		17" x 17"	3/16" UNIFORM	MOTTLED GRAY MOTTLED BLUEBLACK MOTTLED RED MULBERRY MOTTLED GREEN	365 380 380 380 380	11 1/3" x 14"	91	1 LB. 1 1/4" Nails ††	91	NO. 41	106
HEXAGONAL		NO. 70		16" x 16"	3/16" UNIFORM	MOTTLED GRAY MOTTLED BLUEBLACK MOTTLED RED MULBERRY MOTTLED GREEN GREEN VENEER-ROUGH TEXTURE SOLID RED-ROUGH TEXTURE	295 315 315 315 315 290 290	13" x 13"	87	1 LB. 1 1/4" Nails ††	87	NO. 17 AND NO. 71	75 58
		NO. 60		12" x 12"	3/16" UNIFORM	MOTTLED GRAY MOTTLED BLUEBLACK MOTTLED RED MULBERRY MOTTLED GREEN GREEN VENEER-ROUGH TEXTURE SOLID RED-ROUGH TEXTURE	310 325 325 325 325 300 300	9 1/2" x 9 1/2"	160	1 1/2 LB. 1 1/4" Nails ††	160	NO. 17 AND NO. 61	75 77
RIDGE AND HIP FINISH BOSTON		NO. 18		LENGTH 16" WIDTH BUTT 5 11/32" HEAD 4 19/32"	1/4" TAPERED	AVAILABLE IN ALL COLORS PROCURABLE IN NO'S 5-10-40-60 AND 70 SHINGLES		7"	PIECES REQUIRED PER 100 LIN. FT. 342 NOTE: USEABLE WITH SHINGLES NO'S 5 10-40-60 AND 70				
RIDGE ROLL		RIDGE ROLL		16" LONG 2 15/16" RAD.	3/8"	GRAY-RED-BLACK OR GREEN		13"	PIECES REQUIRED PER 100 LIN. FT. 93				

** IN USING RANDOM WIDTHS, EQUAL PROPORTIONS OF THE 6" AND 10" OR 6" AND 12" WIDTHS MUST BE ACCEPTED: FROM A STANDPOINT OF APPEARANCE THE USE OF THE 16" AND 18" WIDTHS IS NOT RECOMMENDED: THESE WIDTHS ARE PROVIDED FOR USE IN FORMING MITERED HIPS: † USING STANDARD WIDTHS OR EQUAL PROPORTIONS OF RANDOM WIDTHS APPLIED WITH BUTTS ALIGNED: †† IN RE-ROOFING WORK OVER EXISTING SHINGLES, NAILS NOT LESS THAN 2" LONG SHOULD BE USED:

Continued on next page

Colors, Styles and Application of Johns-Manville Rigid Asbestos Shingles

Mottled Red
(*Standard*)

Mottled Red No. 2

Mulberry

Mottled Blue-Black

Mottled Gray

The No. 55 Salem Gray Shingles. In appearance and color they resemble the old weathered hand-hewn wood roofs of our grandfathers, but have the permanence and fireproof qualities of J-M Asbestos Shingles. Admirably suited for roofing or re-roofing on Colonial buildings.

The No. 5 American Method Shingles. Manufactured in Green Veneer—Rough Texture, Standard and No. 2 Mottled Reds, Mottled Blue-Black, Mottled Gray, Mulberry, Standard and Nos. 2 and 3 Mottled Greens, and Cornwall and Cotswold Blends.

The No. 5 American Method Shingles, laid with butts staggered.

In the J-M line of Rigid Asbestos Shingles there is included a type and color suitable to any requirement. Where it is in order to provide the effect produced by weathered hand hewn shingles, the No. 55 Salem Grey admirably meets this requirement. Where an appearance of great weight and ruggedness is required, the use of the Nos. 190 and 200 shingles provide that effect. Where a more familiar

One of the Cotswold Blend Combinations

A Blend of Mottled Reds and Mulberry

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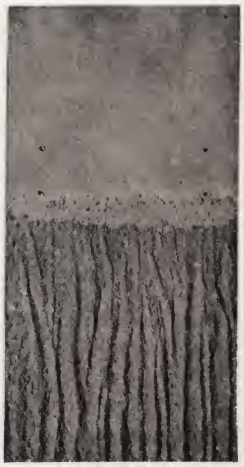
Colors, Styles and Application of Johns-Manville Rigid Asbestos Shingles



Salem Gray

Green Veneer

Mottled Green
(*Standard*)

Mottled Green No. 2

Mottled Green No. 3

straight line characteristic and regularlity is desired, the No. 5 shingle may be employed. If the minimum of initial cost governs the selection, the No. 40 Dutch Lap or the No. 70 Hexagonal should be considered, the former providing the horizontal line characteristic of the American Method at about the price of the Hexagonal Method.

The colors provided in the blends have been designed to combine without strong contrast.

One of the Cornwall Blend Combinations

A Blend of Mottled Greens

The No.70 Hexagonal Method Shingles. Less of the shingles lost in laps at no sacrifice of water-tightness. The most inexpensive of the J-M Asbestos Shingles. Made in Mottled Gray, Standard Mottled Red, Mottled Blue-Black, Mulberry, Standard Mottled Green, Solid Red and Green Veneer—Rough Texture.

The No. 40 Dutch Lap Method Shingles. An adaptation of the economy of the Hexagonal Shingles to give the roof lines of the American Method Shingles. These are available in Mottled Gray, Standard Mottled Red, Mottled Blue-Black, Mulberry and Standard Mottled Green.

The No. 190 and 200 American Method Shingles. These rugged shingles are respectively ½ and ¾ of an inch thick at the butt with jagged edges, and provide a textural roof. Available in Mottled Blue-Black, Solid Red—Rough Texture, and the four shades of Colorblende.

Continued on next page

JOHNS-MANVILLE ASPHALT SHINGLES

Johns-Manville Asphalt Shingles are made of heavy felts impregnated with the finest asphalt and surfaced with crushed mineral. They are made as strip shingles, both Hexagonal and American styles and as individual shingles, American style.

These shingles are made in a variety of colors chosen by a committee of architects and building authorities. The colors offer a wide choice that will provide the proper roof for any type of house—harmonize with any color scheme. Colors include: Tile Red, Standard Red, Fieldstone Green, Chateau Green, Standard Blue-Black. There are also three blends—Blended Normandy Greens, Brittany Blend and Blended Romany Reds. In addition there are three "Duo-Blend" effects in which a darker base color is overlaid intermittently with a lighter color.

Blended Romany Reds
A warm blend that will add charm to any home

Picardy Duo-Blend
A blend of warm autumnal brown with lighter shade mottling to give it variation and interest

Blended Normandy Greens
Three soft shades of green and one of a purple cast—of quiet, good taste

Gascony Duo-Blend
A most interesting blend of several green tones, particularly adaptable to homes of Colonial architecture

Chateau Green
Richer, deeper and different from other greens ordinarily obtainable

Burgundy Duo-Blend
Combines in an entirely new and interesting way two of the most attractive roof colors—brown and green

Brittany Blend
A combination of four shades to give a lively, yet refined roof effect

Fieldstone Green
A color reminiscent of moss on stone walls

Standard Red
For those who want a real bright roof

Standard Blue-Black
Conservative but always in good taste

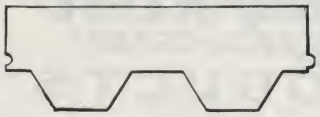
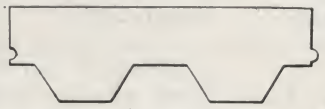
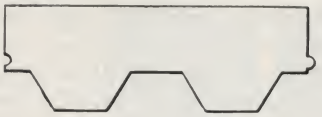
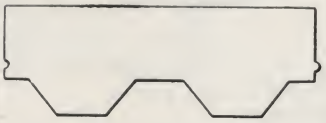
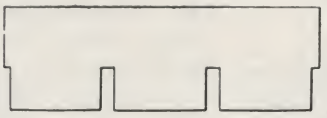
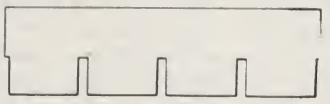
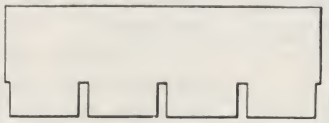
Tile Red
Reproduces the rich colors of old earthen building tiles

Continued on next page

JOHNS-MANVILLE ASPHALT SHINGLES

Johns-Manville Asphalt Shingles are made of heavy felts impregnated with the finest asphalt and surfaced with crushed mineral. They are made as strip shingles, both Hexagonal and American styles and as individual shingles, American style. These shingles are made in a wide variety of colors.

STYLES, COLORS AND APPLICATION DATA FOR JOHNS-MANVILLE ASPHALT SHINGLES

Names and colors	Shape	Size, in.	Exposure, in.	Head lap, in.	Strip per sq.	Approx. weight per sq. lb.
Giant Hexagonal Shingles **Colors—** Fieldstone Green Standard Blue-black Tile Red Blended Normandy Greens Blended Romany Reds Brittany Blend Burgundy Duo-Blend Gascony Duo-Blend Chateau Green		36 x 12⅓	4⅔	3	86	225
Standard 12⅓-in. Hexagonal Shingles **Colors—** Fieldstone Green Standard Red Standard Blue-black Blended Romany Reds Picardy Duo-Blend		36 x 12⅓	4⅔	3	86	175
Standard 11⅓-in. Hexagonal Shingles **Colors—** Fieldstone Green Standard Red Standard Blue-black Tile Red Blended Normandy Greens Brittany Blend Blended Romany Reds Burgundy Duo-Blend Gascony Duo-Blend		36 x 11⅓	4⅔	2	86	160
Standard 12½-in. Double Coverage Hexagonal Shingles **Colors—** Fieldstone Green Standard Blue-black Tile Red Blended Normandy Greens Blended Romany Reds		36 x 12½	4	4½	100	215
Giant Strip Shingles **Colors—** Fieldstone Green Standard Red Standard Blue-black Tile Red Blended Romany Reds Blended Normandy Greens Brittany Blend Chateau Green		36 x 12	5	2	80	245
Standard Strip Shingles **Colors—** *10-in. Width* Fieldstone Green Standard Red Standard Blue-black Blended Normandy Greens Brittany Blend Tile Red Blended Romany Reds		36 x 10	4	2	100	195
12½-in. Width Fieldstone Green Standard Red Standard Blue-black Brittany Blend		36 x 12½	4	4½	100	240
Giant Individual Shingles **Colors—** Fieldstone Green Standard Blue-black Tile Red Blended Romany Reds Brittany Blend Chateau Green		12x16	5	6	225	315
Standard Individual Shingles Fieldstone Green Standard Red Standard Blue-black Brittany Blend		9x12¾	4	4¾	378	240
Bric-Side Shingles *A Siding shingle giving the appearance of brickwork* Red Buff		30x6	2½	1	192	210

THE PHILIP CAREY COMPANY

Manufacturers of Shingles and Roofing Material

LOCKLAND, CINCINNATI, OHIO

BRANCHES AND DISTRIBUTORS IN PRINCIPAL CITIES

FACTORIES: LOCKLAND, OHIO, AND PLYMOUTH MEETING, PA.

Products

CAREYSTONE ASBESTOS - CEMENT SHINGLES.
CAREY ASFALTSLATE SHINGLES.
CAREY STRIP SHINGLES.
CAREYSTONE ASBESTOS - CEMENT SHEATHING.

Careystone ASBESTOS-CEMENT PRODUCTS
TRADE-MARK

CAREYSTONE ASBESTOS-CEMENT WALL BOARD.
CAREYSTONE CORRUGATED ASBESTOS-CEMENT ROOFING and SIDING.
For other Carey Products, see Manufacturers' Index.

CAREYSTONE ASBESTOS-CEMENT SHINGLES

Careystone Asbestos-Cement Shingles are made of two of the most durable materials known—asbestos and special portland cement.

They are verminproof, dampproof, dustproof, fireproof, and will not rot or rust.

Advantages

Careystone Asbestos-Cement Shingles can be laid over old wooden shingles as easily as on new roof construction. They will outlive the building itself, for they actually grow stronger with age. They are light enough to need no special supporting construction. The variety of shapes, sizes and colors give the architect an unlimited field for designing a roof to meet individual tastes.

Rating

When laid over saturated asbestos felt, i. e., Carey's Fiberock Felt, French and Scotch Method Careystone Asbestos-Cement Shingles take a class "B" rating of the Underwriters' Laboratories, Inc. The American Method Shingles take a class "A" rating.

Colors

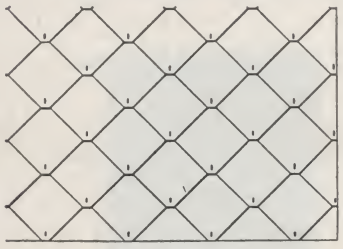
Careystone Asbestos-Cement Shingles, in all styles and sizes, are made in five standard solid colors: Windsor gray, Georgian red, weathered brown, Tudor black and Bristol green. Carey colors are built into and carried all the way through the body of the shingles. This distinctive feature assures the greatest possible durability of color and lasting beauty of the shingle.

Styles

Careystone Asbestos-Cement Shingles are made in three distinctive styles for application by the French, Scotch or American methods.

French Style

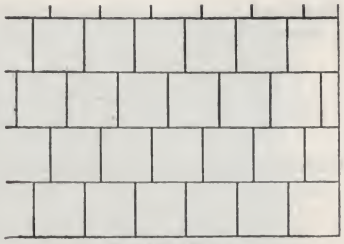
The hexagonal pattern shingle is desired by many builders for its low cost. It gives a very pleasing effect on some types of architecture and is weathertight. Each shingle is protected against windstorms by a copper storm nail in the center of the exposed corner. Size 15¾ in. x 15¾ in., $\frac{3}{16}$ in. thick. Furnished in five standard colors, i. e., Windsor gray, Georgian red, Tudor black, Weathered brown and Bristol green.



French Style

Scotch Style

The Scotch style is a horizontal lap shingle which greatly resembles the straight lined American type. They have rough, rugged, untrimmed edges and will be attractive on most types of architecture, giving the much desired heavy vertical shadow line. Scotch style shingles cost very little more than the hexagonal type shingles, but most builders and architects will prefer it for its symmetrical shape and more pleasing design. The shingles are 16¼ in. x 16¼ in., $\frac{3}{16}$ in. thick, and are furnished in five standard colors: Windsor gray, Georgian red, Tudor black, weathered brown and Bristol green.



Scotch Style

American Style

Where beauty, permanence and roof value are of first consideration, American style shingles are, of course, always first choice. They cost more, it is true, but they produce a wonderfully strong, double-thick roof of rectagonal design that is so pleasing on any type home.

American style Careystone shingles make the ideal roof for the fine home. They may be laid with edges close together, or with a ⅛ in. or ¼ in. joint between each shingle. Each shingle is double punched to permit laying with staggered butts, an effect that is in good taste and great demand for period architecture.

American type shingles are 8 in. x. 16 in. and are made in two standard thicknesses, $\frac{3}{16}$ in. and ¼ in. There are five beautiful solid colors, i. e., Windsor gray, Georgian red, Tudor black, weathered brown and Bristol green.

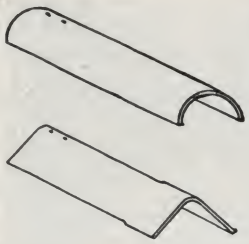
American Style

	American method	Scotch method	French method
Size, in.	8x16	16¼ x 16¼	15¾ x 15¾
Thickness, in.	$\frac{3}{16}$ and ¼	$\frac{3}{16}$	$\frac{3}{16}$
Weather exposure, in.	7x8	12x13¼	12¾ x 12¾
Approx. wgt. per sq. lbs.	400	275	275
Underwriters' label	A	B	B
Colors	5 standard	5 standard	5 standard
Number shingles per square	260	93	90

Continued on next page

Condensed Specifications

Roof to be Careystone Asbestos-Cement Shingles (1) Hexagonal Style, size 15¾ in. x 15¾ in. and 3/8 in. thick—(2) Scotch Method, size 16¼ in. x 16¼ in. and 3/8 in. thick—(3) American Method, size 8 in. x 6 in. and (3/8 in. or ¼ in.) thick—color (Name color) to extend through the entire thickness of the shingle to be laid over solid sheathing (if new building) with a layer of Carey saturated asbestos felt weighing not less than 15 lbs. per 100 sq. ft. between the sheathing and the shingles in strict accordance with the manufacturers' printed specifications and application instructions.



Careystone Asbestos-Cement Ridge Roll

Made in the same manner as Careystone Asbestos-Cement Shingles in colors that blend perfectly with the shingles. Furnished in two designs, the curved and angle shapes as illustrated.

CAREY ASPHALT SHINGLES

There is a Carey Rag Felt Asphalt Saturated Shingle to fit all types of building. Eight different shapes and many beautiful colors offer a limitless field in which the architect can design the roof best suited to the building.

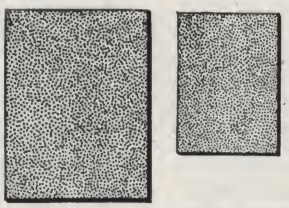
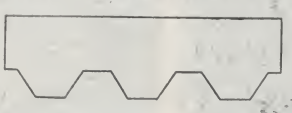
Only the highest quantity raw materials are used in manufacturing Carey Shingles.

Underwriters' Label—Carey Shingles are tested and accepted as standard by the Underwriters' Laboratories.

All Carey Asphalt Shingles bear the Underwriters' Class "C" label.

Chart

Use the following chart to select the type and color of shingles desired:

Shingles	Style	Approx. wgt. per sq. lbs.	Head lap, in.	Exposure, in.	Shingles per square
12x15 ¾-in. Asfaltslate Indian Red, Silver Green, Arcadian Green, Spanish Red, Green-Blue Blend, Red-Green Blend, Double-Brown Blend, Blue Black, Colorblend, Golden Brown, Chocolate Brown		300	5¾	5	224
9x12 ¾-in. Asfaltslate Indian Red, Silver Green, Blue Black, Arcadian Green, Colorblend		240	4¾	4	372
10x36-in. 4-tab Strip Indian Red, Silver Green, Arcadian Green, Blue Black, Colorblend, Red Shadow Blend, Green Shadow Blend		190	2	4	100
12x36-in. 3-tab Strip Indian Red, Silver Green, Arcadian Green, Spanish Red, Blue Black, Colorblend, Golden Brown, Chocolate Brown, Blue-Green Blend, Red-Green Blend, Double Brown Blend, Red Shadow Blend, Green Shadow Blend		240	2	5	81
12½x36-in. 4-tab Strip Indian Red, Silver Green, Blue Black		240	4½	4	102
11⅓x36-in. Hexagonal Strip Indian Red, Silver Green, Arcadian Green, Spanish Red, Blue Black, Colorblend, Golden Brown, Chocolate Brown		160	2	4⅔	86
12x40-in. Double Thick Hexagonal Strip Indian Red, Silver Green, Arcadian Green, Spanish Red, Blue Black, Colorblend, Golden Brown, Chocolate Brown		210	4	4	90
12⅓x36-in. Extra Heavy Hexagonal Strip Indian Red, Silver Green, Arcadian Green, Spanish Red, Blue Black, Colorblend, Golden Brown, Chocolate Brown		225	3	4⅔	87

ETERNIT

SALES DIVISION OF THE RUBEROID CO.

Asbestos Cement Shingles, Flat Sheets and "Big 7" Corrugated Sheets

FACTORY

ST. LOUIS, MO.

OFFICES

BALTIMORE, MD. CHICAGO, ILL. ERIE, PA. MILLIS, MASS. MOBILE, ALA. NEW YORK, N. Y.

Products

ETERNIT ASBESTOS CEMENT SHINGLES, made of the best portland cement scientifically reinforced with selected asbestos fibre.

ETERNIT ASBESTOS CEMENT FLAT SHEETS, made of same materials as Eternit Shingles for use as wallboard. Furnished plain or in decorated "Walpaneau" finish.

ETERNIT "BIG 7" ASBESTOS CEMENT CORRUGATED SHEETS, also made of same materials as Eternit Shingles but designed especially for roofing and siding of industrial buildings. For complete details see SWEET'S ENGINEERING CATALOGUES, 1930 Edition.

Eternit TRADE-MARK

Manufacturing Process

Eternits were the first asbestos cement shingles made in the world and we believe more Eternit Shingles are giving satisfactory service throughout the world today than any other asbestos cement shingle. The process used in the manufacture of Eternits, which assures maximum strength and toughness, as well as imperviousness to fire and water, was invented by Ludwig Hatschek, an Austrian, in 1900. At the same time the appropriately descriptive name Eternit was coined for the product. Since then Eternit factories have been built in practically all the principal countries, the newest and most modern being the American factory at St. Louis. Many improvements have been made in the original manufacturing process, one of the most important being a treatment for colored shingles so that the beautiful, rich Eternit colors will not fade out and are not marred by "blooming."

Services and Samples

Architects, builders and material dealers are invited to send for complete detailed information about all Eternit products as well as instructions for the application of these products.

Instruction sheets for the application of Eternit Asbestos Cement Shingles illustrate every phase of the application problem in detail, making it possible to properly and easily apply Eternits even though one may have had no previous experience with this type of roofing.

Attractive literature in color showing the different styles is also available, and samples of the actual material, miniature or full size, will be gladly furnished. Material dealers may have panel boards for permanent displays.

To Specify

Your specification should read:

The roof shall be covered with Eternit Asbestos Cement Shingles, 8x16 in. American Method; .... color, applied in Quarry Blue; laid in accordance with specifications and instructions of ETERNIT. (See following page for complete listing of colors, styles and sizes to be used in writing specifications.)

[Copper] [Galvanized] roofing nails to be used.

Valleys and flashings to be of (*specify kind of material wanted.*)

ETERNIT ASBESTOS CEMENT SHINGLES

General Description

Eternit Asbestos Cement Shingles are rigid and rocklike. Portland cement and asbestos fibre, a mineral, are the only materials used in Eternits, with the addition of mineral oxides for coloring. Naturally the finished product is just as impervious to the action of weather and fire as are the materials used in its manufacture. Eternits, therefore, cannot burn and are practically everlasting.

Asbestos rock, centuries old and one of nature's most wonderful minerals, is in no way affected by the elements and does not rot or disintegrate under the most severe conditions. Portland cement is recognized as one of the most permanent of building materials and only the highest grade cement, made to ETERNIT specification, is used.

The remarkable strength, toughness and durability of Eternits, however, is due not only to the quality of the materials used but also to the scientific way in which these are combined into a homogeneous mass in which the asbestos fibres are interwoven so that they reinforce the cement most efficiently just as steel bars reinforce concrete.

The Hatschek process of manufacture by which this is accomplished is not a moulding process but is one in which the wet mixture of cement and fibre is gradually built up to the required thickness. In this building-up process the fibres are interwoven horizontally and must necessarily be evenly distributed throughout, so that there are no weak spots due to lack of proper reinforcement or to the clotting of fibre in lumps. Neither can the fibres run vertically through the sheet from one side to the other which would allow free passage of moisture through the shingle at that point.

Brook Forest Chalet, Brook Forest, Colo., Roofed with Eternit 12x14-in. Gray Horizontals

Michigan State Agricultural College—Curved Roof of Eternit Gray Hexagonals

Continued on next page

Beautiful Continental Effect Achieved with 8x16, 9x18 and 12x24-in. Eternits in Heatherblend and Autumn Bronze

Eternit Horizontals in Autumn Bronze Fit the Clean Lines of This Modern American Home

Careful selection and use of highest grade fibre and scientific placing of cement shingle gives maximum strength. This is obtained by using a minimum amount of fibre, thus allowing a maximum of portland cement, which gives the weatherproof quality to the shingle.

Finally Eternit Shingles are subjected to tremendous hydraulic pressure making them dense and compact, and are automatically trimmed and punched for nailing, then seasoned for several months before shipment. The name Eternit in trade mark form is embossed on every Eternit Shingle to protect buyers against substitution.

Beautiful Lasting Colors

Color is a predominant factor in the selection of roofing materials today, and *durability* of color is most important in a shingle like Eternit which is a lifetime roof, never to be replaced, and which therefore must retain its beauty to give complete satisfaction.

Eternit has developed an exclusive method for treating colored asbestos cement shingles so that colors are fixed. "Blooming" (discoloration by lime effervescence) is eliminated.

Through the use of the best mineral oxide colorings obtainable, combined with this exclusive treating process, Eternit produces deep, rich, lasting colors of unusual beauty.

Tests

Eternit representatives are always glad to demonstrate Eternit superiority in strength, resiliency, waterproofness and all-around roofing quality by a few simple, practical tests.

Eternit Asbestos Cement Shingles have the approval and highest ratings of the National Board of Fire Underwriters.

Horizontal Method—Exclusively Eternit—a Fast Laying and Economical Asbestos Cement Shingle

Colors and Sizes

Standard Colors—Colonial Gray, a natural cement color. Quarry Blue, India Red and Emerald Green, mineral oxide colors treated to prevent "blowing" and will not fade out. These colors furnished in all styles and sizes specified below.

Autumn Bronze, in all styles and sizes. Heatherblend Shades (Moss, Terra Cotta, Olive, Meadow and Sienna), in the two American sizes only. These are variegated colors that weather after application. Can be used individually or in combinations.

Pastel Blend, mineral oxide red and blue blended. A new variegated color effect at less cost than plain colors. Furnished only in 8x16-in. American method, 16x16-in. Hexagonal method and 12x24-in. Horizontal method.

Styles and Sizes—***American Method***—8x16 in. standard thickness—exposure 8x7 in.; 9x18x¼ in. standard thickness—exposure 9x8 in. Special pieces for covering ridge and hips are furnished in all colors.

Hexagonal Method—16x16 in. standard thickness—exposure 13x13 in.; 12x12 standard thickness—exposure 9½x9½ in.

Special starter course shingles are furnished.

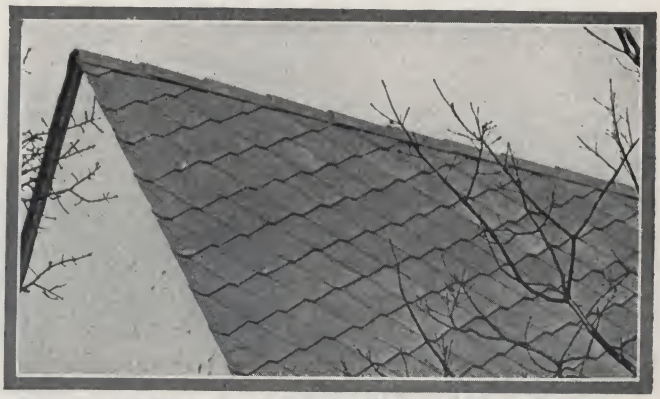
Horizontal Method—12x24 in. standard thickness—exposure 9x20 in. Can also be laid in the American method with exposure 10½x12 in.

No starters are required; all shingles are punched with nailholes for easy application.

Accessories

Copper ridge roll clips, copper storm anchors for hexagonal and horizontal shingles, galvanized or copper roofing nails are also furnished by the manufacturer.

American Method—a Beautiful Shingle, Double Protection Against Wear and Weather at Low Cost



Hexagonal Method—Combines Beauty and Utility with Maximum Economy

CERTAIN-TEED PRODUCTS CORPORATION

ROOFING DIVISION

Manufacturers of Asphalt Shingles

GENERAL OFFICES

100 East 42nd Street
NEW YORK, N. Y.

For Sales Offices, see Gypsum Plaster pages

For Our Other Products, see Manufacturers' Index

CERTAIN-TEED AND VULCANITE SHINGLES

The Certain-teed and Vulcanite shingle lines include every type of asphalt shingle in demand today, from the original and stabilized type of Individual Shingle to our most recent and remarkable roofing development—Speedlay Shingles.

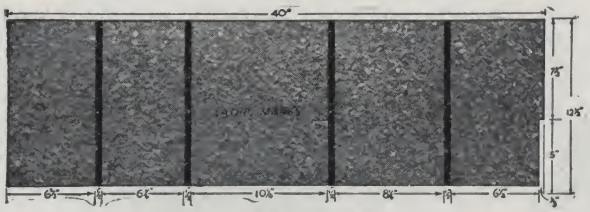
The quality of all Certain-teed and Vulcanite roofings is unquestioned. These shingles, moreover, introduce a variety of rich colors and fascinating blends, and an extensive style range that meet every modern architectural requirement. They have also been designed with regard for ease in handling and quick laying, and are equally suitable for new construction or re-roofing jobs.

Certain-teed and Vulcanite Shingles are known for their extra protection, their lasting service. They bring new security, new beauty wherever used. The shingles illustrated here represent roof styles to fit the home in design, color and economy.

TRADE-MARKS

Speedlay Shingles

Speedlay Shingles fit perfectly into the scheme of modern home building. These exceptionally durable shingles, with their many outstanding features, are revolutionary in speed of laying—faster than any other strip shingle—and savings in material and workmanship are easily assured. Made of the finest materials available, Speedlays provide the home with the very best roofing protection possible. They also reduce fire hazard.



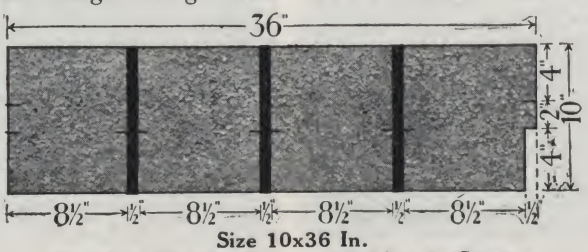
Size 12 ½ x 40 In.
Standard Weight: 200 Lb. per Square
Jumbo Weight: 250 Lb. per Square

As for beauty, the famous Speedlay blends are absolutely exclusive—the only solution to that old problem of a perfectly blended roof. Each shingle is divided into five panels of random widths, and upon each shingle four different, yet harmonizing color blends are distributed. In each group of four shingles, the colors are shifted to different panel positions, so that no two shingles are alike in color arrangement. This scientific preassortment is an insurance against failure to obtain the most beautiful results. Available in four charming blends—red-cast, green-cast, tan-cast and purple-cast, as well as in red, green, blue-black and color-blend. Adapted for every type of American architecture, as well as the many picturesque styles inherited from other countries.

Four-Width Shingles

Four-Width Strip Shingles are designed to give the actual appearance of individual shingles on the roof. Each strip contains four units, which means quick and economical laying. The self-spacing feature of Four-Widths further speeds up laying.

These sturdy shingles bring extra protection during severe seasons—there are no sharp corners to curl or blow up. They are also highly fire-resistant, adding to the security of the home in every way. Four-Widths provide lasting service, for the quality of these shingles is of the highest, and the soft, attractive colors of the mineral surface are permanent.



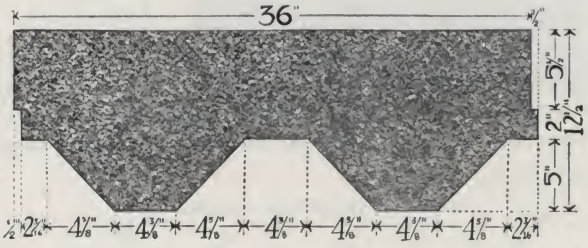
Size 10x36 In.
Standard Weight Only: 196 Lb. per Square
Colors are red, green, blue-black and color-blend

Continued on next page

Hexagonal Shingles

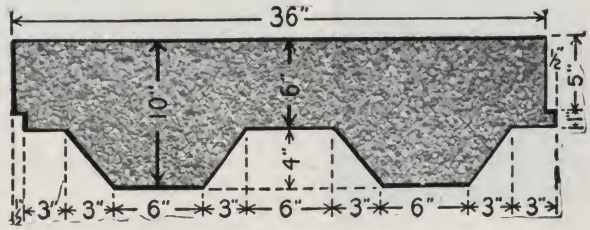
In this group of Hexagonal Shingles there is a style to meet every roof requirement. Hexagonal shingles are distinctive with their wide range of solid colors, combinations, and harmonious blends. They meet in every way the modern demand for color on the roof, as well as offering interesting, tile-like effects, with the additional yet very important feature of full protection from beating rains and snows, and from long dry seasons that bake out the life of so many roofs.

There are years of weather-resistance in these shingles. They are highly fire-resistant, burning embers and falling sparks fall harmlessly on their surface.



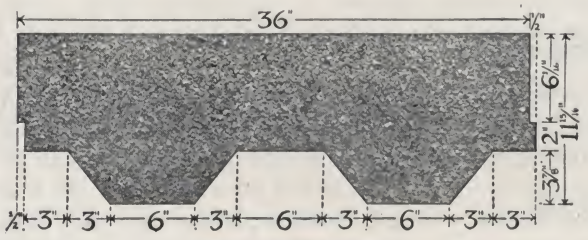
Size 12½x36 in.

Furnished in red, green, blue-black, brick-red color-blend, red-glo, green-glo and tan-glo.
Jumbo weight only: 210 lb. per square



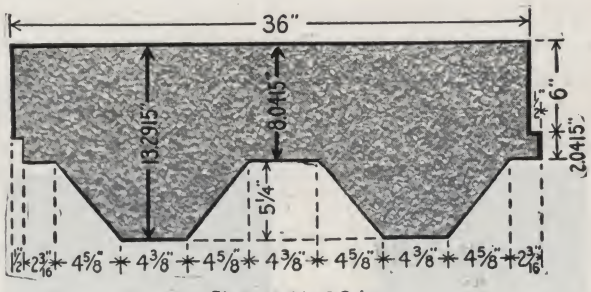
Size 10x36 in.

Furnished in red, green, blue-black, autumn-blend, verdant-blend, tawny-blend and garnet-blend.
Standard weight only: 164 lb. per square



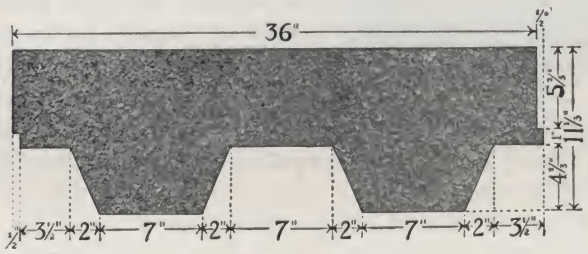
Size 11 15/16x36 in.

Furnished in red, green, blue-black, brick-red color-blend, red-glo, green-glo and tan-glo.
Standard weight: 215 lb. per square.
Jumbo weight: 275 lb. per square



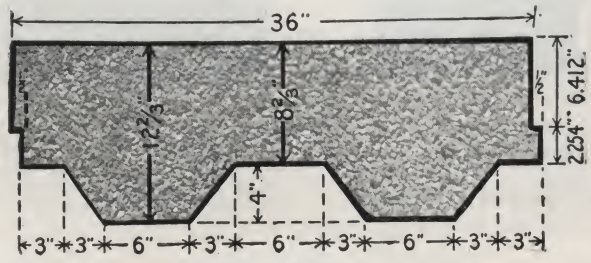
Size 13¼x36 in.

Furnished in red, green, blue-black, garnet-blend, verdant-blend, tawny-blend and autumn-blends.
Jumbo weight only: 210 lb. per square



Size 11⅛x36 in.

Furnished in red, green, blue-black, color-blend, red-glo, green-glo and tan-glo.
Standard weight only: 160 lb. per square



Size 12⅔x36 in.

Furnished in red, green, blue-black, Indian-red, garnet-blend, verdant-blend, tawny-blend and autumn-blends.
Standard weight: 215 lb. per square.
Jumbo weight: 280 lb. per square

Hexagonal Shingles in Beautiful Colorings

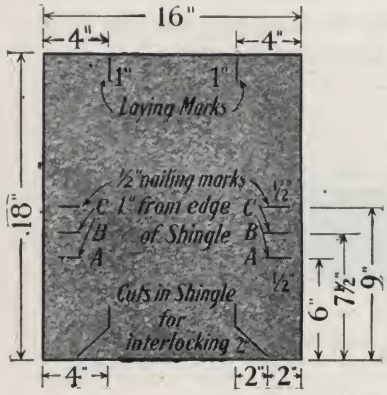
Red-glo, green-glo and tan-glo—these are combinations of two-tone shingles that are assorted at the plant in the proper order for speedy laying on the roof. The titles suggest the dominating colors in each assortment. Red-glo is an artistic blending of four different two-tone shingles with a predominating red tone. Green-glo and tan-glo carry out green and buff blends in similar fashion as their key tones.

Garnet, verdant, tawny and autumn-blends—these are combinations of beautiful colorings in each shingle, assorted at the mill in the order in which they are laid on the roof. The titles suggest the key color in each assortment. Garnet-blend has Indian-red for its predominating tone. Verdant-blend has green for its controlling color. Tawny-blend is skillfully blended to secure a buff overtone. Autumn-blend is obtained by the blending of soft-toned autumnal colors.

Continued on next page

Universal Shingles

Universal Shingles build attractive, durable roofs in an interesting "thatched" design. Deep shadow lines, effected by the thick butt ends, emphasize the rich hues and quaint weaving design of this shingle. A Universal roof may be depended upon to add real distinction to the home.



Size 16x18 In.

Colors are red, green, blue-black and color-blend, also rustic-blend, colonial-blend, terra cotta-blend and tapestry-blend

The patented, interlocking device of Universal Shingles provides a weather-proof, watertight surface that will endure unusually severe weather conditions and climatic changes for many years.

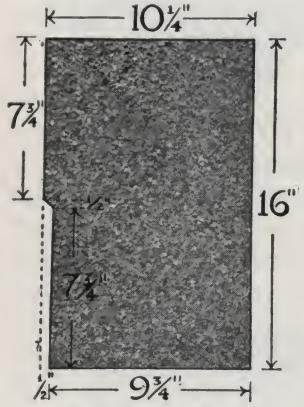
Universals may be laid to give any of three exposures, depending upon particular conditions of the job in question, and the expense to be involved. Whichever exposure is chosen, 4-in. side laps are provided.

These shingles are available in a number of attractive hues and refreshing blends, the soft, rich mineral colors of which are unfading and require no refinishing at any time. The attractive mineral surface likewise reduces fire hazard.

THREE EXPOSURES AVAILABLE

	"C"	"B"	"A"
Headlap .....in.	3	6	9
Exposure .....in.	7½	6	4½
Standard weight per square....lb.	132	165	220
Jumbo weight per square.....lb.	166	208	276

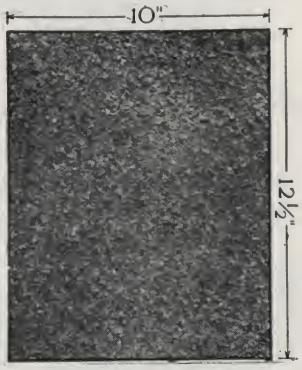
Individual Shingles



Size 10¼ In.

Jumbo weight only, 317 lb. per square.

Colors are red, green, blue-black, color-blend and jade-green



Size 10x12½ In.

Standard weight only, 237 lb. per square.

Colors are red, green, blue-black, color-blend, red-cast, green-cast, tan-cast and purple-cast

Certain-teed and Vulcanite Individual Shingles conform to the very highest roofing requirements. The simple, geometric design of the Individuals is in constant favor. They are suited to every type of home, fitting in easily where modern architecture may decree dips, bends and other structural details of complicated nature.

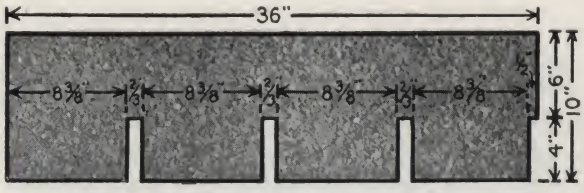
These shingles are convenient to handle, and their self-spacing feature assures straight, even courses and quicker laying. Also available without the notch in size 10x12½ in., where a self-spacing feature is not required.

Certain-teed and Vulcanite Individuals are durable. They bring lasting protection against weather and resist fire. The natural colors of the mineral surface are unfading and attractive.

Cut-out Shingles

Cut-out Shingles present a simple, square-lined effect on the roof that is pleasing with many types of architecture. Their extreme flexibility and ease of laying assure excellent results in all cases.

Sturdy protection against the elements, fire-resistance and lasting service recommend Cut-outs to the homebuilder. Their large covering capacity and their self-spacing feature also reduce labor charges. Supplied in beautiful permanent colors of red, green, blue-black and color-blend.



Size 10x36 in.

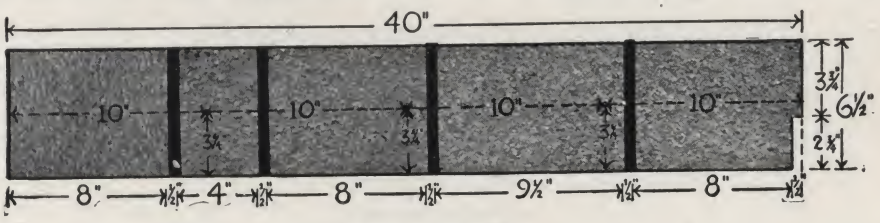
Furnished in red, green, blue-black and color-blend. Standard weight only, 196 lb. per square

Size 10x36 in. Standard weight only, 196 lb. per square.

Continued on next page

Speedlay Tapestry Siding

One of our more recent offerings to the building industry is Speedlay Tapestry Siding, a remarkable new material which surpasses older types of siding in speed of laying as well as in soft, rich beauty. This siding gives an excellent representation of real "tapestry," and the application is so arranged that a perfect blending of the rich colors, as well as double coverage, are assured. Each 40-in. strip is marked off into five divisions of different colorings and varied widths, forming a unique Speedlay design.



Size 40x6½ In.
Colors are red-blend and buff-blend.
Weight per square 189 lb.

The large covering capacity and the self-spacing feature of Speedlay Tapestry Siding mean speedy application. It is economical to renovate shabby houses with this material—applying it right over the old side walls.

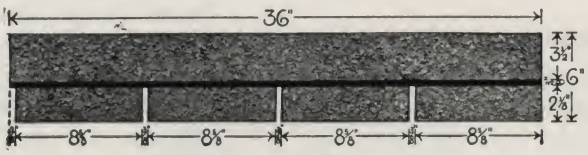
Also excellent for new constructions where outlay is limited, and where a softly colorful Tapestry effect will bring charm and distinction to the structure in question.

The attractive, colorful walls formed by Speedlay Tapestry Siding require no staining or painting at any time—the initial cost is the only cost. This siding is made of the very finest materials throughout, with a strong base made of the best roofing felt and a surface of mineral granules in their natural hues. It is proof against weather and highly fire-resistant. It has proven insulating qualities, bringing comfort and beauty to the home in every way.

Application Guides—Exclusive to Certain-teed are the Guide Strips designed to further speed up the application of Speedlay Tapestry Siding—the very latest device to simplify this operation and reduce labor charges. Their use also insures straight, even courses. Eight of these Patent Guide Strips are supplied with each package of Speedlay Tapestry Siding.

Brick-tex Siding

Brick-tex Siding is widely used for modernizing old homes as well as in new structures. It is particularly suitable for use where expenditure is limited, since the initial cost of this material is low, and labor charges reduced to the minimum through ease and speed of laying. Patent Guide Strips are also furnished with Brick-tex to assure accuracy and speedy jobs.



Size 6x36 In.
Colors are brick-red and buff.
Weight per square 189 lb.

Brick-tex is uniformly marked to give the appearance of real brick on the home or building where it is applied, and the effect is always colorful and pleasing. This is a strong, serviceable material, with a base of asphalt felt that means increased insulation. The surface of crushed minerals reduces fire hazard and adds permanent, unfading beauty to the side walls.

Brick-tex entails no maintenance costs—no annual painting or repairing. It is used with excellent results in the construction of bungalows, club-houses, and other buildings where an attractive exterior on reasonable terms is desirable.

Reinforced Strips

To insure the trimness that a properly finished roofing or siding job should reveal, we provide a complete line of Corner, Starter, Gable and Ridge Strips. These products are made of a 28 gauge galvanized iron base, protected from rust on the underside by a firm layer of asphalt felt. The exposed surface is mineral surfaced for additional protection against weather and fire.

Certain-teed Reinforced Strips eliminate delaying the job for cutting and matching. They conceal rough corner edges, and secure that sharp, clean-cut line along the gable which is so essential in modern roofs. The permanent, unfading colors of the mineral surface are carefully selected to blend with our shingles or siding materials.

Starter Strips, Rake Strips and Ridge Strips are available in Staso Red, Staso Green, Blue-black and Jade Green.

Corner Strips come in Buff Mixture, Straight Buff, Brick Red Mixture and Straight Brick Red.

Starter Strips, 9 in. wide, 8 ft. long.
Rake Strips, 4½ in. wide, 8 ft. long.
Ridge Strips, 8 in. wide, 8 ft. long.
Corner Strips, 4½ in. wide, 8 ft. long.

THE RUBEROID CO.

DIVISIONS

CONTINENTAL ROOFING MILLS | RUBEROID MILLS | SAFEPACK MILLS | H. F. WATSON MILLS

OFFICES

NEW YORK | CHICAGO | BOSTON (Millis) | ERIE | BALTIMORE | MOBILE

Products

STANDARD and MASSIVE ASPHALT SHINGLES, Unit and Strip.

ASBESTOS SHINGLES.

ROLL ROOFING, Asphalt and Asbestos (smooth surfaced and mineralized).

BUILDING PAPERS:

"SAFE-N-DRY"

"7-PLY"

"DOUBLE-KRAFT"

CANVAS PORCH and DECK COVERING.

WATERPROOFING COMPOUND.

Also Roof Coatings and Cements; Pipe Coverings.

For Built-up Roofs, see Manufacturers' Index.

Asbestos Shingles Laid Hexagonal Method

Asbestos Shingles Laid American Method

A Complete Line of Roof Materials

THE RUBEROID CO., through its various divisions, is now in a position to supply a complete line of roofing materials. Asbestos shingles for high grade homes. Asphalt shingles for moderate price homes. Built-up roofs (asbestos, asphalt or tar and gravel) for public and industrial buildings.

Colorful Shingle Roofs Blended by Experts

To assure architects of roof colors that would do justice to the architectural beauty of each home, Ruberoid engineers and color experts spent months in experiments to perfect correctly blended colors and color combinations.

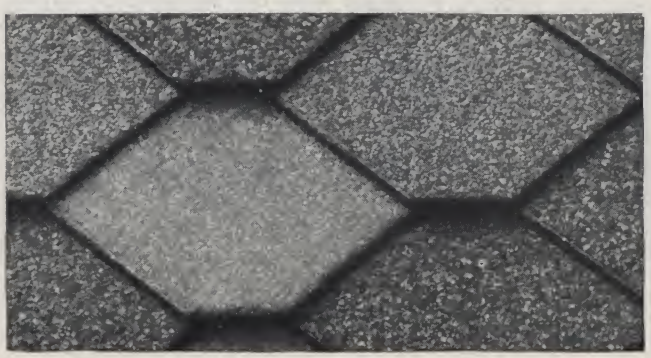
The result is several soft, non-fading shades of warm reds, blended browns, rich purples, bright greens and shaded grays—fine graduation of color tones that express individuality and good taste. These colors may be obtained on both Unit and Strip Shingles in various popular designs.

Moreover, as charted on the following page, there is a wide choice of weights, thicknesses, and headlap protection to meet your varying construction requirements.

All are fire-safe and have the approval of the Board of Underwriters' Laboratories.

Canvas Porch and Deck Covering

This material consists of a fine quality canvas and a standard grade of roll roofing cemented together with waterproof asphalt, making a roofing and floor covering of exceptionally high protective value. It is pliable, tough and long wearing. Always laid canvas side up and nailed in place without cement except at laps. Will not bulge or creep. May be painted any color desired. Rolls contain 108 sq. ft., 36 in. wide, and weigh 60 lb.

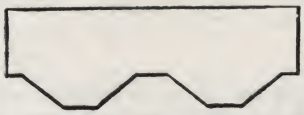
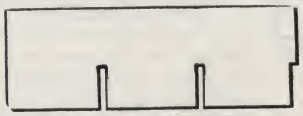
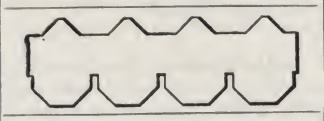
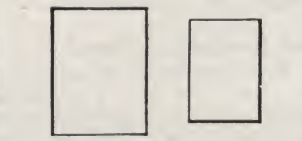


Massive Hex Shingles—Copper Green Tone

Square-Tab Strip Shingles—Mixtone

Continued on next page

SHINGLE COLOR CHART

Key to Colors			Name	Colors	Size, in.	Pieces per sq.	Approx. weight per sq.
Green	A		Massive Hex-Strip 13⅛ in.	B C D E G H I L P	36 x 13⅛	76	225
Valley-green	B						
Willow-green	C		Hex-Strip 12⅓ in.	B C E G H I L P	36 x 12⅓	86	175
Nile Green	D						
Copper Green Tone	E		Hex-Strip 12½ in.	A B C D E F G H I L P	36 x 12½	100	213
Red	F						
Deep-red	G		Massive Square-Tabs 12 in.	A D G L J O P	36 x 12	80	245
Red Tone	H						
Russet-brown	I		Square-Tabs 10 in.	A F H L P Q	36 x 10	100	197
Brown Tone	J						
Midnight-blue	K		Square-Tabs 12½ in.	A D G L J P Q	36 x 12½	100	249
Blue-black	L						
Mountain-purple	M		Octabs	A F L P	33½ x 11	108	190
Tweed-gray	N						
Natural Slatetone	O		Massive Units	B C D G I K L M N P	12 x 16	228	312
Varitone	P		Standard Units	A F L P	9 x 12¾	380	238
Mixtone	Q						

Cement Waterproofing Compound

Cement Waterproofing Compound, when mixed with portland cement, makes leaky cellars or pits bone dry. Its use in stucco entirely eliminates "hair cracking." It differs from other waterproofing compounds in that it does not delay the set or reduce the strength of the mortar.

Building Papers

There is also a complete line of building papers. Included are the well known reenforced papers—"Safe-n-dry" and "7-Ply." For use behind clapboards, stucco shingles, brick veneer and under floors.

Safe-n-dry, because of the strong woven jute fabric used and the extra reenforcing cords along each edge, has unusual strength. It is almost impossible to tear. Never becomes sticky in summer or brittle in winter. Clean, odorless, waterproof and airtight.

Extra Reenforcing Cords Along Each Edge Make It Practically Impossible to Tear

Rolls 36 in. wide contain 500 sq. ft., weighing 35 lb. per roll.

Safe-n-dry is also used for curing and covering concrete floors. Completely eliminates the costly labor of spreading sand or sawdust. Because of its flexibility and strength, Safe-n-dry may be used over and over again. Obtainable in 40, 48, 54 and 60 in. widths.

Where unusual insulating values are required, "7-ply," consisting of three separate sheets of strong kraft paper, two separate layers of asphalt and two separate plies of reenforcing cords (parallel and diagonal), is used. Rolls contain 500 sq. ft., 36 in. wide and weigh 34 lb.

Samples and Literature

Samples and descriptive literature of any product made by The Ruberoid Co. will gladly be sent upon request. Address nearest office.

BIRD & SON, inc.

Manufacturers of Roofings and Building Papers

MILLS AND GENERAL OFFICES

EAST WALPOLE, MASS.

CHICAGO OFFICE AND PLANT: 1472 West 76th Street NEW YORK OFFICE: 295 Fifth Avenue

CANADA: Building Products Ltd., Bird & Son Division, HAMILTON, ONTARIO

Products

Bird Asphalt Slate Surfaced Shingles, Neponset Black Building Paper and other Waterproof Building Papers, Bird Insulating Board.

For our page on Built-up Roofs and Roll Roofing, see Manufacturers' Index.

Experience and Facilities

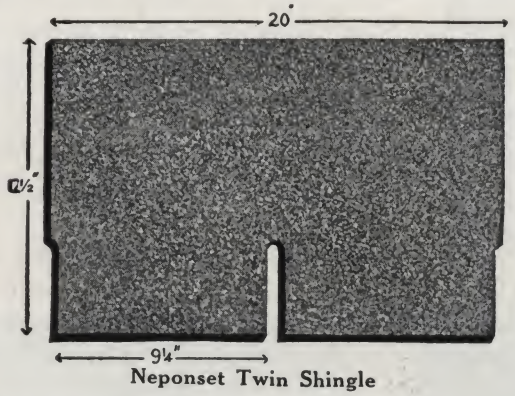
Bird & Son, inc., was established in 1795, and after years of experience in paper manufacturing became one of the pioneers in specializing in the manufacture of waterproof building paper and asphalt roofings.

The highest quality of materials is maintained through the most up-to-date machinery and methods and a highly efficient personnel. The several mills and warehouses of the company provide for prompt shipment anywhere.

Bird products have been distributed and applied to buildings of every description throughout the world and have long been known to be of the highest grade.

Bird Asphalt Shingles

Bird Asphalt Shingles are distinctive. They are made in a variety of styles suitable for all sorts of buildings, from the low price house to the costly residence. They are made of long fibre felt and pure asphalt with maximum saturation, super-surface and coated back. Bird Asphalt Shingles are made in plain shades of red, green and blue-black. They are also made to give unusually attractive and colorful effects.



Neponset Twin Shingle

The following types of shingle are particularly recommended for the architect's specifications. All but the Standard Individual are available in the Art-Blende color.

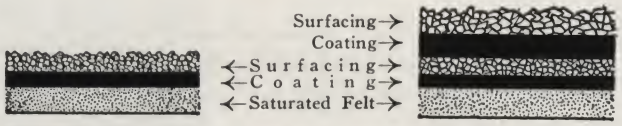
Neponset Twin Shingles—12½x20 in., laid 4 in. to the weather, giving a ½-in. overlap beyond three layers.

Bird Super Twin Shingles—12x20 in., laid 5 in. to the weather. An extra heavy twin shingle combining the features of Neponset Twins with extra weight and massive appearance.

Bird Standard Individual—8x12½ in. laid 4 in. to the weather. A high grade individual shingle of standard dimensions. Recommended for residential work.

Giant Individuals—12x16 in. laid 5 in. to the weather. An unusually heavy and massive giant shingle giving an impression of thickness and weight adequate for the more expensive residences.

Bird (Thick Butt) Shingles—Afford roofs of distinctive appearance with two additional layers of protection on the exposed portion. One of the features of these heavyweight (Thick Butt) shingles is their massiveness. Their construction produces particularly pleasing shadow effects on the roof. The butts are thick and heavy.



Cross Section of Average Shingle

Cross Section of Bird Twin (Thick Butt) Shingle

Application—Bird Asphalt Shingles should be applied over dry roof boards laid close together, sheathed with Neponset Black Building Paper; roofer to follow instructions enclosed in each bundle of shingles.

Bird Insulating Board

Bird Insulating Board—the new "air cell" insulating product—should be used throughout the house for all insulating purposes. Bird Insulating Lath not only makes an ideal base for gypsum plaster but also acts as an insulator. Bird Insulating Board is packed 32x96 in., 12 sheets to the bundle. Bird Insulating Lath is packed 24x32 in., 18 sheets to the bundle.

Neponset Black Building Paper

Neponset Black Building Paper has been known and specified by architects for years as a waterproof building paper of the highest grade. A strong bodied paper thoroughly saturated with asphalt, protected with asphaltic coating on both sides, giving an absolutely waterproof paper. Recommended particularly for use:

(1) Under all kinds of roofing.
(2) Behind clapboards and shingles or stucco on the walls of buildings.
(3) Between floors.
(4) Between double floors that extend over an open porch.
(5) Within walls of house, store or factory in place of backplaster.
(6) For cellar lining.
(7) For cold storage work.

Put up in rolls 36 in. wide containing 500 sq. ft., weighing 50 lb. per roll.

Specifications for Use of Bird Neponset Black Waterproof Building Paper—***Beneath Clapboards and Shingles***—Underneath the clapboards or shingles shall be applied 1 layer of Bird Neponset Black Waterproof Building Paper, lapped not less than 2 in. and tacked to hold in place.

Beneath Roofing—Underneath the roofing, 1 layer of Bird Neponset Black Waterproof Building Paper shall be applied; paper to be lapped not less than 2 in. and tacked along the seams, sufficient to hold in place.

Back of Stucco—Over the sheathing boards 1 layer of Bird Neponset Black Waterproof Building Paper lapped not less than 2 in. Hold paper in place with furring strips spaced about 16 in. on center. Nail metal lath firmly to furring strips and apply stucco to the lath.

Beneath Double Floors—Between the double floors or underneath the parquetry shall be placed 1 layer of Bird Neponset Black Building Paper. Paper to be lapped not less than 2 in. and tacked sufficiently to hold in place.

ALUMINUM COMPANY OF AMERICA

Manufacturers of Alcoa Aluminum Roofing

PITTSBURGH, PA.

Products

ALCOA "TOP DOWN" ALUMINUM SHINGLES and ACCESSORIES, including Ridge Covers, Hip Covers, Side Finishers, Eave Finishers, Valleys, Flashings, etc., and Aluminum Nails for applying.

Note: Alcoa "Top Down" Aluminum Shingles are distributed by Aluminum Building Products Company, 1430 Builders Exchange Building, Cleveland, Ohio.

ALCOA ALUMINUM HANGING GUTTER (Eave Trough) and Conductor Pipe, together with Miters, Elbows, Hangers, and other required fittings.

ALCOA ALUMINUM FLAT SHEET for batten seam, standing seam and other standard or special forms of sheet metal roofing; and for box gutters, moulded gutters, flashings, skylights, etc.; Aluminum Accessories for applying this material are also furnished.

ALCOA ALUMINUM CORRUGATED SHEET for Roofing and Siding in standard 2½x¾ in. and 1¼x⅜ in. corrugation; special corrugations on order.

For our pages on Aluminum and its Alloys, and Paint, see Manufacturers' Index.

Advantages of Alcoa Aluminum Roofing

Will Not Rust—Alcoa Aluminum is a non-rusting metal. It is unharmed by the sulphurous fumes of smoke. It is also resistant to other corrosive agents found in the atmosphere.

Will Not Stain—Alcoa Aluminum forms no colored salts. Consequently, it will not discolor adjoining materials from drip or splash of watershed.

Durable—The rigidity and strength of Alcoa Aluminum roofing minimize possible damage from snow, hail, ice, falling bricks, tree branches, etc. Alcoa Aluminum retains its strength, rigidity, toughness, and ductility in all kinds of weather.

Light Weight—Alcoa Aluminum weighs only one-third as much as other metals commonly used for roofing. "Top Down" shingles, when applied, weigh approximately 60 lb. per square (100 sq. ft.). This lightens and reduces the cost of supporting members.

Easily Worked—Because of its light weight, Alcoa Aluminum roofing is easy to handle on the job. It is readily cut and worked without cracking or breaking.

Weathertight—"Top Down" shingles are made weathertight on all four edges by positive interlocking mechanical joints with complete provision for expansion and contraction. Where weatherproofing of corrugated sheet joints is necessary, asphaltic base cements are recommended. The uniformity of the corrugations assists materially in weatherproofing.

Costs and Scrap Value—When figuring the cost of Alcoa Aluminum roofing, the ease of application, size of supporting members, freedom from rust and discoloration, and the long life of the material must be considered. It is generally safe to assume that the scrap value of an Alcoa Aluminum roof, after many years of service, will be about one-half of its original value.

Finishes and Colors

The standard finish for flat and corrugated roofing sheet is gray plate. However, polished and oxide finishes are available.

Hanging gutter, conductor pipe, fittings, and flashings are furnished in natural aluminum or oxide finishes.

"Top Down" Shingles are available in red or green baked enamel finish (other colors on special order) and oxide finish. The latter is obtainable in three shades of gray. Any one of these shades may be ordered alone, or all three may be used on a single roof to give a variegated effect.

All of the above colors are available in three different shingle designs: plain, ribbed, and texture design.

Gauges and Weights

Alcoa Aluminum roofing is supplied in B&S gauge thicknesses. For approximately the same thickness, B&S gauge runs two numbers lower than U. S. gauge.

ALUMINUM SHEET THICKNESSES GENERALLY RECOMMENDED FOR ROOFING

B&S gauge	Thickness	Weight per sq. ft.
22	0.0253 in.	0.357 lb.
20	0.0320 in.	0.450 lb.
18	0.0403 in.	0.568 lb.
16	0.0508 in.	0.716 lb.
14	0.0641 in.	0.903 lb.

Fabrication and Application

For flat or corrugated sheet roofing and siding, fabrication and application are practically the same as for other metals, except that, where soldering is required for other metals, welding is necessary for aluminum.

An instructive booklet, "The Welding of Aluminum," will be sent upon request to anyone interested in the process.

ALUMINUM COMPANY OF AMERICA will also gladly furnish specifications, estimates, and any other data necessary for any roofing job.

Alcoa "Top Down" Shingles—Alcoa "Top Down" Aluminum shingles possess the unique advantage of being laid from the top, down. Work starts at the ridge and finishes at the eaves. This eliminates the necessity of working over any finished part of the roof.

For one square (100 sq. ft.) of completed roof surface, 112½ full size 8x16 in. "Top Down" shingles are required.

Specifications

Manufacturers' complete specifications and standard application instructions will be sent on request.

Holy Ghost Church, Milwaukee, Wis.
ESCHWEILER & ESCHWEILER, Architects

Alcoa Aluminum sheet batten seam roofing, gutters, leaders, and conductor heads of No. 20 B&S gray plate sheet. Alcoa "Top Down" Aluminum shingles, hanging gutters, and leaders used on garage

Applying Alcoa "Top Down" Aluminum Shingles

Alcoa "Top Down" Aluminum shingles, texture design, natural aluminum finish, were applied with ease on the roof of this tower, 38 stories above the street

THE AMERICAN ROLLING MILL COMPANY

Makers of Armco Ingot Iron Sheets and Plates and Special Analysis, Special Finish Steel Sheets

EXECUTIVE OFFICES
MIDDLETOWN, OHIO

DISTRICT OFFICES

NEW YORK, N. Y., 50 Church Street
CHICAGO, ILL., 1122 Straus Building
PHILADELPHIA, PA., 2020 Lewis Tower
ST. LOUIS, MO., 1724 Ambassador Building
DETROIT, MICH., 5-261 General Motors Building
CINCINNATI, OHIO, 1007 Chamber of Commerce Building
PITTSBURGH, PA., 1632 Oliver Building
SAN FRANCISCO, CAL., 540 Tenth Street
CLEVELAND, OHIO, 1516 B. F. Keith Building

(Member of The Producers' Council)

Products

ARMCO INGOT IRON SHEETS: ARMCO Ingot Iron black sheets; ARMCO Ingot Iron blue annealed sheets; ARMCO Ingot Iron corrugated sheets; ARMCO Ingot Iron furniture sheets; ARMCO Ingot Iron galvanized sheets; ARMCO Ingot Iron plates; ARMCO Ingot Iron roofing sheets.

ARMCO Ingot Iron formed products, such as down-spouts, elbows, gutters, lath, metal shingles, pipe, are made and distributed by all leading sheet metal fabricators.

Rust Resistance

Among the five salient characteristics of ARMCO Ingot Iron is its pronounced resistance to rust and corrosion. This is the result of its freedom from the impurities that hasten rust.

Behind this pure iron is twenty-three years of satisfactory service under a wide variety of service conditions. Galvanized sheets have a heavy, even coating of high grade zinc, thus assuring added protection.

Cost

Because of the additional refining processes involved in producing ARMCO Ingot Iron it costs slightly more than ordinary irons and steels. Still, when durability, ductility, and dependability are considered, ARMCO Ingot Iron more than compensates for the slight differential in first cost.

Numerous installations—cornices, marquises, roofing, gutters, down-spouts—are giving longer and more economical service than less-pure irons and steels have given under identical conditions. Construction costs are lower, too; for ARMCO Ingot Iron, being uniformly pure and consequently soft and workable, forms easily and quickly to the most intricate architectural designs.

Many service records show that ARMCO Ingot Iron, galvanized or painted, gives long, dependable service. Yet the initial expense is less than one-quarter the material cost of copper or lead, and one-half the cost of zinc.

RECOMMENDED GAGES FOR DIFFERENT CLASSES OF WORK

Installation	Gage No. for residences	Gage No. for offices and public buildings	Gage No. for factories and warehouses
Roofing	26 to 28	26	18 to 24
Siding	.....	.....	20 to 26
Cornices	24 to 26	22 to 26	22 to 24
Skylights	24 to 26	20 to 26	20 to 26
Ventilators	24 to 26	18 to 24	16 to 24
Heating and ventilating ducts	22 to 26	16 to 26	16 to 26
Eaves troughs	24 to 26	24 to 26	22 to 24
Leaders	24 to 26	24 to 26	22 to 26
Flashing	26 to 28	26	may be lighter than roof
Valleys	24 to 26	24 to 26	same gage as roof
Ridge roll	26 to 28	26	may be lighter than roof
Window frames	22 to 24	22 to 24	22 to 24
Window sash	24	24	24

The heavy gages shown above should be used where unusually severe corrosive conditions are present.

How to Identify Armco Ingot Iron

The ARMCO triangle, stencilled in blue on every sheet, is definite protection against substitution of inferior grades or lighter gages. In each instance the gage is shown at the right of the triangle. All ARMCO Ingot Iron construction should reveal at least a portion of the blue triangle as shown at the left, for it is placed three times diagonally lengthwise on the sheet. If ARMCO Ingot Iron has been specified and the triangle is not in evidence, either inside or outside, it is certain that the specifications have not been followed.

Standard Gages and Sizes

ARMCO *Ingot Iron Galvanized Sheets* are carried in stock in the following sizes: Gages, 16, 18, 20, 22, 24, 26 and 28. Widths, 24, 26, 28, 30 and 36 in. Lengths, 96 and 120 in.

ARMCO *Ingot Iron Black Sheets* are carried in stock in even gages from 14 to 26, inclusive, and in the same sizes as galvanized.

ARMCO *Ingot Iron Corrugated Sheets* for roofing and siding purposes are made with 5, 3, 2½ and 1¼-in. corrugations. For general building purposes we recommend and carry in stock a 2½-in. corrugated sheet, 26 in. wide (after corrugating) for siding, and 27½ in. wide (after corrugating) for roofing. This size covers 24 in. in the width and allows for a one corrugation lap for siding and a one and one-half corrugation lap for roofing. These sheets may be had from stock in the following sizes: Gages, 20, 22, 24, 26 and 28. Widths, 26 and 27½ in. Lengths, 60, 72, 84, 96, 108, 120 and 144 in.

All of the above sizes are termed standard sizes because they are carried in stock and used most frequently. All grades of sheets may be had in special sizes when an order is placed for 2000 lbs. or more of a size.

APPROXIMATE THICKNESS AND WEIGHT OF GALVANIZED ARMCO INGOT IRON

Gage No.	Weight per sq. ft., lb.	Approximate thickness, in.	Approximate thickness in decimal parts of an inch	Gage No.	Weight per sq. ft., lb.	Approximate thickness, in.	Approximate thickness in decimal parts of an inch
28	.781	1/64	.0153	18	2.156	1/20	.0490
26	.906	3/160	.0184	16	2.656	1/16	.0613
24	1.156	1/40	.0245	14	3.281	5/64	.0766
22	1.406	1/32	.0306	12	4.531	7/64	.1072
20	1.656	3/80	.0368	10	5.781	9/64	.1379

Where to Get Armco Ingot Iron

Leading distributors and "Ingot Iron Shops" in all parts of the United States and Canada supply galvanized sheets and sheet products, and in some instances, blue annealed and black sheets and plates. Names and addresses of distributors and shops in any given territory supplied on request.

Two Useful Books Every Architect Should Have

"Galvanized Iron for Roofs and Roof Drainage" is a comprehensive work devoted to every-day problems in these important phases of building construction. It is replete with working data, reference data, detail drawings, tables, scales, nomenclature, and other valuable information for architects and engineers. (See specimen drawings on following page.)

"Galvanized Iron for Cornices, Marquises and Skylights" is a companion book to the first. It contains a wealth of detail drawings, suggestions and data pertaining to these types of sheet metal construction. (See specimen drawings on following page.)

Both books were prepared in collaboration with competent firms of architects and engineers and reviewed by The Producers Council.

Copies will be sent free of charge to any practicing architect or engineer on request.

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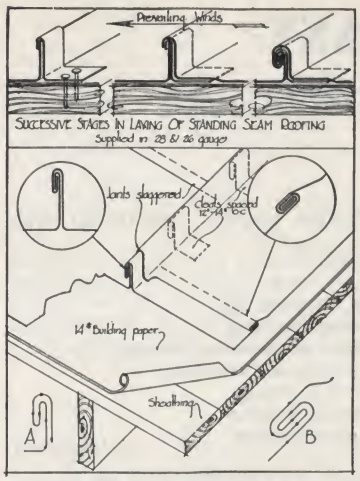
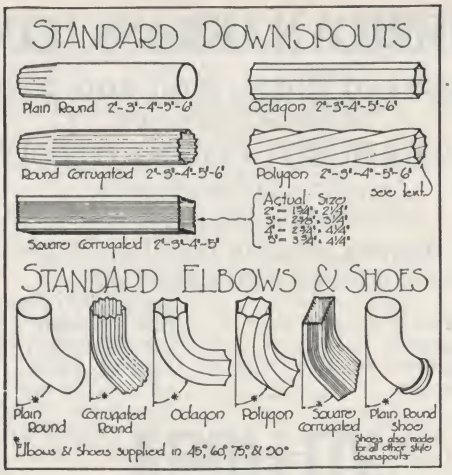
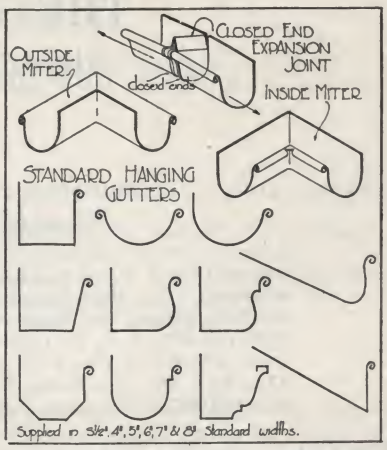


Standing Seam Roofing
Successive stages in laying this effective type of roof for industrial and certain other types of buildings



Armco Ingot Iron Down-spouts, Elbows and Shoes
The variety of available styles that harmonize with practically any type of architecture

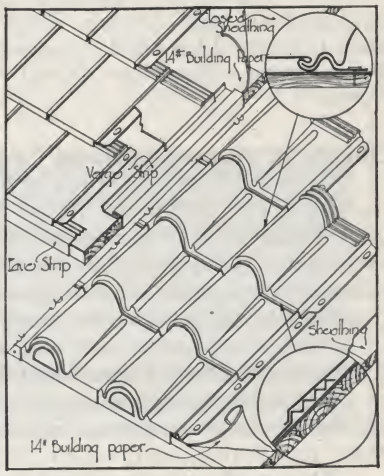


Standard Hanging Gutters
A wide variety of attractive styles are available for draining roof surfaces

Suggested Specifications for Roofs and Roof Drainage Parts

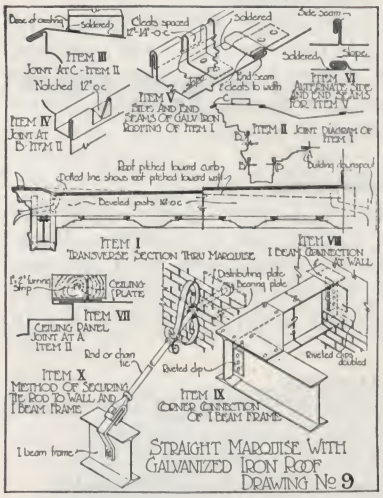
All sheet metal used in construction and erection of this (or these) roof (or roofs) shall be of (a) 26 ga. (b) 24 ga. (c) 22 ga. (d) 20 ga. (e) 18 ga. (f) 16 gage galvanized ARMCO Ingot Iron.

The various sheet metal parts shall be constructed and applied as indicated in the detailed drawings (or as detailed in "Galvanized Iron for Roofs and Roof Drainage," 1929 edition by The AMERICAN ROLLING MILL COMPANY, Middletown, Ohio).



Right

Metal Tile and Metal Shingles
Has the tight, side-locking feature. Note how the 3 or 4 crimps at the end safeguard against the entrance of water



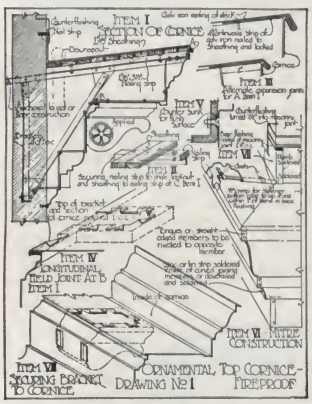
Left

Straight Marquise with Galvanized Iron Roof
Showing detailed construction throughout

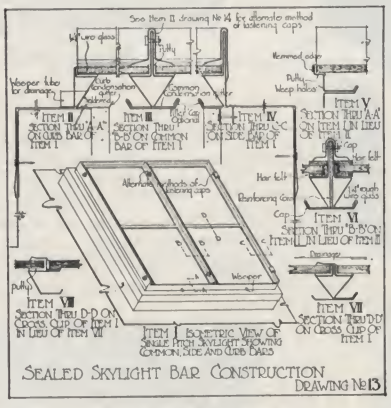
Suggested Specifications for Galvanized Iron Cornice, Marquise, or Skylight

All sheet metal used in construction and erection of this (or these)—(a) cornice—(b) marquise—(c) skylight (or skylights), shall be of (a) 26 ga. (b) 24 ga. (c) 22 gage galvanized ARMCO Ingot Iron.

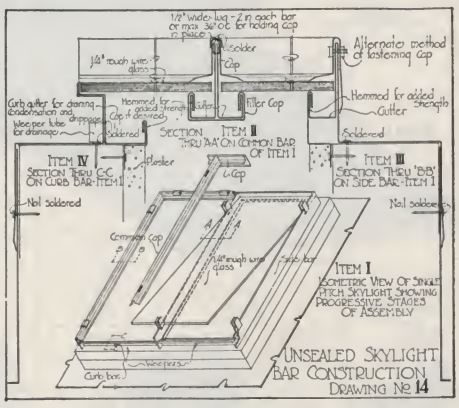
Details of construction and erection shall be done according to detail drawings and all possible applicable parts of section A and (a) section B—(b) section C (c) section D of Specification Suggestions of The AMERICAN ROLLING MILL COMPANY in their handbook "Galvanized Iron for Cornices, Marquises, and Skylights," 1929 edition.



Curved Cornices
Details of constructing and erecting both horizontal and vertical curves, with fireproof and wood supports



Sealed Skylight Bar Construction
The various stages of assembly



Unsealed Skylight Bar Construction
Showing the progressive stages of assembly

THE AMERICAN BRASS COMPANY

Manufacturers of Sheet, Roll and Strip Copper

GENERAL OFFICES

WATERBURY, CONNECTICUT

MILLS AND FACTORIES

ANSONIA, CONN. TORRINGTON, CONN. WATERBURY, CONN. BUFFALO, N. Y. DETROIT, MICH. KENOSHA, WIS.

Canadian Mill: Anaconda American Brass Limited, New Toronto, Ont.

OFFICES AND AGENCIES

NEW YORK, N. Y., 25 Broadway
NEWARK, N. J., Military Park Building
BOSTON, MASS., One Forty Federal Street
PROVIDENCE, R. I., 131 Dorrance Street
PHILADELPHIA, PA., Architects Building
ATLANTA, GA., The Healey Building
PITTSBURGH, PA., Oliver Building
CLEVELAND, OHIO, Union Trust Building
DAYTON, OHIO, Third National Building
CINCINNATI, OHIO, Chamber of Commerce Building
CHICAGO, ILL., 1326 W. Washington Boulevard
ST. LOUIS, MO., Cotton Belt Building
HOUSTON, TEX., Post-Dispatch Building
SAN FRANCISCO, CAL., Russ Building

Products

ANACONDA SHEET COPPER, ROLL COPPER and ECONOMY STRIP COPPER.

For pages on Anaconda Extruded Architectural and Drawn Shapes, Brass and Copper Pipe and Copper Service Tubes, and Everdur Metal, see Manufacturers' Index.

Quality of Anaconda Sheet Copper

ANACONDA Sheet Copper is 99.9% pure, and guaranteed by THE AMERICAN BRASS COMPANY, the world's largest and most experienced manufacturers of copper and brass products. Manufacturing processes, developed during more than a hundred years of practical experience, insure uniform temper and accurate gauge.

Copper in a More Convenient Form

For valleys, flashings, gutters, rain-pipes, gutter linings and similar purposes, THE AMERICAN BRASS COMPANY has developed Economy Strip Copper.

This product is furnished perfectly flat, with edges parallel, in lengths of from 5 to 10 feet, inclusive, widths of 6 to 16 inches, and in 16-ounce weight. Economy Strip Copper is correctly tempered for forming. Its use eliminates the labor cost of flattening, cutting and trimming standard sheets. In addition, because of standardized production in large volume, Economy Strip Copper costs less than standard sheet copper.

Every length of Economy Strip Copper (trade-mark Reg. U. S. Pat. Off.) has the Anaconda trade-mark stamped in the metal—a guarantee of full weight, 99.9% pure copper.

Lead Coated Anaconda Copper

Anaconda Sheet Copper in standard weights, lead-coated on both sides, is readily obtainable from leading sheet metal distributors.

Trade-marked Leaders and Gutters

Arrangements have been made with a number of leading manufacturers whereby leaders and gutters, fabricated of Anaconda Sheet Copper, are available in all sections of the country with the Anaconda trade-mark embossed in the metal.

Anaconda Service is Nationwide

Large stocks of Anaconda Copper Sheets, Rolls and Strips at Ansonia, Conn., Buffalo, N. Y., Detroit, Mich. and Kenosha, Wis., enable distributors to meet any unusual requirement. The convenient location of these shipping points means prompt service and a saving in freight.

RECOMMENDED SIZES AND WEIGHTS OF COPPER FOR SHEET METAL WORK

Anaconda Economy Strip Copper should be used for all purposes where the required width does not exceed 16 inches. Where the required width exceeds 16 inches Anaconda Standard Sheet Copper should be used.

Purpose	Designation	Temper	Weight, oz.	Sizes	Number strips packed to crate	Area or length covered
Roofs	Flat seam	Soft	*16	14 x 20-in.	112	180 sq. ft.
				10 x 14-in.		82 sq. ft.
	Standing seam	Soft	*16	20 x 96-in.	25	284 sq. ft.
				30 x 96-in.		448 sq. ft.
	Ribbed seam	Soft	*16	20 x 96-in.	25	284 sq. ft. outside of battens
				30 x 96-in.		448 sq. ft. outside of battens
				6 in. x 6, 8, or 10-ft.	25 or 50	50 lin. ft., 8 sq.ft. for 2 x 3-in. ribs
Flashings and Gutter Linings	Base	Soft	*16	12, 14, 16, or 18-in. x 6, 8, or 10-ft.	25 or 50	150, 200, 250, 300, 400 or 500-lin. ft.
	Cap	Soft	*16	10 in. x 6, 8, or 10-ft.	25 or 50	150, 200, 250, 300, 400 or 500-lin. ft.
	Valley	Soft	*16	18 in. x 6, 8, or 10-ft.	25 or 50	150, 200, 250, 300, 400 or 500-lin. ft.
	Gutter linings	Soft	*16	12, 14, 16, or 18-in. x 6, 8, or 10-ft.	25 or 50	150, 200, 250, 300, 400 or 500-lin. ft.
	Shafts	Soft	*16	12, 14, 16, or 18-in. x 6, 8, or 10-ft.	25 or 50	150, 200, 250, 300, 400 or 500-lin. ft.
	Skylight base	Soft	*16	12, 14, 16, or 18-in. x 6, 8, or 10-ft.	25 or 50	150, 200, 250, 300, 400 or 500-lin. ft.
	Window heads, etc.	Soft	*16	6 or 8-in. x 6, 8, or 10-ft.	25 or 50	150, 200, 250, 300, 400 or 500-lin. ft.

Note: For flat seam roofs use 4 cleats to each sheet with 2 nails to each cleat.
For standing seam roofs use 9 cleats to each sheet with 2 nails to each cleat.
For ribbed seam roofs use 10 cleats to each sheet with 2 nails to each cleat.
**16-oz. copper meets all ordinary conditions,* but in special cases heavier or lighter weights are sometimes used.

APOLLO STEEL COMPANY

Manufacturers of Apolloy Metal Sheets, Roofing and Siding

GENERAL OFFICES
APOLLO, PA.

SALES OFFICES

BOSTON, MASS., Park Square Building
BUFFALO, N. Y., Marine Trust Building
CHICAGO, ILL., 180 No. Michigan Avenue
CINCINNATI, OHIO, 1002 American Building
CLEVELAND, OHIO, 1655 Union Trust Building
DETROIT, MICH., 2034 Dime Bank Building
INDIANAPOLIS, IND., 846 Illinois Building
LYNCHBURG, VA., 612 Krise Building
NASHVILLE, TENN., Nashville Trust Building
NEW ORLEANS, LA., 437 Decatur Street
NEW YORK, N. Y., 1372, 50 Church Street
PHILADELPHIA, PA., 607 Otis Building
PITTSBURGH, PA., Oliver Building
SAN FRANCISCO, CAL., Hunter-Dulin Building
ST. LOUIS, MO., 2817 Laclede Avenue
SYRACUSE, N. Y., Hills Building

Products

APOLLOY METAL (COPPER) STEEL.
HIGHWAY METAL PURE IRON.

Galvanized	Roofing Sheets
One Pass Cold Rolled	1¼, 2, 2½, 3 in.
Blue Annealed	Corrugated
Single Pickled	2-V, 3-V, 5-V Crimp
	Plain Roll Roofing

APOLLOY METAL COPPER STEEL

Apolloy Metal, Its Manufacture

The new materials entering into the various stages of fabrication are carefully analyzed in our own laboratory, assuring the use at all times of materials of the proper composition for the ultimate purpose intended.

The fundamental sheet mill operation—hot rolling—is done on the most approved rolling mill machinery under the direction of plant superintendents who give each order their careful and individual attention.

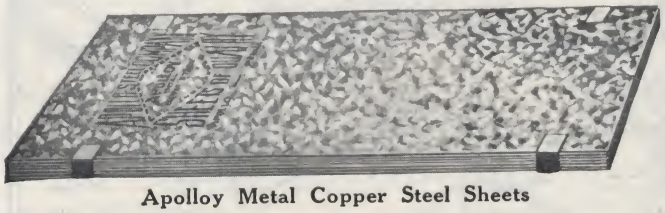
All sheets are rolled from soft ductile steel of special analysis to suit each individual requirement.

Apolloy Metal, Its Uses

Apolloy Copper Steel Sheets are manufactured in blue annealed, black and galvanized finishes. This brand has established for us an enviable reputation among our customers who have been using these sheets in the manufacture of their numerous products.

These sheets are especially recommended for exterior work such as roofing, siding, cornices, etc., for underground work such as vaults, culverts, tanks, etc., in fact, wherever the sheets will be exposed to the weather or other corroding agencies.

The extra cost of Apolloy Metal Copper Sheets is surprisingly low. Write to our nearest sales office for further particulars.

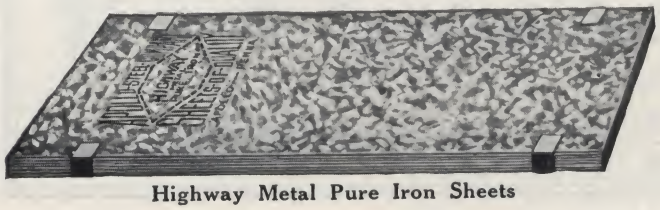


Apolloy Metal Copper Steel Sheets

Highway Metal Pure Iron

It is a known fact that the impurities in metal are the first to be attacked by corrosion. By eliminating impurities in-so-far as possible, it would follow that the resultant metal would have rust-resisting properties of the highest quality.

To supply the demand for this class of material we have specialized in commercial pure iron sheets. These sheets are especially suitable for use as corrugated metal culverts. Copper may be added in proper quantity and this imparts additional rust-resisting properties. The value of this material is attested by the fact that a number of State highway departments specify iron sheets exclusively.

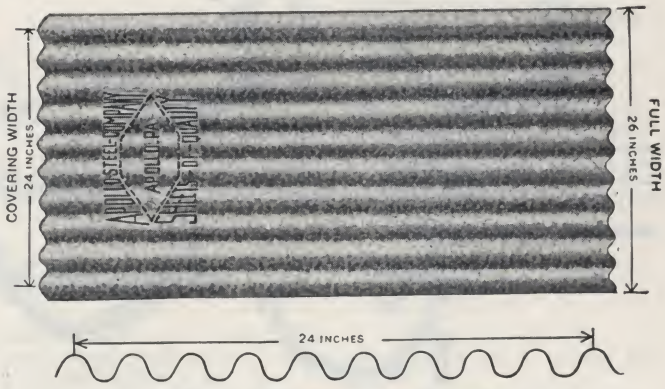


Highway Metal Pure Iron Sheets

Corrugated Steel Sheets

Made of best quality regular and copper content black and galvanized sheets.

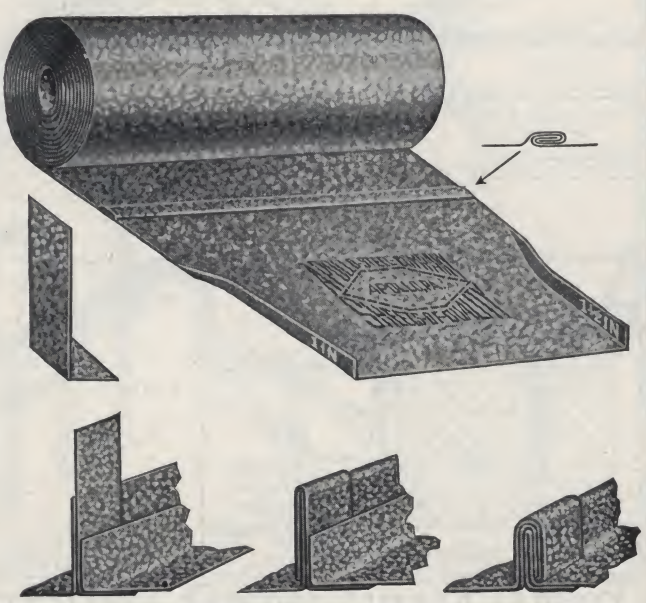
Corrugated sheets are the strongest form of sheet metal and are used for roofing and siding. The corrugations make the sheet more rigid and allow for expansion and contraction, adding strength to the structure to which applied. They are manufactured from flat sheets made in our own plant.



2½-in. Corrugated Steel Sheets

Plain Roll Roofing

Black and galvanized; 28 gauge and lighter. Put up in rolls of five sheets, full 50 ft., 26½ in. wide; each roll has covering surface of 100 sq. ft.



Plain Roll Roofing

BERGER BROTHERS COMPANY

Gutter Hangers and Conductor Pipe Fasteners

229-237 Arch Street, PHILADELPHIA, PA.

(See Display in the Architects' Exhibit in Indianapolis, Ind.)

Products

GUTTER HANGERS and CONDUCTOR PIPE FASTENERS, of malleable iron, wrought iron, solid cast bronze and copper channel.

Also a general line of Sheet Metal Workers' Requirements; "Shurlock" Conductor Pipe and "E-Z" Fit Eaves Trough; "Quaker City" line of Mitres, Ends, Caps and Outlets.

Manufacturers of Octagon and Polygon Conductor Pipe.

TRADE -B B- MARK

Our registered trade-mark appears on all products manufactured by us. This mark represents dependability, durability and strength and protects the purchaser against inferior imitations.

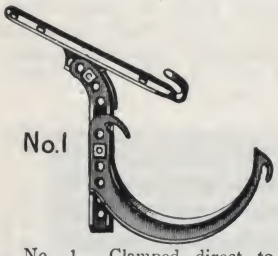
When specifying, full protection is assured by insisting that our trade-mark appear on every piece.

The Mark of Quality Which Protects the Purchaser

We are the originators, designers and manufacturers of the best grade of gutter hangers and conductor pipe fasteners on the market.

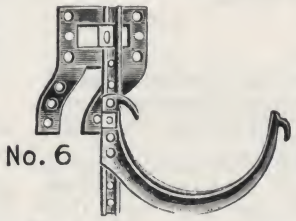
How Furnished—Made of malleable and wrought iron, plain or tinned (plain furnished unless otherwise specified), solid cast bronze and copper channel. All shanks and circles interchangeable. One bolt included with each hinged shank. Hinged shanks are adjustable to any pitch of roof. Shanks may be lengthened with our extension shanks.

Free samples on request.



No. 1. Clamped direct to metal roof, requiring only one bolt through the iron. Especially suitable for awnings and corrugated roofs

No. 5. Will span over various shaped mouldings and is easily bent larger or smaller before nailing to eave



No. 6. For nailing against O. G. mouldings. The two stays are made to fit in the cove and can be bent to suit variation

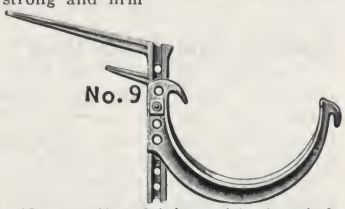
No. 7. For driving from 3 to 4 in. square in cornice. Lower prong forms a brace for the upper and makes it strong and firm

No. 8. For driving from 3 to 6 in. square in cornice. Intended for eaves where shingles project over the cornice

Penn Gutter Circle
For double bead gutters. Sizes, 3½, 4, 4½, 5, 6, 7 and 8 in.

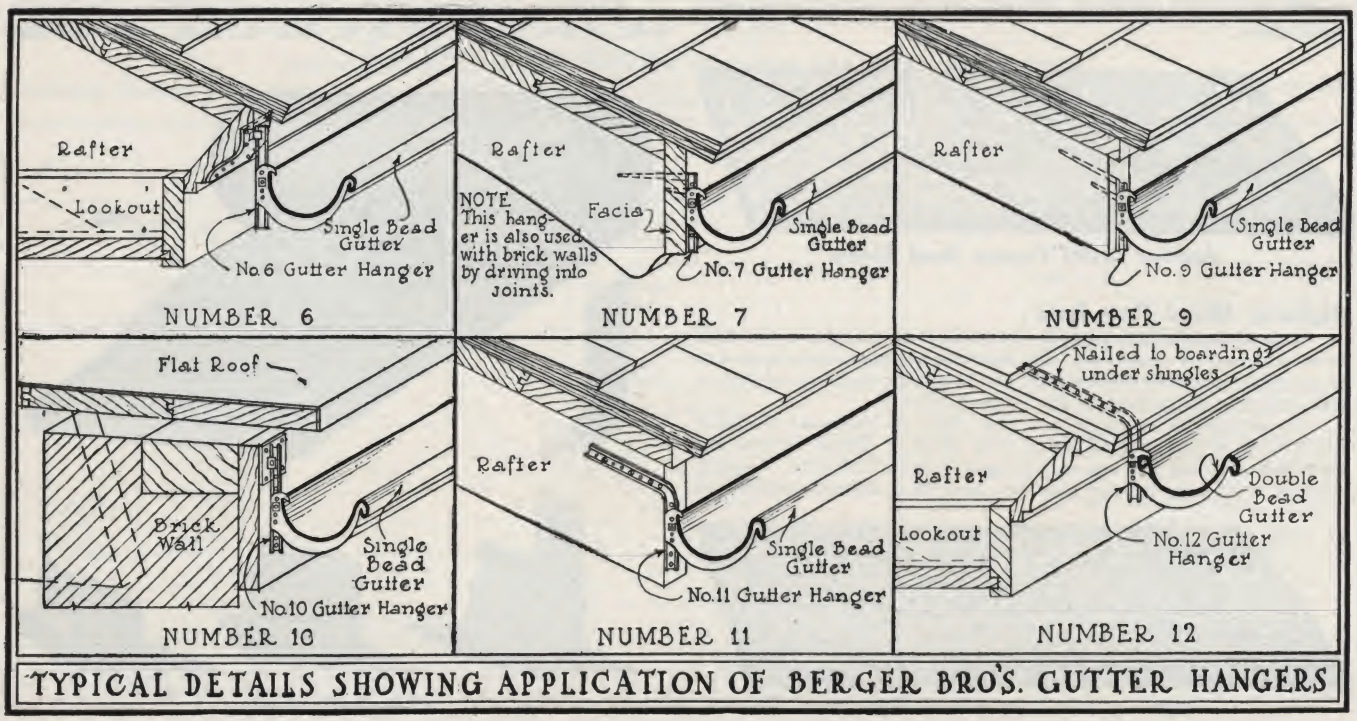
Gem Gutter Circle
For single bead gutters. Sizes, 3½, 3¾, 4, 4½, 5, 6, 7 and 8 in.

Circles are applicable to any B. B. hanger



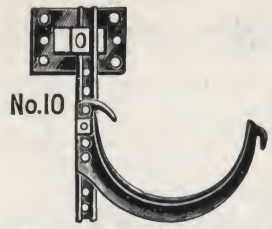
No. 9. For driving with the pitch of the roof. Suitable for narrow moulded cornice

B. B. Gutter Hangers

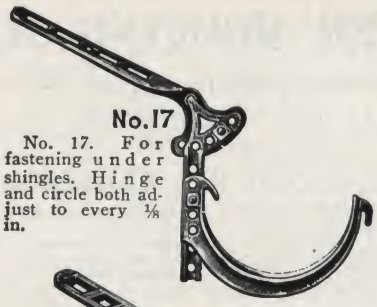


TYPICAL DETAILS SHOWING APPLICATION OF BERGER BRO'S. GUTTER HANGERS

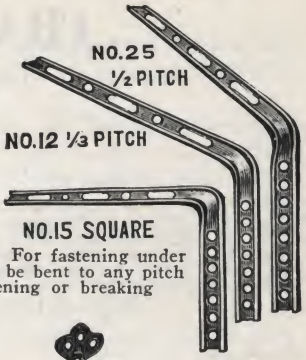
Continued on next page



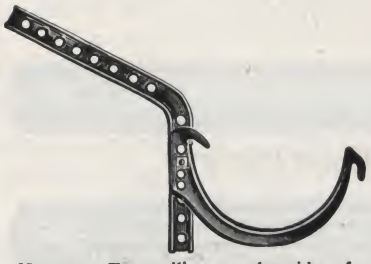
No. 10. For nailing against square box cornice



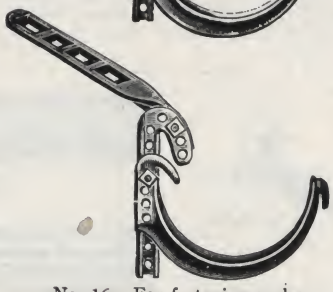
No. 17. For fastening under shingles. Hinge and circle both adjust to every ⅛ in.



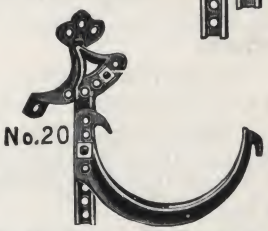
Nos. 12, 15 and 25. For fastening under shingles or slate. Can be bent to any pitch of roof without weakening or breaking



No. 11. For nailing to the side of exposed rafters



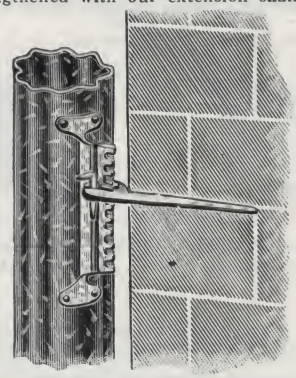
No. 16. For fastening under shingles

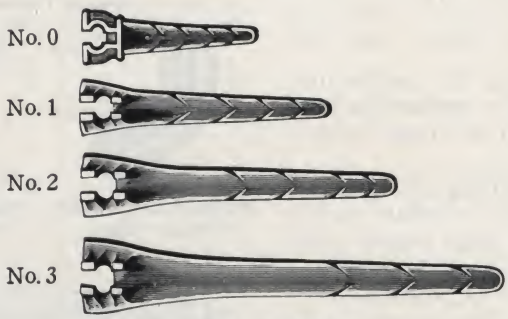


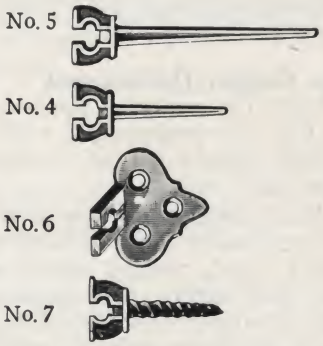
No. 20. For nailing or screwing to various shaped mouldings at any angle desired. Hinged for any pitch of roof

B. B. Gutter Hangers

Made of malleable and wrought iron, plain or tinned (plain furnished unless otherwise specified), solid cast bronze and copper channel. All shanks and circles interchangeable. One bolt included with each hinged shank. Hinged shanks are adjustable to any pitch of roof. Shanks may be lengthened with our extension shanks. Free samples on request



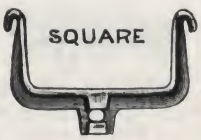


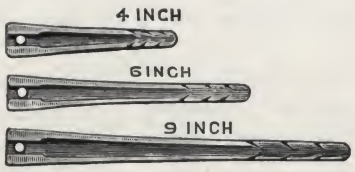


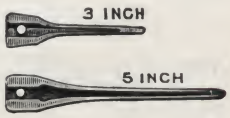
Pipe Fasteners

For fastening all kinds of conductor pipes at any distance from the wall. Used in any position and allow enough variation to let pipe slip together until tight in the joints. Needs no close measuring on wall to find a joint for the drive

No. 0. For brick, 3 in. No. 1. For brick or stone, 4½ in. No. 2. For stone, 6 in. No. 3. For stone, 9 in. No. 4. For wood, 3 in.
No. 5. For wood, 5 in. No. 6. To nail on wood. No. 7. To screw in wood.

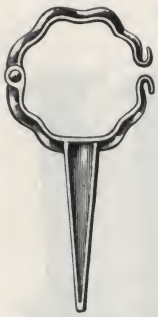






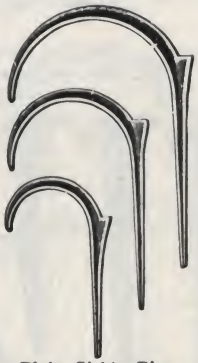
Clasp Pipe Hooks

For fastening conductor pipe to wood, brick or stone at any distance from the wall. Length drives: 3 and 5 in. for wood; 4, 6 and 9 in. for brick and stone

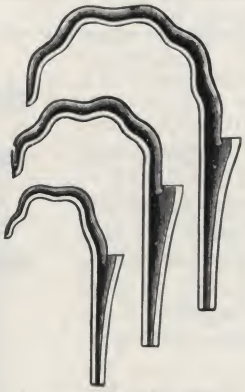


Round Corrugated Hinged Pipe Hook
With wood and brick drive. Sizes, 2, 3, 4, 5 and 6 in.

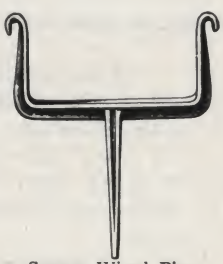
Plain Round Hinged Pipe Hook
With brick drive in 2, 3, and 4 in., and wood drive in 2, 3 and 4-in. sizes.



Plain Sickle Pipe Hooks
With wood and brick drive. Sizes, 2, 3, 4, 5 and 6 in.



Corrugated Sickle Pipe Hooks
With wood and brick drive. Sizes, 2, 3 and 4 in.



Square Wired Pipe Hook
With wood and brick drive. Sizes, 3, 4, 5 and 6 in.

Round Wired Pipe Hook
With wood drive. Sizes, 3 and 4 in.

B. B. Conductor Pipe Fasteners and Hooks

Made of tinned malleable iron and of solid cast bronze

CHASE COPPER ROOFING MATERIALS

Drawn Brass Door Saddles and Sill Mouldings

CHASE BRASS & COPPER CO.
—INCORPORATED—
WATERBURY, CONN.

NEW YORK, N. Y., 80 Lafayette Street
BOSTON MASS., 411 "D" Street
BUFFALO, N. Y., 25 Ellicott Street
NEWARK, N. J., 361 Halsey Street
PHILADELPHIA, PA., 46 No. 6th Street
BALTIMORE, MD., 307 E. Lombard Street
MINNEAPOLIS, MINN., 145 No. 10th Street
PITTSBURGH, PA., 855 North Avenue, West
CINCINNATI, OHIO, 222 Post Square
CLEVELAND, OHIO, 5005 Superior Avenue
DETROIT, MICH., 2798 E. Grand Boulevard
CHICAGO, ILL., 1300 W. Harrison Street
MILWAUKEE, WIS., 512 North Water Street
ST. LOUIS, MO., 314 No. 2nd Street
NEW ORLEANS, LA., 429 Camp Street
DALLAS, TEX., 1407 Main Street
LOS ANGELES, CAL., 210 Central Avenue
SAN FRANCISCO, CAL., 680 Second Street
OAKLAND, CAL., 1808 Peralta Street
SEATTLE, WASH., 1957 First Avenue, So.

Products

CHASE

COPPER DOWNSPOUTS, ELBOWS, SHOES, STRAPS, STRAINERS, HEADS.

COPPER GUTTERS: MITERS, END PIECES, CAPS, OUTLETS and HANGERS.

SHEET COPPER; COPPER NAILS; COPPER SHINGLES.

DRAWN BRASS DOOR SADDLES and SILL MOULDING.

Also, Snow Guards; Copper Ridge Caps, Rolls, Valleys and Flashings; Brass and Bronze Railings; Grilles; Ornamental Wire Work.

For Chase pages on Bronze and Copper Screen Cloth, Brass Pipe, Copper Water Tubing and Fittings, see Manufacturers' Index.

Chase Copper Downspouts

Only 16-oz. pure copper will give the satisfactory long life and permanently trim, neat appearance that rightfully should be and is expected of copper downspouts and gutters.

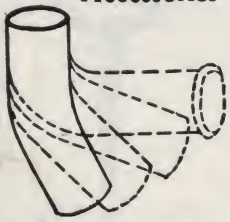
Every length of Chase downspouting and gutter is clearly embossed with our name and the standard weight of hard rolled, roofing temper pure sheet copper from which it is made. Our name and brand mark on a length of copper downspout or gutter is positive assurance of full net weight, standard quality material. All Chase copper products are unconditionally guaranteed.

In order to meet requirements of the building trades for prompt service we carry on hand in our warehouses, ready for *immediate* shipment an extensive stock of copper downspouts comprising the following sizes and kinds.

Copper Downspouts	Weight of copper, oz.	Lengths, ft.	Diameter, in.
Plain round	16	10	2, 3, 4, and 5
Corrugated round	16	10	2, 3, 4, 5 and 6
*Corrugated square	16	10	2, 3, 4, and 5

*From long custom this type of downspout is termed "square," whereas it is in reality rectangular in shape. Sizes carried in our stock as noted above are standard. Actual measurement of 2-in. "square" corrugated downspout is 1¾x2¼ in.; 3 in. = 2⅜x3¼ in.; 4 in. = 2¾x4¼ in.; 5 in. = 3¾x5 in.

Chase Copper Downspout and Gutter Fittings and Accessories



No. 1 45° No. 2 60° No. 3 75° No. 4 90° Shoe

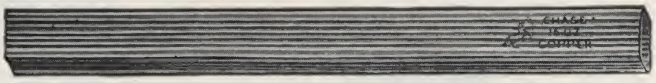
Types of Downspout Elbows

Elbows, shoes, miters, endpieces, caps and outlets are also carried in our warehouse stock in sizes and patterns to correspond with foregoing stock items of downspouts and gutters.

Downspout elbows are ordinarily designated by "number" and diameter. "Number" indicates degree of angle (see accompanying sketch).

Round Plain Copper Downspout

Round Corrugated Copper Downspout

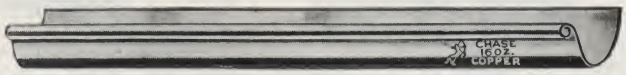


Square Corrugated Copper Downspout

Round Corrugated Copper Shoe

Diamond Pattern Copper Leader Head

Square Corrugated Copper Shoe



Half Round, Single Bead, Copper Gutter

Copper Gutter Endpiece with Outlet and Cap

Copper Downspout Strainer

Copper Gutter Miter

Simplex Copper Downspout Strap
Will fit round and square downspouts

Copper Nails

Continued on next page

Chase Copper Gutter

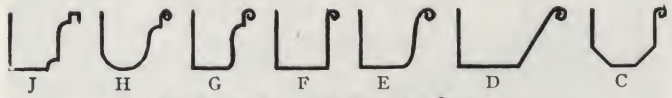
Single bead, lap joint half round. Stock sizes: 16-oz. copper, 10-ft. lengths, 4, 5, and 6-in. diam.

Double bead, half round gutter, also double or single bead, *slip* joint types can be furnished promptly to special order.

While it is possible for a skilled metal worker to make satisfactory quality copper gutter, this practice leaves the architect without positive means of knowing that full weight, 16-oz. copper has been installed on a residence, in accordance with specifications.

Like our Chase Copper Downspouts, we advocate the use of *factory made* material and for purposes of quick identification and as our positive guarantee of standard quality, every length of genuine Chase copper gutter is indelibly die stamped with our name and the full standard weight of copper sheet from which it is made.

To meet special requirements a variety of "OG" and other types of copper gutters can be made to order promptly. The following suggested patterns give some idea of our facilities in this direction.



Styles of Special Copper Gutters

End or contour views showing some types of "OG" and special patterns of copper gutters that can be made promptly to special order (not drawn to scale). These designs may be varied in any particular to conform with architects' plans and can be made in any size desired

Chase Sheet Copper

Has a reputation with the roofing and sheet metal working trades as a dependable, uniformly satisfactory product.

Every step in the production of Chase sheet copper from mine to ingot and from ingot to the rolled sheet is carried out in full accordance with present day standards and improved methods.

Chase sheet copper is as near 100% pure as any sheet copper can be made.

By writing Chase Copper into specifications you will have the satisfaction of knowing that you are providing for material with a thoroughly tried and proved reputation for quality.

Chase Lead Coated Copper

For roofs, valleys, flashings, leaders, gutters and other outside metal trim on country houses or public buildings where "English" style of architecture is a feature.

Can be furnished in any required size. Coated on one or both sides, as desired.

The cost is only a fraction of that of hard lead or cast lead fittings. It is much lighter than pure lead and therefore easier to handle and support. It will not dent and damage as easily as pure lead. It can be made into downspouts, gutters, downspout heads, straps and other roofing accessories.

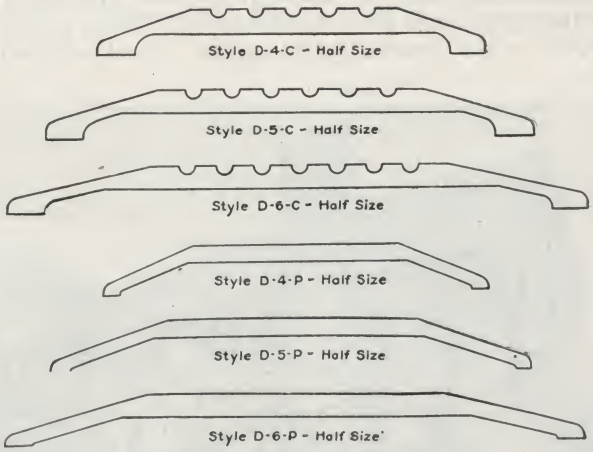
Chase Drawn Brass Door Saddles

Ready to ship from warehouse stock in two types, *plain* and *corrugated;* and in three widths, *four, five* and *six-inch* (see drawings of cross sections opposite).

Drawn brass saddles should not be confused with *cast* brass equipment, which is much softer and less durable than drawn metal for this purpose.

Iron door saddles will rust and are unsightly; marble and stone wear away quickly, also chip and crack easily; while wood is wholly unsuitable for use where there is any great amount of traffic. Drawn brass saddles are ideal for both interior and exterior use.

Furnished ready cut to specific lengths or in random mill lengths up to *twelve feet.* Notched end cuts will be made without charge provided they can be made on a circular bench saw. Any odd width up to *six inches* can be furnished from mill where quantity required is sufficient to warrant special manufacture.



Drawn Brass Door Saddles
(Not drawn to scale)

Showing Method of Installing Chase Drawn Brass Sill Moulding
(Not drawn to scale)

S-1-F
Cross section, actual size

S-2-V
Cross section, actual size

S-3-P
Cross section, actual size

Chase Drawn Brass Weatherproof Sill Moulding

Every wood frame casement window and outside French door should have a strip of non-rustable weatherproof moulding installed on the sill.

We specialize in brass moulding for this purpose and have tools for the manufacture of a variety of types, three of which are illustrated here.

Combination brass door saddles and weatherproof sill mouldings are in great favor for suburban residences and we can furnish practically any type or size to special order provided the quantities required are large enough to warrant special manufacture.

Samples and further details regarding standard types and sizes gladly furnished upon request.

FOLLANSBEE BROTHERS COMPANY

Follansbee Forge Roofing

GENERAL OFFICES
PITTSBURGH, PA.
MILLS: FOLLANSBEE, W. VA., and TORONTO, OHIO
OFFICES AND WAREHOUSES

DETROIT, MICH. CHICAGO, ILL. MILWAUKEE, WIS. ROCHESTER, N. Y. CINCINNATI, OHIO MEMPHIS, TENN. NEW YORK, N. Y. CLEVELAND, OHIO BUFFALO, N. Y. NASHVILLE, TENN. PHILADELPHIA, PA. INDIANAPOLIS, IND.
SAN FRANCISCO (Tay-Holbrook, Inc.)
DISPLAY: INDIANAPOLIS, IND., ARCHITECTS AND BUILDERS BUILDING

Products

Follansbee Forge Best Roofing Sheets for roofing and architectural sheet metal work.

Conductor Pipe, Elbows, Eaves Trough, Ridge Roll, etc.

For Follansbee Fresh Air Heating System, see Manufacturers' Index.

FORGING ADDS STRENGTH

Follansbee Service to Architects

The services of an experienced staff of specialists in roofing are available to architects and engineers in solving problems involving unusual conditions.

Characteristics and Properties

Appearance—A Follansbee Forge Roof has a distinctive appearance. The standing seams and battens cast shadows and show high-lights that give pleasing effects and color variations. The standing seams and battens may be of various heights and sizes and may be spaced to give the best design for the architectural requirements. May be painted any color at any time, thereby completely changing the appearance and corresponding to other painting and decoration of the building.

The combination of battens and pressed standing seams adds greatly to the appearance, particularly on the larger and monumental types. Being either double locked pressed seams or flat locked soldered seams, there are no small parts to become loose or displaced.

Follansbee Forge Roof, St. Paul's Cathedral, Detroit, Mich.
Cram & Ferguson, Architects; George Mason, Associate Architect

Follansbee Forge Roof, Residence of Dr. Ralph Lynch, Pittsburgh, Pa.
Brandon Smith, Architect

Strength, Expansion, etc.—Tensile strength: 45,000 lbs. per sq. in.

Expansion: The lineal expansion is .825 in. per hundred ft. per 100° F.

Electrical conductivity: The building with a Follansbee Forge Roof is afforded protection from lightning when the roof is grounded by the conductor pipe or otherwise.

Durability—Many of the oldest buildings remaining from Colonial days are still covered with the original roofs of this type. Roofs within present recollection ranging to 45 years of service are still in good condition and continue to remain so with no more attention than occasional painting.

Weight—Follansbee Forge Roofing is practically the lightest of roofings. In many cases a great saving in materials in the supporting structure is made. This is an important consideration when figuring the comparative cost of various roofing materials.

Follansbee Forge Roof, Taylor Allderdice High School, Pittsburgh, Pa.
Robert Maurice Trimble, Architect

Continued on next page

Fire Protection—Tests and actual experience in conflagrations have proved that the tin-clad wood fire door is the most effective barrier to flame. A Follansbee Forge Roof gives the same protection to the upper part of the building. The fire cannot penetrate the unbroken sheet of metal, the seams made in application make it continuous. In case of fire from within the building the Follansbee Forge Roof acts as a blanket and will often hold together intact, and prevent the disastrous upward draughts which often carry sparks and embers.

The Brand Name

Follansbee Forge Best Roofing was formerly known as Scott's Extra Coated. This product marketed for more than forty years under the old registered trademark has proved its quality through long dependable service.

Follansbee Forge
BEST ROOFING
40 lbs.

What Trade Symbols Signify

IC, IX, No. 28, No. 26 and No. 24 gauge denote the thickness or weight of steel sheets called black plate before the coating is applied. 112 sheets 20x28 in. IC Follansbee Forge Best Roofing weigh 246 lb., and 112 sheets 20x28 in. IX Follansbee Forge Best Roofing weigh 302 lb.; both including 40 lb. of coating. The numbered gauges are made to the same net weight per square foot as galvanized steel sheets, including 40 lb. of coating to each 436 sq. ft. of sheets. The thickness of IC before coating is approximately .0122 in. and IX is approximately .0155 in.

Follansbee Forge Roof
BRANDON SMITH, Architect

What Follansbee Forge Roofing Is

Follansbee Forge Roofing is forged metal coated with a mixture of tin and lead. It can be worked into intricate shapes, folded, bent, stretched, shrunk and fastened. The metal is Follansbee Open Hearth Copper Content Forged Steel. Chemically the purest quality practical for the purpose and physically perfect due to the forging process. The copper is added to the molten metal and in solution becomes diffused evenly throughout the entire mass, forming an alloy and bringing about a further chemical improvement, increasing the working and wearing qualities of the finished product. The pure molten metal is cast into ingots. The ingots are reheated and by 1000-ton pressure are forged to the greatest density. Forging increases the ductility and strength and makes perfect the physical structure of the metal. The Follansbee Forge Billets are then rolled into sheets and the coating is applied.

The coating amounts to 40 lb. to the box, 112 sheets 20x28 in. or equal area and is evenly distributed over all parts of every sheet. The inspection of the sheets before and after coating is most rigid. Only strictly all prime sheets are branded "Follansbee Forge Best Roofing."

Follansbee Forge Roof
THE AUSTIN COMPANY, Builders

STOCK SIZES

Gauge No.	Sizes, in.
IC	14x20, 20x28, 14x96, 20x96, 24x96, 28x96, 30x96
IX	14x20, 20x28 (for Long Sheets see No. 28 gauge)
28	10x96, 14x96, 20x96, 24x96, 28x96, 30x96
26	24x96, 26x96, 28x120, 30x120
24	Up to 30x120 not carried in stock but made to order in lots of one ton or more per item

Maximum sizes: widths 36 in., lengths 120 in.

APPROXIMATE WEIGHT

Gauge No.	Approx. weight per sq. ft., oz.	Approx. weight per sq. ft., lb.	Approx. weight on roof laid, lb.
IC	9.028	.564	62
IX	11.08	.692	76
28	12.5	.7812	86
26	14.5	.9062	100
24	18.5	1.156	127

Follansbee Forge Roof
ROBERT MAURICE TRIMBLE, Architect

Continued on next page

METHODS OF APPLICATION OF FOLLANSBEE FORGE BEST ROOFING

Construction details are shown on Plate I, second page following. Finished construction is indicated by letter (A, B, etc.) and progressive steps in forming the seams are indicated by numbers. Roofing details are shown on Plates II, third page following, and III, fourth page following, and can be identified by the same letters and numbers as are shown on Plate I describing the details. Examples of application are shown on Plate IV, fifth page following.

Directions for Forming Standing Seam

To form standing seams, make vertical bend along the longer dimensions of sheets or rolls, on one side 1½ in. high and on the other side 1¼ in. high. Place first course in position with painted side down. Do not nail through the sheets. Use cleats, made of the same material. Nail cleats every 8 in. along the 1¼-in. upturned edge. Bend the cleat ¼ in. over top of the upturned edge and bend the other end of cleat over nailhead. Place next course in position with the 1½-in. flanged edge adjoining the one attached to the roof. Bend ¼ in. of the 1½-in. flanged edge over the 1¼-in. cleated edge, forming a single lock standing seam 1¼ in. high; continue by turning over ¼ in. of the standing seam, thereby forming a double locked standing seam 1 in. high. Press the seam tightly together in each operation. Stagger cross seams to avoid extra thickness in pressed standing seams.

To finish with seamless ridge, edge the sheets or rolls with 1¼ and 1½-in. upturned edges in the usual way of applying standing seam roofing, but allow each course to extend 12 in. or more above the ridge cone. Cut the upturned edges and bend the sheet over the ridge and down on the other side of the roof. Continue to form the double locked standing seam as usual. Finish standing seams at ridge by attaching with solder, pressed ridge caps made of the same material.

Directions for Forming Flat Locked Seam

Notch corners of the sheets and turn ½-in. edges (top and one end turned up and bottom and one end turned under) to form ½-in. flat seam.

Do not nail through the sheets. Attach sheets to roof with cleats made of the same material. Use two cleats to each 14-in. side of sheets and on longer sheets place cleats at 8-in. intervals.

Nail cleats to sheathing board. Bend one end of cleat over nailheads and hook the other end of the cleat into the ½-in. edge formed on sheet. Lay sheets according to the flow: i.e., placing the sheet higher on the roof over the upper edge of the lower adjoining sheet.

Stagger all joints. Seams to be malleted down to form flat overlapping surface. Carefully mallet the seams to avoid buckling. Soak the seams well with half-and-half solder, using rosin as a flux.

Directions for Forming Ribbed or Batten Seams

Usual size of batten ranges from 2x2 to 4x4 in.—finished seam should be not less than 1 in. high.

Before beginning the first course be governed by proper application at drip edges, end or side walls, ridges, gutters, valleys, etc. All cross seams to be flat locked and soldered. Formation of batten seams to be according to blue print showing finished seam (Fig. C) and progressive steps in forming and attaching with cleats (Figs. 1, 2 and 3). Ribbed seams at ridge and hip to be constructed as described in blue print (Fig. J). Ends of battens to be constructed the same as Fig. H and progressive steps in forming Nos. 1, 2 and 3.

Do not drive nails through sheets. Use cleats, spaced at intervals of 8 in. Stagger the cleats along battens, also all flat lock soldered seams to avoid extra thickness. All work must be painted immediately after application.

Directions for Forming Gutters, Valleys and Flashings

Valleys and Flashings—Use Follansbee Forge Best Roofing 40 lb. IC 96-in. sheets (**). Paint one side and dry well before applying painted side down.

Gutters and Valleys—All cross seams to be flat lock soldered. Joints to be made according to the flow with higher sheets overlapping lower sheets. No seams to be made the long way. Do not drive nails through sheets. Use cleats spaced at 8-in. intervals.

Drip Edges and Flashings—When strips are nailed to the building instead of cleats follow diagram in forming and finishing sheets to cover all nailheads. All work to be painted immediately after application to roof.

General

Painting—The underside of all Follansbee Forge Best Roofing to be well painted and dried before applying. All Follansbee Forge Best Roofing to be painted promptly after being applied to the roof.

Paint—Use Imported Spanish Oxide of Iron mixed with pure boiled linseed oil. *(Finishing coat may be of any color.)*

Paper Lining—All Follansbee Forge Best Roofing to be laid on rosin sized paper. Tar paper and other grades containing acid prohibited.

Nails—No nails shall be driven through the sheets. All sheets must be attached to the sheathing with cleats. Cleats to be nailed to the sheathing boards and locked into the seams of the roofing sheets. For drip edges and flashing use strips. Nail the strips and lock them into the sheets as shown in the diagram. ⅞-in. coated barbed wire nails should be used in all cases. (In no instance should nail go through sheathing.)

Solder—All solder used shall be strictly half-and-half, and all cross seams to be well soaked with solder, excepting where expansion joints are required.

Soldering Flux—Rosin only shall be used as a flux for soldering. Remove excessive rosin at seams before painting.

Insulation—Follansbee Forge Best Roofing is adaptable for application over any standard type of insulation.

Notes:

(*) Specify size of sheets 14x20, 20x28, 14x96, 20x96, 28x96, 30x96 in. Specify if wanted in IC or heavier weight IX, or in gauges No. 28, 26 or 24. The coating is the same in each gauge—the difference is in the thickness of the Follansbee Forge base plates before coating. Specify if courses are to be of 14, 20 or 28 in. sheets, according to the architectural design or effect desired.

(**) Specify if required in sheets 14x20, 20x28 in., or in Long Sheets 14, 20, 24, 28 or 30x96 in. Also specify if wanted in IC or heavier weight IX or in gauges No. 28, 26 or 24. The coating is the same in each gauge—the difference is in the thickness of the Follansbee Forge base plates before coating. Long Sheets are better for gutters, valleys and flashings on account of the smaller number of cross seams.

Continued on next page

SPECIFICATIONS FOR FOLLANSBEE FORGE BEST ROOFING

Standard Specifications

All roof surfaces of this building shall be covered with Follansbee Forge Best Roofing. (Specify IC, IX, No. 28, 26, or 24 gauge as required for all or any part). Each sheet identified with brand name. No substitute for the above brand will be allowed.

Follansbee Forge Best Roofing shall be laid on selected waterproof paper (tar paper and other qualities containing acids prohibited). No nails shall be driven through the sheets. All solder used shall be strictly half-and-half. Rosin only shall be used as a flux for soldering and all rosin must be removed from seams before painting.

Follansbee Forge Best Roofing shall be painted both sides with one coat of Imported Spanish Oxide of Iron (containing not less than 85% Sesqui Oxide of Iron), ground and mixed in pure boiled linseed oil containing not less than 40% Open Kettle Boiled Linseed Oil. Lower coat to be applied in the shop and thoroughly dry before sheets are laid. First upper coat applied immediately after roof is completed; second or finishing coat three days later. This shall be a lead base paint mixed with Open Kettle Pure Boiled Linseed Oil, and of a harmonizing color. All painting shall be done with a hand brush and well rubbed in, and shall be part of the roofing contract.

The roofers shall wear rubber shoes and no unnecessary walking over the roof or using the same for storage of other material will be allowed. All workmanship guaranteed for one year.

When pitch of roof is 3 in. or less to the foot, it is to be laid Flat Lock 20x28-in. sheets, each sheet carefully notched and edged, edges ½ in. Sheets are to be laid on roof, one sheet at a time, the narrow way. Each sheet is to be secured to sheathing with four cleats, three on the long side, one on the short side; cleats to be 1½ in. wide and carefully hooked over ½-in. edge and nailed to sheathing with two ⅞-in. roofing nails to each cleat. The seams are to be thoroughly and smoothly hammered down with wooden mallet and carefully soldered with large coppers, using not less than 6 lb. of solder to each square of roofing.

When there is sufficient pitch the roof is to be laid Standing Seam using 20x28, or 14, 20, 24, 28 or 30x96-in. sheets, courses applied the narrow way, the ends to be locked with ½-in. seams and carefully soldered. The courses are to be joined with double locked Standing Seams secured to sheathing with cleats every 8 in., using two ⅞-in. roofing nails to each cleat. (In no instance should the nail go through the sheathing.) The edges for Standing Seam shall be turned up 1¼ in. and 1½ in., the Standing Seam to be 1 in. when completed.

All valleys and gutters shall be applied Flat Lock, sheets laid the narrow way, and of sufficient pitch to prevent any water standing therein.

For flashings Follansbee Forge Best Roofing to be turned up not less than 6 in. at chimneys and fire walls and to be cap flashed 4 in., cap flashings to extend into brickwork 1 in. and to be firmly wedged in with wedges not over 15 in. apart. Fill openings in brickwork with portland cement.

Over Concrete Roof

Sheet Metal Work—All roof surfaces shall be covered with Follansbee Forge Best Roofing; the flat roof surfaces shall be flat seam, with the edges of the sheets turned ½ in. and with all seams locked together and well soaked with solder. Sheets to be fastened by cleats spaced 8 in. apart, locked into the seams and fastened to the roof with two ⅞-in. barbed wire coated nails. (In no instance should the nail go through the sheathing.) No nails shall be driven through the sheets, which shall be 20x28 in. (Specify IC, IX, No. 28, 26, or 24 gauge as required for all or any part.)

The sloping roofs shall have wood ribs, installed as specified under carpenter work and spaced as shown; the sheets shall be turned up at the ribs and fastened by cleats spaced as specified above and nailed to the ribs, which shall then be covered with a sheet metal cap.

Carpenter Work—The roofing shall be laid over rosin sized sheathing paper.

All flat roof surfaces shall be sheathed with surfaced boards of the best quality, securely nailed to 3x4-in. creosoted cypress strips spaced 1 ft. 6 in. on centers and bolted to the roof with ⅜-in. galvanized bolts 24 in. on centers, with a nut and large galvanized washer on the bottom of each bolt; the bolts and washers shall be installed by others as specified under Cement Tile Roofing.

All sloping roof surfaces shall be ribbed as shown and detailed; each rib shall be constructed of two pieces of 2x4-in. (according to the effect desired, specify ribs of any other sizes desired) creosoted cypress bolted to the roof as specified above, except that all bolts, nuts, washers, etc., shall be installed under this heading.

FOLLANSBEE FORGE FIRE DOOR STANDARD FOR FIRE DOORS AND SHUTTERS

This plate conforms with the specification approved by the Underwriters' Laboratories, Inc. The base plates are Follansbee Forge copper content, superior working and wearing quality metal. The coating is 20 lb. as required by the Underwriters' specifications. All prime, resquared. IC 14x20 in., 112 sheets per box. Each sheet stamped with trade-mark. Also made in 20x28 and 14x28 in.

FOLLANSBEE BROTHERS CO
Follansbee Forge
FIRE DOOR STANDARD
IC 20 LBS

FOLLANSBEE FORGE BEST ROOFING ACCESSORIES

Made of 26 gauge and 28 gauge long sheets. Conductor pipe and elbows are painted both sides at factory—other items shipped not painted.

Conductor Pipe and Elbows

Plain round, round corrugated and square corrugated.

Round diameter: 2, 3, 4, 5, 6 in.; length 10 ft.

Square corrugated: 1¾x2¼, 2¼x3¼, 2¾x4¼, 3½x5 in.; length 10 ft.

Eaves Trough, Mitres, End Caps and Outlets

Single bead and double bead, lap joint and slip joint. Sizes 3½, 4, 5, 6, 7, 8 in.; length 10 ft.

Ridge Roll

Plain and "V"-capped. Sizes 1¼, 1½, 2, 2½ and 3 in.; girth 7, 8, 10, 12 and 14 in.; length 10 ft.

Box and Roof Gutters

Girth 8, 10, 12, 14 and 15 in.; length 10 ft.

Special Designs

Special designs of conductor pipe and O.G. box gutters can be made locally by using long sheets.

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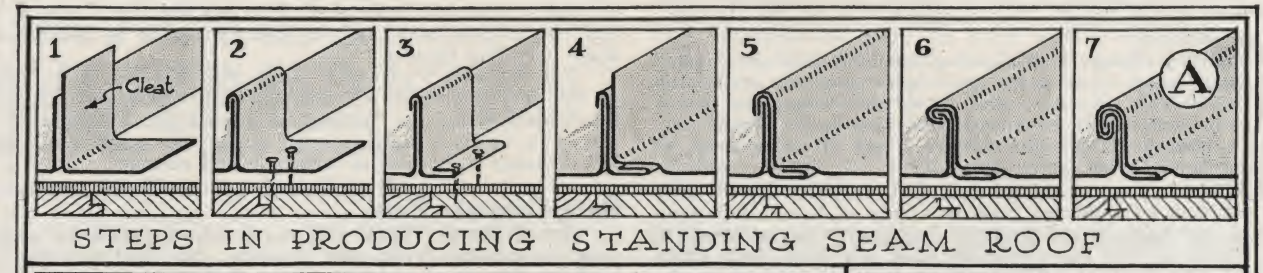
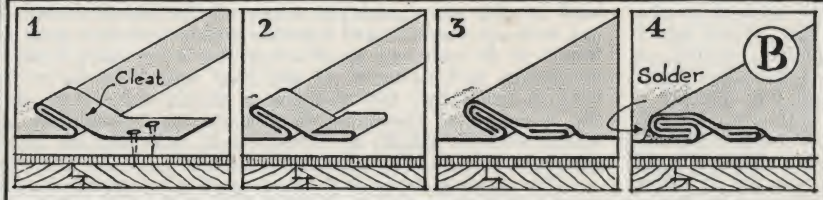
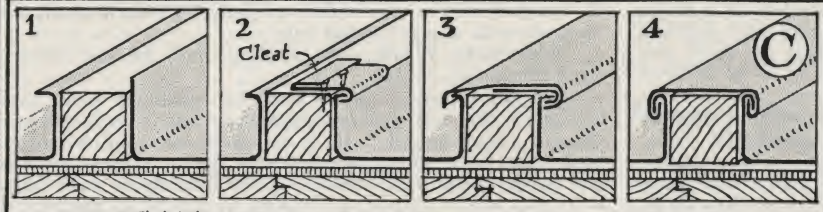


STEPS IN PRODUCING STANDING SEAM ROOF



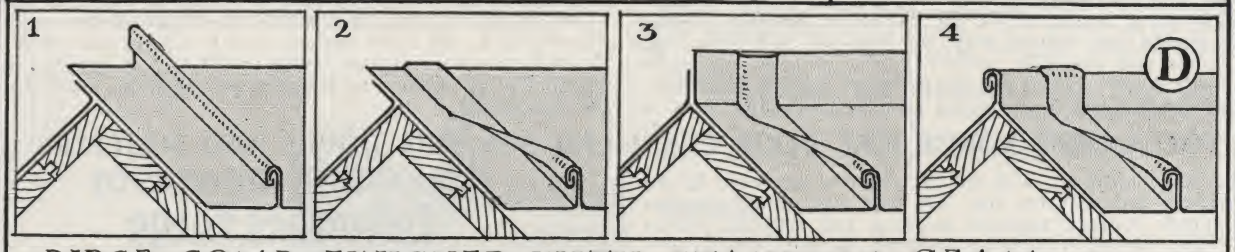
APPLICATION OF FLAT SEAM ROOF



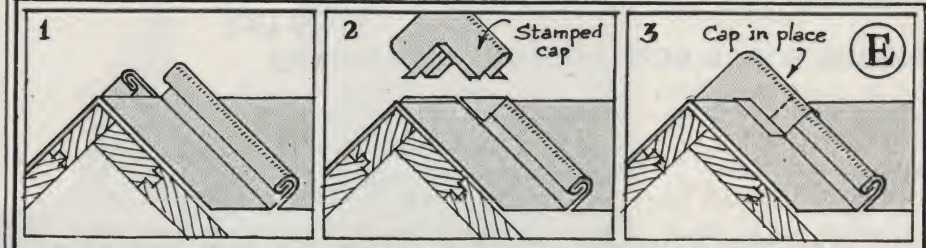
APPLICATION OF RIBBED SEAM ROOF

LEGEND

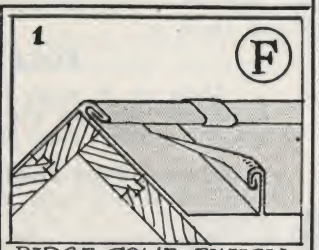
THE DRAWINGS ON THIS SHEET SHOW THE THREE STANDARD TYPES OF TIN SEAMS A-B-C AND THEIR APPLICATION AT RIDGE, VALLEY AND GUTTER••• PROGRESSIVE STEPS ARE NUMBERED CONSECUTIVELY AND FINAL CONDITION NOTED BY LETTER THUS Ⓐ ETC•• ALL SEAMS ARE OPENED OUT TO SHOW CONSTRUCTION CLEARLY•• DRAWINGS ARE NOT MADE TO SCALE, BEING ONLY DIAGRAMMATIC••••••



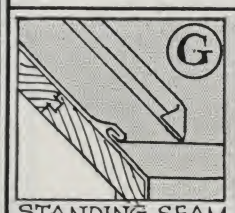
RIDGE COMB FINISHED WITH STANDING SEAM



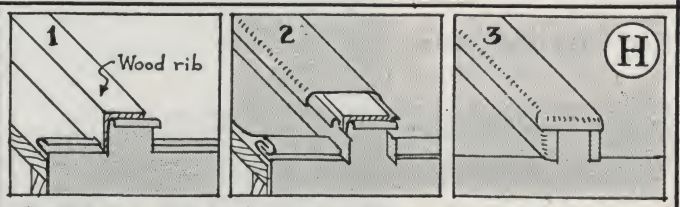
RIDGE COMB FINISHED WITHOUT SEAM



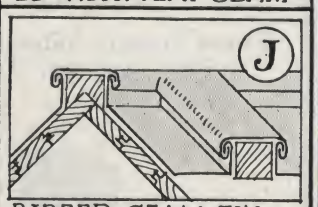
RIDGE COMB FINISHED WITH FLAT SEAM



STANDING SEAM GUTTER OR VALLEY



RIBBED SEAM FINISHED AT GUTTER



RIBBED SEAM FINISHED AT RIDGE

FOLLANSBEE FORGE
PITTSBURGH·PENNA

SEAM DETAILS

PLATE NUMBER I

Continued on next page

FIG. 1

METAL-COVERED PENT HOUSE, DECK ROOF & COPING ALL FINISHED WITH FLAT SEAMS • LONG SHEETS USED WHEREVER POSSIBLE

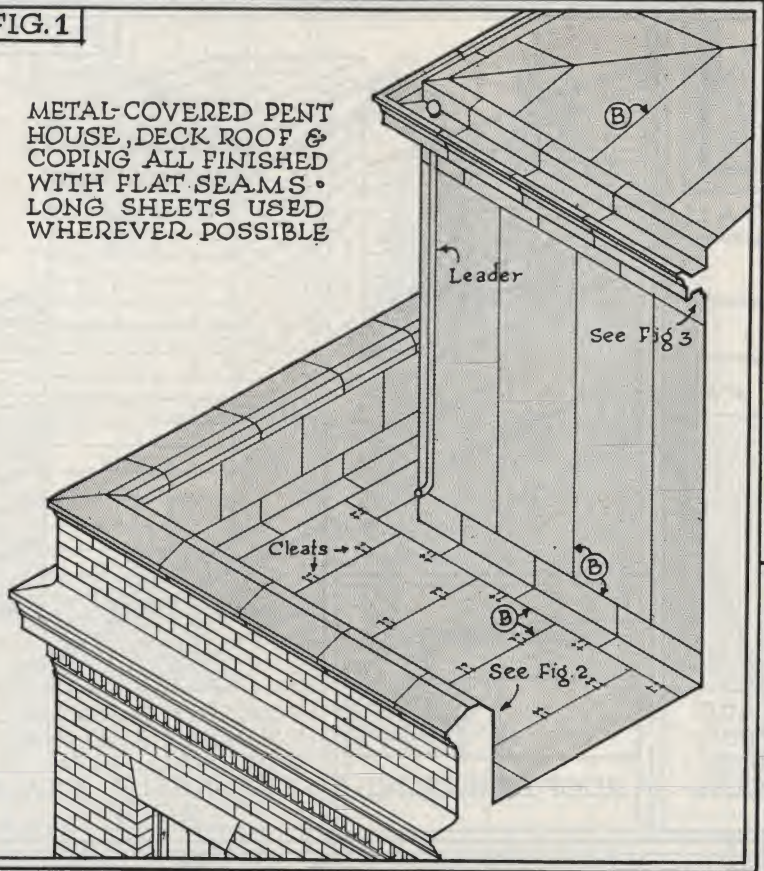
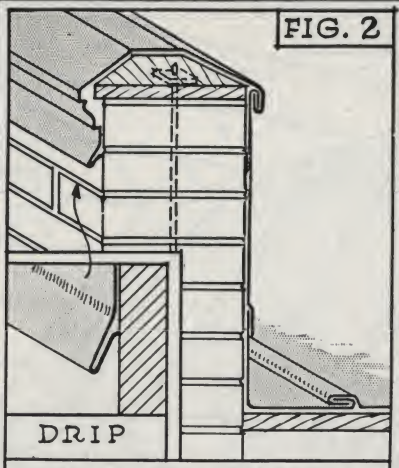
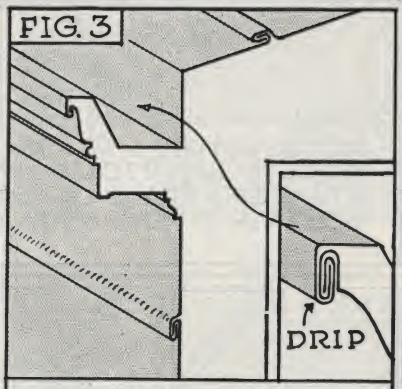


FIG. 2



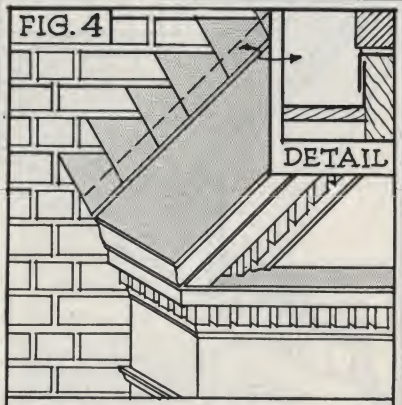
DETAIL OF METAL COPING ON PARAPET WALL SHOWN IN FIG. 1

FIG. 3



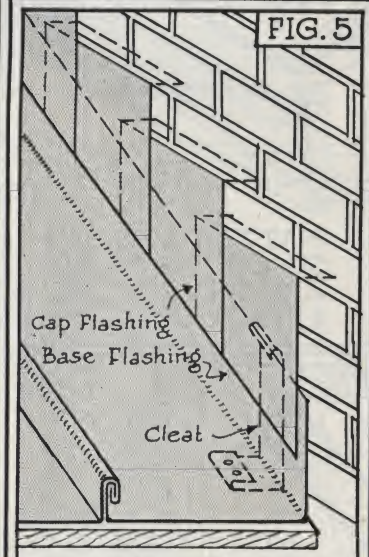
DETAIL OF GUTTER SHOWN IN FIG. 1

FIG. 4

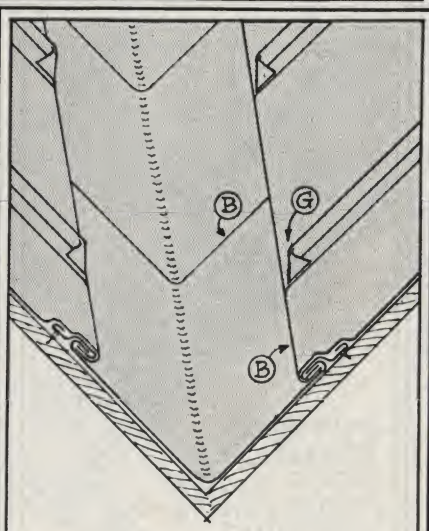


FLASHING PEDIMENT OF WOOD DOOR INTO A BRICK WALL

FIG. 5



FLASHING INTO SLOPING PARAPET SEE FIG. 2 PL. III



DETAIL OF VALLEY WITH STANDING SEAM ROOF

FOLLANSBEE FORGE
PITTSBURGH · PENNA.

ROOFING DETAILS

PLATE NUMBER II

Continued on next page

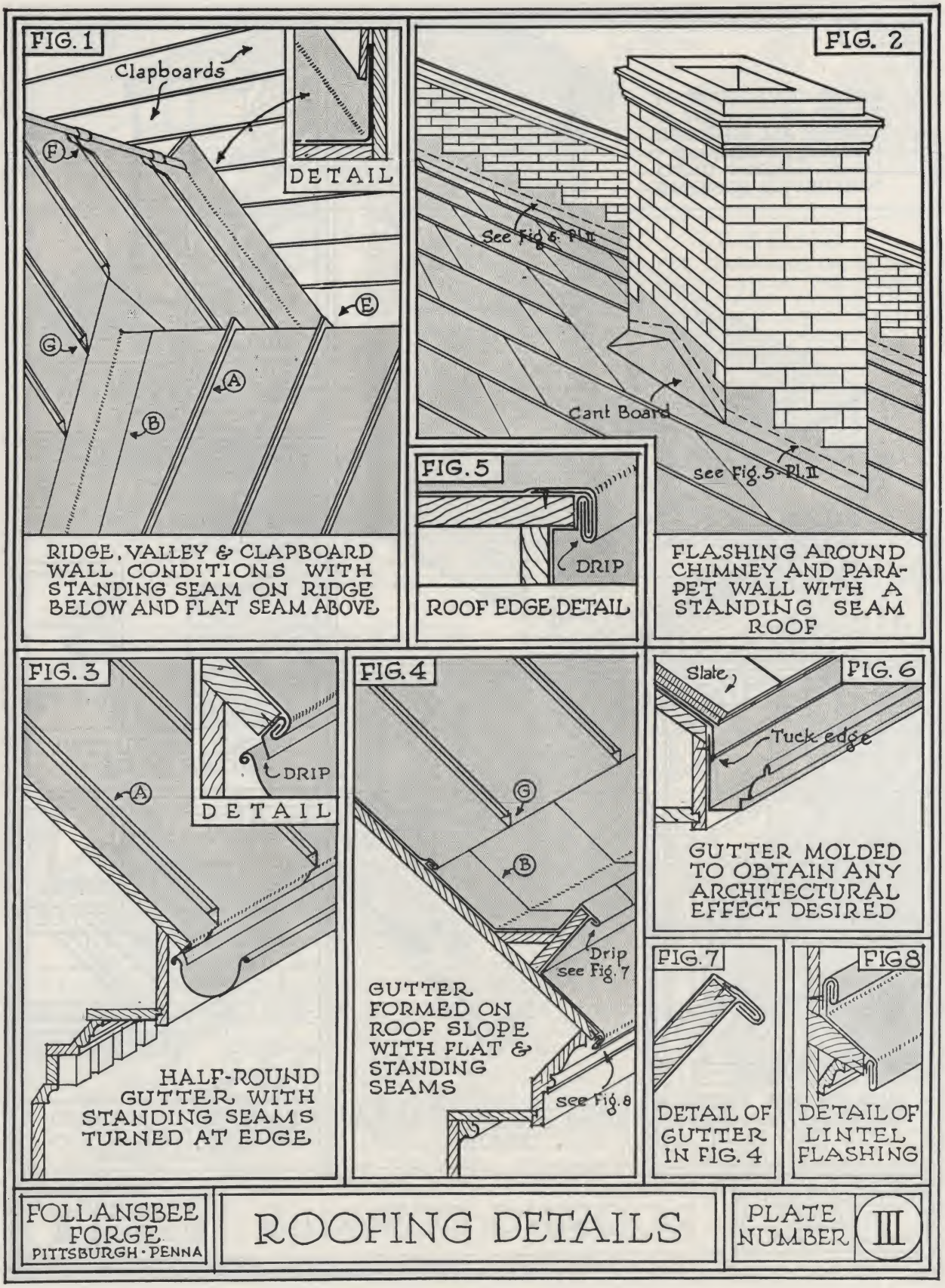


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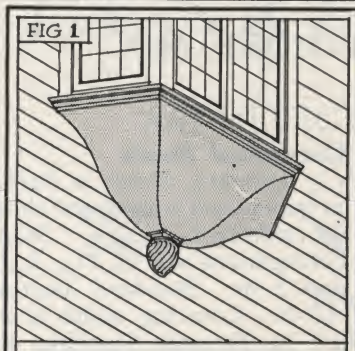
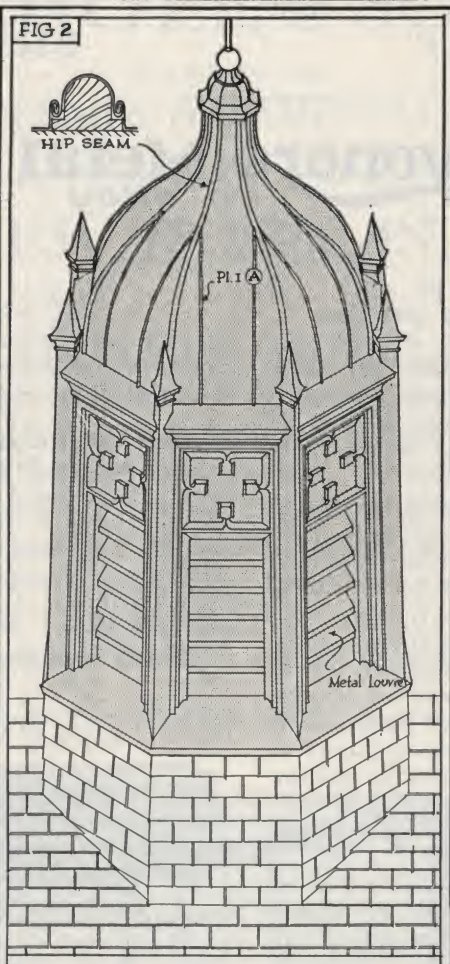
FIG 1



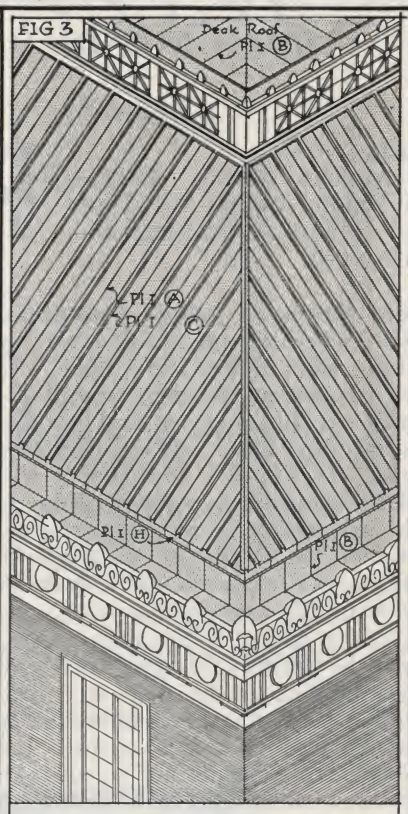
TREATMENT OF ORIOLE WINDOW SOFFIT

FIG 2



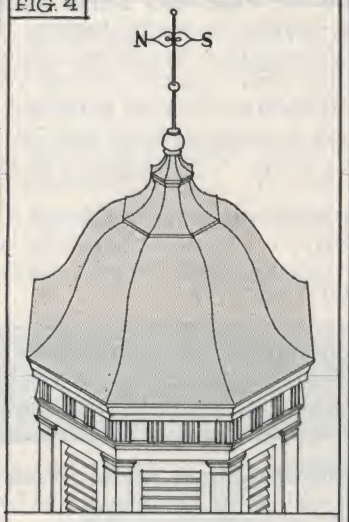
GOTHIC CUPOLA

FIG 3



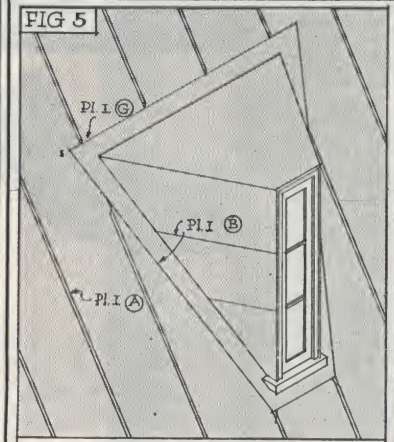
ROOF WITH ALTERNATING RIB AND STANDING SEAMS

FIG. 4



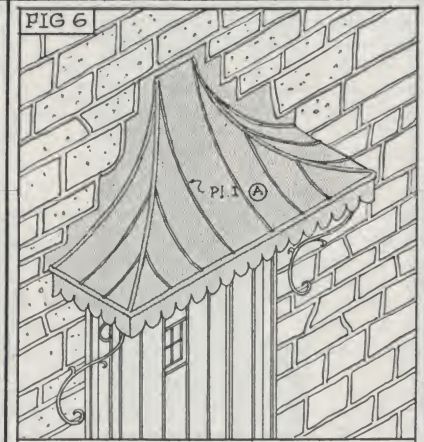
COLONIAL CUPOLA

FIG 5



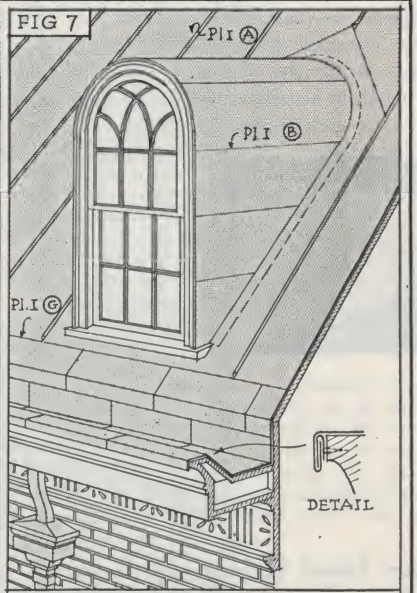
SPECIAL DORMER TYPE ON STANDING SEAM ROOF

FIG 6



ENTRANCE DOOR HOOD FLASHED IN STONE

FIG 7



ROUND DORMER-BOXED GUTTER & LEADER HEAD

FOLLANSBEE FORGE
PITTSBURGH·PENNA·

EXAMPLES OF APPLICATION

PLATE NUMBER IV

LYON, CONKLIN & CO. INC.

Manufacturers of Lyonore Metal Products

WASHINGTON, D. C. BALTIMORE, MD.

Products

"Lyonore Metal" Galvanized Sheet, Conductor Pipe, Eaves Trough, Galvanized and Tin Roofing.

Lyonore Metal an alloy NICKEL COPPER

Corrugated Sheets

Lyonore Metal is furnished in galvanized corrugated sheets in all standard gauges. Standard corrugations are 5/8, 1¼, 2, 2½, 3 and 5 in. Standard lengths are 5, 6, 7, 8, 9, 10 and 12 ft. Covering width is 24 in. Can also be furnished in Pressed Standing Seam, V-crimped, Weatherboard Siding, Beaded Ceiling, Brick and Stone Siding, etc.

Lyonore Metal, an Alloy—Description and Uses

Ever since the industrial advantages of iron and steel have been known and these products produced in such tremendous volumes, scientists have been continuously experimenting to find some practical way to combat the immense annual wastes due to rust and corrosion.

Metal, constantly exposed to the gases and matter held in suspension in the atmosphere—nitrogen, oxygen, carbonic acid, sulphur, ammonia, smoke and water—is subject at all times to electrolysis, the cause of rust, corrosion or disintegration.

Lyonore Metal is an alloy made according to a formula, the exclusive property of this company, which provides the greatest resistance to corrosion that science has so far been able to compose. There is no other sheet metal like it; it is electrically balanced to resist corrosion. Its elements are of such character and so proportioned that the metal is not unduly influenced by electrolysis. It will outlast ordinary sheet metal many times.

Lyonore Metal is of a very close texture, and more homogeneous than steel or iron. It is pliable, yet tough. Can be worked with less labor and expense and, when formed, hold its shape. Its pliability and toughness make tighter seams possible and its close texture insures a uniform galvanized coating.

Standard Specifications for Ventilating Ducts and Dust Conveyors—All duct work shall be of galvanized Lyonore Metal, nickel-copper alloy, of weights and gauges noted and shall be formed with the trade mark (as here shown) on the outside so that it can be seen on each section.

Specify gauge of sheets for duct sizes as follows:

16 in. diameter and smaller	No. 26 gauge
17 to 30 in. diameter	No. 24 gauge
31 to 40 in. diameter	No. 22 gauge
41 to 60 in. diameter	No. 20 gauge
61 in. and over, diameter	No. 18 gauge

For identification, each sheet is stencilled with trade mark on one side three times diagonally lengthwise.

Lyonore Metal Galvanized Sheets

Over 356,000 lbs. of Lyonore Metal went into the construction of ventilating ducts and the giant smokestack of Baltimore's majestic tower of commerce—The Baltimore Trust Building.

Used for all kinds of general sheet metal work.

For positive identification, this trade mark is stencilled on every sheet of Lyonore Metal three times diagonally lengthwise.

Lyonore Metal Conductor Pipe and Eaves Trough

Conductor Pipe—Made in 10-ft. lengths in six styles: Plain round and square, corrugated round and square, crimped round and square. Ends deeply crimped; slip easily into place and bind snug and tight when fitted. Furnished in gauges 28, 26 and 24—each length stamped, for quick identification, "Lyonore Metal, an alloy."

Eaves Trough—Made in 10-ft. lengths in a wide variety of styles: Single or double bead—slip or lap joint—28, 26 and 24 gauge—each length plainly die stamped "Lyonore Metal, an alloy."

Standard Specifications for Sheet Metal Work

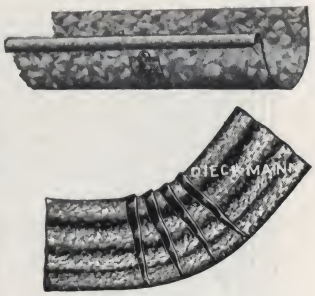
All galvanized sheet metal on this building shall be Lyonore Metal of gauges specified for each class of work.

Note: For best results, we recommend that the following gauges be specified for various classes of sheet metal work:

For conductor pipes, hanging gutters and eaves trough	No. 26 gauge
For cornices and skylights	No. 24 gauge
For gravel strips and flashings	No. 26 gauge

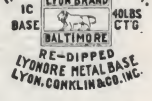
For ventilating ducts and dust conveyors (inside work) specify gauge number according to size of ducts as follows:

16-in. diameter and smaller	No. 26 gauge
18-in. diameter	No. 24 gauge
Larger than 18-in. diameter	No. 22 gauge
For paneling, moulding and special work	No. 24 gauge



Lyonore Metal Roofing Tin Plates

Lyon Brand has a Lyonore Metal Base of carefully selected perfect sheets, and carries 40-lb. coating. Coated by the genuine pure palm oil process, with pure new tin and new lead, in the proportions of 1 part tin and 3 parts lead, making this a superior tin roofing plate. 1C thickness is generally used for roofing. 1X thickness for valleys and secret gutters.



A Lyonore Metal Roof is lightning-safe when properly grounded.

Standard Specifications for Tin Roofing—For Lyonore Metal Tin Roofing in standing seam, flat seam or ribbed.

All tin roofing on this building shall be Lyonore Metal Base, Lyon Brand 40-lb. coated, 1C thickness for all roofing, and 1X thickness for valleys and gutters, to be done in accordance with the Standard Specifications of National Association Sheet Metal Contractors.

HENRY HOPE & SONS INC.

MAKERS OF

ARCHITECTURAL & ORNAMENTAL LEADWORK

B.C.M.
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NEW YORK, N.Y.

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Send for our illustrated catalogue of leadwork

EDWARD GREY LTD., BIRMINGHAM, ENGLAND

Continued on next page

HOPE'S LEADWORK

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HOPE'S LEADWORK CATALOGUE NO. 826

We have a variety of leadwork designs suitable for the garden, and we shall be pleased to prepare designs for special work or to work to Architects' instructions. *Our leadwork catalogue is a comprehensive work and Architects and others will not fail to find interest in its pages. We shall be pleased to send a copy on request*

WROUGHT LEAD FLOWER BOX

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HOYT HARDLEAD PRODUCTS DIVISION
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BOSTON, MASS., Architects Exhibit, Inc., 11 Beacon Street
DETROIT, MICH., Architects Exhibit, Inc., Barlum Tower

Products

Hoyt Hardlead Roofing Sheets; Rain Water Pipes; Rain Water Pipe Heads; Pipe Bands; Gutters; Spandrels; Finials; Statuary Garden Ornaments; Ornamental Hoyt Hardlead Work of every description.

For our pages on Lead Cames and Paints, see Manufacturers' Index.

Hoyt Hardlead

Hoyt Hardlead has a much greater tensile strength than soft lead, which permits its use in comparatively thin sheets, making it thoroughly practical and adaptable to modern building construction. It can be stamped, formed or cast in any shape desired. When exposed to the atmosphere it takes on a soft gray, non-staining patina that brings out the true value of adjacent materials and gives a balance to these materials that cannot be obtained with other metals. It will lend dignity and character to any structure where permanence and beauty are desired. It is used for roofing, flashings, cornice coverings and other building purposes where it is practical to use sheet metal.

It is rolled in sheets 24, 30 and 36 in. wide and 96 in. long, weighing 2½, 3, 4, 6 and 8 lb. to the sq. ft. The proper weight of Hoyt Hardlead Sheets depends upon the purpose for which they are to be used. For roofing, cornice coverings and base flashings generally the 3-lb. sheet is recommended, and for cap flashings and batten roofs where the battens are spaced 24 in. or less on centers the 2½-lb. sheet may be used.

Roofing—Indiana War Memorial, Indianapolis, Ind.
Walker & Weeks, Cleveland, Ohio, Architects

Spandrels

Architecturally and economically there are many advantages in the use of Hoyt Hardlead Spandrels.

It is possible to obtain in Hoyt Hardlead effects that cannot be duplicated in other materals which in contrast present an extreme severity of line. Softness of line and low relief are characteristics of stamped Hoyt Hardlead.

The soft gray color of Hoyt Hardlead is uniform and permanent.

Unlike other metals, Hoyt Hardlead Spandrels require no painting nor other maintenance, and do not stain adjacent masonry.

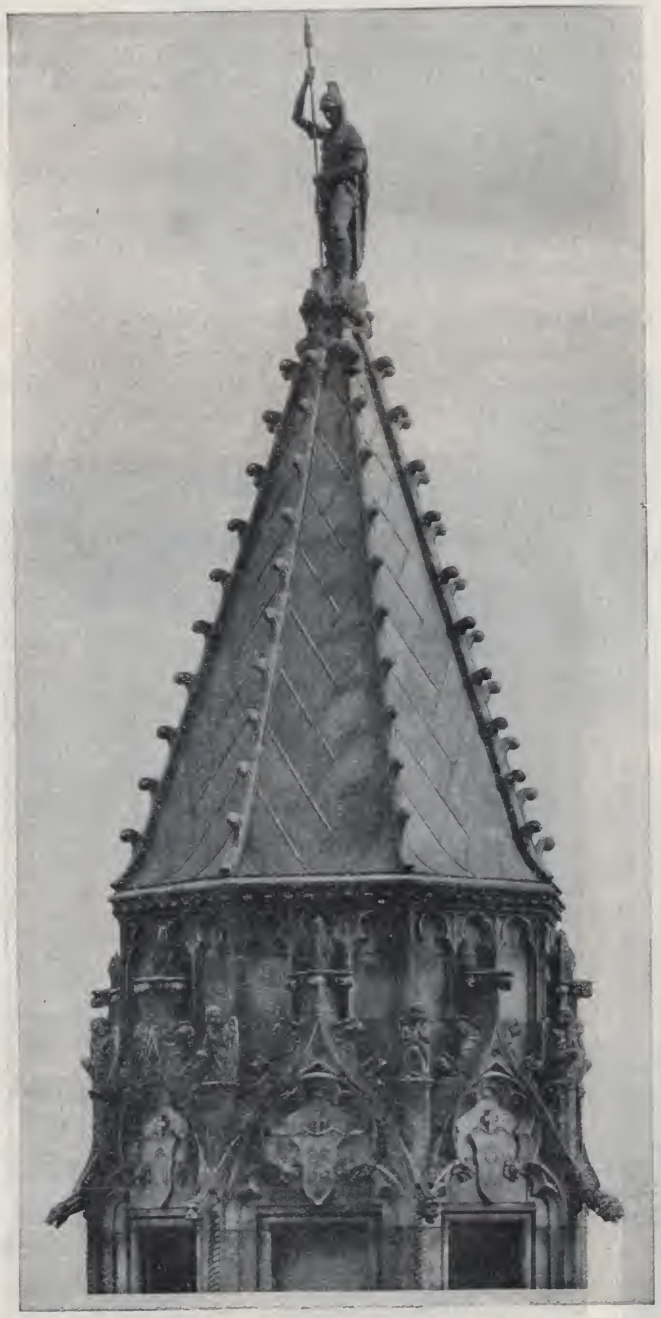
Catalogue

Our catalogue illustrates a complete line of architectural and ornamental Hoyt Hardlead work. This catalogue will be sent to architects on request.

Special Cast Rain Water Pipe Head, Pipe Band, Pipe and Gutter, St. George Chapel, Newport, R. I.
Cram & Ferguson, Boston, Mass., Architects

Continued on next page

Spandrels, Gutter Linings and Coping Flashings, Southern Railway Office Building, Washington, D. C.
WADDY B. WOOD, Washington, D. C., Architect



Statuary and Spire, Quigley Memorial Seminary, Chicago, Ill.
J. W. MCCARTHY, Chicago, Ill., Architect
GUSTAVE E. STEINBACK, New York, N. Y., Associate Architect

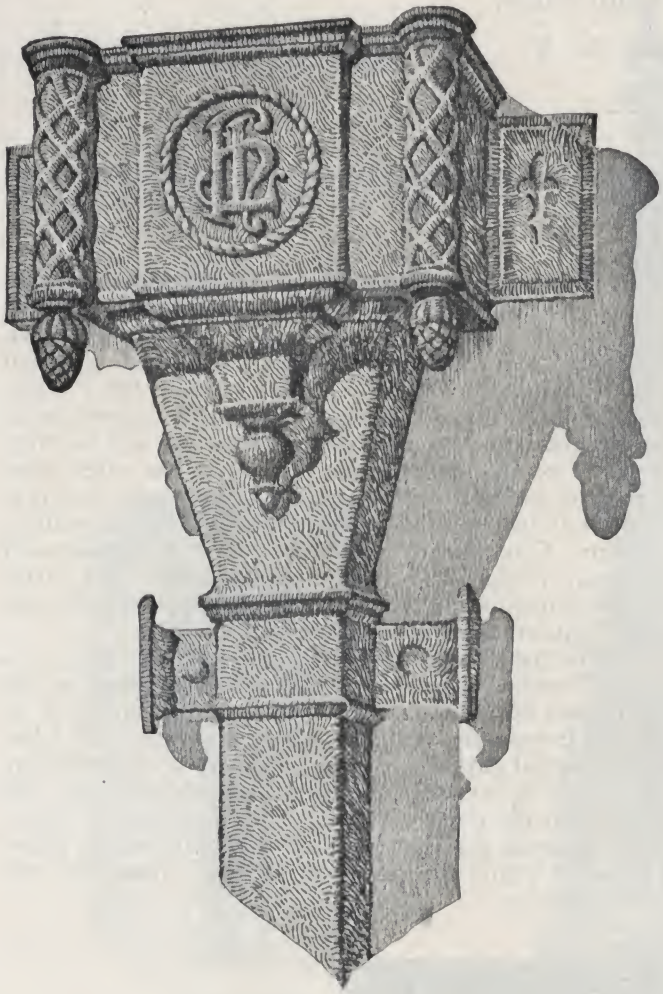
All Roofs, Rain Water Pipes, Gutters, Flashings, Finials and Crestings, Prudential Life Insurance Co. Building, Newark, N. J.
CASS GILBERT, New York, N. Y., Architect

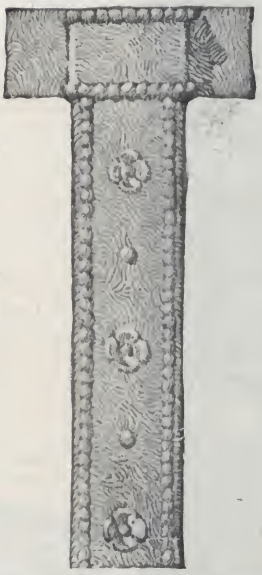
Spandrels, The American Bankers Insurance Company Building, Chicago, Ill.
CHILDS & SMITH, Chicago, Ill., Architects

Continued on next page

Cast Rain Water Pipe Heads, Rain Water Pipes, Gutters, etc.

A number of designs are carried in stock and we are prepared to execute special designs in accordance with architects' drawings.





Seamless Rain Water Pipe

Made from Hoyt Hardlead in the following sizes: 2x3 in., 2½x3½ in., 3x4 in., 3½x5 in., 4½x4½ in., 3 in. round, and 4 in. round. It can be furnished smooth or with a rough cast surface as desired

Rolled Sheet Rain Water Pipe

Made from Hoyt Hardlead rolled sheet in the following sizes: 2x2 in., 3½x3½ in., 2½x3¼ in., 2½x4¼ in., 3 in. and 4 in. octagon and 3 in. and 4 in. round and corrugated

Rolled Sheet Gutter

Made from Hoyt Hardlead rolled sheet with reinforced beaded edge in the following sizes: 3 in., 4 in., 5 in. and 6 in., half round and octagon

INCORPORATED

KLEIN & KAVANAGH

Roofers and Sheet Metal Craftsmen

207-209 East 120th Street
NEW YORK, N. Y.

Products

ANTIQUE ROOF REPRODUCTIONS in Slates or Tiles; ORNAMENTAL HAND WROUGHT and CAST LEAD WORK; LEADER PIPES, HEADS, GUTTERS, etc., of "Antique Finish" lead coated copper.

Specialized Roofing Service

Our service precludes the misunderstandings that frequently arise when quarry, foundry, mill, roofer and sheet metal contractor each expresses his individual interpretation of the architect's plans and specifications. *For we handle the entire roofing and sheet metal problem from its inception.*

Outstanding Metal Work

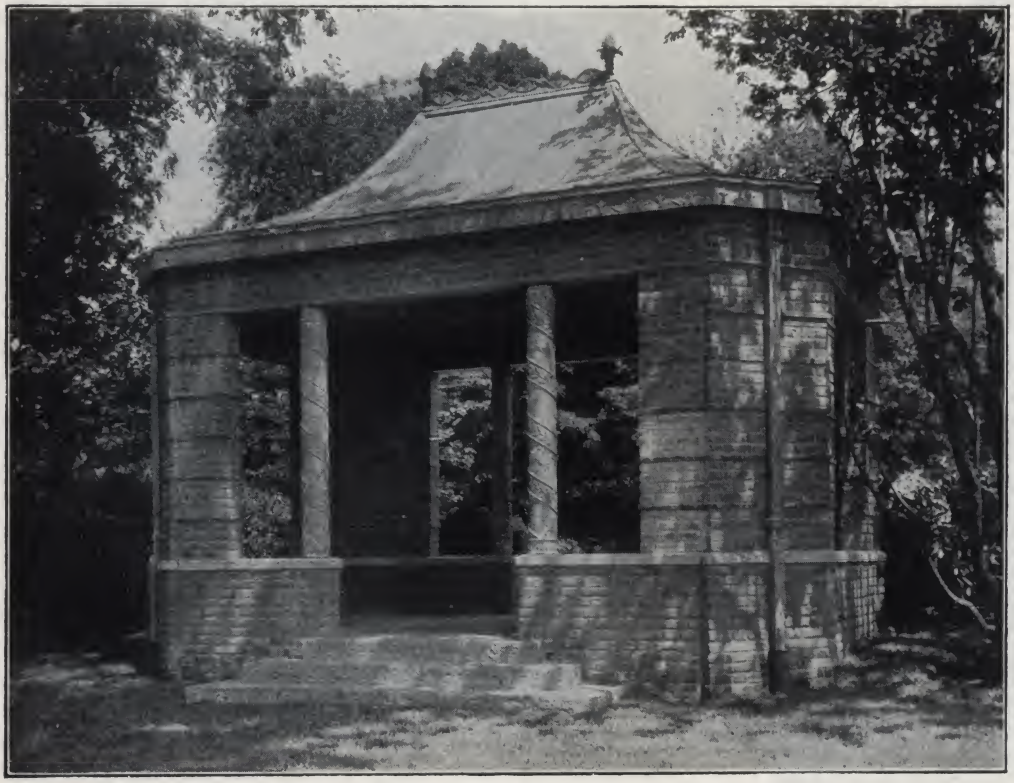
Our "Antique Finish" lead coated copper is made in *our own plant* under a patented process and is a true reproduction of old cast lead. All metal work—lead coated copper, plain copper, lead or bronze—is fabricated, wrought or cast in our plant to exacting requirements. Flashing and metal work generally are built in at the building scientifically with due allowance for contraction and expansion. Chimneys are flashed through to the flue lining, all flashings built well into or through the walls and concealed from view, if desired, with absolute safety.

Standing seam or batten roofs are installed in accordance with our special method eliminating all soldering of joints, allowing full freedom for movement of the metal and insuring absolute weathertightness.

Roofing and Sheet Metal Specifications

The most comprehensive specification cannot express the interesting nuances, the effectively uneven character of the slates, the subtle refinement of detail that culminate in the truly correct roof on the French, English or Colonial residence. We could suggest many paragraphs covering points of construction and description of results desired, but we have too often seen exquisite potentialities ruined by unfortunate interpretations of plans and specifications left to competitive bidders. Consequently, may we suggest discussing with us your roofing and sheet metal problem, and, after deciding upon a specific treatment, incorporating in your specifications the following clause:

The general contractor will allow the sum of $..... for all roofing and sheet metal work indicated on the plans and necessary, in the opinion of the architect, to insure the weathertightness of the building. All labor and material required for this work will be furnished by KLEIN & KAVANAGH, and upon completion they will deliver to the owner their guarantee, bonded if necessary, to make good any of their work which may prove defective within the period of 10 years from the date of completion.



Garden House

Designed by
LEROY P. WARD
Architect

Lead work by
KLEIN & KAVANAGH

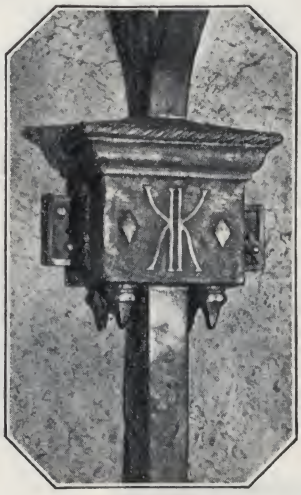
Lead work includes:
(1) Batten seam roof.
(2) Ridge and finials.
(3) Cornice.
(4) Columns.
(5) Leaders.
(6) Soffits of openings and rope mouldings at same level all around building

Continued on next page

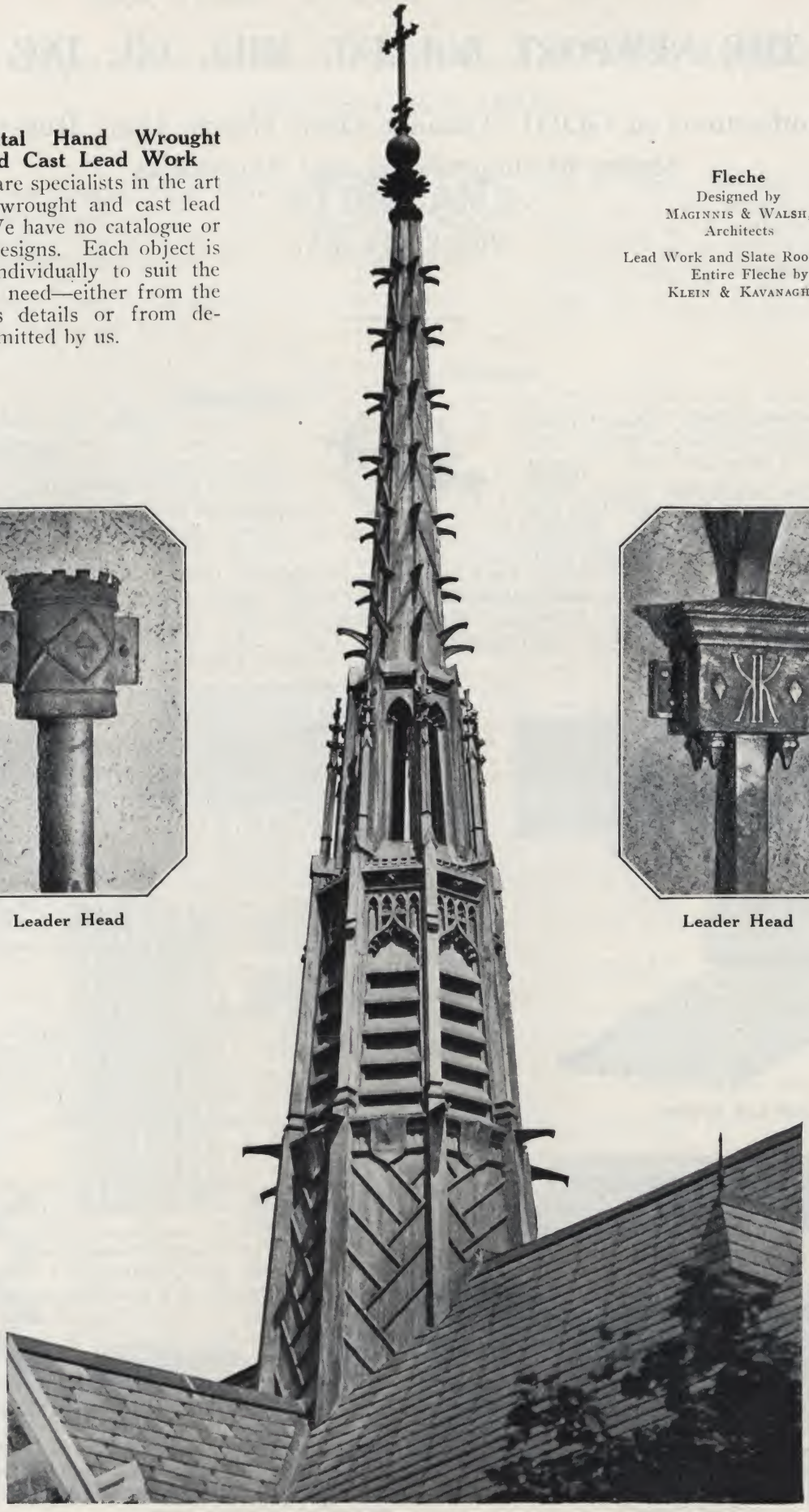
Ornamental Hand Wrought and Cast Lead Work

We are specialists in the art of hand wrought and cast lead work. We have no catalogue or "stock" designs. Each object is created individually to suit the particular need—either from the architect's details or from designs submitted by us.

Leader Head



Leader Head



Fleche
Designed by
Maginnis & Walsh,
Architects

Lead Work and Slate Roofing of
Entire Fleche by
Klein & Kavanagh

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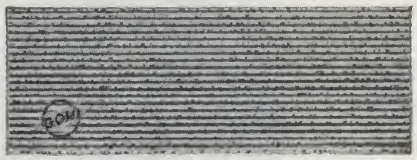
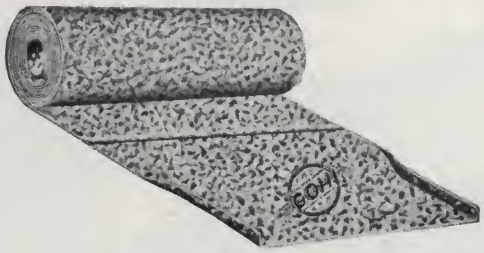
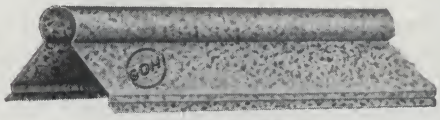
TRADE-MARK



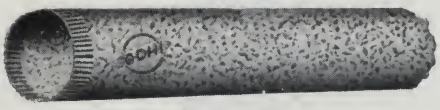
Corrugated Sheet



Roll and Cap Roofing



Ridge Finish



Conductor Pipe

Roof Gutter

Description

GOHI (Genuine Open Hearth Iron) pure iron-copper alloy rust-resisting sheets and formed products will analyze approximately 99.875% pure—considering as impurities the dangerous rust and corrosion agents, namely: carbon, manganese, phosphorus, sulphur, silicon, nitrogen, hydrogen and oxygen.

In addition, GOHI (Genuine Open Hearth Iron) has a copper content of not less than two-tenths (.2) of one per cent (1%) or over three-tenths (.3) of one per cent (1%). This addition of copper to the pure base metal produces a superior lasting and rust-resisting quality product.

Advantages

GOHI (Genuine Open Hearth Iron) is absolutely uniform in quality, being manufactured from the highest grade of selected materials, thus assuring one of the best rust-resisting metals for any and all conditions. GOHI will give longer life and is more durable than re-worked muck bar, charcoal iron, steel, or other iron sheet metal. On account of its superior working qualities, labor costs are reduced and are actually less than in working up steel or other iron sheets. Lasting qualities considered, GOHI is more economical than other sheet metal building materials you can specify.

Sources of Supply

Jobbers, dealers, hardware concerns, etc., everywhere sell GOHI (Genuine Open Hearth Iron) sheets and formed products. On request, we will supply names of distributers who can furnish GOHI in sheets or in the formed products specified above.

Service

GOHI has been produced on a foundation of quality, and knowing it to be as good as human ingenuity can make it, THE NEWPORT ROLLING MILL CO., INC., has directed all efforts to improved service.

We recently had prepared by a firm of architects, a file folder containing a complete analysis and specifications of GOHI (Genuine Open Hearth Iron). This valuable information should be in the hands of every architect specifying quality sheet metal work. It also shows ways and means in which GOHI (Genuine Open Hearth Iron) may be used to advantage in building construction. If you do not have a copy of this folder we will be very glad to forward it to you upon request.

We have also available for your reference, leatherette folders containing sample gauges of GOHI which are mailed free upon request.

REPUBLIC STEEL CORPORATION

SUCCESSOR TO CENTRAL ALLOY STEEL CORPORATION

Toncan Copper Mo-lyb-den-um Iron Rust and Corrosion Resisting Sheets

YOUNGSTOWN, OHIO

Products

TONCAN IRON SHEETS: Black, Blue Annealed, and Galvanized.

TONCAN IRON ROOFING: Roll, V-Crimped, Pressed Standing Seam and Corrugated.

TONCAN IRON SIDING: Corrugated, and Reproductions of Rock Faced Stone, Rock Faced Brick and Lapped Weatherboard.

Also Toncan Iron Corrugated Sheets, straight and curved, for use with concrete work and other special purposes; Toncan Iron Pipe, Plates, Wire, Bolts, Rivets, etc.

REG. U.S. PAT. OFF.
TONCAN
COPPER
Mo-lyb-den-um
IRON
TRADE-MARK

Description and Uses

Toncan is a carefully made commercially pure iron alloyed with copper and mo-lyb-den-um to obtain the greatest possible resistance to rust and corrosion. Its long life and easy working qualities are a matter of common experience.

Toncan Iron is widely used for expanded metal lath, eaves trough, conductor pipe, ridge roll, valleys, flashing, cornice, balcony, marquise, window frames, skylights, tanks, ventilation, refrigeration—in fact, for every purpose which demands a durable iron.

Roll Roofing
Painted or galvanized. Excellent for low pitched roofs. Covering width, 24 in. Each roll lays 100 sq. ft. on the building

Three V-Crimp Roofing
An attractive form of Toncan roofing, covering width 24 in.; gauges, No. 20 and lighter; also made with 2 and 5 V-form

Expanded Metal Lath

Many architects specify Toncan lath for all lath work as an extra assurance of lasting service. It should always be used for stucco and other exterior or exposed work.

Toncan Expanded Metal Lath
Made in standard weights of 2.2, 2.5, 3.0 and 3.4 lb. per sq. yd. Sheets, 24x96 in., 9 sheets or 16 sq. yd. per bundle

Corrugated Sheets for Roofing and Siding
Gauges No. 10 and lighter; 1¼ and 2½-in. corrugations are standard

Corrugated Ridge Roll
2½ or 1¼-in. corrugations. Lengths, 27 and 96 in.

Toncan Iron Conductor Pipe
Round corrugated, square corrugated and plain round conductor pipe. Lengths, 8 and 10 ft. All diameters. Elbows, miters and cut-offs to match

Toncan Iron Eaves Trough
Length, 10 ft. All widths; and gauges Nos. 28, 26 and 24

Corrugated End Wall Flashing
Flat side on wall, 2 in. Corrugated apron, 4 in. Lengths, 27 and 96 in.

Advantages

In Toncan Iron lies the architect's most satisfactory solution for the sheet metal problem. It enables him to specify a moderate priced sheet metal of unquestionable durability—a durability proved by many years of use in thousands of structures and in every form of severe sheet metal service.

Identification

The trade-mark shown above is stamped in two or three places on every Toncan Iron sheet and die stamped on eaves trough, conductor pipe, elbows, etc.

Sources of Supply

Jobbers and tinners everywhere sell Toncan Iron sheets and products. On request, we will supply names of manufacturers or dealers who can furnish any special Toncan Iron product you may have in mind.

Specification Data

"All sheet metal work shall be of Toncan Copper Mo-lyb-den-um manufactured by the REPUBLIC STEEL CORPORATION, of Youngstown, Ohio," is a safe specification; for Toncan meets all the requirements of modern sheet metal practice.

For trough and pipe, we recommend No. 26 gauge. For gutter, flashing, valleys, etc., No. 24 or, better still, No. 22 gauge. Roofing may be No. 26, 24 or 22 gauge. The heavier gauges should always be used where corrosive conditions are severe as along the sea coast or in a smoky atmosphere. Further information on Toncan Iron will be supplied promptly.

References

Thousands of installations in all parts of the country are proving the lasting qualities of Toncan Iron. A few are mentioned below. Ask for others.

Arlington Memorial Bridge, Washington, D. C.; McKim, Meade & White, Architects
Atlantic City Auditorium; Lockwood Greene, Inc., Architects and Engineers
Norwood Building, Austin, Tex.; Giesecke & Harris, Architects
Federal Reserve Bank Buildings of Cleveland, Baltimore and Salt Lake City
Hotels Statler of Boston, Cleveland and Buffalo; Geo. B. Post & Sons, Architects
Yankee Baseball Stadium, New York, N. Y.; Osborn Engineering Co., Architects and Engineers
Sears, Roebuck & Co. Plant, Kansas City, Mo.; Geo. C. Nimmons, Architect
Mt. Vernon Junior High School, Los Angeles, Calif.; Austin & Ashley, Architects
U. S. Chamber of Commerce Headquarters, Washington, D. C.; Cass Gilbert, Inc., Architect
Tilden Technical High School, Chicago, Ill.; John C. Christianson, Architect

California Palace of the Legion of Honor, San Francisco, Cal.
G. A. APPLEGARTH, Architect
30,000 sq. ft. of Toncan Skylight used here

O. S. STEWART CO.

Manufacturers of Iron Protectors for Sewers and Downspouts

MAIN OFFICE
Union Trust Building, CLEVELAND, OHIO

FACTORY: 886 East 67th Street, CLEVELAND, OHIO

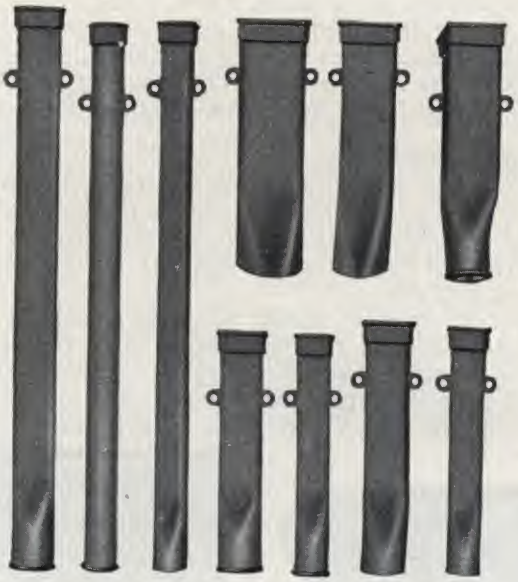
Construction of Stewart Protectors

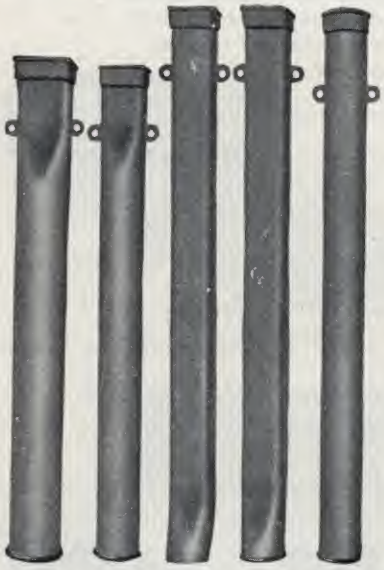
Stewart Protectors for sewers and downspouts are made of extra heavy gray iron and dipped in olive green enamel to protect them from corrosion and rust. A curve at the bottom allows the fitting to strike the center of the sewer. They are fitted with ears and a guide and equipped with bolts ready for installation. When anchored to the building they set plumb with the wall. They are neat in appearance and add much to the finish of the building. Made to fit all standard sizes of conductor pipes.

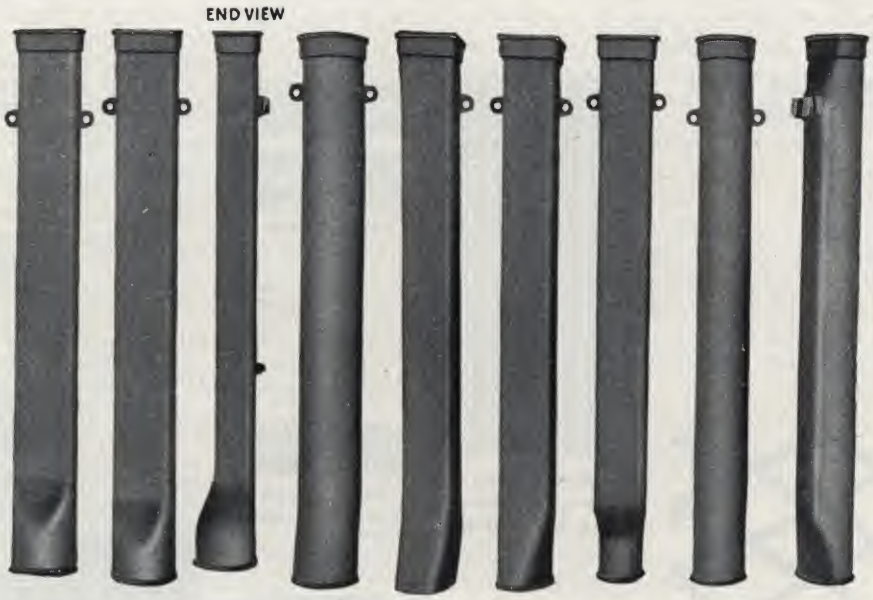
Uses

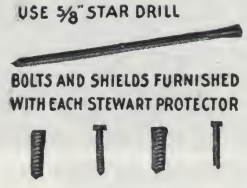
The hub of the protector is installed above the grade line. It protects both the sewer and downspout and thus eliminates the 80% of sewer stoppages caused by broken sewer pipes and rust conductor pipes at the grade line. It also prevents the washing of sand and dirt into the traps.

The short protector may be used around residences where there is danger of breaking from lawn mowers, etc. The long protector should be used at driveways and around commercial buildings where there is danger of vehicles coming in contact with the downspouts.









Representative Styles of Stewart Iron Protectors for Sewers and Downspouts

Continued on next page

Ordering

Stewart Iron Protectors for sewers and downspouts are sold by leading jobbers. If your local jobber does not handle them, write direct to the O. S. STEWART COMPANY, Union Trust Building, Cleveland, Ohio.

Fittings of special size or offsets made to order.

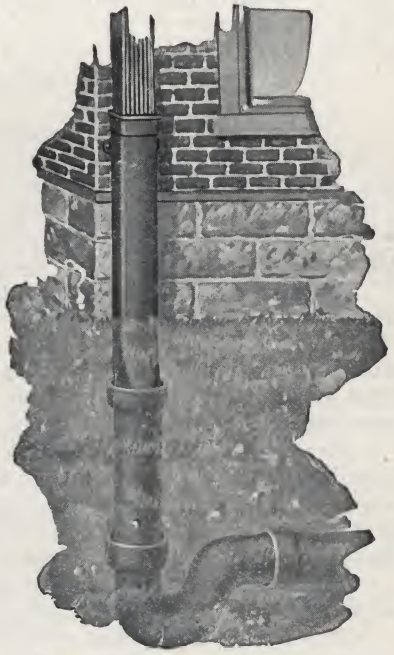
Specification

The contractor shall furnish and install at the front of each rain water conductor one Stewart Iron Downspout Protector of proper size to fit the downspout and to connect with the sewer 6 in. below the grade line. Each protector shall be set plumb with the building and securely anchored to the same. All joints shall be properly cemented or calked.

Ordinary Leaders Cannot Withstand Hard Abuse

Before Installing Stewart Protector

After the Installation



Stewart Protector Connected to Sewer

Typical Stewart Protector Installation on Residence

Public Building Equipped with Stewart Protector

SIZES AND DIMENSIONS OF STEWART PROTECTORS

No.	Size of conductor, in.	Length, in.	Size of opening at bottom, in.	No.	Size of conductor, in.	Length, in.	Size of opening at bottom, in.
1	6 x 6 square	54	6	23	3 x 4 rectangular	18	4
2	6 x 6 square	24	6	24	3 x 4 rectangular	12	4
3	4 x 6 rectangular	54	6	25	3 x 4 rectangular	54	3
4	4 x 6 rectangular	24	6	26	3 x 4 rectangular	24	3
5	5 x 6 rectangular	54	6	27	3 x 4 rectangular	12	3
6	5 x 6 rectangular	24	6	28	2 x 3 rectangular	54	3
7	4 x 5 rectangular	54	5	29	2 x 3 rectangular	24	3
8	4 x 5 rectangular	24	5	30	2 x 3 rectangular	12	3
9	4 x 5 rectangular	12	5	31	2 x 3 rectangular	12	4
10	4 x 5 rectangular	54	4	32	6 round	54	6
11	4 x 5 rectangular	24	4	33	6 round	24	6
12	4 x 5 rectangular	12	4	34	5 round	54	5
13	4 x 4 square	54	4	35	5 round	24	5
14	4 x 4 square	24	4	36	4 round	54	4
15	4 x 4 square	12	4	37	4 round	24	4
16	3 x 5 rectangular	12	4	38	4 round	12	4
17	3 x 4 rectangular	54	4	39	3 round	54	3
18	3 x 4 rectangular	48	4	40	3 round	24	3
19	3 x 4 rectangular	42	4	41	3 round	12	3
20	3 x 4 rectangular	36	4	42	3 round	12	4
21	3 x 4 rectangular	30	4	43	2 round	24	2
22	3 x 4 rectangular	24	4	44	2 round	12	3

WHEELING METAL & MFG. CO.

Manufacturers of "Leadclad" Roofing Materials and Accessories

HOME OFFICE
WHEELING, W. VA.

The Leadclad Process

The LEADCLAD process of coating sheet steel with *pure lead* was developed in 1912 after years of experiment. Prior to this time, the so-called "lead coatings" had been alloys of lead with other metals, or, if not, they were attended by considerable porosity of the coating.

By the LEADCLAD process, a dense coating is obtained without the use of alloys, and all electrolytic activity between the lead and the steel is neutralized during the process in a manner that is original with this product.

Thus LEADCLAD is actually two sheets of *pure lead* reinforced with a core of steel.

The LEADCLAD process is exclusive and products manufactured under it are obtainable only from the WHEELING METAL & MFG. CO. or its agents.

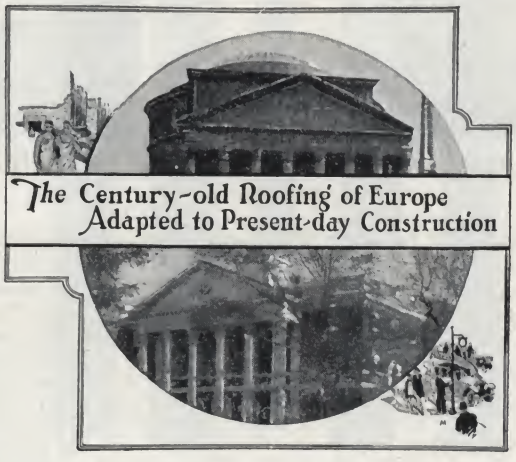
Products

LEADCLAD SHEETS (Flat, Corrugated and V-Crimp), LEADCLAD ROLL ROOFING and STANDING SEAM; LEADCLAD LEADER HEADS, CONDUCTOR PIPE and FITTINGS; LEADCLAD EAVES TROUGH, GUTTER and FITTINGS; LEADCLAD SHINGLES, LEADCLAD SPANISH TILE, LEADCLAD SIDING, CEILINGS, LEADCLAD RIDGE ROLL (Plain and Corrugated).

The same complete line of roofing products is also fabricated from LEADCLAD Copper.

Advantages of Pure Lead Protection

The value of *pure lead* as a protection against rust and corrosion is familiar to every architect. Its worth as a roofing material has been proven in some of the world's most notable examples of architecture—the Pantheon and St. Peter's at Rome; Windsor Castle and St Paul's Cathedral, Sir Christopher Wren's masterpiece in London; Paris Opera; St. Mark's in Venice. These are but a few of the famous buildings on which lead roofs have given hundreds of years of service. These buildings are all roofed, however, with heavy slabs and sheets of solid lead, requiring tremendous supporting structures, a roofing method not possible under modern building conditions.



Leadclad

Recognizing these proven weather resisting advantages of *pure lead*, architects and builders have long sought some commercial method of applying its protection to the requirements of present day building. LEADCLAD, they have found, is the modern method of securing *pure lead* protection. It is, in effect, two sheets of *pure lead* reinforced with a core of steel. It provides all the durability and weather resisting qualities of solid lead without its excessive weight or cost. The special copper bearing steel core combines strength with lightness and rigidity. Heavy, expensive supporting structures are thus eliminated.

Nothing But Lead to the Weather

The *pure lead* surface affords every weather resisting advantage of solid lead. Since LEADCLAD is not subject to excessive expansion and contraction, the expansion joints used with solid lead are unnecessary. Being composed wholly of metals, LEADCLAD is absolutely fireproof, and, when properly grounded, affords fullest protection against lightning.

A Proven Material

Salt laden air, particularly disastrous to most metals, leaves LEADCLAD entirely unaffected; while in smoky or sulphurous atmospheres LEADCLAD has a resistance to corrosion proven through many years of service in the manufacturing districts of Pittsburgh, Cleveland, Cincinnati and other industrial centers.

Because of its weather resisting qualities, its immunity under many fume conditions, its lightness, fire safety and its low first cost, LEADCLAD offers the architect a material of proven durability and economy for all exterior sheet metal purposes.

With the passage of time the color of LEADCLAD, being *pure lead*, takes on the same soft, stone colored patina which blends so harmoniously with almost any architectural treatment.

Re-Dipped by Hand

All LEADCLAD Pipe, Trough, Elbows, Shoes, Tile, Shingles and Formed Products are re-dipped by the old hand process after forming to insure an extra heavy, even coating.

Continued on next page

LEADCLAD COPPER

In response to a demand from architects for some finish which would eliminate the discoloration so frequent where copper is used, LEADCLAD COPPER was developed. As the name indicates, it is standard copper sheets encased in a heavy coating of *pure lead.*

Advantages of Leadclad Copper

Since pure lead is not subject to discoloration or corrosion, its application to copper sheets combines in one material the advantages of both metals.

It has the lightness, high tensile strength and ductility of copper and the permanence of lead. Its surface, being *pure lead,* resists discoloration entirely. It weathers to a soft stone gray which harmonizes with the better types of architectural design.

Uses

LEADCLAD COPPER is made in flat sheets of all standard sizes and weights as well as all standard roofing and drainage forms. It is especially recommended for architectural use, however, as conductor pipe, gutters, flashings, cornices, leader heads and all ornamental trim.

Finishes

LEADCLAD COPPER is furnished in two popular finishes, a smooth gray for all ordinary sheet metal work and an English Cast Finish of roughened, antique effect for use where texture is important. Both are available in all weights and sizes.

Further Data

The specifications and descriptions following apply to both LEADCLAD and LEADCLAD COPPER.

SPECIFICATIONS—LEADCLAD AND LEADCLAD COPPER

Since each type of roof requires different specifications and the variety of LEADCLAD products is so wide, we have thought it advisable here to present a general specification only, not attempting to cover all types and conditions which might be encountered in actual practice.

"All roof surfaces of this building shall be covered with LEADCLAD (or LEADCLAD COPPER) as manufactured by the WHEELING METAL & MFG. CO., of Wheeling, W. Va. No substitute for the above will be permitted.

"LEADCLAD (or LEADCLAD COPPER) shall be laid over first grade waterproof paper. (Paper saturated with tar or other acids should be avoided as the heavy acids when confined under the roof are sometimes injurious.) No nails shall be driven through the sheets. Roofers shall wear rubber shoes and no unnecessary walking over the roof or using the same for storage of other material shall be allowed. All workmanship shall be guaranteed for one year."

Specifications should indicate the required gauge and grade of LEADCLAD as shown in the table below.

In addition, the architect should include such data as would be required by local conditions and the particular job. Such items should specify preparation of surfaces; weight, lap and nailing of paper or felt; spacing of battens, etc., under carpenter's work; prevention of damage to roof during construction; cleaning of roof after completion and water testing where this is deemed necessary; provision for scaffolding or rigging, hoisting, and similar items dictated by local requirements.

In general, it may be stated that LEADCLAD (or LEADCLAD COPPER) may be quickly and readily applied under the usual specifications for any sheet metal.

RECOMMENDED GAUGES

	Residence	Public buildings	Industrial plants
Roofing	26 to 29	24 to 28	18 to 28
Siding	26 to 29	24 to 28	18 to 28
Skylights	24 to 30	20 to 26	20 to 26
Cornices	24 to 28	22 to 28	22 to 26
Ventilators	24 to 28	18 to 26	18 to 26
Conductor	24 to 29	24 to 29	24 to 28
Eaves trough	24 to 28	24 to 28	24 to 26
Ridge roll	26 to 29	26 to 29	18 to 28
Valleys	24 to 29	24 to 28	18 to 28
Flashing	28 to 30	26 to 29	24 to 28

APPROXIMATE THICKNESS AND WEIGHT OF LEADCLAD

Gauge No.	Weight per sq. ft. in lb.	Approximate thickness, in.	Approximate thickness in decimal parts of an in.	Gauge No.	Weight per sq. ft. in lb.	Approximate thickness, in.	Approximate thickness in decimal parts of an in.
30	.76	1/64	.016	24	1.25	1/32	.031
29	.82	9/160	.019	22	1.50	3/80	.036
28	.88	7/320	.021	20	1.96	7/160	.041
26	1.00	1/40	.026	18	2.25	9/160	.054

WEIGHT OF LEADCLAD COPPER

Note: The LEADCLAD Process adds weight and strength to plain copper. When specifying it is well to remember that 14-oz. LEADCLAD COPPER is equal in weight and strength to 16-oz. uncoated copper, our lightest coating adding 2 oz. to the finished weight.

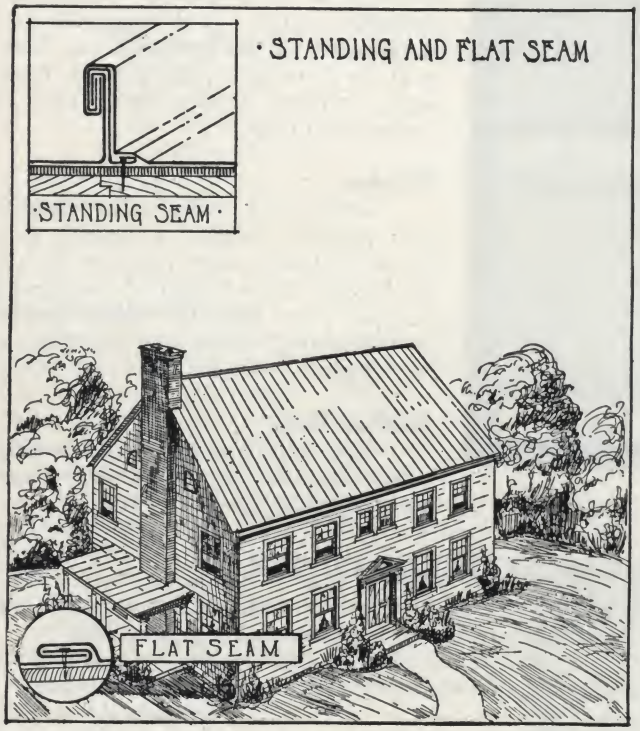
LEADCLAD STOCKS IN THESE CITIES

BOSTON, MASS., HERRICK & Co., 47-49 Broad St.
NEW YORK, N. Y., KATZMAN & STROBER, 1182 Flushing Ave., Brooklyn, N. Y.
BRIDGEPORT, CONN., PARSONS BROS., 25 E. Washington Ave.
CLEVELAND, OHIO, J. KINSNER & SON CO., 8710 Blaine Ave.
DETROIT, MICH., W. J. BURTON CO., 5670 Federal Ave.
CINCINNATI, OHIO, MAXIMENT COMPANY, 615 Carr St.
RICHMOND, VA., VICTORIA METAL COMPANY
MANSFIELD, OHIO, E. C. LEISY ROOFING CO., 115 Stocking Ave.
ERIE, PA., GUST KRACK & SON CO., 1018 W. 18th St.
YOUNGSTOWN, OHIO, DALZELL BROS. CO., 928-940 W. Rayen Ave.
TOLEDO, OHIO, FRED CHRISTEN & SON, 714-726 George St.
BALTIMORE, MD., KAHL-HOLT CO., 111 South Charles St.
WASHINGTON, D. C., FRIES, BEALL & SHARP, 734-736 Tenth St., N. W.
NORRISTOWN, PA., ASBESTOS INSULATING CO., Astor and Main Sts.
SAN FRANCISCO, CAL., CARTER SPECIALTIES CO., 506 Sharon Bldg.
LOS ANGELES, CAL., H. E. MCGOWAN CO., 2464 Enterprise St.
INDIANAPOLIS, IND., TANNER & COMPANY

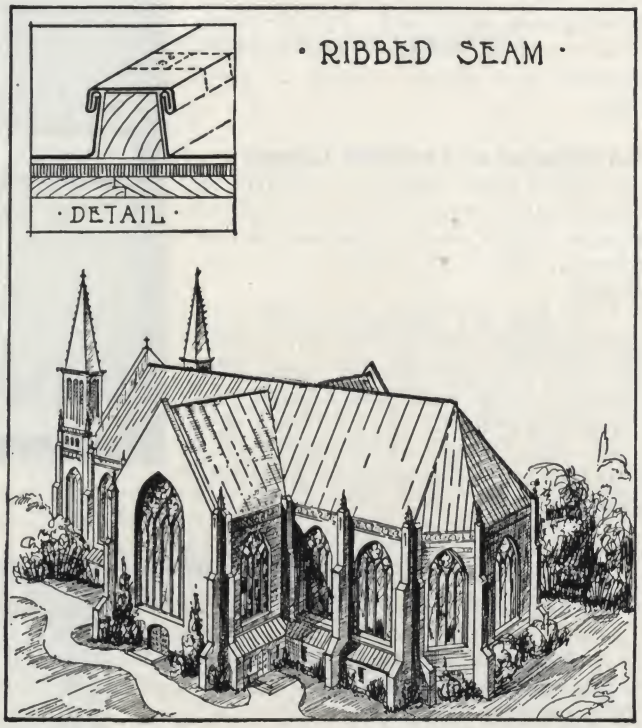
Continued on next page

TYPES OF LEADCLAD ROOFS

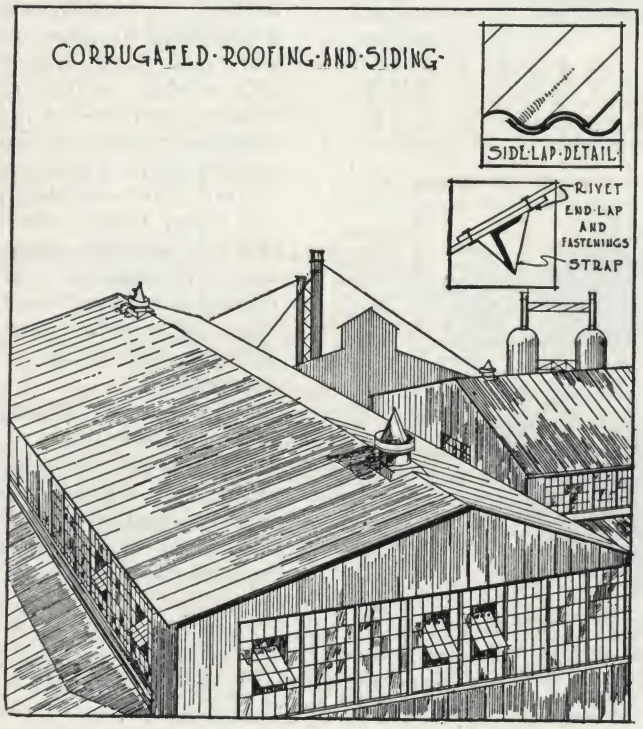
Of the many forms in which LEADCLAD is applicable as roofing, the five types indicated below are most commonly specified. Each has its peculiar advantages, governed by nature of building, character of architecture, pitch of roof as well as local usage in the community.



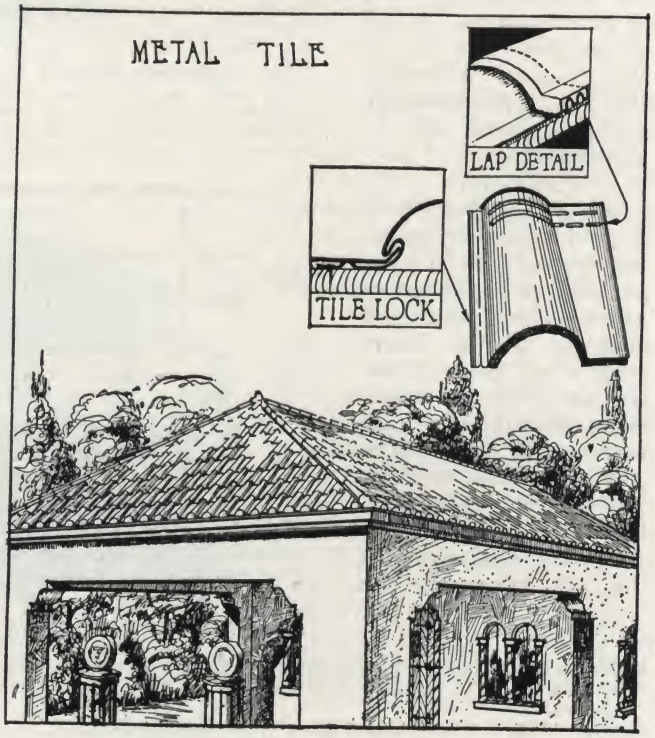
Of the many forms of roofing, in which LEADCLAD is used, standing and flat seam are most frequently specified by architects largely because it affords their clients lowest upkeep and assures protection and permanency for their work.



In the specification of rib roof construction permanency is of first consideration. Hence the wide acceptance of LEADCLAD for work of this nature. The *pure lead* jacket insures generations of service without attention, while an occasional painting provides a practically permanent roof.



Light, strong, easily handled, rustless, impervious to most acid and fume conditions, LEADCLAD affords the architect engaged in industrial design a material unusually well adapted to the long life and low upkeep cost required in work of this kind.



LEADCLAD Spanish Tile is the only metal tile having the full tapered barrel and heavy shadow lines of the old mission clay tile. The *pure lead* jacket of LEADCLAD Spanish Tile makes it practically everlasting, providing low first cost and little or no upkeep.

Continued on next page

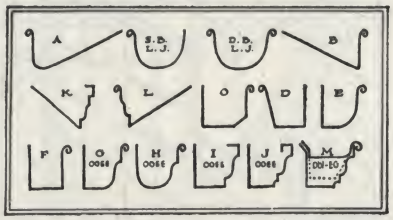
LEADCLAD HAND-DIPPED DRAINAGE PRODUCTS

The durability of LEADCLAD and its resistance to wear and weather has been amply proved through its use upon thousands of structures as gutter, flashing, conductor and at other points where concentration of roof drainage accelerates the wear.

This freedom from corrosion affords the building owner lasting protection at but a fraction of the cost of other metals. LEADCLAD is available in a variety of formed products, all recoated after forming by the old hand-dipping process. This insures an extra heavy covering of lead on all surfaces, and seals all seams.

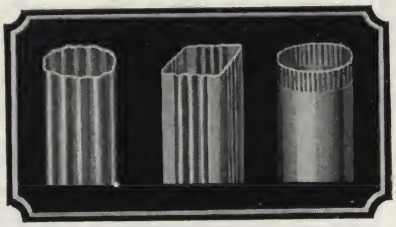
Gutters

Hand-dipped LEADCLAD and LEADCLAD COPPER Gutters are furnished in box, pole and hanging types. The profile below shows the designs of box and hanging gutters always available from stock. Special shapes to order. The soft stone color of LEADCLAD makes it blend well with many types of architecture, particularly those of masonry construction.



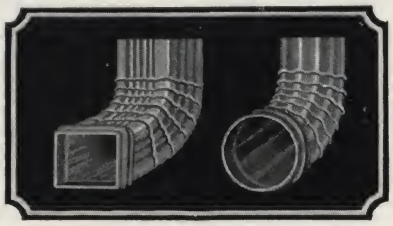
Conductor

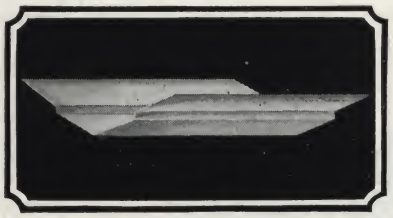
Attractive designs are supplied of LEADCLAD and LEADCLAD COPPER in plain round, round corrugated, plain square, square corrugated, and polygon shapes. Plain round, round corrugated and polygon is furnished from stock in 24, 26, 28 gauge, in sizes 2, 3, 4, 5 and 6 in. Square and square corrugated in 24, 26, 28 gauge in 2, 3, 4 and 5 in. Special shapes can be furnished in any gauge and diameter. The pure lead *inside* as well as outside adds many years to the life of LEADCLAD Conductors.



Elbows and Shoes

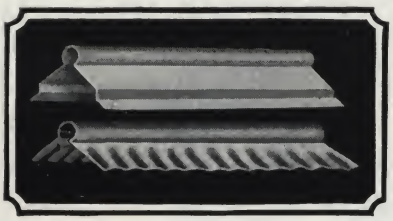
Elbows and shoes are made in sizes to fit all standard downspouts and are furnished in angles of 45°, 60°, 75° and 90°. Special sizes promptly to order. All LEADCLAD and LEADCLAD COPPER elbows and shoes are recoated by the old hand-dipping process after forming to insure an extra heavy protective coat and full coverage of all edges and seams.





Valleys

For the various types of valley commonly formed on the job, standard size sheets of LEADCLAD and LEADCLAD COPPER will be found highly satisfactory for ease of working and durability. Where time and labor are at a premium, factory formed valleys of either metal will effect a substantial saving. They are offered in several styles (one of which is illustrated) and assure the architect a dependable material for use with slate, tile, asbestos, and shingle as well as metal types of roofing. Put up in 10-ft. lengths and available in 18, 20, 22, 24, 26, 28 and 29 gauge.



Ridge Rolls

All standard types of ridge roll are offered in LEADCLAD and LEADCLAD COPPER. The two illustrated are plain ridge with nailing flange and corrugated. Corrugated style comes to match both 2½ and 1¼-in. corrugations. All styles put up in convenient 10-ft. lengths; quickly and easily installed; adds to the appearance of the finished roof and assures positive weathertight protection at this important point. Available in 18, 20, 22, 24, 26, 28 and 29 gauge.

Accessories

A complete line of hangers and straps in both standard and ornamental styles are made for LEADCLAD drainage products. A few of these are illustrated and embody fundamental designs which years of use have proven best. These are manufactured of wire, malleable iron, steel or copper and protected by the LEADCLAD Process after forming.

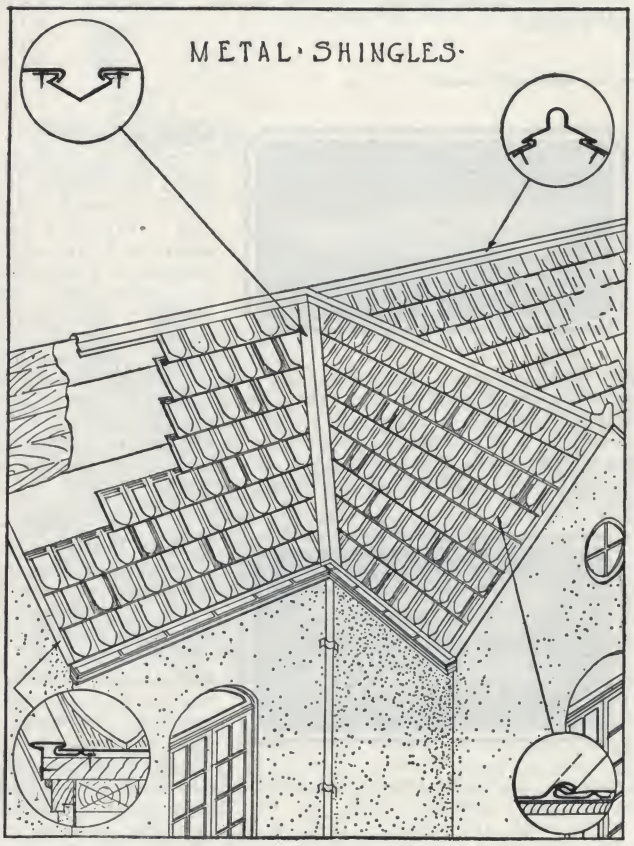
A Few Leadclad Installations

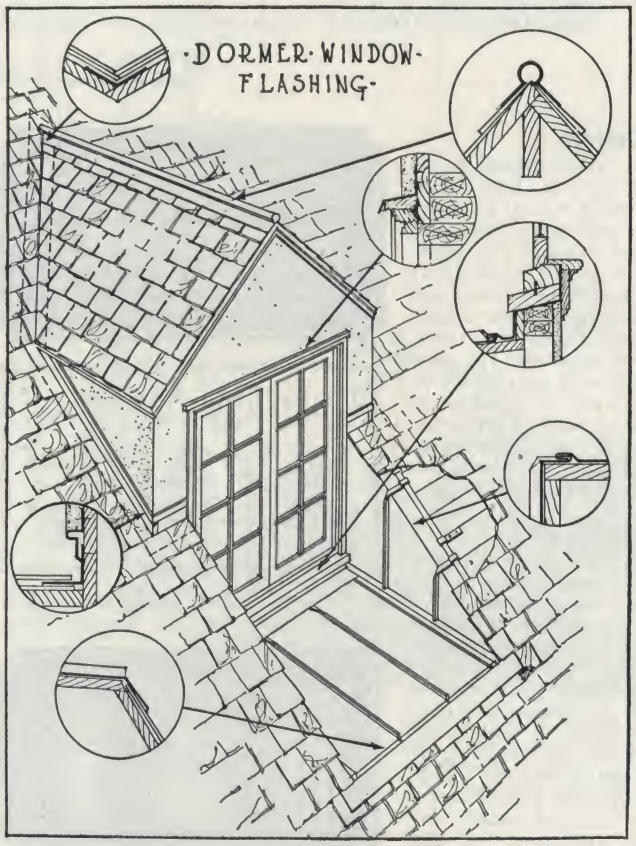
West Virginia State Capitol, Charleston, W. Va., Cass Gilbert, Architect
Paramount Theatres, New York, N. Y., G. B. Buckhannon, Architect
New York Telephone Company, New York, N. Y., Benjamin K. Boyce, Chief Engineer
New Phillips Hall, Bethany College, Bethany, W. Va., Thayer Company, New Castle, Pa., Architects.
Vernon Manor Apartments, Cincinnati, Ohio, Hannaford & Son, Architects; Garber & Woodward, Associate Archiects
William Telling Residence, Cleveland, Ohio, John Sherwood Kelly, Architect
South Shaker Apartments, Cleveland, Ohio, Phillip Lindsay Small, Architect
School Building, East Orange, N. J., Meyers & Shanley, Newark, N. J., Architects
Olsen Estates, Hempstead, L. I., N. Y., John E. Cahill, Architect
The Texas Company Service Stations.
Robert McKay Residence, Lloyds Neck, N. Y., Burrall, Murray & Hoffman, Architects
Church of Our Saviour, Cleveland Heights, Ohio
Tanners' Research Building, University of Cincinnati, Harry Hake, Architect
Belvedere Health Centre, Los Angeles, Cal., J. K. Hastings, Hollywood, Architect
Henry L. Doherty Company, New York, N. Y., C. E. Payne, Architect
Bedford Park Presbyterian Church, Brooklyn, N. Y., Meyer & Mathieu, Architects
The New York Central Railroad Company
Pennsylvania Railroad Company
New York, New Haven & Hartford Railroad Company
Erie Railroad Company
Boston & Maine Railroad Company
Boston & Albany Railroad Company
Pittsburgh Coal Company

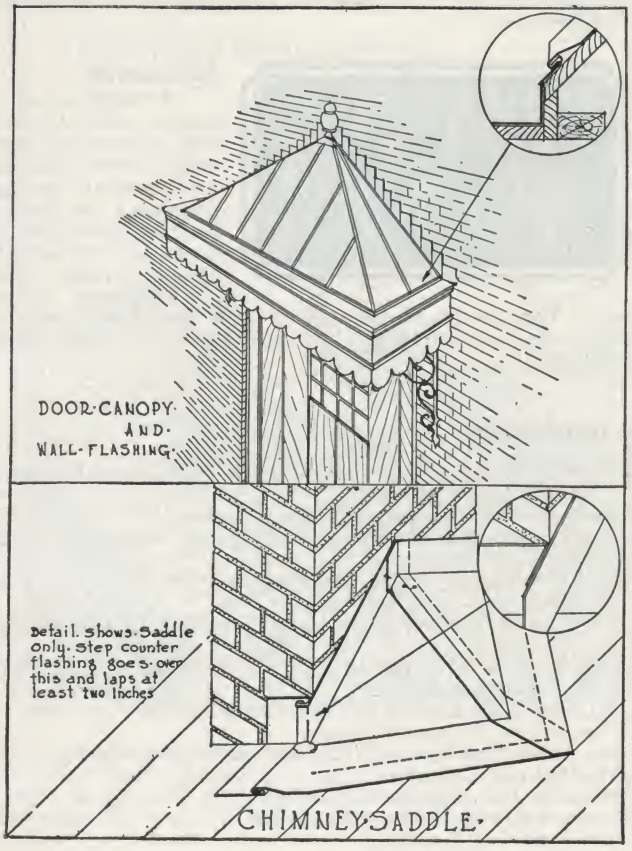
Continued on next page

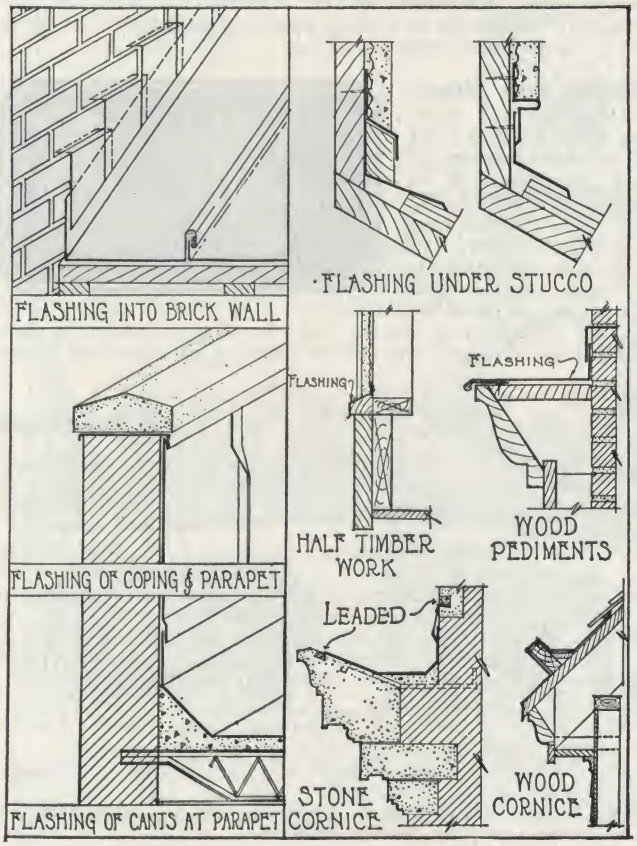
LEADCLAD FLASHINGS

The same characteristics which make LEADCLAD and LEADCLAD COPPER so satisfactory for roofs make it particularly suitable for flashing. The smooth, soft, gray sheets are easily workable, their lead surfaces are not injured by intricate bending. The exceptional durability of LEADCLAD adds to its value for flashings that are hard to get at or that are liable to years of exposure without attention. The same specifications covering any sheet metal flashing are applicable to LEADCLAD.









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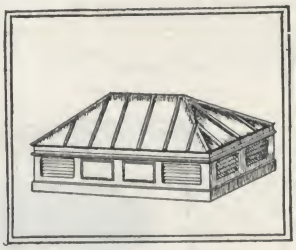
LEADCLAD FOR OTHER PRODUCTS

The advantages of LEADCLAD described on the first page make this unusual product especially suitable for every metal use. On this page we point out only a few of the more important of these which will be of especial interest to the architect. When designing any of these products the distinctive properties of LEADCLAD should be carefully considered and specifications so worded as to insure the use of LEADCLAD in their construction.

LEADCLAD

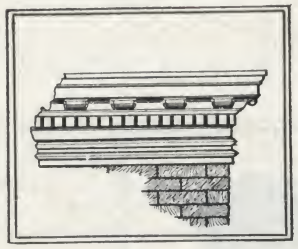
TRADE-MARK

The initial cost of LEADCLAD is very little more than that of ordinary metals but its cost over a period of time is considerably less. There is no difference in the cost of erection but the life of LEADCLAD due to its *pure lead* coating is many times that of ordinary roofing metals. To insure the actual use of LEADCLAD where specified, look for the trade-mark LEADCLAD plainly stamped on every sheet as shown above.



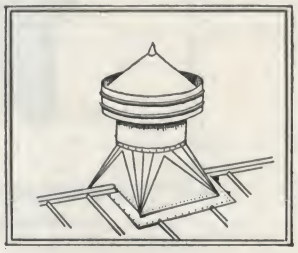
Skylights

A durable, long-lasting metal, resistive to acid fumes is essential in skylight construction. All too often have skylight leaks been the cause of extensive water damage. When formed of LEADCLAD or LEADCLAD COPPER, danger of rust is eliminated and a more permanent structure is assured.



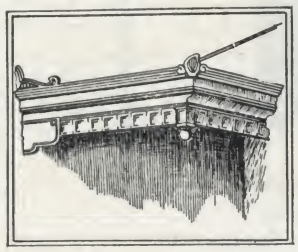
Cornices

Five factors contribute to the popularity of LEADCLAD for cornice work. First, strength; second, lightness and ease of handling; third, durability, due to its heavy lead jacket; fourth, ductility; fifth, the harmony of the natural soft gray color with the better types of architecture.



Ventilators

Any type or style of ventilator can readily be formed from LEADCLAD or LEADCLAD COPPER. This is especially important for ventilators in industrial plants where acid fumes must be carried off. Fumes which attack even the best of unprotected metals have little or no effect upon the acid-resisting surface of LEADCLAD.

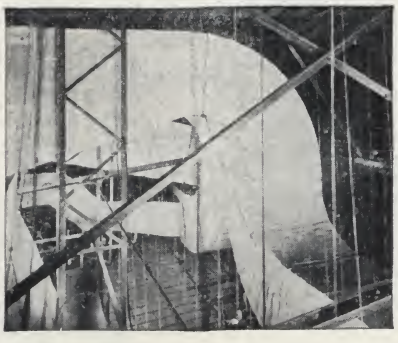


Marquises

Usually highly ornamental, marquises present a severe test for any metal. LEADCLAD is easily worked and the architect's design can be accurately reproduced without difficulty. Furthermore, LEADCLAD soon takes on a beautiful soft, gray stone-like patina and requires no acid treatment or painting to maintain its appearance.

LEADCLAD MINIMIZES NOISE TRANSMISSION IN AIR DUCTS

The growing use of air conditioning in public buildings has directed architects' attention to LEADCLAD from an entirely new angle. One of the difficulties encountered in air ducts has been the tendency to amplify and transmit annoying sound, due to the vibration of the hard coated metal ordinarily used.



In addition to the immunity of LEADCLAD to corrosion and fume conditions, it has been discovered that the *pure lead* coating, softer than zinc or other coating, assists in absorbing sound and minimizing the transmission of noise to other parts of the building.

For this reason, a number of architects choosing sheet metal for ventilating and air conditioning systems have specified LEADCLAD. They have found this advantage particularly useful in theatrical work since the advent of the talking picture which creates a condition not heretofore met in theatrical design.

One of the large theatre chains, after conclusive tests, now specify LEADCLAD exclusively for this work.

Continued on next page

LEADCLAD LEADER HEADS

Leader heads of cast lead have been an integral feature of ornamentation and practical usage for centuries. Noteworthy and beautiful examples lend a masterful touch to the architectural fitness of some of the world's noblest buildings.

The makers of LEADCLAD have developed the new LEADCLAD Leader Heads, anticipating the need for this type of ornament on modern buildings in the medieval style. Hand made, by skilled craftsmen, of one-piece welded construction, LEADCLAD Leader Heads have the softened line, the soothing tone, and rugged appearance that mark the historical cast lead heads of Old England. With the same pure lead protection applied by the LEADCLAD Process, these new heads are much lighter in weight, much stronger, than their ancient prototypes, and the cost admits of their usage on the smallest of homes.

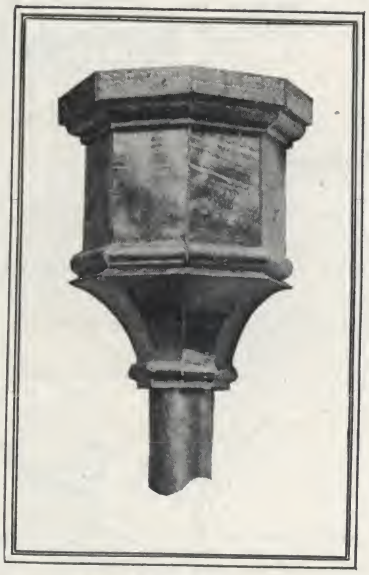
In addition to the regular series pictured below, special designs can be produced from the architect's drawings.

Exeter

Weight 14½ lb. Width 14½ in.
Height 25½ in. Depth 9 in.

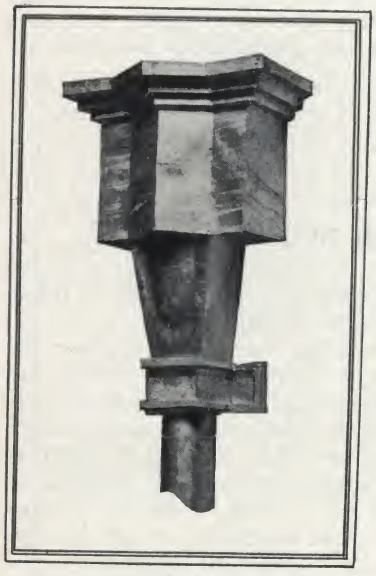
Bristol

Weight 24 lb. Width 17 in.
Height 36 in. Depth 10½ in.



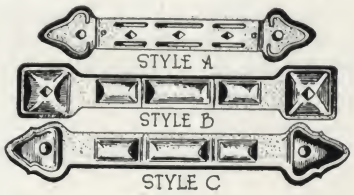
Norwich

Weight 15½ lb. Width 18 in.
Height 25½ in. Depth 12 in.



York

Weight 17 lb. Width 18 in.
Height 31 in. Depth 8½ in.



Straps

Style "A" for 2x3-in. and 3x4-in. square conductor. Can also be used for 3 and 4-in. round conductors.

Style "B" for 2x3-in. and 3x4-in. square conductor.

Style "C" for 2x3-in. and 3x4-in. square conductor.

One-piece construction, of LEADCLAD STEEL or LEADCLAD COPPER in both English cast and smooth finishes. Shipped flat, to be bent and formed by hand on the job.

Carlisle

Weight 15 lb. Width 14 in.
Height 30 in. Depth 8½ in.

REVERE COPPER AND BRASS INCORPORATED

Copper, Brass and Bronze Sheets

GENERAL OFFICES

ROME, N. Y.

DIVISIONS

BALTIMORE COPPER MILLS, Baltimore, Md.
DALLAS BRASS & COPPER CO., Chicago, Ill.
HIGGINS BRASS & MFG. CO., Detroit, Mich.
MICHIGAN COPPER & BRASS CO., Detroit, Mich.
ROME BRASS & COPPER CO., Rome, N. Y.
TAUNTON-NEW BEDFORD COPPER CO., Taunton, Mass.

BRANCH OFFICES

NEW YORK, N. Y., 230 Park Avenue
BOSTON, MASS., 61 Batterymarch Street
PHILADELPHIA, PA., 123 So. Broad Street
RICHMOND, VA., Travelers Building, 1108 E. Main Street
PITTSBURGH, PA., 910-937 Pennsylvania Avenue
CLEVELAND, OHIO, 809 Bulkley Building
CINCINNATI, OHIO, Union Central Building
DETROIT, MICH., 3104 E. Woodbridge Street
CHICAGO, ILL., 2200 N. Natchez Avenue
ST. LOUIS, MO., 2817 Laclede Avenue
NEW ORLEANS, LA., 207 Queen & Crescent Building
SAN FRANCISCO, CAL., 610 Wells Fargo Building
LOS ANGELES, CAL., 1321 Washington Building
SEATTLE, WASH., 317-318 Pioneer Building

Products

REVERE COPPER, BRASS and BRONZE SHEETS: Rolls, Strips; BRASS and COPPER RIVETS and NAILS. For Bars, Extruded Shapes, and Pipe, see Manufacturers' Index.

Revere COPPER & BRASS Products

Revere Sheet Copper

Revere Sheet Copper, with over a century of reputation for quality, is made by REVERE COPPER and BRASS INCORPORATED, and marketed under the Revere Red, White, and Blue Label.

Revere makes every type of sheet copper in use today, including hot and cold rolled copper, lead coated copper, nickel and chromium plated copper, and tinned copper.

Sheet Copper for Roofing

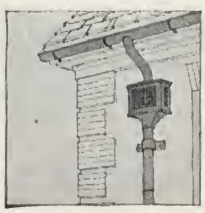
Revere Sheet Copper is the ideal roofing material. Because it cannot rust, and because of the absolute protection it affords under all types of weather conditions, it is also an economical material.

It does not require painting or protective treatment of any kind; it never needs repairing; the first cost is the only cost involved. For these reasons, the ideal roof is one in which copper is used throughout.

However, where the preference of the home owner or style of architecture dictates roofs of other materials—such as slate, shingles, or composition shingles, clay or cement tile—Revere Sheet Copper also plays an important part.

Flashings, valleys, ridges, cornices, gutters, eaves troughs and conductor pipes should be constructed of Revere Sheet Copper to insure maximum protection against weather. Revere Parallel Edge Strip Copper is recommended especially for this. This product, free from waves and wrinkles and correctly tempered, with edges parallel, is furnished in lengths from 5 to 10 ft. and in widths of from 6 to 16 in. Each strip is stamped with the "Revere" name.

Not only will Revere Copper be permanent and repair proof, and for that reason be more economical, but it will age beautifully and provide a touch of color to the home.



Lead Coated Copper

Lead coated copper possesses all of the advantages of uncoated copper—endurance, ductility, tensile strength—plus a new and attractive surface finish, produced by a coating of lead.

Where the gray finish is desired for roofing, spouting, cornices, etc., Revere Lead Coated Copper is the product to use. It tones down to a neutral gray as contrasted with the verde green color taken on by uncoated copper with age. It reduces to a minimum discoloration caused by water.

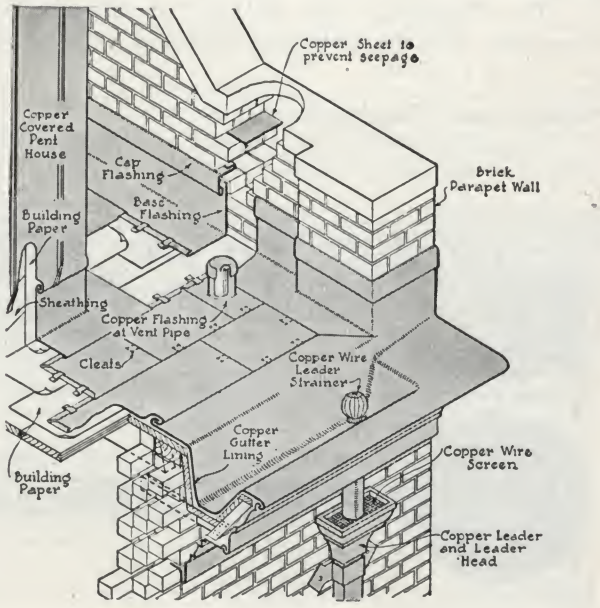
Revere Lead Coated Copper is supplied in two finishes and on any gage copper:

Leadtex "A"—Coated both sides only, with 15 lb. of lead per 100 sq. ft. for the two sides.

Leadtex "AA"—Coated one or both sides with 25 lb. per 100 sq. ft. for one side or double this weight for two sides.

Samples

We shall be pleased to send samples of sheet copper in any of the following finishes to architects upon request—plain hot or cold rolled, nickel plated one side, tinned one side, lead coated (Leadtex "A" and "AA").



BANGOR SLATE ASSOCIATION

BANGOR, PA.

MEMBER COMPANIES

AULD & CONGER CO., Cleveland, Ohio
BANGOR IDEAL SLATE MINING CO., Bangor, Pa.
BANGOR QUARRY COMPANY, Bangor, Pa.
BANGOR WASHINGTON SLATE CO., Bangor, Pa
BANGORVEIN SLATE CO., Bangor, Pa.
COLUMBIA BANGOR SLATE CO., Bangor, Pa.
THOS DITCHETT ESTATE, Bangor, Pa.
EAST BANGOR CONSOLIDATED SLATE CO., East Bangor, Pa.
HOUSTON BROS. CO., Pittsburgh, Pa.
NORTH BANGOR SLATE CO., Bangor, Pa.
OLD BANGOR SLATE CO., Bangor, Pa.
VENDOR SLATE CO, Easton, Pa.

Product

The members of the BANGOR SLATE ASSOCIATION are the Sole Producers of GENUINE BANGOR ROOFING SLATE—a blue-gray slate of the highest quality.

Purposes of the Association

The BANGOR SLATE ASSOCIATION is a non-profit membership corporation formed, (1) to bring about a wider appreciation of the real value of slate as a roofing material, (2) to invite the co-operation of architects, contractors and roofers in formulating and disseminating information regarding the most advantageous methods of application, (3) to protect the high reputation and standards of Genuine Bangor Slate. To accomplish these objects, the Association is constantly furnishing to the building world detailed information desired regarding Genuine Bangor Slate.

To insure that the architect obtains slate of a uniform grade and quality, an inspection service is maintained to inspect and label with the trade-mark all Genuine Bangor Slate. In addition, a certificate of quality and grade is furnished to each purchaser of Genuine Bangor Slate.

Service

The Association will welcome the opportunity to co-operate with the architect, contractor and roofer on all roofing problems.

Strength and Toughness

Figures published by the U. S. Geological Survey show Genuine Bangor Slate to have a strength of 9810 lbs. to the square inch and a toughness of .312—the strongest and toughest given for any Pennsylvania Slate. Without sacrificing flexibility, this slate possesses a wearing quality which makes it the standard by which other slates may be judged. Genuine Bangor Slate is practically non-weathering, and years of exposure on the roof show no appreciable change in color. Mill stock for structural purposes, Genuine Bangor slate flagging and blackboards are also produced by some of the members of the Association.

(Reg. U. S. Pat. Off.)
Look for Label Bearing This Trade-mark on All Shipments of Genuine Bangor Slate

Label and Certificate Protection

All Genuine Bangor Slate bears the trade-mark of the Association and each shipment is accompanied by a certificate of identification. Genuine Bangor Slate is guaranteed by the Association to conform to rigid specifications for material and workmanship. To insure the protection afforded by this guarantee, architects should insist on only slate bearing the Genuine Bangor label and compel the contractor to furnish a certificate.

This certificate should be checked by the architect, as substitutions of other slate for Genuine Bangor Roofing Slate are common occurrences.

The trade-mark shown has been identified for a generation with the superior slate produced in the Bangor, Pa., district.

Selections of Genuine Bangor Slate

No. 1 Clear—The finest grade of blue-gray slate produced. Uniform throughout as to color and texture, and free from knots and knurls that in any way interfere with the safe conveyance or the laying of the slate on the roof. Entirely clear stock. The customary tolerance to be allowed for thickness. Corners to be square.

No. 1 Ribbon—Similar in all respects to No. 1 Clear stock except that one or more ribbons of darker material may cross the slate in such manner that when laid with the regulation 3-in. lap, the ribbons shall not be exposed to the weather. Fracture tests prove that the ribbon is stronger than the slate.

To Specify Genuine Bangor Slate

Architects who desire Genuine Bangor Slate should specify only by the full name "Genuine Bangor Slate, with labels and certificate of BANGOR SLATE ASSOCIATION." This wording will protect the architect and his client against the substitution of inferior materials.

Small Size of Facsimile Certificate Issued with Every Car of Genuine Bangor Slate

Continued on next page

Stock Sizes Available at All Times

Due to the vast production of the Bangor Quarries, a complete stock of the sizes given in table and in standard thickness of approximately $\frac{3}{16}$ in. is available at all times. All shipments are made from quarries at Bangor or East Bangor, Pa. Heavier slate are manufactured promptly to order.

STANDARD SIZE SLATE AVAILABLE AT ALL TIMES

Type	Sizes are in inches, length by width in the order given						
No. 1 Clear.....	24x14	22x12	20x12	18x12	16x12	14x10	12x10
	24x12	22x11	20x10	18x10	16x10	14x 8	12x 8
	.....	.....	.....	18x 9	16x 9	14x 7	12x 7
	.....	.....	.....	.....	16x 8	.....	12x 6
No. 1 Ribbon.....	24x12	22x12	20x12	18x12	16x12	14x10	12x 8
	.....	22x11	20x10	18x10	16x10	14x 8	.....
	.....	.....	.....	18x 9	16x 8	14x 7	.....

QUANTITIES REQUIRED AND WEIGHT PER SQUARE FOR VARIOUS SIZES

Size of slate, in.	Weight per square, lb.	Number per square	Exposure with 3-in. lap, in.	Nails per square 3d copper, lb. and oz.	Size of slate, in.	Weight per square, lb.	Number per square	Exposure with 3-in. lap, in.	Nails per square 3d copper, lb. and oz.
24x14	641	98	10½	1–4	16x12	692	185	6½	2–4
24x12	641	115	10½	1–7	16x10	692	222	6½	2–12
22x12	652	127	9½	1–9	16x 9	692	247	6½	3–1
22x11	652	138	9½	1–12	14x10	716	262	5½	3–3
20x12	664	142	8½	1–12	14x 8	716	328	5½	4–0
20x10	664	170	8½	2–2	14x 7	716	374	5½	4–10
18x12	674	160	7½	1–15	12x 8	750	400	4½	4–15
18x10	674	192	7½	2–6	12x 7	750	457	4½	5–10
18x 9	674	214	7½	2–9	12x 6	750	534	4½	6–9
16x 8	692	277	6½	3–3					

Standard Specification "A"

Preparation of Roof—Before proceeding with roofing work of any nature whatsoever, the roofer shall examine all roof surfaces so intended for the application of slate, and report for correction any and all defects therein which will interfere with the execution of his work and guarantee thereof.

Cant Strip—Carpenter contractor shall provide in place at all eaves a beveled cant strip 1 in. in thickness at the lower side and 2 in. or more in breadth, so beveled that the slate will rest evenly thereon.

Paper—Cover all roof surfaces so intended for slate application with an approved brand of 30-lb. asphalt impregnated roofing felt. This felt shall be laid to shed water and accordingly lapped 4 in. on the rafter and 12 in. where vertical joints are occasioned. It must be in perfect, undamaged condition and free from holes when slate is applied.

Cement—Within 1 ft. of dormers, vertical walls, valleys, ridges, hips and similar places, slate shall be laid in an approved brand of elastic cement approximating the general color of the slate. (Within 2 ft. of the eaves where parapet walls require the use of a copper cricket, slate shall be laid in cement as above indicated.) *Note if required.*

Nails—Each slate shall be secured with two copper slating nails of sufficient length to penetrate the roof sheathing 1 in. in every instance. In no case shall nails be driven through (copper) flashings except when applying same.

Slate—Cover all properly felted roof surfaces as above detailed with Genuine Bangor Certificate Roofing Slate (size) [No. 1 Clear] [No. 1 Ribbon] identified with certificate and labels of the BANGOR SLATE ASSOCIATION. (*Note: Architects should insert size and grade here.*)

Manner of Laying—All slates shall be laid in proper weathertight manner with well broken joints and preserving a headlap of at least 3 in. above the second course below in all instances.

Valleys—All valleys shall be closed type and shall be properly slip flashed in each and every course. (*Where open valleys are required see foot note below.)* At valley intersections, all courses throughout the entire roof shall meet.

Ridges—Ridges shall be of Boston Type and laid horizontally in such a manner as to form a regular course of slate. There shall be no demarcation between the last course of slate and the ridge course. The holes in the ridge slate shall be punched to intersect the joints of the next course below. It is understood that the top course of slate shall be laid in elastic cement and so arranged that a first class waterproof job will result. In no instance shall the cement be so applied that it will run over face of the slate.

Diagram Showing Method of Laying Boston Ridge

Hips—All hips shall be applied in the Boston Style as per sketches supplied by the BANGOR SLATE ASSOCIATION, Bangor, Pa.

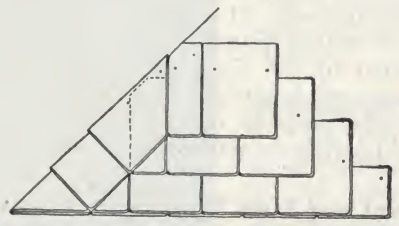


Diagram Showing Method of Laying Boston Hip

Flashings—Flashings on dormer cheeks and where the roof meets other vertical surfaces, shall be of sufficient size to lap 4 in. under the next above and extend 8 in. under slate on each side.

Cleaning Up and Guarantee—The contractor shall guarantee his work for a period of at least ... years, replacing or repairing any broken slates or leaks until the end of his guarantee period. Any stains of any nature whatsoever, excluding stains or dirt streaks caused by other contractors at time of building, shall be removed before acceptance of his work will be granted.

It is not the intent or purpose of the above guarantee to require the roofer to replace slates or repair leaks caused by other contractors or by causes beyond his reasonable control. This guarantee refers to faulty slate or workmanship which will not be allowed in connection with the application of this roof.

Note: For abbreviation purposes the following form of specification may be used in place of above: "All materials and labor in connection with slate work shall be furnished and performed in strict compliance with Specification 'A' of the BANGOR SLATE ASSOCIATION, Bangor, Pa. The slate shall be Genuine Bangor Certificate Slate (grade and size) with labels and certificate of the Bangor Slate Association."

Note: For the sheet metal work we recommend the specifications published by the Copper and Brass Research Association.

Slate on Flat Surfaces

Genuine Bangor Slate for this purpose are applied in small sizes, butt to butt over standard prepared roof surfaces in place of slag or gravel as per specifications issued by the manufacturers of prepared roofing materials.

Copies of such specifications will be mailed upon request.

THE CHAPMAN SLATE COMPANY

Sole Producers of Wm. Chapman Hardvein Roofing Slate

BETHLEHEM, PA.

Member of the National Slate Association

Products

WM. CHAPMAN HARDVEIN BLUE-GRAY ROOFING SLATE, in standard thickness, furnished in smooth or rugged texture. Complete stock of all sizes maintained for immediate shipment.

CHAPMAN TEXTURE SLATE: A rugged texture blue-gray roofing slate in graduated lengths and intermixed thicknesses. A large stock of heavier than standard slate is carried at all times.

FLAGGING in natural cleft surface with trimmed or natural edges.

STEPPING STONES for garden walks.

SLATE FENCE POSTS for rail fences.

General Description

Wm. Chapman is the strongest, toughest, least absorbent and slowest weathering slate produced in the Northampton-Lehigh districts of Pennsylvania.

This fine, close grained blue-gray slate is striated with hard siliceous veins which impart a beautiful sheen and texture. A Chapman roof is dignified, rugged, unfading and symbolic of endless durability—a worthy covering for the finest architectural efforts.

Operated by the Chapman family for more than eighty years—an American record for continuous production made possible only through fine quality of product and satisfied customers.

Government and State Work

Wm. Chapman Hardvein Slate will meet the most rigid requirements for U. S. Government and State projects requiring the finest quality of blue-gray roofing slate. Results of physical tests and chemical analyses from recognized testing laboratories will be furnished upon request.

How to Specify

Chapman Texture Slate may be applied under any standard slate roof specification. As a condensed form we suggest the following:

Cover all roof surfaces properly felted in accordance with standard specifications, with Chapman Texture Slate as furnished by THE CHAPMAN SLATE COMPANY, Bethlehem, Pa., graduated in thickness from ..... to ..... inches in random widths. (If a specially prepared layout is to be furnished by our architectural department, this should be stated.)

Wm. Chapman Slate Label

By request of architects, 2% of each shipment bears this label.

References

Herewith are listed a few of the buildings covered with Wm. Chapman slate roofs:

Brooklyn Bridge Buildings, New York, N. Y.
Central Park Buildings, New York, N. Y.
Long Island Historical Society, New York, N. Y.
Metropolitan Opera House, New York, N. Y.
Roman Catholic Cathedral, New York, N. Y.
United States Military Academy, West Point, N. Y.
Saint Barnaby's P. E. Church, Philadelphia, Pa.
U. S. Fort Terry, Plum Island, N. Y.
State Capitol, Albany, N. Y.
Bethlehem Steel Company, Bethlehem, Pa.

Residence of Arthur H. Hull, Harrisburg, Pa.
CLAYTON J. LAPPLEY, Architect
Chapman Texture Slate 16 in. x Random $\frac{3}{16}$ to $\frac{1}{2}$ in.

ESTABLISHED 1873

THE JOHN D. EMACK CO.

Thatchslate and Olde Stonesfield Roofs and Flagging

ARCHITECTURAL SERVICE AND DISPLAY ROOMS

Quarries	Home Office	101 Park Avenue
VERMONT	PHILADELPHIA, PA.	NEW YORK, N. Y.

Products

OLDE STONESFIELD ROOFS.
OLDE STONESFIELD FLAGGING.
THATCHSLATE.
Also Commercial Roofing Slate.

Olde Stonesfield Roofs

Olde Stonesfield Roofs are inspired by the age-old stone roofs of the Cotswold district but offer the added feature of unlimited variety, for in Olde Stonesfield Roofs the greatest range of colors, size, and texture are available and as designed by our Architectural Department fully meet the requirements of the individual building. (For specifications see next page 4 A.)

Thatchslate

In Thatchslate Roofs, designed and produced by THE JOHN D. EMACK CO., exclusively, the designer is offered a roof of rich color and texture at a cost between that of an ordinary commercial slate and the more expensive Olde Stonesfield Roofs. (For specifications see next page 4 B.)

Olde Stonesfield Flagging

Interesting colors and textures in irregular, semi-irregular and random rectangular shapes for inside floors, terraces, walks, steps, coping, etc.

Olde Stonesfield Flagging is also offered cut-to-pattern assuring the designer in advance of the ultimate effect of the work.

Stocks

We carry large stocks of both roofing and flagging for immediate shipment.

Circulars

Circulars regarding Thatchslate, Olde Stonesfield Roofs and Olde Stonesfield Flagging will be mailed on request.

Architectural Service

We will be pleased to co-operate with you in the preparation of specifications or designs of roofs or floors, estimating cost or furnishing such information as may be desired.

Quarries

We operate our own quarries for producing Olde Stonesfield and Thatchslate.

The interesting feature of Thatchslate (an exclusive Emack production) as shown in these color cuts is the exceptional, fine texture that is obtained at a minimum cost and you will note that the exposure of no two slate in any one roof are exactly alike. Thatchslate is not to be confused with material having broken corners as used in imitations. The slate are cut on a specially designed machine to produce this effect.

The three subjects shown in color are all Thatchslate but the same combinations can be furnished in straight edge Olde Stonesfield roofs as described above.

Continued on Next Page

Suggested Specifications for Olde Stonesfield Roofs and Thatchslate Roofs

(1) Roofing—All sloping roofs (and sides of all dormers), except where otherwise indicated on plans, shall be covered with slate as hereinafter specified.

(2) Felt—All surfaces which are to be covered with slate shall first be covered with an approved asphalt saturated felt weight 40 lb. [30 lb.] to the square. Lap well at all joints and fasten with the proper metal clips and nails to the roof sheathing.

(3) Cant Strips—At all eaves provide a wood strip of sufficient thickness to give the slate the proper cant. (The thickness of this strip is controlled by thickness of slate at eave.)

(4) Slate—*Note:* Use either paragraph A or B.

(A) Over the felt lay an *Olde Stonesfield Roof* designed and produced by The John D. Emack Co., Philadelphia. Roof to be laid in accordance with roof layout and instructions furnished by The John D. Emack Co. and approved by architect.

(B) Over the felt lay a **Thatchslate Roof** designed and produced by The John D. Emack Co., Philadelphia. Roof to be laid in strict accordance with roof layout and instruction sheet furnished by The John D. Emack Co. and approved by the architect.

(5) Head Lap—All slate shall be laid with at least a 3-in. head lap.

(6) Hips and Ridges—Mitered hips shall be used throughout. Finishing or ridge courses shall be of slate of same average exposure and widths as courses of roof immediately below. No long stretchers are to be used.

(7) Valley—*Note:* Use either paragraph C or D.

(C) All valleys, except where otherwise indicated, shall be round. Carpenter to build valley framing and roofer shall cover with slate in accordance with instructions and working drawing furnished by The John D. Emack Co.

(D) Straight closed valleys shall be used as shown or indicated on the architect's drawings.

(8) Flashing — Copper Nails — Cement, Etc.—

OLDE STONESFIELD SLATE FLAGGING

Description:—

Olde Stonesfield Slate Flagging can be supplied in a wide range of colors as indicated below, in either natural cleft or milled surfaces.

Edges, rectangular sizes. Can be furnished either trimmed, rough sawn or milled for Random Rectangular, cut-to-size or pattern.

Edges, Irregular sizes. Furnished in sculped or broken edges only.

Cut-to-pattern. Olde Stonesfield Flagging can be furnished in cut-to-pattern designs with each piece numbered, thereby insuring desired effect.

Treads, Copings, Base, etc. Olde Stonesfield Flagging can be furnished in either natural cleft or milled surface in thicknesses and dimensions as desired. Edges can be rough sawed, tooled or milled.

Impervious to Stains. Aside from its beautiful color and interesting texture Olde Stonesfield Flagging is impervious to stains, being non-absorbent it can easily be cleaned.

Circular. Circular will be furnished with detailed information and additional uses upon request.

Random Rectangular—Limited Sizes

Semi-Random Rectangular

Irregular

Random Rectangular

KNICKERBOCKER SLATE CORPORATION

355 West 26th Street
NEW YORK, N. Y.

Products

ROOF SLATES; FLOOR and GARDEN FLAGGING; STRUCTURAL SLATE.

SNOW GUARDS; SLATING NAILS.

Also Slate Blackboards.

Old European Graduated Slate Roofs

Our experience in the handling of *graduated slate roofs* dates from the first introduction of these roofs into this country, keeping pace with the subsequent improvements in quarrying and applying of this material.

Old European slate roofs are all that modern artistic demands can possibly desire. Marked in texture, graduated in exposures and thickness, random in widths, colors placed haphazard throughout the roof, with more or less departure from symmetry of lines, gives a brief word picture of these beautiful roofs.

Colors range in purples, grays, greens, reds and blacks of varying shades, with some weathering to buffs. A distinguishing color feature of these roofs is the fact that they grow in beauty with age in direct contrast with manufactured roofings.

Cost will vary in range from about that of the ordinary slate roof upwards. Low cost roofs in this line can be worked out to contain some of their attractive features.

For a roof of this character we make up a roof plan outlining each and every course therein, noting the length and thicknesses of every course, thereby making clear the proper placing or laying of the slate. Blue prints furnished as desired.

Old European Terrace, Floor and Garden Flagging

Again, our experience dates from the first use of this material for garden walks, etc.

The features of these floors are their pleasing texture and beautiful color effects which are everlasting. The colors are generally purple and green with black, red and buff introduced in such quantities as the individual job requires. The material offers a pleasing texture in its natural quarry surface. The individual pieces are either irregular shapes, varying in size from about 1 to 4 sq. ft.; or square and rectangular. The thickness approximates 1 in., which is sufficient for any purpose.

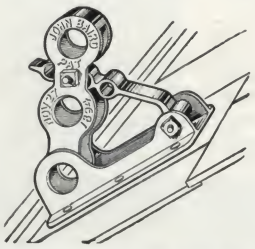
A Curved Valley

Snow Guards

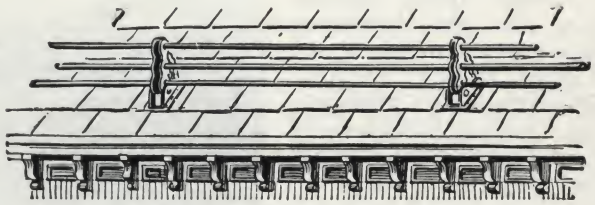
The patent snow guard standard, in connection with ¾-in. (outside measurement, 1 in.) galvanized gas pipe, composes the "pipe" or "rail" guard. This standard is adjustable to any pitch of roof. The plate is made the thickness of Standard No. 1 slate and of the same dimensions as the slate upon the roof where used, the plate taking the place of a slate and being well secured to the roof with wood screws or otherwise as may be desired.

Standards with plates of greater thickness than Standard No. 1 slate will be made to suit heavier slate at an additional charge. Plates will also be made of suitable form for use on tile or other roofs. Standards are placed along the eaves of all roofs from 5 to 6 ft. apart and are made for 3 pipes.

When ordering, specify the size of slate to be used on the roof (Standard No. 1 thickness is understood unless otherwise ordered).



Snow Guard Standard



Pipe or Rail Guard Complete

Slating Nails

Most slate roof troubles are due to slates falling out because the nails have corroded, therefore cut yellow metal or copper wire nails are recommended.

Our nails are made up and shaped distinctly for slating purposes—the result of many years' experience.

Structural Slate

Furnished in various shapes and sizes for use as steps, platforms, risers, wainscoting, base, toilet slabs of all kinds, floors, electrical slabs, etc. This can be supplied in regular ribbon black, clear black, light green and mottled purple and green.

The light green and mottled purple and green slates present a very fine appearance and are especially suitable for use in entrances, lobbies, stairways, etc., where architectural beauty is desired. They compare favorably with marble but are considerably cheaper.

In the use of this material it is important that expert advice be secured as to the best method of installing the slate. Our Service Department will freely give this advice, and the benefit of our expert experience on any installation project submitted to us.

ESTABLISHED 1869

RISING & NELSON SLATE CO.

Miners, Makers and Shippers of High Grade Roofing Slate

QUARRIES AND MAIN OFFICE

WEST PAWLET, VT.

BOSTON OFFICE, 46 Cornhill
NEW YORK OFFICE, 101 Park Avenue
CHICAGO OFFICE, 2554 West Harrison Street
PHILADELPHIA OFFICE, 112 South 16th Street
DETROIT OFFICE, 2539 Woodward Avenue
LONDON OFFICE, 26 Martin Lane, Cannon Street
ARCHITECTS' SERVICE DEPARTMENT, 101 Park Avenue, NEW YORK, N. Y.

Tudor Stone Roofs and Flagging

TRADE-MARK

Products

"Tudor Stone" and "Tudor Stone Jr." Roofing Slate.

Commercial Roofing Slate.

"Monson Maine" Unfading Black Roofing Slate.

"Tudor Stone" Flooring Slate and Garden Flagging.

Production

The fact that this company owns and operates numerous quarries in addition to controlling the production of a number of others insures quality and uniformity of result in all slate. This is especially true of architectural slate, which is quarried to order under trained architectural supervision.

Architectural Specialties

"Tudor Stone" Roofing Slate; also the following, which are variations of the *"Tudor Stone"* group: Golden Pheasant, Valenheli, Verde Unique, Yorkshire Gray, Cotswold, *"Tudor Stone, Jr.,"* etc. These are distinct types, not ordinary slate parading under new names, as can readily be seen by comparison.

"Tudor Stone" Roof in Perfect Harmony
Warren & Clark, Architects

Tudor Stone is peculiarly desirable for the house with a broad expanse of roof. For here one has a rare opportunity to utilize the slate in a multitude of shapes, sizes, and color tones, and so design a roof of exceptional beauty

Commercial Roofing Slate

Sea Green, Unfading Green, Weathering Green, Mottled Green and Purple, Clear Purple, Purple Vein, Rustics, Red, etc., quarried in Vermont.

Genuine Bangor, Albion or Jackson Bangor, Washington Bangor, Franklin, Chapman, Peach Bottom, etc., quarried in Pennsylvania and elsewhere. Monson and Brownville, quarried in Maine, Buckingham, quarried in Virginia.

"Monson Maine" Black Roofing Slate

"Monson Maine" Roofing Slate commends itself to the architect who is seeking the finest type of unfading black slate obtainable. This black slate is unsurpassed for strength and lasting qualities and is far more beautiful than inferior materials. "Monson Maine" slate is shipped direct from our quarries and, therefore, receives the strict supervision and inspection as our other slate.

This beautiful black slate does not cost much more to quarry, the freight charges are about the same, and it does not cost any more to apply than inferior slate. Hence, a truly high class roof may be specified without seriously increasing total appropriation of building.

Flooring Slate and Garden Flagging

Split surface or rubbed surface, trimmed or sawn edges. Irregular shapes, random sizes, rectangular shapes and regular-size pieces. In full range of weathering and unfading colors in all thicknesses.

Samples and Booklet

Samples of any slate desired forwarded on request.

We have booklets and architectural leaflets showing examples of our products. We would be pleased to forward copies of these on request.

Architects' Service Department

The Service Department established in the Architects Building, 101 Park Avenue, New York City, is under trained architectural direction, and is equipped and maintained by this company for the convenience of architects and others who may require information in reference to roof design and construction.

Architects are requested to make use of the facilities offered, either for preliminary work or for the preparation of complete roof layouts and estimates of costs.

This service is rendered without obligation.

Specifications for "Tudor Stone" Roofing Slate

Preparation — Slating contractor shall examine roof boarding and report to carpenter all defects which would be detrimental to the durability of the finished roof, and shall see that defects are remedied before applying felt.

Carpenter contractor shall furnish and apply a cant strip nailed about 2 in. above the eave line of the slate and shall put water shedding cant strips back of chimneys and up the sides of dormers and where else required. The carpenter contractor shall also build up forming where curved slate valleys are shown and furnish and place all blocking required by roofer.

Roofing contractor shall furnish and apply elastic cement where in his judgment the same is necessary.

Felt—Cover surface to be slated, including cheeks of dormers, with slater's asphalt impregnated roofing felt weighing 30 lbs. to 100 sq. ft. lapped 6 in. at joinings. (See Note 1.)

Where curved slate valleys are shown felt shall be double thickness.

Slate—All surfaces prepared for slate as above described shall be covered with "Tudor Stone" Roofing Slate, as made by the Rising & Nelson Slate Co., West Pawlet, Vermont.

Thickness, exposure to the weather and character of laying shall be as indicated on roof layout prepared by the Architects' Service Department of the Rising & Nelson Slate Co., under the direction of the architect.

Nails—Nails shall be copper (see Note 4) slater's nails of sufficient length to adequately penetrate the roof boards using not less than 2 to each slate.

Flashing—The sheet metal contractor shall furnish and the slate contractor shall install 16-oz. soft rolled copper built-in flashings as required at closed valleys, chimneys, dormers and other necessary places. Flashing shall extend not less than 4 in. under slate and have not less than 4 in. exposed above the slate on a line at right angle to the roof and shall not be nailed to

Continued on next page

the vertical surface. Roofing contractor shall insert all aprons required, which will be furnished by sheet metal contractor.

A Terrace of "Tudor Stone"
The rugged texture and infinite variety of soft, natural colorings of "Tudor Stone" Flagging make it peculiarly suitable for garden walks and terraces

Sheet metal contractor shall apply counterflashing and make same secure against leaks.

Open Valleys—All open valleys shall be 16-oz. soft rolled copper (see Note 5), 20 in. wide, nailed at top only. In applying slate, care shall be used that no nails penetrate the sheet metal valleys.

Closed Valleys—All closed valleys to be flashed with 16-oz. copper flashing over each course. Flashing to lap at least 2 in. and to extend 10 in. either side of valley.

Round Valleys—To be carefully fitted and laid with special long slate. No metal used unless specially directed, but care must be taken to preserve continuity of roof color and texture.

Ridges—Ridges and hips shall be of slate laid mitered (or Boston style). If design should so require, ridges and hips should have 16-oz. copper hip and ridge rolls (see Note 6) as shown and detailed.

Guarantee—Contractor shall guarantee to maintain all slate roof surfaces in a watertight condition for a period of 2 years from completion.

Specification for Plain Hipped Roof with Valleys and Dormers Using Commercial Grade Slate

Preparation, Cement, Felt and *Guarantee* to be specified as described under heading "Tudor Stone" Roofing Slate with such modifications as may be necessary to meet the individual problem.

Slate—All surfaces prepared with felt as above described shall be covered with No. 1 Weathering Green (see Note 2) Roofing Slate, as furnished by the Rising & Nelson Slate Co., West Pawlet, Vermont. Slate shall be of random widths and 16 in. long (see Note 3); laid with 3-in. head lap so that distance to the weather shall be 6½ in.

Nails (see Note 4), *Valleys, Flashing* and Ridge to be specified as described under heading "Tudor Stone" Roofing Slate.

Specification Notes

Note 1—For best commercial work 30-lb. felt is recommended. For slate not over ¼ in. thick 16-lb. felt may be used.

Note 2—Substitute, if desired, "Tudor Stone Jr.," Weathering Green, Unfading Green, Mottled Green and Purple, Clear Purple, Red or Pennsylvania Slate.

Note 3—Substitute other lengths or uniform widths if desired, but note that commercial slate are made in lengths from 10 to 24 in., always in even inches, and that slate should have 3-in. head lap on second slate.

Note 4—Substitute for less expensive work away from seashore, galvanized iron or copper clad steel nails.

Note 5—Substitute zinc, galvanized iron or tin if desired. Copper is recommended. Curved slate valleys require special attention and when required should be specified to be watertight and of uniform appearance to adjoining slate.

Note 6—Substitute 4-lb. sheet lead or galvanized iron if desired, or specify slated "Boston" hips and ridges or mitered slated hips and ridges. Plumbing specifications should call for 4-lb. sheet lead flashings, 18 in. square, turned up 4 in. around all plumbing pipes, with separate lead cap flashing extended down to the slate and calked into first joint of pipe above the roof.

Specifications for Slate Floors, Terraces and Walks

Slate—The contractor shall furnish and lay all slate for walks, floors and terraces listed below. Slate shall be (here specify color, thickness, surface, size when necessary, shape of pieces, style of edges and width of joints).

On Soil with Grass Joints (Soil or Turf Subbed)—If ground is not well settled, wet and tamp thoroughly. Lay slate directly on soil in (here specify arrangement and pattern). Each piece of slate shall rest on a solid, even bed with the top surface level.

On Soil with Grass Joints (Cinder Subbed)—Mark out location of all walks and terraces to be laid with slate with grass joints and excavate to a depth of 8 to 10 in. Fill excavations with cinders from 6 to 8 in. deep, well rolled and tamped to an even surface. On top of cinder bed place a 2-in. layer of soil and on soil lay slate in (here specify arrangement and pattern). Fill all joints with soil to level of surface of slate and sow grass seed.

On Masonry Slab Laid in Concrete—Place from 1 to 2 in. (depending on final level) of setting mixture (3 parts sand with 1 part of cement). As soon as this setting bed is leveled, sprinkle with pure portland cement to perfect bond between bed and slate and lay slate in (here specify arrangement and pattern). Thoroughly wet pieces of slate and firmly embed to desired level. Point all joints with concrete mixed 2 parts well-sieved sand and 1 part cement.

Cleaning Slate—(*Note: Only required for slate floors with concrete mixture joints*). Sponge all slate as set on exposed surface with clean water to remove mortar stains, and, if necessary upon completion, rub down with a solution 3 parts coal oil and 1 part linseed oil. (If light or weak solution of muriatic acid is needed and used for cleaning, care should be taken to wipe only exposed slate surfaces to avoid eating out cement joints.)

An Example of "Tudor Stone" Roof
Julius Gregory, Architect
The interesting lines of this house have been subtly emphasized by the harmonious blending of colors, sizes and shapes of the "Tudor Stone" in a roof especially designed for the building

Completion—Upon completion, all slate shall be sound, whole and clean; the work shall be left smooth and in every respect a neat example of craftsmanship.

J. W. WILLIAMS SLATE CO.

Producers of Highest Quality Slate Roofs and Slate Specialties

MAIN OFFICE
Drake Building, EASTON, PA.
VERMONT OFFICE, POULTNEY, VT.
ARCHITECTURAL SERVICE DEPARTMENT, 103 Park Avenue, NEW YORK, N. Y.

Products

PENRHYN STONE for roofing, floors, garden walks, coping, etc.

COTSWOLD STONE for roofs and exterior flagging and walks.

VERMONT SLATE of varied colorings, in commercial and architectural thicknesses for artistic roofing.

GENUINE BANGOR BLUE-GRAY ROOFING SLATE from the Bangorvein quarries in Bangor, Pa.

PENNSYLVANIA BLUE-GRAY SLATE in all grades and thicknesses.

ROUGH TEXTURED BLUE-GRAY SLATE in architectural thicknesses.

Penrhyn Stone

Penrhyn Stone is the product of a series of quarries operating in the Penrhyn Hills on the border of the State of Vermont.

The wonderful texture and coloring of this material allow harmonious combinations that are adaptable to any type of architecture or period reproduction. The various shades and variegated colorings of purple, gray, green, brown, etc., are so intermingled and weathered that a newly laid roof has all the aged appearance that is characteristic of the roofs on the ancient castles and homes in England.

Penrhyn Stone is produced by skilled craftsmen. It is quarried, split, and trimmed entirely by hand into sizes and thicknesses required by each individual roof, as determined by a study of the architect's plans. Either dark or colorful effects can be produced just as the architect desires or period reproduction demands. The nature of the rock does not admit of being split into commercial thickness and it is, therefore, essentially an architect's slate and especially adaptable to roofs where texture, color, general excellence and integrity of the material itself in addition to the architectural effectiveness, is the paramount object.

Architectural Roof Design

The Company's organization with over 14 years' experience in the layout of roofs for numerous important projects throughout the United States, and its intimate knowledge of the possibilities connected with the slate produced and available in the Vermont and Pennsylvania quarries, is prepared to collaborate with the architectural profession in the preparation of specifications for the artistic roofing of any style of architecture.

Cotswold Type of Roof

The residence shown below is a reproduction in slate rock of the centuries old roofs in the Cotswold district of England. The architect (Mr. Alfred Hopkins) has introduced the Cotswold type of architecture in a number of his residential designs and in each instance the roof is of the beautiful and varying color tones of "Penrhyn Stone" laid in small units of graduated lengths, giving exposures varying from 5½ in. at the eaves to 2½ in. at the ridge. The surface of the slate is of rough texture; the thicknesses, varying from ¾ to ⅜ in., are intermixed in each course.

Interesting examples of "Cotswold" roofs are the residences of:

F. R. Huntington, Columbus, Ohio.
H. Gilbert, Bowmansdale, Pa.
J. W. Lawrence, Pittsburgh, Pa.
H. Ledyard, Grosse Point, Mich.
O. M. Mitchell Residence and Farm Buildings, Greenwich, Conn.

Residence of H. Ledyard, Grosse Point, Mich.
ALFRED HOPKINS, Architect

Continued on next page

Vermont Colored Slates

The slates listed below are exclusive productions of our quarries situated near Fair Haven, Vermont, and are positively unfading in color. U. S. Government specifications require that slate classified as unfading must come from quarries North of Poultney, Vermont—this includes Fair Haven.

Verdelite Unfading Green—

Verdelite Unfading Green is of a shade of green that is not only uniform and positively unfading, but has none of the dullness or gray color so characteristic of all other so-called unfading greens. When first laid on the roof it is a light green, but it soon assumes a uniformly dark rich green that is permanent and unchangeable in color.

Mottled Purple—

Mottled Purple is a purple slate in which markings of green appear of the same shade as Verdelite Unfading Green and for this reason it is exceptionally valuable in a mixture of the two slates.

Variegated Purple and Green—

Variegated purple and green is a blend of the two colors with the purple predominating. It has a remarkable good texture and makes a beautiful roof without any other mixture.

Mottled Gray—

A greenish gray slate of excellent quality and good texture with streaks of mottlings of darker gray. Mottled gray is of great value in combination with purples and weathering green where mixed color effects are desired.

Weathering Green

A slate of architectural texture which weathers out from a gray green to varying shades of buff, brown and yellow. While the degree and nature of color change is not pre-determinable this very quality when used in mixture is very valuable in producing a decidedly warm color effect.

Rustics (Usually Termed "Freaks")

This highly colored slate (browns, yellows, varicolored tone) is quarried close to the surface and is useful in getting an immediate color effect which otherwise would be delayed until the weathering slates had been exposed for a year or so on the roof and had time to change their color. Being surface material it is not of a solid character and consequently susceptible to a good percentage of loss in transportation and application. The slate receives its color from the seepage of the surface water into the interstices of the rock and this color is retained on the surface of the slate when split for roofing and is permanent.

Its exceptional color is its great recommendation but we cannot guarantee its strength, though when on the roof experience shows that it is about as durable as other slates.

English Rough Cleft

An interesting and artistic roof in thicknesses varying from $\frac{3}{16}$ to $\frac{3}{8}$ in. The color tones we introduce in this type of roof consist of varying shades of gray, weathering, greens, rustics, purples and black—this combination when intelligently distributed in application gives a roof a dark general tone that after a few months exposure to allow of "weathering" brings out the final coloring, which it is very distinctive and pleasing. The slate used may be limited to a single length in random widths or in graduated lengths and exposures which if correctly balanced produces a distinctive and individual effect.

Rough Cleft Blue-Gray Slate

A rough textured slate of architectural quality in varying lengths, widths and thicknesses to meet the demand for a dark toned graduated roof.

Penrhyn Stone for Floors, Garden Walks, Garden Seats, Wainscoting, Base, etc.

The wonderful applicability of slate for both interior and exterior effects, with its beautiful and especially effective yet subdued natural colorings, is now fully recognized by the architectural profession.

It has the advantage over other materials in that it can be used with either a rough cleft surface in any degree of roughness desired, or with a rubbed finish similar to a marble tile. The range of colors obtainable is extensive and when carefully selected and blended the result is exceptionally striking and artistic.

The use of slate for terrace and porch floorings in random irregular shapes in mixed colorings is coming more and more into use in America. In Europe, it has been used for centuries—as a reference to illustrations of the floorings and walks of these old structures will testify.

For steps, risers, coping and window sills, slate has many advantages over other materials—it does not absorb moisture, and the colorings can be selected to harmonize with the slate roof.

For stepping stones and garden walks a roughish surface is invariably required by landscape architects, but for terrace and porch floors a comparatively smooth surface (though natural cleft) should be selected so as not to interfere with the free use of the porch furniture.

Where a sub-base of cement is used the thickness of the slabs need not be more than ½ in. but where the Stone is laid in soil a thickness from ¾ to 1 in. is advisable.

The maximum size of the slabs should be determined by the dimensions of the space to be covered—large areas lend themselves to the use of individual slabs of a dimension that could not be successfully used on smaller areas.

Cotswold Stone Roofs

The Cotswold type of English Tudor design with its stone roofs have aroused the enthusiasm of some of our leading architects and reproductions are being designed and specified. To quote a prominent New York architect "the beauty of the Cotswold roofs lie principally in the effect of texture which is brought about by the inequalities of the roof surface; the stone itself is rough on all edges, thick, and laid in courses beautifully graduated in small units." We have made many reproductions using slate instead of stone but we now offer a stone roof of the Cotswold type in interesting tones of Buffs, Rustics, Browns, Gray and Blue in thicknesses of ½ to 1 in. (thicker if desired) and in graduated lengths.

Cotswold Stone Flagging

A natural stone in a variety of subdued colors including Grays, Buffs, Rustics, Browns, Blue, etc.

Cotswold Stone has a very pleasing surface, just rough enough to the foot to prevent slipping when wet which makes it highly desirable for garden walks, steps, curbing for swimming pools and terraces.

Cotswold Stone is supplied in either random sized rectangles or in slabs cut to dimensions as to length and width and in thicknesses from 1 to 3 in.—it is readily cut with a cold chisel to fit any space without breakage.

Descriptive Booklets

We issue specifications and illustrated booklets on the use of "Penrhyn Stone" for architecturally designed graduated roofs, garden walls, interior and exterior floorings and other purposes.

ESTABLISHED 1901

O'BRIEN BROTHERS SLATE COMPANY, INC.

Quarriers and Manufacturers of Roofing Slate and Slate Flagging

MAIN OFFICE
GRANVILLE, N. Y.

QUARRIES—PAWLET, VERMONT

ARCHITECTS SERVICE DEPARTMENT, 101 Park Avenue, NEW YORK, N. Y.

Products

UNFADING GREEN; UNFADING MOTTLED GREEN and PURPLE; GRAY; WEATHERING GREEN; VERMONT BLACK; RUSTICS (so-called Freak Slate).

Colors

Unfading Green—Considered one of the best products manufactured in Vermont Roofing Slate, absolutely unfading and a certificate is furnished by the Unfading Slate Association to the effect that our slate is *unfading.*

Unfading Mottled Green and Purple—The green and purple color appears in each individual slate. A certificate is furnished by the Unfading Slate Association with every shipment which guarantees that the slate is *unfading* and is of the best possible slate rock obtainable.

Gray—This slate is furnished in two shades, a light and dark, and is of a somewhat rougher texture than our other slate.

Weathering Green—A commercial slate that gives the owner the best possible roof protection at the least possible price. This material fades out but this fading does not affect the watertightness of a roof of this color.

Vermont Black—A rough texture slate produced only in ¼ in. and thicker thicknesses. Some are a shiny black while others are sort of gray-black.

Rustics—The quarry people call them Freaks, they are a top rock of very poor qualities for durability. The bronze and yellow colors disappear after being exposed to the weather. This type of slate is recommended only in ⅜ in. and thicker thicknesses.

Specifications

(1) General and Guarantee—

(a) The General Conditions of the contract are hereby made a part of the contract and this contractor shall examine these General Conditions and thoroughly acquaint himself with all the requirements therein contained.

(b) This contractor shall furnish all materials and labor in accordance with the drawings and these specifications.

(c) This contractor shall inspect all surfaces prepared for slating by other trades, point out to the proper authority all defects, and shall not proceed with the laying of felt, flashings or slate until the necessary corrections have been made.

(d) Roofing shall be applied by workmen experienced in the applying of slate.

(e) The roofing contractor shall furnish his own scaffold or rigging, or arrange with the general contractor for the use of scaffolds furnished by others.

(f) A written guarantee shall be furnished that the materials used are in strict accordance with these specifications, and that any and all repairs required on the roof due to defective materials or workmanship furnished under this contract shall be made without cost to the owner for a period of one year.

(2) Roofing Felt—

(a) On all boarding to be covered with slate, furnish and lay asphalt saturated rag felt, not less in weight than that commercially known as "14-lb." felt. In this weight, per 100 sq. ft., a tolerance of 1 lb. plus or minus will be allowed.

(b) Felt shall be laid in horizontal layers with joints lapped toward eaves and at ends at least 2 in. and well secured along laps and at ends as necessary to properly hold the felt in place and protect the structure until covered by the slate. All felt shall be preserved unbroken, tight and whole.

(c) The felt shall lap over all hips and ridges.

(d) Felt shall be lapped 2 in. over the metal of any valleys or built-in gutters.

(3) Slate—

Slate shall be of commercial standard No. 1 quality and thickness, size 14 x random widths, Unfading Green Slate as mined and manufactured by O'BRIEN BROTHERS SLATE COMPANY, INC., Granville, N. Y. A certificate of the Unfading Slate Association of Vermont shall be furnished by the contractor.

All slate shall be hard, dense, sound rock, machine punched for two nails each. All exposed corners shall be practically full. No broken corners on covered ends which sacrifice nailing strength or the laying of a watertight roof will be allowed. No broken or cracked slates shall be used.

(4) Hips—

(a) All hips shall be laid to form "saddle" hips without metal underneath.

(5) Ridges—

(a) All ridges shall be laid to form "saddle" ridges. The nails of the combing slate shall pass through the joints of the slates below.

(6) Valleys—

(a) All valleys shall be laid to form "open" valleys.

(7) Elastic Cement—

(a) Cement shall be an approved brand of waterproof elastic slaters' cement colored to match as nearly as possible the general color of the slate.

(8) Nails—

(a) All slate shall be fastened with two large-head slaters' solid copper nails. Use 3d (1¼-in. nails for slates 18 in. or less in length, 4d (1½-in.) for 20-in. or longer, and 6d (2-in.) for slates on hips and ridges.

(9) Slating—The entire surface of all main and porch roofs, the roofs and sides of any dormer windows, if shown, and all other surfaces so indicated on the drawings, shall be covered with slate in a proper and watertight manner.

(b) The slate shall project 2 in. at the eaves and 1 in. at all gable ends, and shall be laid in horizontal courses with the standard 3-in. headlap, and each course shall break joints with the preceding one. Slates at the eaves or cornice line shall be doubled and canted ¼ in. by a wooden cant strip.

(c) Slates overlapping sheet metal work shall have the nails so placed as to avoid puncturing the sheet metal. Exposed nails shall be permissible only in top courses where unavoidable.

(d) Neatly fit slate around any pipes, ventilators, etc.

(e) Nails shall not be driven in so far as to produce a strain on the slate.

(f) Cover all exposed nailheads with elastic cement. Hip slates and ridge slates shall be laid in elastic cement spread thickly over unexposed surface of undercourses of slate, nailed securely in place and pointed with elastic cement.

(g) Build in and place all flashing pieces furnished by the sheet metal contractor and co-operate with him in doing the work of flashing.

(h) On completion all slate must be sound, whole and clean, and the roof shall be left in every respect tight and a neat example of workmanship.

F. C. SHELDON SLATE COMPANY

GRANVILLE, N. Y.

BRANCHES IN PRINCIPAL SLATE CONSUMING CENTERS

CHICAGO, 2654 Ward St. DETROIT, 1115 Francis Palms Bldg. NEW YORK, 101 Park Ave., Room 514
CINCINNATI, 35 Poinciana Apartment SEATTLE, 1107 W. Idaho St. PORTLAND, ORE., 501 Grand Ave.
ATLANTA, Williams Mill Rd. KNOXVILLE, TENN., 426 W. Depot St. MONTREAL, P. Q., 9 Olier St. TORONTO, ONT.

PLANTS AND ASSEMBLING YARDS AT POULTNEY, PAWLET, AND RUPERT, VT., GRANVILLE AND MIDDLE GRANVILLE, N. Y.

EXHIBITS

NEW YORK, N. Y., Architects' Samples Corporation, 101 Park Avenue BUFFALO, N. Y., Architects' and Builders' Exhibits, Inc., 1 Niagara Building

The Company and Its Service

Owns and operates, with subsidiaries, twelve quarries, five mills and five assembling yards, extending throughout Vermont-New York Slate Belt. Produces and sells, under personal supervision of Staff Experts, a complete variety of slate for every purpose in any desired style or finish. A fleet of twelve trucks supplements rail deliveries.

Architectural Service

Sketches, Layouts, and every form of co-operative assistance promptly rendered. Roof installations personally supervised when conditions require.

Specialties

Sheldon's Unfading Mottled and Rustic Gray—Slightly varying shades—gray background with dark harmonious colorings. Also, a co-ordinating Unfading Green. Singly or in combination will amply meet conditions inviting their use.

Sheldon's Unfading Mottled Green and Purple—Some nearly clear, others with beautiful colorings blending from green to purple, or vice versa, in each unit. Can be selected for exclusive color predominance.

Exact Replicas of Olde English Roofs and Walks—In the production of which only old country craftsmen of great skill and long experience are employed.

Sheldon's Special Rough Cleft $\frac{3}{16}$ to $\frac{3}{8}$ In.—Any combination of sizes and colors applied to layout.

Guarantee a splendid low priced architectural roof—justifying the confidence implied by an ever-increasing demand.

Sheldon's Hard Vein National Black—Strictly unfading—equally as durable, more economical, than Maine or Virginia Slate.

Sheldon's Slate Flags—Can be furnished in colors which are different, exclusive, impossible of duplication. Experienced mechanics sent anywhere to handle installation.

Sheldon's Semi-weathering Green and Gray—The standard of comparison.

Colors so combined as result of special tests, uniform percentage on exposure weather to soft tones of brown and buff, balance retain their original color. For matured effect equalling cut, insist on Sheldon's. A promiscuous choice will fail to do so. Unequalled for low cost. Possess every desirable feature constituting the perfect roof. Modulus of rupture, 14,000 lb. per sq. ft.; greater than Maine or Virginia or other Vermont slate; more than twice that of Pennsylvania slate. Porosity, less than ¼ of 1%.

Exact Reproduction at Full Maturity of Sheldon's Semi-Weathering Green and Gray Roofing Slate of Standard Commercial Thickness Averaging $\frac{3}{16}$ in.

Continued on next page

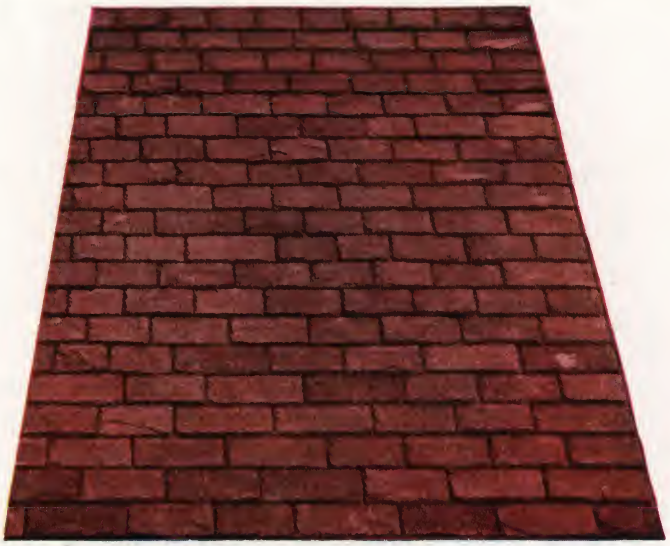
Sheldon's Arabian Red

Exclusive and distinctive—grows brighter on exposure For many years exceedingly limited, now quickly available to any extent for roofing or structural uses

Washington County, New York, only source of production in this country.

Sheldon's Olde English Combination No. 12

The highest achievement in architectural slate roofs. Cut shows exposures 10½ in. to 5½ in., thicknesses ranging 1 in. to ¼ in. Simply specify—"Roofs to be covered with Sheldon's Olde English Combination No. 12 (following with maximum and minimum thicknesses and exposures) as manufactured by F. C. Sheldon Slate Company, Granville, N. Y., in accordance with detailed layout to be furnished by them and approved by architect."



Sheldon's Olde English Rough Cleft Unfading Arabian Red

Olde English Architectural Slate Combination No. 12

Recent Projects Roofed with Sheldon's Slates

Project	Location	Architect
John Russell Pope Residence	Newport, R. I.	John Russell Pope, New York, N. Y.
Rand Residence	Buffalo, N. Y.	E. B. Green & Son, A. H. Hopkins
Church of the Blessed Sacrament	Decatur, Ill.	Aschauer & Waggoner
Deaf Mute School	Rochester, N. Y.	Leon Stern
Goodyear Estate	East Aurora, N. Y.	John Russell Pope, New York, N. Y.
Fullbright School	Springfield, Mo.	W. B. Ittner, Inc., St. Louis, Mo.
School of Liturgical Music	Washington, D. C.	Murphy & Olmstead
C. M. Day Residence	Jackson, Mich.	Beckett & Akitt, Detroit, Mich.
Marcus Ward Home	Maplewood, N. J.	John Russell Pope, New York, N. Y.
M. E. Church	Providence, R. I.	Woodbury & Stewart, Boston, Mass.
Library Building, Reed College	Portland, Ore.	A. E. Doyle & Associates
St. Andrews Episcopal Church	Jackson, Miss.	N. W. Overstreet
Santa Fe Depot and Harvey House	Newton, Kan.	E. A. Harrison
Johnson Residence	Seattle, Wash.	D. J. Myers
Sherrouse Residence and Garage	Monroe, La.	Clarence W. King
M. E. Church	Knoxville, Tenn.	Barber & McMurray, J. R. Pope
Milwaukee Country Club	North Milwaukee, Wis.	Fitzhugh Scott, Milwaukee, Wis.

A list of many others on request.

VENDOR SLATE CO.

MAIN OFFICE AND ARCHITECTURAL DEPARTMENTS

EASTON, PA.

BRANCH OFFICES

CHICAGO, ILL., 140 South Dearborn Street
CLEVELAND, OHIO, 4500 Euclid Avenue
DETROIT, MICH., 13948 Roselawn Avenue
NEW YORK, N. Y., 101 Park Avenue
PHILADELPHIA, PA., 5787 Nassau Road
PITTSBURGH, PA., 6600 Hamilton Avenue

DISTRIBUTORS

BOSTON, MASS., Waldo Bros. Co., 202 Southampton Street
KANSAS CITY, MO., Kansas City Slate & Tile Roofing Co., 21st and Forest Avenue
LOS ANGELES, CAL., Barnes Corning Co., 3363 Fruitland Road
MINNEAPOLIS, MINN., F. P. White, 434 Builders Exchange
PORTLAND, ORE., Gillen-Cole Co., 15th and Overton Streets
ST. LOUIS, MO., J. E. Williams Slate Co., 3423 Big Bend Road, Maplewood P. O.
SALT LAKE CITY, UTAH, Alex Sims, 129 Motor Avenue
SAN FRANCISCO, CAL., Barnes Corning Co., 220 Montgomery Street
TACOMA, WASH., Gillen-Cole Co., Pacific and Jefferson Streets
VANCOUVER, B. C., Western Steel Products Co.
WINNIPEG, MAN., CAN., Western Steel Products Co.
MONTREAL, QUEBEC, CAN., Alexander Murray Co., Ltd., 151 Richelieu Street
TORONTO, ONT., CAN., Alexander Murray Co., Ltd., foot of Morse Street

Products

ROOFING SLATE.

FLAGGING SLATE.

All grades of standard Pennsylvania Commercial and Architectural Roofing Slate.

All grades of standard Vermont Commercial and Architectural Roofing Slate.

All classifications of Mettowee Stone Flagging and Flooring.

METTOWEE STONE ROOFING

Architectural Service

VENDOR SLATE CO. offers an extended service to architects through the establishment of additional Architectural Departments at Chicago and Philadelphia, co-operating direct with their main office and quarries. These departments, in addition to those existing in New York and Easton, are prepared to co-operate with the profession. Each department is supervised by an especially trained director, who is thoroughly conversant not only with the practice of architecture, but the quarrying and application details of the roofing slate business as well.

Literature

"Slate for the Roof Architectural," the only catalogue of its type and scope ever published, showing each variety of Pennsylvania and Vermont roofing slate in full color reproduction. Detailed specifications, slating details and various sundry data relating to slate roofing, flagging and flooring. You are requested to avail yourself of this literature. A special treatise on the correct classification and description of every known slate production in America will also be forwarded when requested.

Condensed Classification

BLUE GRAY—*No. 1 Genuine Bangor Certificate*—Strong, unfading.

Genuine Bangor No. 1 Ribbon—Identical to the above, but containing dark streaks unexposed under the lap.

Genuine Washington Big Bed—Strong, unfading and of darker color value than the above.

Genuine Albion—Similar in general appearance to Genuine Bangor, but used for more moderately priced construction.

GREEN—*Verdelite Unfading Green*—A most durable slate of unfading quality. Exceptionally defined as to color.

Weathering Green—A deeper shade of green when quarried which, owing to its weathering nature, changes to various shades of browns, buffs and tans.

Sea Green—A slate containing a wider range of shades when freshly quarried than the above. Will change to indeterminate proportions of browns, buffs, tans, yellows and sometimes white.

MOTTLED GRAY—A beautiful unfading slate, quite similar to Unfading Green only of darker color value and including dark markings of various intensities.

VARIEGATED GREEN AND PURPLE—An unfading slate of unsurpassed beauty. Each slate contains the two colors noted.

MOTTLED GREEN AND PURPLE—This slate weathers slightly, the general effect after years of exposure results in a purplish bronze. The slate itself is more purple than green, the green spots and splashes being distinct mottlings.

CLEAR PURPLE—A very rare slate, sometimes weathering and sometimes unfading. Generally of a rich deep subdued shade.

FLORENTINE RED—A very subtle and dignified color, but distinctly red in value.

General Specifications

(1) Preparation of Roof—Before proceeding with roofing work of any nature whatsoever, the roofer shall examine all roof surfaces so intended for the application of slate and report for correction, any and all defects therein which will interfere with the execution of his work and guarantee thereof.

(2) Cant Strip—Carpenter Contractor shall provide in place at all eaves a beveled cant strip 1 in. in thickness at the lower side and 2 in. or more in breadth, so beveled that the first course of slate will rest evenly thereon.

(3) Paper—Cover all roof surfaces so intended for slate application with an approved brand of 40-lb. asphalt impregnated roofing felt. This felt shall be laid to shed water and accordingly lapped 4 in. on the rafter and 12 in. where vertical joints are occasioned. It must be in perfect, undamaged condition when slate is applied. NOTE: Roofer shall not drive either his stake or hammer into the roof sheathing.

(4) Cement—Within 1 ft. of dormers vertical walls, valleys, ridges, hips and similar places, slate shall be laid in an approved brand of elastic cement approximating the general color value of the slate.

(5) Nails—Each slate shall be secured with 2 copper slating nails of sufficient length to penetrate the roof sheathing 1 in. in every instance. In no case shall nails be driven through flashings except when applying same.

(6) Slate—Cover all properly felted roof surfaces as above detailed with (insert herein the type of slate desired) as supplied by the VENDOR SLATE COMPANY, Easton, Pa., with their certificate as to kind and quality and in strict accordance with their details as approved by the architect.

(7) Laying of Slate—All slate shall be laid in a proper weather-tight manner with well broken joints, preserving a standard headlap of 3 in. under the second course above in all instances. Corners and butts shall not be intentionally broken. However, a certain latitude due to normal breakage of corners will be acceptable, but severely broken slate shall not be applied.

(8) Valleys—Select type desired as follows:

Open Valleys—Provide 16-in. soft rolled copper flashing 24 in. wide fastened at the top only. In applying slate, care shall be used that no nails penetrate the metal valley.

Closed Valleys—Slip flash all closed valleys with 16-oz. soft rolled copper flashing with each course. Flashing shall lap at least 2 in. and shall extend 12 in. on each side of valley.

Rounded Valleys—Slate shall be carefully cut, fitted and laid with special length and width slate. Course lines shall carry round from roof to roof except where otherwise required and so noted on the layout. No metal is required unless specially directed, but great care should be used in breaking joints and applying slate, to avoid leaks.

(9) Ridges—Select type desired as follows:

All ridges shall be laid to form (Combed Ridges) (Saddle Ridges) (Boston Ridges). It is understood that the three top courses of slate shall be laid in elastic cement and so arranged that a first class waterproof job will result. In no instance shall the cement be so applied that it will run over face of the slate. (Exposed nailheads, if any, in ridge course. to be covered with elastic cement as here before described.)

(10) Hips—Select type desired as follows:

All hips shall be laid to form standard (Mitered Hips) (Fantail Hips) (Boston Hips) (Saddle Hips) and shall be carefully embedded in elastic cement as herebefore described.

(11) Dormer Cheeks—Dormer cheeks where so indicated on the plans are to be covered with roofing slate as here before described.

(12) Cleaning Up and Guarantee—The Contractor shall guarantee his work for a period of at least (.....) years, replacing or repairing any broken slates or leaks until the end of his guarantee period. Any stains of any nature whatsoever, excluding stains or dirt streaks caused by other contractors at time of building, shall be removed before acceptance of his work will be granted.

See other side

"METTOWEE STONE" SLATE ROOFS

Mettowee Stone Roof Panel No. 56 (Vendor Slate Co.)

Mettowee Stone Roof Panel No. 57 (Vendor Slate Co.)

These two combinations are presented in 70% standard and 30% ¼" thickness, and are of moderate cost. Heavier and graduated thicknesses can be supplied in similar color arrangement. Complete layouts will be designed and furnished in each individual case if you will loan us the roof plans. (See next page)

A. W. CAMPBELL

Manufacturers of Snow Guards for Roofs

104 Edwards Street
HARTFORD, CONN.

Products

"CAMPBELL" PATENTED SNOW GUARDS for slate, tile, and other steep roofs.

"Campbell" Patented Snow Guards

The "Campbell" is a positive snow guard that stays put and will not break, bend nor wear out. It is made of pure copper and will last as long as the building upon which it is installed.

An especially valuable feature of the "Campbell" snow guard is that it can be installed on roofs already laid, without breaking or removing slates.

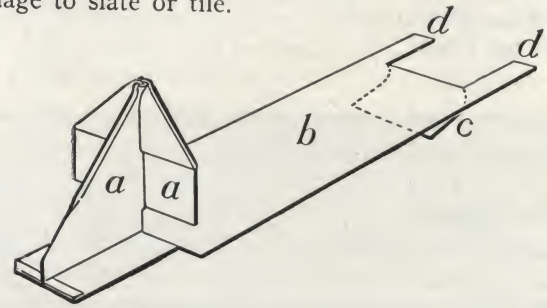
Construction Details

The snow stop or guard head (a) is so designed and constructed that it can not bend or collapse under the weight of the snow or ice.

The broad, flat, thin supporting strap (b) gives a distributed bearing, does not lift the slates and positively will not cause them to break.

The hook end (c) on the supporting strap is broad and will not split nor injure the slates and stays put.

The figures (d) on the hook end are designed for quick and easy installing on roofs already slated without damage to slate or tile.



Number of Guards to Set, Per Square

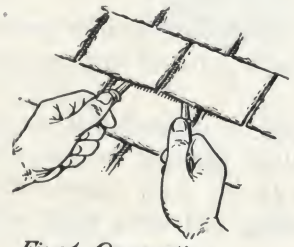
This varies according to the size of the slates, pitch of the roof and special needs.

For graduated, random slate roofs, space the guards from 16 to 24 in. apart horizontally and so spaced up and down as to properly stagger in alternate courses. The following table is worked out by this method:

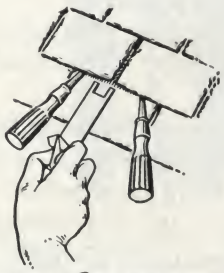
Size of slate, in.	Guards required per square	Where to place guards	
		Horizontally	Perpendicularly
12x6	60	Every 3rd slate	Every 3rd course
12x7	50		
12x8	40	Every 2nd slate	Every 5th course
14x7	45	Every 3rd slate	Every 3rd course
14x8	40		
14x10	35	Every 2nd slate	Every 4th course
16x8	30	Every 3rd slate	Every 3rd course
16x9	60		
16x10	55		
16x12	45		
18x9	50		
18x10	45		
18x12	40	Every 2nd slate	Every 2nd course
20x10	40		
20x12	35		
22x11	35		
22x12	30		
24x12	30		

Directions for Installing

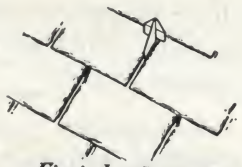
The only tools required are two screwdrivers. Push a screwdriver under the butt of the slate at each side of the joint where the guard is to be installed. Then



First Operation



Second Operation



Finished and in Place

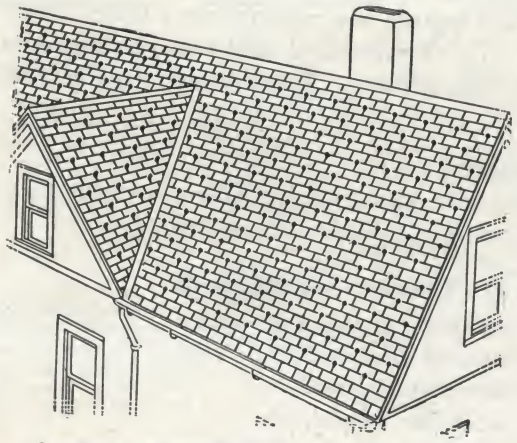
push the guard into place, remove the screwdrivers and continue with the succeeding guards in a like manner.

If the guards are securely hooked on the slates no staging will be required after the first course has been installed.

Start installing at the eaves and work up to the ridge, using the guards as a foothold to work on. However, as a precaution, it is well to have a rope or plank.

Architects' Specification

Install "Campbell" Patented Snow Guards, as manufactured by A. W. Campbell, Hartford, Conn., spaced not more than 24 in. nor less than 16 in. apart, and so spaced up and down that they will properly stagger in alternate courses.



Spacing of Snow Guards on Typical Roof

CLASON WIRE SNOW GUARD FOR ROOFS

Manufactured Only by
THE M. N. CARTIER & SONS CO.
Cartier Building, 275 Canal Street
PROVIDENCE, R. I.

Product

WIRE SNOW GUARDS for slate, tile, asbestos shingle, metal and other steep roofs.

Their Purpose

To lessen chances of damage suits against owners of property by increasing both personal and property safety.

There are many buildings so situated that the use of snow guards is essential to personal safety; there are more cases where the use of snow guards could protect the surrounding roofing and sheet metal work against costly damages.

Sliding snow and ice often injure roofings, and puncture or tear away gutters, etc. The use of our snow guards forestalls these dangers, as they hold the ice and snow where they form. They are a cheap and unobtrusive preventive against damage.

Important Notation

We note a growing tendency to permit the installation of three, four, or five courses of snow guards near the roof eaves. The result is that a few guards are compelled to hold not only the weight of snow and ice which they are located to care for, but also to withstand the tremendous tearing force of slides starting from the roof surfaces above.

No guards will withstand such conditions, and their installation in such a manner precludes the *purpose* for which they are used. When specifying our guards please do so according to our table and *insist* upon the roofer following the specification.

Manufacture

We make our guards in our own plant, and are not dependent upon the facilities or services of others.

These guards are manufactured either from pure copper wire or galvanized steel wire, both selected for ductility and stiffness. No copper-covered steel wire is used.

Practicality

Our wire snow guards combine strength, long service, economy and unobstructive design.

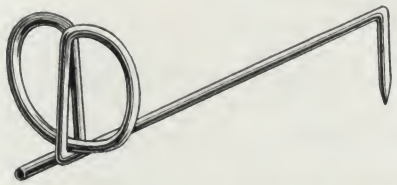
Types of "Clason" Snow Guards

New roofs, 1 and 2-in. points.
Hook and friction for old roofs.
Solder-to-metal-roof.
Special for Spanish tile.
Special for asbestos shingles.

The "Clason"

The "Clason" has been for years the standard guard, and is the strongest guard made.

Note from the illustration that the "butterfly" loops brace and strengthen each other, while the extension brace lends additional strength.



"Clason" Snow Guard for New Roofs

Number Per Square

The following table gives the approximate number of snow guards which may be safely specified for use in each 100 sq. ft. of roof surface:

ROOF PITCH	NUMBER OF GUARDS
One-quarter	50
One-third	75
One-half	125

Towers, and steeper roofs than above indicated, may require special consideration.

How to Specify

Apply to all pitched roofs "Clason" [for old roofs "Clason Special"] Snow Guards, as made by THE M. N. CARTIER & SONS CO., Providence, R. I. The guards to be made from pure copper [galvanized steel] wire. (Here specify the number of guards required per square, dependent upon the pitch of the roof and other special conditions.)

In applying the snow guards, the eaves course of the roofing material shall be laid as usual, but the next course shall be laid with the joints slightly open to receive the shank of the snow guard.

After striking the line for the third course of the roofing material, place the guards in the joints, with the loop just below the lap of the course, and drive the prong into the roof decking; then lay the course, leaving only the loop exposed.

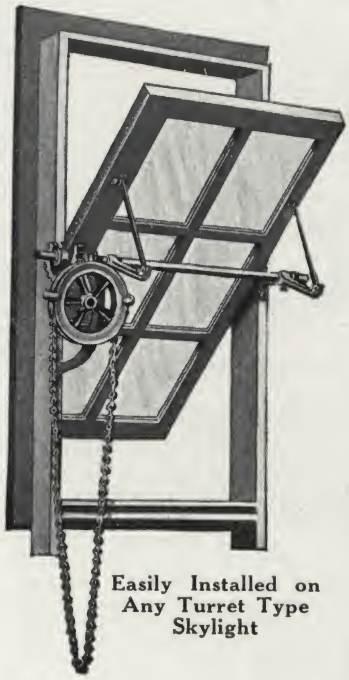
Care must be used to insure having the shank well sunk into the joints, so that the following course of roofing material will lie flat and not bear upon the guard.

(*Note:* The architect or engineer may omit at his discretion the method of application of the guards.)

DAVID LEVOW

TELEPHONE
CHelsea 3-2400

308 West 20th Street, NEW YORK, N. Y.



Easily Installed on Any Turret Type Skylight

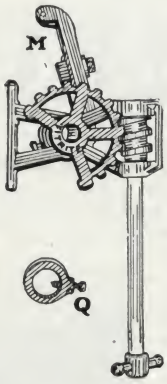
"Fitrite" Skylight Gearing

Features—Instead of the usual round pipe holes (where the only point of contact is at the setscrew), "Fitrite" Skylight Gearing has special oval pipe holes on arms and lifting gear. The result is a much firmer grip (contact at *three* points instead of one) and absolute freedom from rattling in any position. Accurately machined. No filing necessary.

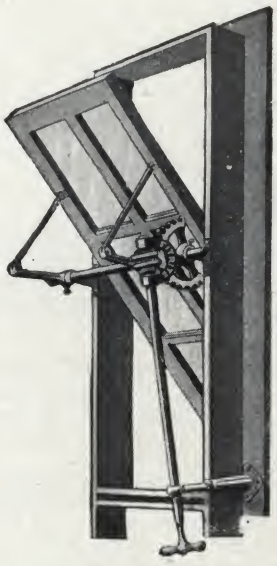
Material—Made in best quality gray iron; and also in solid bronze which is rustproof and harmonizes with copper skylights.

Sizes—Made for standard ½-in. pipe size. Also furnished for ⅜ and 1-in. pipe sizes.

Type "M"—Especially designed for single sashes as it requires no horizontal piping. Also used for skylights having more than one sash where small operator is desired. Particularly suited to concrete as it requires no extensions, eliminating the problem of fastening extensions to concrete walls.



Type M "Q" Collar

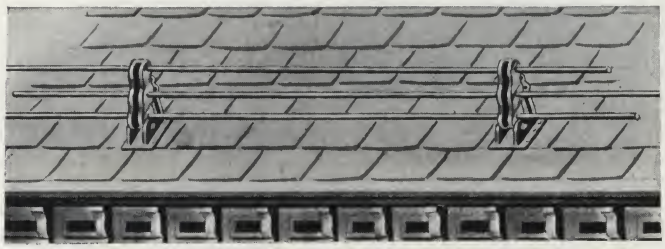


Comes Completely Assembled or Unassembled as Desired

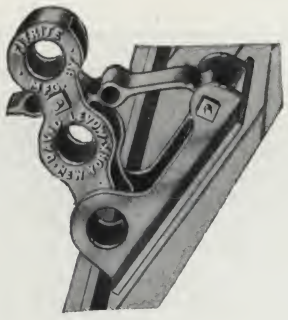
"Fitrite" Bronze Gearing—Is especially recommended (1) for industrial buildings as it resists corrosion due to chemical fumes, acids, etc., (2) for laundries, kitchens or wherever excessive moisture causes iron to rust away. The slight extra cost of "Fitrite" Bronze Gearing assures a permanent trouble-free job.

"Fitrite" Adjustable Pipe Snow Guards

Material—Made in galvanized malleable iron or bronze. Adjustable to four positions. Fits any slate roof of any pitch. To be used with 2 or 3 galvanized iron pipes ¾-in. iron pipe size.



Features—Rivet holes on underside of plate are countersunk, permitting rivets to be hammered down absolutely flush with plate. The bottom corners and underside edges of plates are rounded off thereby preventing cutting or breaking of slate.



Instructions — Place "Fitrite" Snow Guards along eaves of roof 5 or 6 ft. apart. Plate takes the place of a slate and is fastened with wood screws or nails.

Size of Plates—Made in any size for standard No. 1 slate, but can be made with thicker plates. Unless otherwise specified, standard No. 1 plates will be supplied. Also made for Spanish tile and special design shingles.

"Fitrite" Roof Strainers—for Flat Roofs Having Inside Cast Iron Leaders

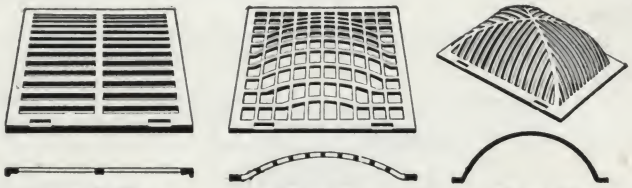
Type F—Perfectly flat. Extensively used for roofs and roof gardens requiring freedom from all obstruction; also for swimming pools.

Type R—The slight crown (1 in. high) does not seriously obstruct the roof, yet the construction is such that debris slides off easily. Especially recommended for flat tile or slag roofs having inside leaders, at center of roof.

Type X—Recommended where drainage efficiency is the prime consideration. The extra high crown (3¼ in.) and narrow slits effectively keep out gravel, sticks, etc. Type X is especially desirable where leaders are at edge of roof.

Materials—All types made in solid bronze.

Features—About ¼ in. thick; will not rust; and are practically unbreakable—will easily support the weight of three husky men. Each strainer has two hinge holes allowing easy attachment by copper strip to leader box.



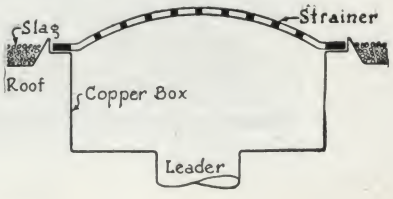
Type F Flat | Type R 1 in. high | Type X 3¼ in. high

STRAINER SIZES

No.	Exact size, in.	Types
12-in.	11¾ x 11¾	F, R and X
10-in.	9¾ x 9¾	F, R and X
8-in.	8 x 8	F, R and X
6-in.	6 x 6	F, R

Application of "Fitrite" Strainer to Slag Roofs

Information concerning installations on other types of roofs gladly supplied on request



COLUMBIAN ENAMELING & STAMPING CO.

ESTABLISHED 1871

Manufacturers of Reinforced Porcelain Roofing Tiles

MAIN OFFICE AND FACTORY
TERRE HAUTE, IND.

NEW YORK OFFICE: 319 Broadway

Products

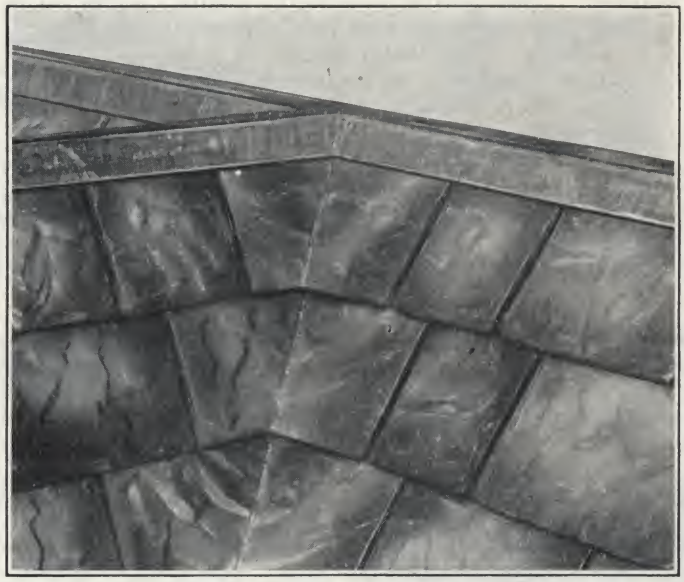
PORCELAIN ROOFING TILES, continuously reinforced with corrosion-resistant metal of high tensile strength.

Also Reinforced Porcelain Tiles for walls; Building Specialties; Surgical, Hospital and Hotel Utensils; Kitchen Wares; Reflectors.

Watertightness of Our Porcelain Roofing Tiles

These tiles when laid to our standard specifications are watertight against the heaviest driving rains without dependence on the 30-lb. asphalt felt laid under them as an extra precaution.

Hips and valleys are tight, and proof against disruption to extent of upwards of 4000 lbs. per tile. Eaves, gables and ridge closed and finished in 16-oz. copper. Flashing tiles and all other specials so designed that no tile need be cut.



Close-up of Valley and Ridge

Colors

There are no limitations on the colors available for special roofs. For standard roofs, these tile are made in those mellow colors which age and favoring conditions alone impart to high class permanent roof materials. Produced with that maturity and being unfadable, they enable the architect to realize his desired effects immediately and permanently.

The standard roofs embody quiet color rhythms and form variations which intrigue but never affront the discerning eye.

Surfaces are available in dull mattes, semi-mattes and bright enamels, all irregularly textured. Standard roofs are in mattes and semi-mattes.

Color schemes and details submitted without obligation by our Architects' Service Bureau at Terre Haute.

Sizes

Roofs laid graduated using 12 sizes varying from 12x12½ in. to 7½x6½ in.; butts are ⅞ in. to ½ in. irregular thickness.

Uses

Fine residences, clubs, churches, public buildings, schools, hospitals, office buildings, on all slopes over one-quarter pitch.

Prices approximate heavy slate and high grade tiles.

Safety

Every tile is held to the roof with heavy concealed copper fastenings at all four corners.

Being reinforced with a continuous layer of tough, corrosion-resisting metal of high tensile strength, through which two of the heavy copper fastenings pass, it is proof against breaking off and falling.

These tiles are therefore especially valuable for roofs the eaves of which are high above places where people pass, such as tall office buildings, towers, spires and public buildings.

In addition, they are safe against wind, hail or vibrations.

Weight including felt, 2⅛ lb. per sq. ft. laid.

Other Properties

The surfaces being absolutely non-absorbent are clean at all times.

The special porcelain used reflects back invisibly into the air the long heat rays (infra-red) which alone penetrate much beyond the outer surface. The tile enclose air spaces which ventilate when warm, making rooms under these roofs exceptionally cool in summer and warm in winter. Snow blows and slides off—does not stick or accumulate.

The system of concealed curbs made of solid copper, used to insure watertightness against heavy winds, constitutes a Faraday cage which is the most perfect type of protection yet devised against lightning. Rod conductors from eaves and grounds, to complete this protection, are supplied.

Roof in Old Manse Moss (Greens, Black-greens and Grays)

IMPERIAL ROOFING TILES

A SERIES OF

SPECIFICATIONS AND DETAILS FOR

ROOFING TILES

LUDOWICI-CELADON COMPANY

Makers of IMPERIAL *Roofing Tiles*

CHICAGO
104 SOUTH MICHIGAN AVENUE

NEW YORK
565 FIFTH AVENUE

WASHINGTON
738 FIFTEENTH STREET, N. W.

LUDOWICI-CELADON COMPANY

Makers of IMPERIAL *Chimney Pots*

CHICAGO, 104 South Michigan Avenue

NEW YORK, 565 Fifth Avenue

WASHINGTON, 738 Fifteenth Street, N. W.

Factories located at NEW LEXINGTON, OHIO—COFFEYVILLE, KANSAS—PERU, KANSAS

CHIMNEY POTS

Chimney pots are made in various textures and colors especially adapted to use with our weathered effect tiles. They are also available in glazed colors for the modern treatment.

C.P.200

C.P.500, 510 and 520

C.P.600, 610, 620, 630, 640, 650 and 660

SCHEDULE OF SIZES

NUMBER	FLUE	BASE	HEIGHT
C.P.200	7½″x7½″	13 ″x13″	15″
C.P.300	8 ″ Dia.	14 ″	18″
C.P.310	12 ″ Dia.	18 ″	21″
C.P.320	15 ″ Dia.	21 ″	25″
C.P.400	8 ″ Dia.	14½″	25″
C.P.410	12 ″ Dia.	18½″	29″
C.P.420	15 ″ Dia.	21 ″	32″
C.P.500	8 ″ Dia.	14 ″	15″
C.P.510	12 ″ Dia.	18 ″	18″
C.P.520	15 ″ Dia.	21 ″	22″
C.P.600	10 ″ Dia.	13 ″	15″
C.P.610	12 ″ Dia.	15 ″	18″
C.P.620	15 ″ Dia.	18 ″	20″
C.P.630	18 ″ Dia.	21½″	23″
C.P.640	23 ″ Dia.	26 ″	30″
*C.P.650	8 ″x12″	11 ″x15″	20″
*C.P.660	12 ″x17″	15 ″x20″	30″

*Elliptical

C.P.400, 410 and 420

C.P.300, 310 and 320

Continued on next page

LUDOWICI-CELADON COMPANY

Makers of IMPERIAL *Roofing Tiles*

CHICAGO, 104 South Michigan Avenue

NEW YORK, 565 Fifth Avenue

WASHINGTON, 738 Fifteenth Street, N. W.

Factories located at NEW LEXINGTON, OHIO—COFFEYVILLE, KANSAS—PERU, KANSAS

IMPERIAL ROOFING TILES

Produced since 1875.

Hard burned to afford enduring protection under the most severe weather conditions encountered.

Our nearest sales office will furnish samples or give information as to where displays or typical installations may be seen. Photographs of representative work on request.

Estimates promptly furnished from architect's plans and specifications.

Experienced service available for assistance in solving difficult roofing problems.

We are singularly well equipped to furnish tiles of quality. Our manufacture is carried on where the raw material is peculiarly adapted to the purpose; our plants are equipped with modern machinery; our research department develops methods for producing both modern and ancient effects at minimum cost. Large output and flexible production assure service on all operations.

Variety of product affords wide latitude in accomplishing pleasing roof effects.

Shingle tiles are produced in a variety of sizes, colors and textures. Brittany Shingles may be so applied as faithfully to resemble ancient roofs of burned clay or stone, which are so interesting to the traveller in France and England. Crude Shingles are moulded duplicates of early original French tiles. Antique Shingles, more irregular, are ideal for the low rambling English design country house. Colonial Shingles, in texture and color, are remarkably like old split wood shingles. The Provincial Shingle, an inexpensive yet artistic pattern, is used in its dull-colored and weathered effects to subdue the roof, or in a range of brighter tones to give it accent. Yale Memorial tiles, as used on the Harkness Memorial Quadrangle at Yale University, on the New Duke University group, and other prominent buildings, especially lend themselves to the furthering of individual expression in a conservative manner.

Closed Shingle, English Shingle, French, Mission, Spanish, Roman and Greek tiles are offered in natural reds and fireflashed shades, or glazed in practically any color. They are also produced in various textures, including weathered surface effects.

SHOW ROOMS

CHICAGO
104 South Michigan Avenue

CINCINNATI
622 Broadway

NEW YORK
565 Fifth Avenue

BOSTON
E. Stanley Wires Company
120 South Boylston Street

WASHINGTON
738 Fifteenth Street, N.W.

PHILADELPHIA
1315 Walnut Street

ARCHITECTURAL EXHIBITS

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Architects Exhibit Building

DETROIT
Barlum Tower, Cadillac Square

ST. LOUIS
Arcade Building

CLEVELAND
Hanna Building

NEW YORK
101 Park Avenue

BROOKLYN
Brooklyn Daily Eagle Building

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LUDOWICI-CELADON COMPANY

Makers of IMPERIAL *Roofing Tiles*

CHICAGO, 104 South Michigan Avenue

NEW YORK, 565 Fifth Avenue WASHINGTON, 738 Fifteenth Street, N. W.

Factories located at NEW LEXINGTON, OHIO—COFFEYVILLE, KANSAS—PERU, KANSAS

SHINGLE TILES

These patterns are available in a range of colors in a variety of surface textures

SPECIFICATIONS

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Words in italics enclosed within parentheses are selective to suit particular condition. Include or omit as required.*

Note: *Clauses are selective. Include or omit as they apply.*

(1) Tiles

(1a) Cover roofs so indicated with Ludowici-Celadon Company's Imperial (*specify pattern*) Shingle tiles and fittings of (*specify*) color.

(1b) (*Hips*) (*and*) (*valleys*) shall be cut before burning.

(2) Nails

All nails for flashings and tiles shall be copper.

(3) Felt

(3a) Lay asphalt felt weighing 30 lbs. per square, doubled on (*low pitches*) (*rough surfaces*) (*hips*) (*valleys*) (*and*) ridges. Lay parallel to eaves. Lap 2½″ horizontally and 6″ vertically. Fasten with large-headed galvanized nails.

(3b) Extend felt (6″ *up vertical walls*) (*and*) 4″ over (*gutter*) (*and*) (*valley*) metal.

(4) Wood Strips

(4a) Provide ¾″ x 1″ cant strips at eaves and 1″ stringers of necessary height under (*hip rolls and*) ridges.

(4b) Embed parallel with the pitch on 20″ centers 1″ x 2″ beveled wood strips flush with surface of concrete. Fasten felt with lath nailed over these strips. At right angles to embedded strips, over lath, install 1″ x 2″ strips spaced to suit tiles.

Note: *Include* (4b) *if roof base is concrete.*

(5) Flashings

(5a) At sides of vertical surfaces, insert base flashing between each course of tiles. Lap 3″ and extend 4″ under tiles and at least 6″ up wall.

(5b) At fronts, extend flashing at least 3″ up wall and 4″ over tiles.

(5c) Masonry wall shall be cap flashed and pointed.

(5d) Where tile and metal roofs intersect, extend metal up tile roof 12″ or more.

(5e) Extend gutter metal up roof to a point higher than outer edge of gutter.

(5f) **Open Valleys**—Line valleys with 16 oz. copper at least 20″ wide. Turn edge over ¼″. Lap joints at least 4″. Fasten with cleats. Do not solder.

(5g) **Closed Valleys**—Flash between each course of tiles with 16″ strips of same length as tiles.

(5h) **Rounded Valleys**—Flash between each course of tiles with curved strips of same length as tiles. Extend strips 8″ beyond the curve at either side of valley.

(6) Laying

(6a) Lay tiles (*regular*) (*irregular*) with (*specify*) average exposure and not less than 2″ head lap on the third course. Double tiles at eave. Fasten with (1½″) (1¾″) (*specify*) copper nails. Fasten tiles overlapping sheet metal with copper wire and elastic cement.

Note: *Select whether regular or irregular and specify 1½″ nails for ⅜″ shingles; 1¾″ nails for ⅝″ shingles; longer for thicker shingles.*

(6b) Leave opening of 6″ or more across valleys.

(6c) Cement end bands in laps.

(6d) Cement hip rolls in laps and fasten with 2″ copper nails.

(6e) Cement ridges in laps and fasten with 2½″ copper nails.

(6f) Where tiles join hip stringers make waterproof with elastic cement.

(6g) Cement small pieces of graduated tiles solidly with elastic cement.

Note: *Include* (6g) *on circular roofs.*

(6h) Cement all tiles in laps, using 30 lbs. of elastic cement per square.

Note: *Include* (6h) *on high buildings.*

Details concerning any roofing problem furnished on request.
If additional copies of this catalogue are desired, please write.

Continued on next page

IMPERIAL SHINGLE TILES

PROVINCIAL

Length	15 ″
Width	7 ″
Thickness	$\frac{1}{2}$″
Average exposure	7″x6$\frac{1}{2}$″
Average pieces per square	317
Average weight per square	1230 lbs.

BRITTANY

Length	12 ″
Width	7 ″
Thickness	$\frac{5}{8}$″
Average exposure	7″x5 ″
Average pieces per square	412
Average weight per square	1840 lbs.

Continued on next page

IMPERIAL SHINGLE TILES

ANTIQUE

Length	12 ″
Width	7 ″
Thickness	$\frac{9}{16}$″
Average exposure	7″x5″
Average pieces per square	412
Average weight per square	1600 lbs.

CRUDE

Length	12 ″
Width	$6\frac{1}{4}$″
Thickness	$\frac{5}{8}$″
Average exposure	$6\frac{1}{4}$″x5″
Average pieces per square	460
Average weight per square	1850 lbs.

Continued on next page

IMPERIAL SHINGLE TILES

COLONIAL

Length	15 ″
Width	$7\frac{3}{8}$″
Thickness	$\frac{5}{8}$″
Average exposure	$7\frac{3}{8}$″x$6\frac{1}{2}$″
Average pieces per square	300
Average weight per square	1675 lbs.

YALE MEMORIAL

Lengths	12″, 14″, 16″
Widths	6″, 7″, 8″
Thicknesses	$\frac{5}{8}$″, $\frac{3}{4}$″, 1″

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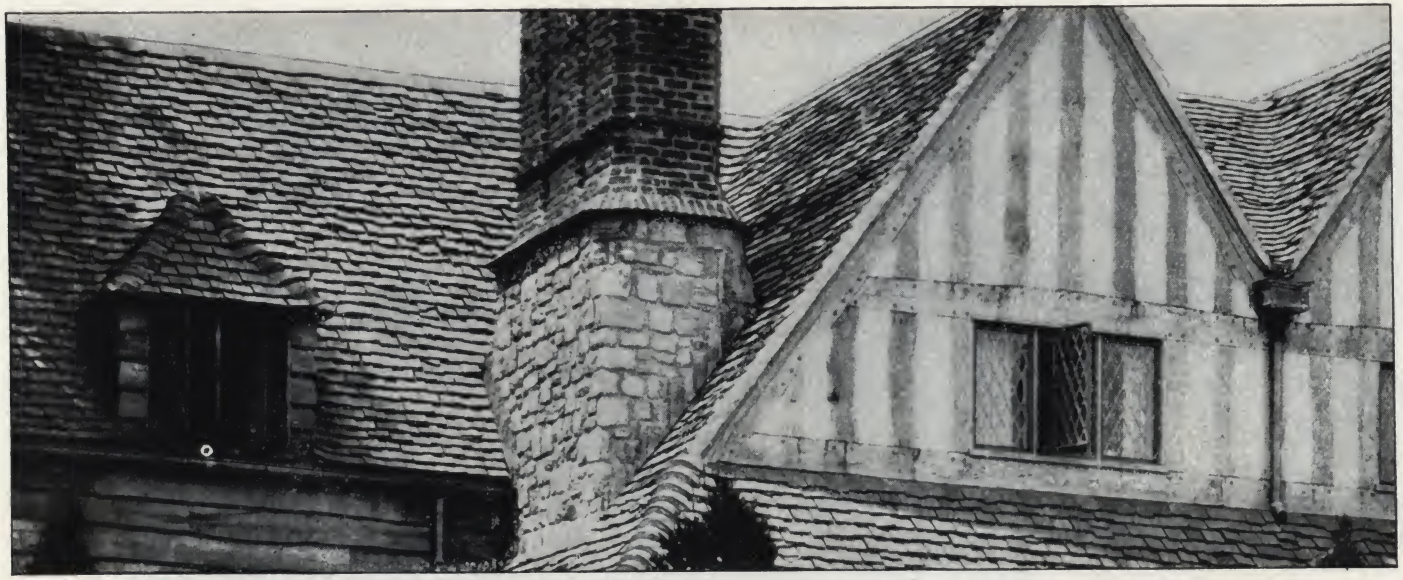
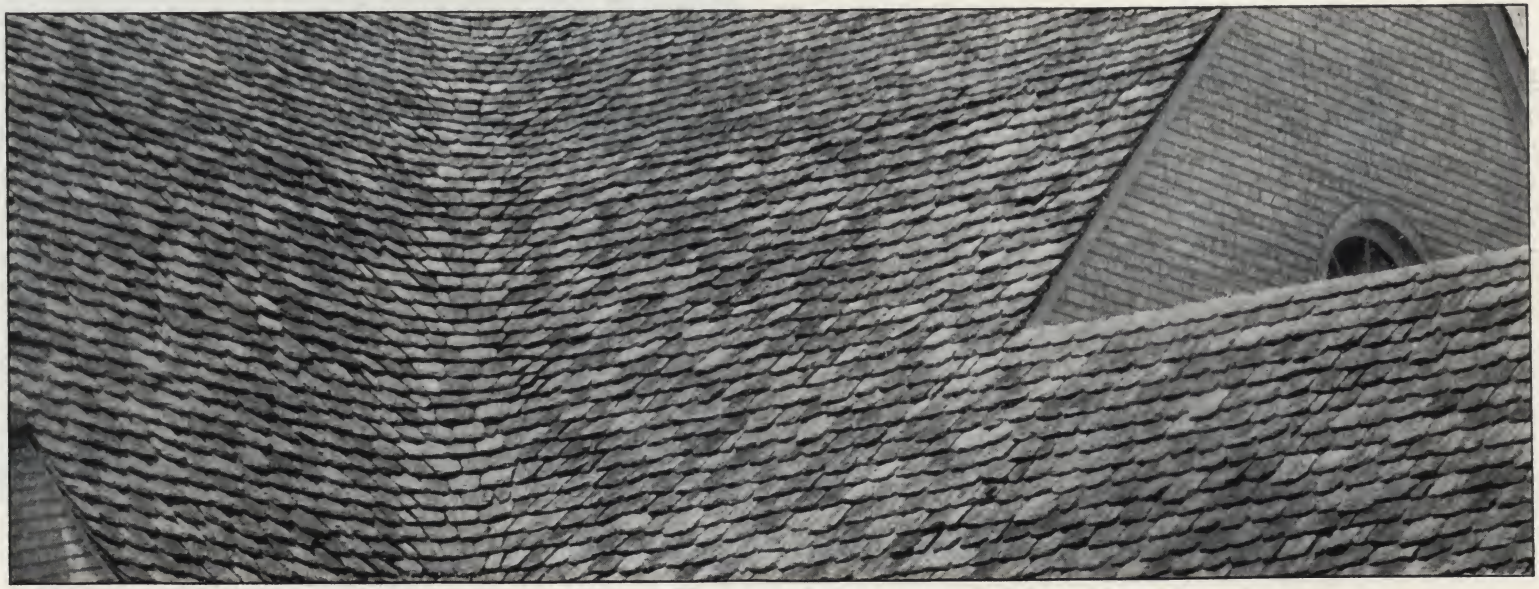
IMPERIAL SHINGLE TILES



Brittany Shingle Tiles

Roll Ridge



Yale Memorial Tiles

Sprocket hip roll

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DETAILS OF IMPERIAL 3/8" FLAT AND 5/8" SLAB SHINGLE TILES AND FITTINGS

SCALE 1½" = 1'-0"

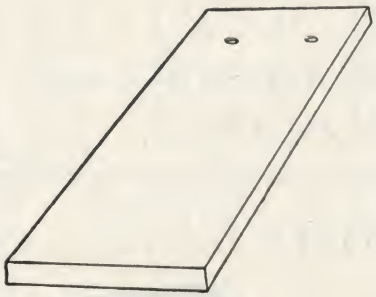
IMPORTANT DATA

3/8" Flat Shingle Tiles

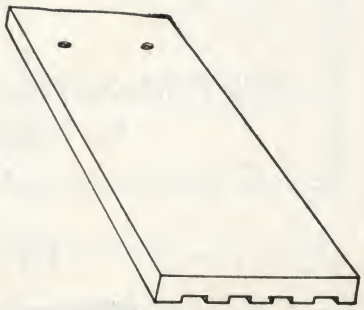
Length	12"
Width	6"
Average exposure	6"x5"
Average pieces per square	480
Average weight per square	1225 lbs.

5/8" Slab Shingle Tiles

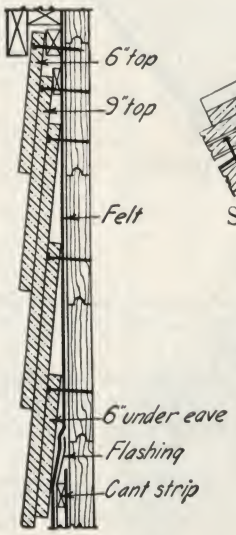
Length	12"
Width	6¼"
Average exposure	6¼"x5"
Average pieces per square	461
Average weight per square	1780 lbs.



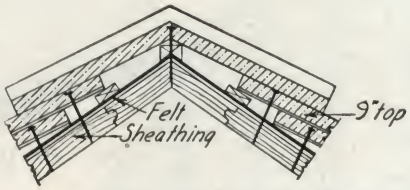
3/8" Flat Shingle Tile.



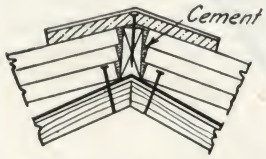
5/8" Slab Shingle Tile.



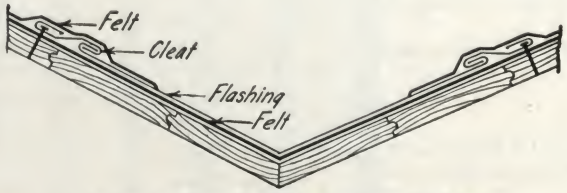
Section A-A.



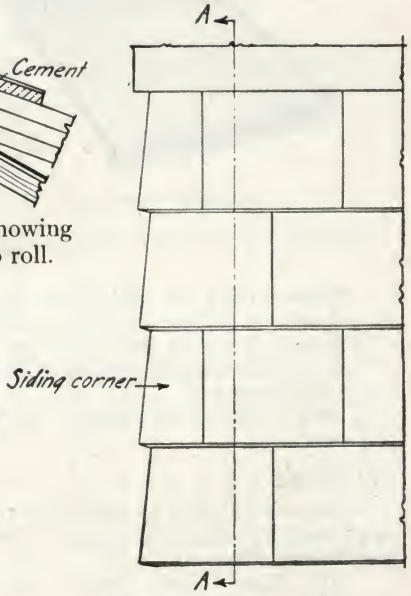
Section showing No. 203 ridge.



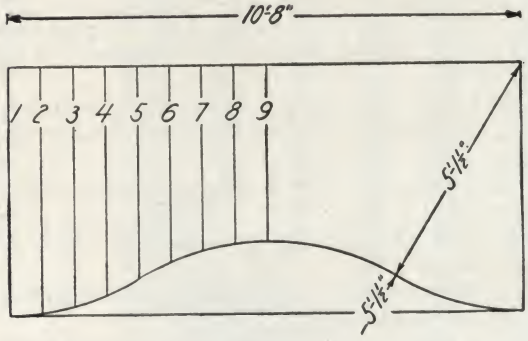
Hip section showing No. 111 Hip roll.



Cross section showing valley flashing on wood roof base. See specifications.

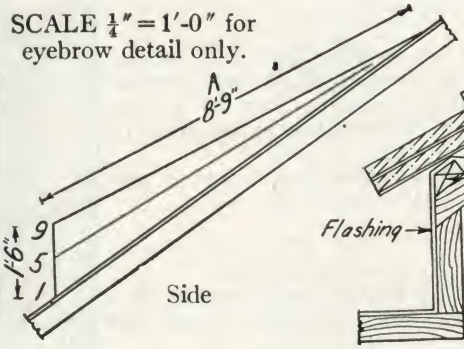


Elevation showing 3/8" Flat Shingle Tiles.

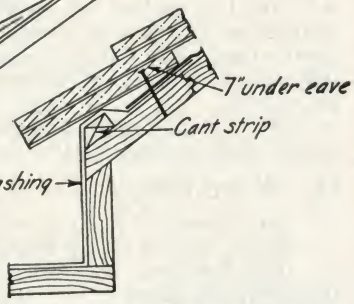


Front

SCALE ¼" = 1'-0" for eyebrow detail only.



Side



Eave section showing gutter construction.

Eyebrow dormers must be constructed as shown above for 5/8" Slab Shingle Tiles. Rafters and sheathing must show a straight line from the curved eave to the point directly above where it joins main roof and on a line with the point where center line of eyebrow meets main roof. See front elevation.

Larger or smaller effects can be secured providing vertical height and radius shown are increased or decreased proportionately. Distance "A" should not be decreased and it must be increased when roof pitch is steeper than 12" rise in 12" run.

Crowd tiles at top of dormer and spread them at eave. Shorten exposure of tiles as they leave main roof until tail lines of tiles on both surfaces are aligned.

Continued on next page

LUDOWICI-CELADON COMPANY

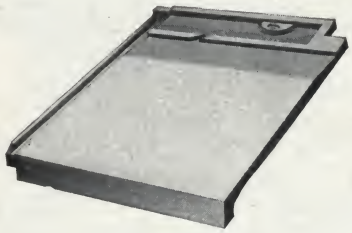
Makers of IMPERIAL *Roofing Tiles*

CHICAGO, 104 South Michigan Avenue

NEW YORK, 565 Fifth Avenue WASHINGTON, 738 Fifteenth Street, N. W.

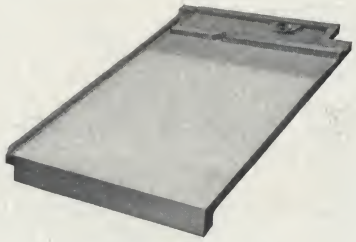
Factories located at NEW LEXINGTON, OHIO—COFFEYVILLE, KANSAS—PERU, KANSAS

INTERLOCKING SHINGLE TILES



CLOSED SHINGLE

These patterns are available in a range of colors in a variety of surface textures.



ENGLISH SHINGLE

SPECIFICATIONS

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*
Note: *Words in italics enclosed within parentheses are selective to suit particular condition. Include or omit as required.*
Note: *Clauses are selective. Include or omit as they apply.*

(1) Tiles

(1a) Cover roofs so indicated with Ludowici-Celadon Company's Imperial (*Closed*) (*English*) Shingle tiles and fittings of (*specify*) color.

(1b) (*Hips*) (*and*) (*valleys*) shall be cut before burning.

(2) Nails

All nails for flashings and tiles shall be copper.

(3) Felt

(3a) Lay asphalt felt weighing 30 lbs. per square, doubled on (*low pitches*) (*rough surfaces*) (*hips*) (*valleys*) (*and*) ridges. Lay parallel to eaves. Lap 2½″ horizontally and 6″ vertically. Fasten with large-headed galvanized nails.

(3b) Extend felt (6″ *up vertical walls*) (*and*) 4″ over (*gutter*) (*and*) (*valley*) metal.

(4) Wood Strips

(4a) Provide ⅞″ x 1″ cant strips at eaves.

Note: *Include* (4a) *if English Shingles are specified.*

(4b) Provide 1″ stringers of necessary height under (*hip rolls and*) ridges.

(4c) Embed parallel with the pitch on 20″ centers 1″ x 2″ beveled wood strips flush with surface of concrete. Fasten felt with lath nailed over these strips. At right angles to embedded strips, over lath, install 1″ x 2″ strips spaced to suit tiles.

Note: *Include* (4c) *if roof base is concrete.*

(5) Flashings

(5a) Line valleys with 16 oz. copper at least 20″ wide. Turn edge over ¼″. Lap joints at least 4″. Fasten with cleats. Do not solder.

(5b) At sides of vertical surfaces, extend base flashing at least 6″ up wall, 5″ under tiles and turn up edge ½″.

(5c) At fronts, extend flashing at least 3″ up wall and 4″ over tiles.

(5d) Masonry wall shall be cap flashed and pointed.

(5e) Where tile and metal roofs intersect, extend metal up tile roof 12″ or more.

(5f) Extend gutter metal up roof to a point higher than outer edge of gutter.

(6) Laying

(6a) Lay tiles to straight lines, parallel and at right angles to eaves, lapped 3″. Fasten with 2″ copper nails. Fasten tiles overlapping sheet metal with copper wire and elastic cement.

(6b) Leave opening of 6″ or more across valleys.

(6c) Cement gable rakes to field tiles and fasten with 2″ copper nails.

(6d) Cement hip rolls in laps and fasten with 2″ copper nails.

(6e) Cement ridges in laps and fasten with 2½″ copper nails.

(6f) Where tiles join hip stringers make waterproof with elastic cement.

(6g) Cement small pieces of graduated tiles solidly with elastic cement.

Note: *Include* (6g) *on circular roofs.*

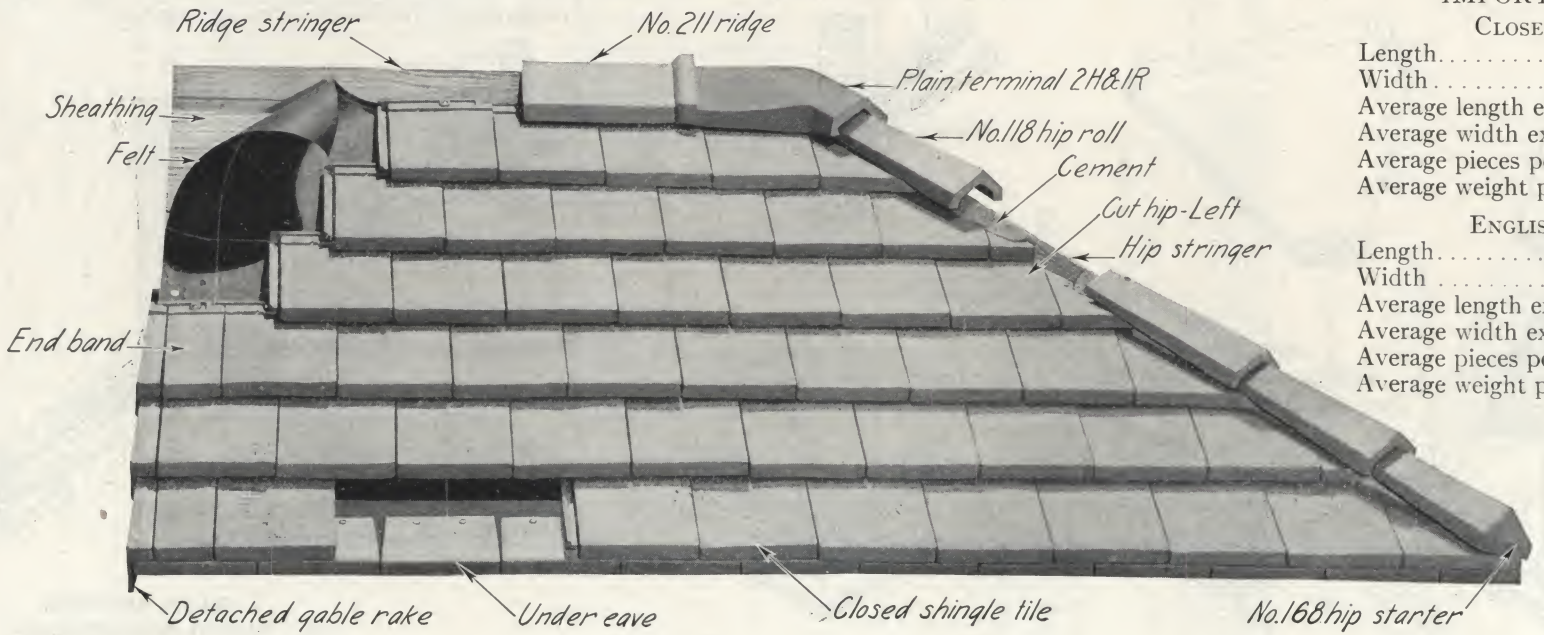
(6h) Cement all tiles in laps, using 30 lbs. of elastic cement per square.

Note: *Include* (6h) *on high buildings.*

Details concerning any roofing problem furnished on request.
If additional copies of this catalogue are desired, please write.

Continued on next page

DETAILS OF IMPERIAL INTERLOCKING SHINGLE TILES



IMPORTANT DATA

CLOSED SHINGLE

Length	11 ″
Width	8¾ ″
Average length exposure	8 ″
Average width exposure	8 ″
Average pieces per square	225
Average weight per square	900 lbs.

ENGLISH SHINGLE

Length	13¼ ″
Width	8¾ ″
Average length exposure	10⅛ ″
Average width exposure	7¾ ″
Average pieces per square	182
Average weight per square	900 lbs.

CORRECT RAFTER LENGTHS FOR FULL LENGTH TILES

Based on 2″ projection at eave of roof.

COURSE	CLOSED SHINGLE	ENGLISH SHINGLE
1	9″	11¼″
2	17″	21⅜″
3	25″	31½″
4	33″	41⅝″
5	41″	51¾″
6	49″	61⅞″
7	57″	72 ″
8	65″	82⅛″
9	73″	92¼″
10	81″	102⅜″
11	89″	112½″

HIP AND RIDGE STRINGER HEIGHTS

	CLOSED SHINGLE		ENGLISH SHINGLE	
ROOF PITCH	HIP NO. 118	RIDGE NO. 211	HIP NO. 120	RIDGE NO. 211
4″ Rise to 12″ Run	2⅞″	3⅛″	3¼″	3 ″
5″ Rise to 12″ Run	2⅞″	2⅞″	3¼″	2¾″
6″ Rise to 12″ Run	2⅞″	2⅝″	3⅛″	2½″
7″ Rise to 12″ Run	2¾″	2⅜″	3⅛″	2¼″
8″ Rise to 12″ Run	2¾″	2⅛″	3⅛″	2 ″
9″ Rise to 12″ Run	2¾″	1⅞″	3 ″	1¾″
10″ Rise to 12″ Run	2⅝″	1⅝″	3 ″	1½″
11″ Rise to 12″ Run	2⅝″	1⅜″	3 ″	1⅛″
12″ Rise to 12″ Run	2⅝″	1⅛″	3 ″	1 ″
13″ Rise to 12″ Run	2⅝″	⅞″	2⅞″	⅞″
14″ Rise to 12″ Run	2⅝″	⅝″	2⅞″	¾″

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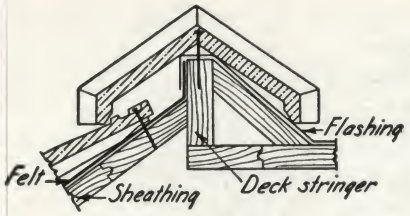
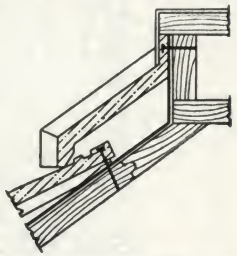
DETAILS OF IMPERIAL INTERLOCKING SHINGLE TILES AND FITTINGS

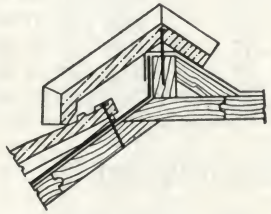
SCALE $1\frac{1}{2}'' = 1'\text{-}0''$



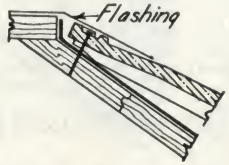
Deck section showing No. 211 ridge.



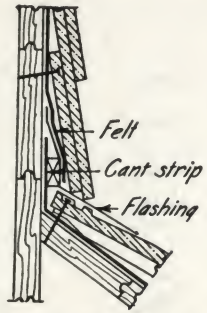
Deck section showing No. 211 deck mould-raised flange.



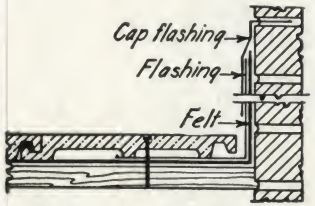
Deck section showing No. 211 cut-off ridge.



Deck section showing flashing over top of tiles.

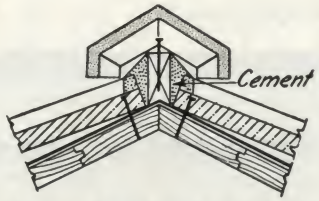


Section showing flashing under $\frac{3}{8}''$ Flat Shingle Tiles.

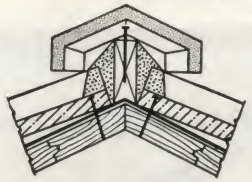


Section showing flashing under side of tiles.

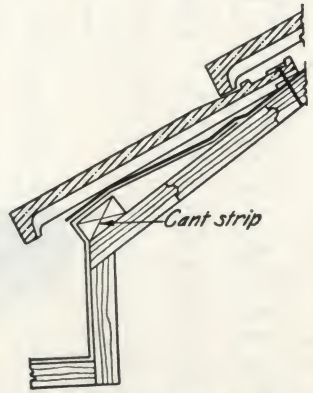
Section showing right gable rake and end band.



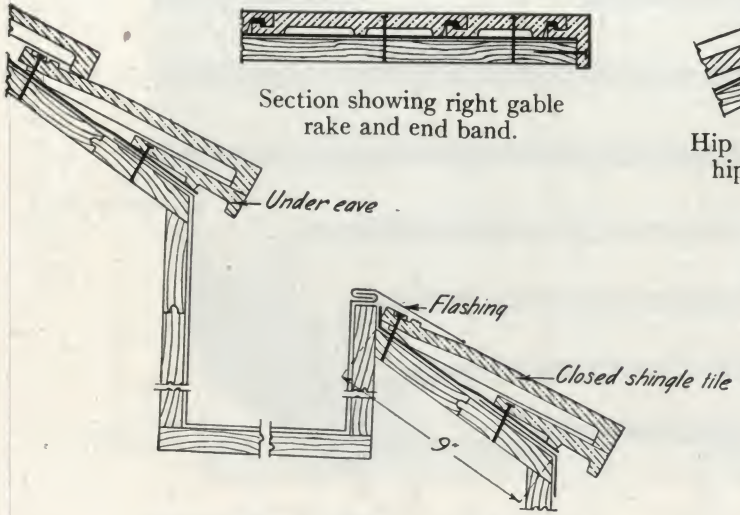
Hip section showing No. 118 hip roll used with Closed Shingle Tiles.



Hip section showing No. 120 hip roll used with English Shingle Tiles.

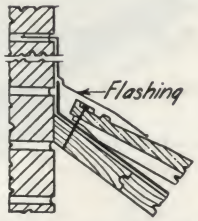


Section showing gutter construction for English Shingle Tiles.

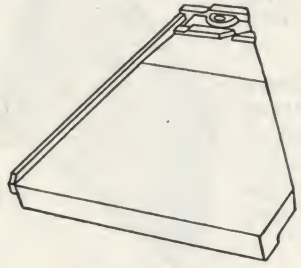


Section showing sunken gutter treatment.

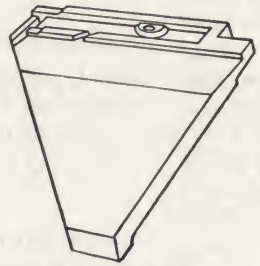
NOTE: When English Shingle Tiles are used, under eaves are omitted and distance below gutter is $11\frac{1}{4}''$.



Section showing flashing over top of tiles.



Cut hip—Left.



Cut valley—Right.

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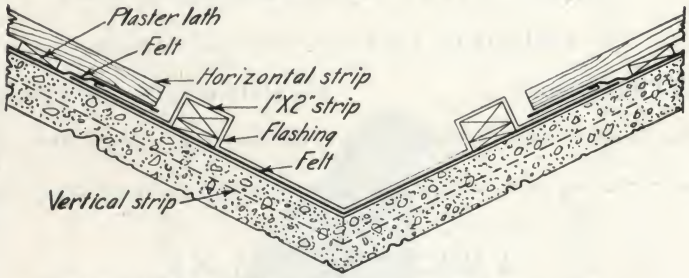
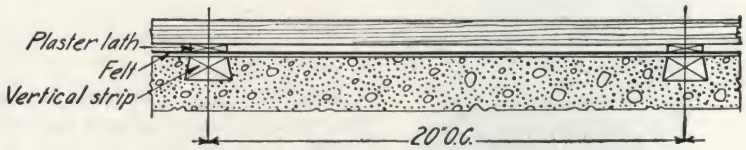
DETAILS OF IMPERIAL INTERLOCKING SHINGLE TILES AND FITTINGS

APPLICATION OVER CONCRETE

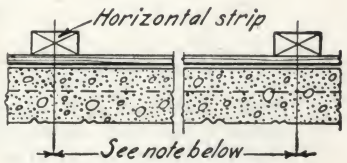
SCALE $1\frac{1}{2}'' = 1'\text{-}0''$



Section showing valley flashing on concrete roof base.



Longitudinal section through roof.

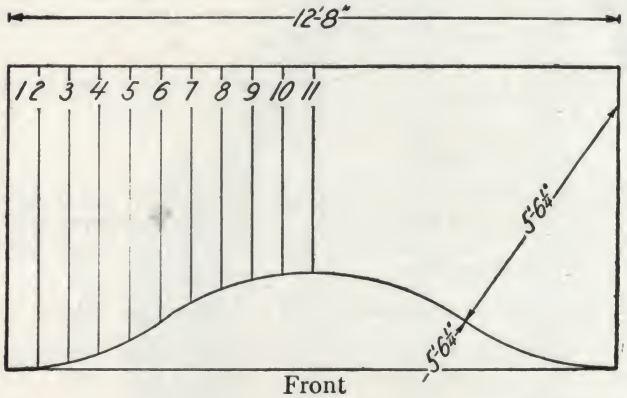


Cross section through roof.

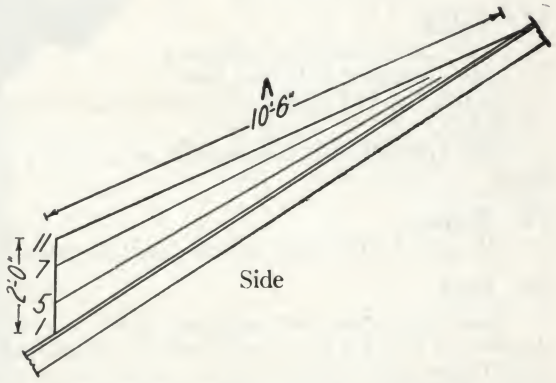
Application of wood strips to concrete roof base.
Exact spacing of horizontal strips determined by shade of tiles.

DIAGRAM OF EYEBROW DORMERS

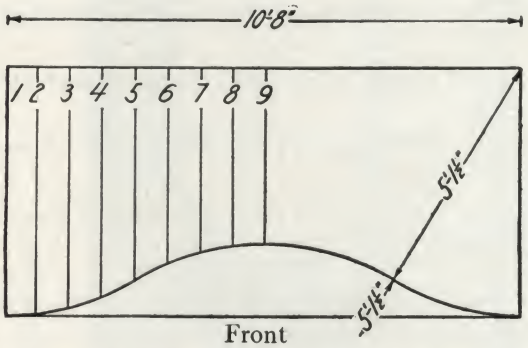
SCALE $\frac{1}{4}'' = 1'\text{-}0''$



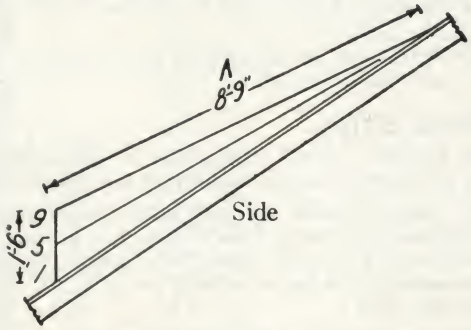
Front



Side



Front



Side

Eyebrow dormers must be constructed as shown above for Closed Shingle Tiles. Rafters and sheathing must show a straight line from the curved eave to the point directly above where it joins main roof and on a line with the point where center line of eyebrow meets main roof. See front elevation.

Larger or smaller effects can be secured providing vertical height and radii shown are increased or decreased proportionately. Distance "A" should not be decreased and it must be increased when roof pitch is steeper than 12" rise in 12" run.

NOTE: For English Shingle tiles, eyebrow width and distance "A" must be increased 2'-0". The height remains the same.

Continued on next page

LUDOWICI-CELADON COMPANY

Makers of IMPERIAL *Roofing Tiles*

CHICAGO, 104 South Michigan Avenue

NEW YORK, 565 Fifth Avenue WASHINGTON, 738 Fifteenth Street, N. W.

Factories located at NEW LEXINGTON, OHIO—COFFEYVILLE, KANSAS—PERU, KANSAS

FRENCH TILES

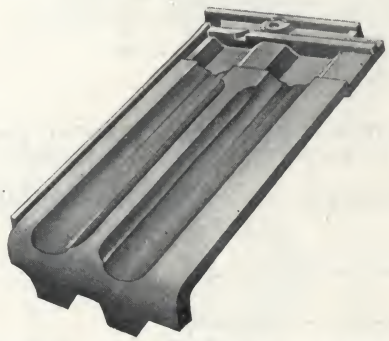
This pattern is available in a range of colors

SPECIFICATIONS

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Words in italics enclosed within parentheses are selective to suit particular condition. Include or omit as required.*

Note: *Clauses are selective. Include or omit as they apply.*



(1) Tiles

(1a) Cover roofs so indicated with Ludowici-Celadon Company's *Imperial* French tiles and fittings of (*specify*) color.

(1b) (*Hips*) (*and*) (*valleys*) shall be cut before burning.

(2) Nails

All nails for flashings and tiles shall be copper.

(3) Felt

(3a) Lay asphalt felt weighing 30 lbs. per square, doubled on (*low pitches*) (*rough surfaces*) (*hips*) (*valleys*) (*and*) ridges. Lay parallel to eaves. Lap 2½″ horizontally and 6″ vertically. Fasten with large-headed galvanized nails.

(3b) Extend felt (6″ *up vertical walls*) (*and*) 4″ over (*gutter*) (*and*) (*valley*) metal.

(4) Wood Strips

(4a) Provide 1½″x2″ cant strips at eaves and 1″ stringers of necessary height under (*hip rolls and*) ridges.

(4b) Embed parallel with the pitch on 20″ centers 1″ x 2″ beveled wood strips flush with surface of concrete. Fasten felt with lath nailed over these strips. At right angles to embedded strips, over lath, install 1″ x 2″ strips spaced to suit tiles.

Note: *Include* (4b) *if roof base is concrete.*

(5) Flashings

(5a) Line valleys with 16 oz. copper at least 20″ wide. Turn edge over ¼″. Lap joints at least 4″. Fasten with cleats. Do not solder.

(5b) At sides of vertical surfaces, extend base flashing at least 6″ up wall, 5″ under tiles and turn up edge ½″.

(5c) At fronts, extend flashing at least 3″ up wall and 4″ over tiles.

(5d) Masonry wall shall be cap flashed and pointed.

(5e) Where tile and metal roofs intersect, extend metal up tile roof 12″ or more.

(5f) Extend gutter metal up roof to a point higher than outer edge of gutter.

(6) Laying

(6a) Lay tiles to straight lines, parallel and at right angles to eaves, lapped 3″. Fasten with 2½″ copper nails. Fasten tiles overlapping sheet metal with copper wire and elastic cement.

(6b) Leave opening of 6″ or more across valleys.

(6c) Cement gable rakes to field tiles and fasten with 2″ copper nails.

(6d) Cement hip rolls in laps and fasten with 2″ copper nails.

(6e) Cement ridges in laps and fasten with 2½″ copper nails.

(6f) Where tiles join hip stringers make waterproof with elastic cement.

(6g) Cement small pieces of graduated tiles solidly with elastic cement.

Note: *Include* (6g) *on circular roofs.*

(6h) Cement all tiles in laps, using 40 lbs. of elastic cement per square.

(6i) Copper clamp shall be placed in side lock of each tile at point directly above head of tile below. Nail clamp to roof base.

Note: *Include either* (6h) *or* (6i) *on high buildings.*

Details concerning any roofing problem furnished on request.
If additional copies of this catalogue are desired, please write.

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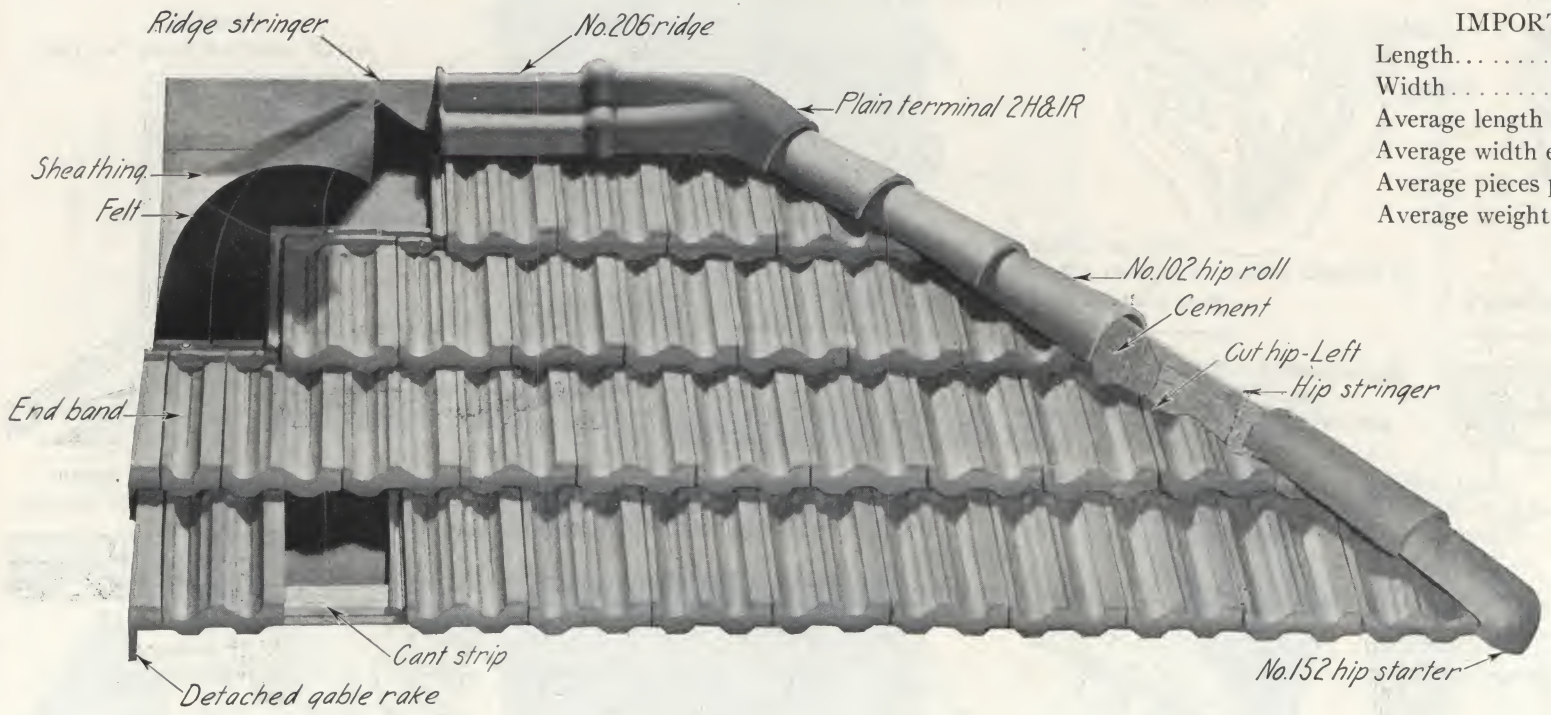
DETAILS OF IMPERIAL FRENCH TILES



IMPORTANT DATA

Length	$16\frac{1}{4}$"
Width	9 "
Average length exposure	$13\frac{3}{8}$"
Average width exposure	$8\frac{1}{8}$"
Average pieces per square	133
Average weight per square	935 lbs.

CORRECT RAFTER LENGTHS FOR FULL LENGTH TILES

Based on 2" projection at eave of roof.

COURSE	RAFTER
1	14 "
2	$27\frac{3}{8}$"
3	$40\frac{3}{4}$"
4	$54\frac{1}{8}$"
5	$67\frac{1}{2}$"
6	$80\frac{7}{8}$"
7	$94\frac{1}{4}$"
8	$107\frac{5}{8}$"
9	121 "
10	$134\frac{3}{8}$"

HIP AND RIDGE STRINGER HEIGHTS

ROOF PITCH	HIP NO. 102	RIDGE NO. 206
4" Rise to 12" Run	$4\frac{3}{4}$"	$5\frac{1}{4}$"
5" Rise to 12" Run	$4\frac{5}{8}$"	5 "
6" Rise to 12" Run	$4\frac{5}{8}$"	$4\frac{3}{4}$"
7" Rise to 12" Run	$4\frac{1}{2}$"	$4\frac{1}{2}$"
8" Rise to 12" Run	$4\frac{1}{2}$"	$4\frac{1}{4}$"
9" Rise to 12" Run	$4\frac{3}{8}$"	4 "
10" Rise to 12" Run	$4\frac{3}{8}$"	$3\frac{3}{4}$"
11" Rise to 12" Run	$4\frac{1}{4}$"	$3\frac{1}{2}$"
12" Rise to 12" Run	$4\frac{1}{4}$"	$3\frac{1}{4}$"
13" Rise to 12" Run	$4\frac{1}{8}$"	3 "
14" Rise to 12" Run	$4\frac{1}{8}$"	$2\frac{7}{8}$"
15" Rise to 12" Run	$4\frac{1}{8}$"	$2\frac{5}{8}$"

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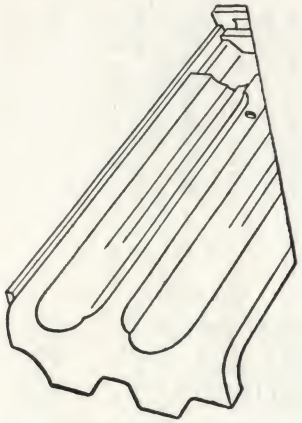
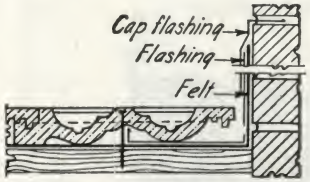
DETAILS OF IMPERIAL FRENCH TILES AND FITTINGS

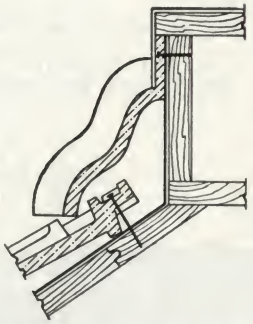
SCALE $1\frac{1}{2}'' = 1'\text{-}0''$



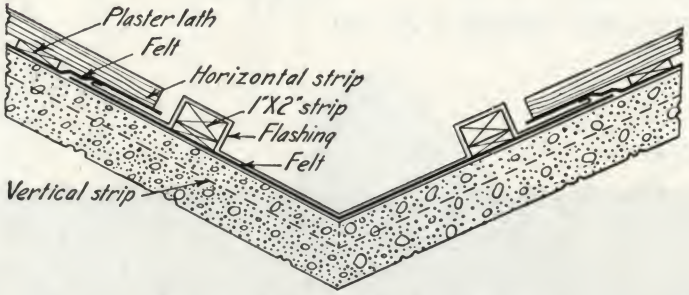
Cut hip—Left.



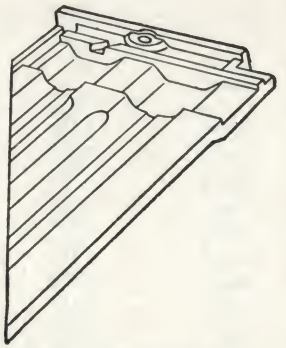
Section showing flashing under side of tiles.



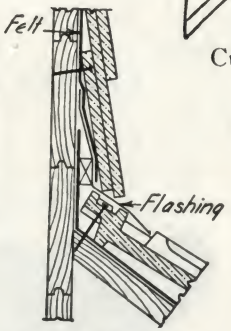
Deck section showing No. 206 deck mould-raised flange.



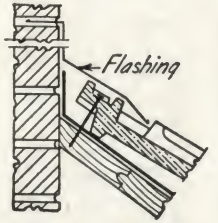
Section showing valley flashing on concrete roof base.



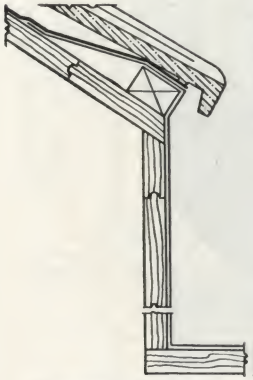
Cut valley—Right.



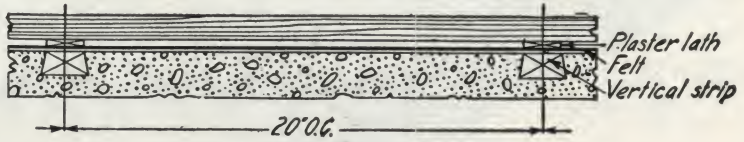
Section showing flashing under $\frac{3}{8}''$ Flat Shingle Tiles.



Section showing flashing over top of tiles.

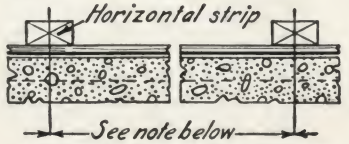


Section showing right gable rake.

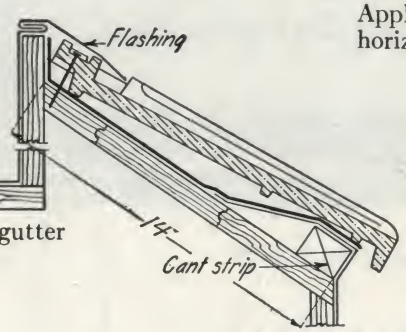


Longitudinal section through roof.

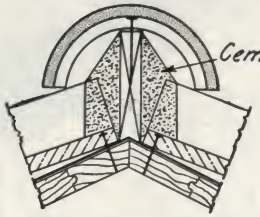
Application of wood strips to concrete roof base. Exact spacing of horizontal strips determined by shade of tiles.



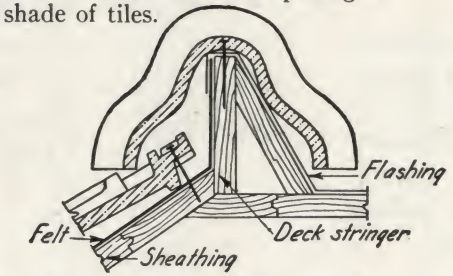
Cross section through roof.



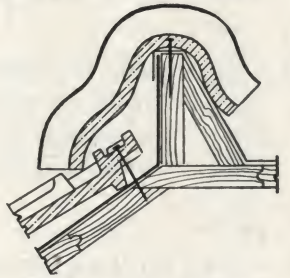
Section showing sunken gutter treatment.



Hip section showing No. 102 hip roll.



Deck section showing No. 206 ridge.



Deck section showing No. 206 cut-off ridge.

Continued on next page

LUDOWICI-CELADON COMPANY

Makers of IMPERIAL *Roofing Tiles*

CHICAGO, 104 South Michigan Avenue

NEW YORK, 565 Fifth Avenue WASHINGTON, 738 Fifteenth Street, N. W.

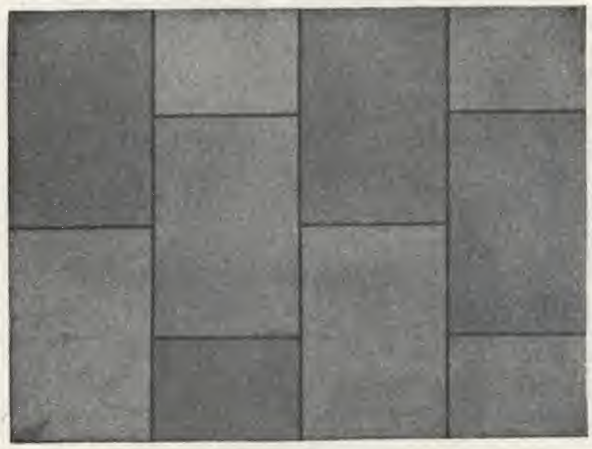
Factories located at NEW LEXINGTON, OHIO—COFFEYVILLE, KANSAS—PERU, KANSAS

TILE SLABS

In addition to shale red colors, tile slabs are manufactured in a range of browns and fire-flashed shades. A complete line of tile slab fittings is available.

NUMBER OF PIECES PER SQUARE

Mortar Joint	6″x6″x1″	6″x9″x1″	9″x9″x1″
$\frac{1}{8}$″	384	258	173
$\frac{1}{4}$″	369	250	168
$\frac{3}{8}$″	355	241	164
$\frac{1}{2}$″	341	234	160



6″x9″x1″

6″x6″x1″

GARDEN WALK EDGING

Made in red, fire-flashed and black. Placed in the ground along walks or driveways it makes an interesting and practical edging for lawns or flower borders.

TILE FLAGGING

Made in a variety of colors. The texture suggests that of old stone flagging. Size approximately 9″x12″x1$\frac{1}{4}$″.

Continued on next page

LUDOWICI-CELADON COMPANY

Makers of IMPERIAL *Roofing Tiles*

CHICAGO, 104 South Michigan Avenue

NEW YORK, 565 Fifth Avenue WASHINGTON, 738 Fifteenth Street, N. W.

Factories located at NEW LEXINGTON, OHIO—COFFEYVILLE, KANSAS—PERU, KANSAS

MISSION TILES

These patterns are available in a range of colors in a variety of surface textures

SPECIFICATIONS

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*
Note: *Words in italics enclosed within parentheses are selective to suit particular condition. Include or omit as required.*
Note: *Clauses are selective. Include or omit as they apply.*

(1) Tiles

(**1a**) Cover roofs so indicated with Ludowici-Celadon Company's Imperial (*specify pattern*) Mission Tiles and fittings of (*specify*) color.

(**1b**) Covers shall be used as (*hip roll and*) ridge.

(**1c**) (*Hips shall be cut*) (*and*) valleys shall be cut and closed before burning.

(2) Nails

All nails for flashings and tiles shall be copper.

(3) Felt

(**3a**) Lay asphalt felt weighing 30 lbs. per square, doubled on (*low pitches*) (*rough surfaces*) (*hips*) (*valleys*) (*and*) ridges. Lay parallel to eaves. Lap 2½″ horizontally and 6″ vertically. Fasten with large-headed galvanized nails.

(**3b**) Extend felt (6″ *up vertical walls*) (*and*) 4″ over (*gutter*) (*and*) (*valley*) metal.

(4) Wood Strips

(**4a**) Provide 1″ strips of necessary height under covers (*hip rolls*) and ridges.

(**4b**) Embed parallel with the pitch on 20″ centers 1″ x 2″ beveled wood strips flush with surface of concrete. Fasten felt with lath nailed over these strips. At right angles to embedded strips, over lath, install 1″ x 2″ strips spaced to suit pan tiles.

Note: *Include* (4b) *if roof base is concrete.*

(5) Flashings

(**5a**) Line valleys with 16 oz. copper at least 20″ wide. Turn edge over ¼″. Lap joints at least 4″. Fasten with cleats. Do not solder.

(**5b**) At sides of vertical surfaces, extend base flashing at least 6″ up wall, 4″ under tiles and turn up edge 2″.

(**5c**) At fronts, extend flashing at least 3″ up wall and 4″ over tiles.

(**5d**) Masonry wall shall be cap flashed and pointed.

(**5e**) Where tile and metal roofs intersect, extend metal up tile roof 12″ or more.

(**5f**) Extend gutter metal up roof to a point higher than outer edge of gutter.

(6) Laying

(**6a**) Lay tiles (*regular*) (*irregular*) exposure with not less than 3″ lap. Fasten with 2″ copper nails. Fasten tiles overlapping sheet metal with copper wire and elastic cement.

(**6b**) **Irregular Effect**—Lay pans at actual exposure. Vary exposures of covers to avoid horizontal and diagonal lines using 10% additional covers.

(**6c**) Leave opening of 6″ or more across valleys.

(**6d**) Cement gable rakes to field tiles and fasten with 2½″ copper nails.

(**6e**) Cement (*hip rolls*) (*and*) (*ridges*) in laps and fasten with 2½″ copper nails.

(**6f**) Where tiles join hip stringers make waterproof with elastic cement.

(**6g**) Cement small pieces of graduated tiles solidly with elastic cement.

Note: *Include* (6g) *on circular roofs.*

(**6h**) Cement all tiles in laps, using 30 lbs. of elastic cement per square.

Note: *Include* (6h) *on high buildings.*

Details concerning any roofing problem furnished on request.
If additional copies of this catalogue are desired, please write.

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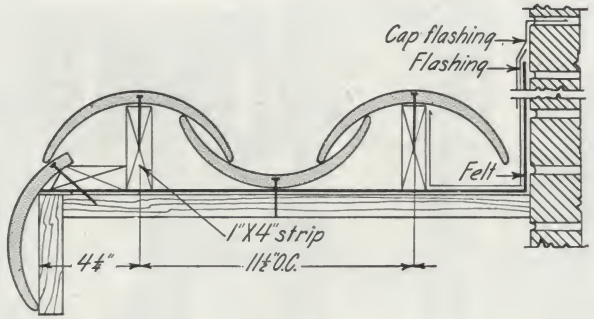
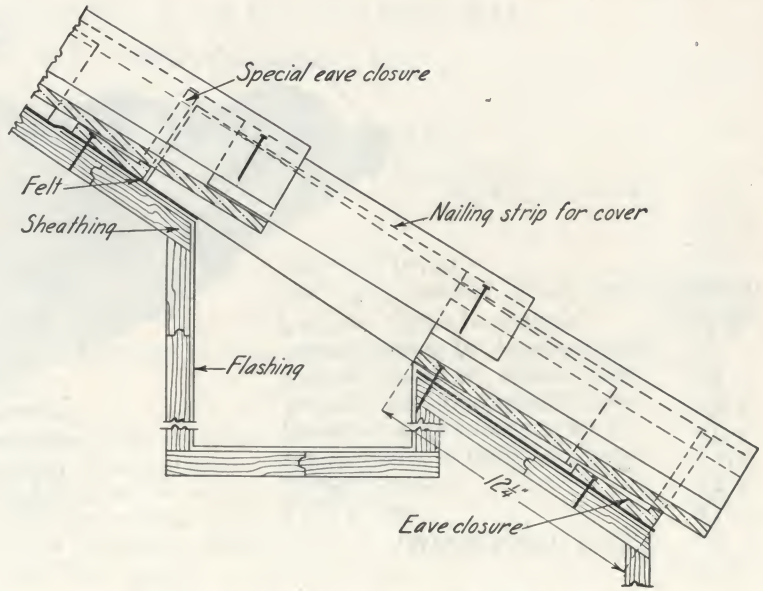
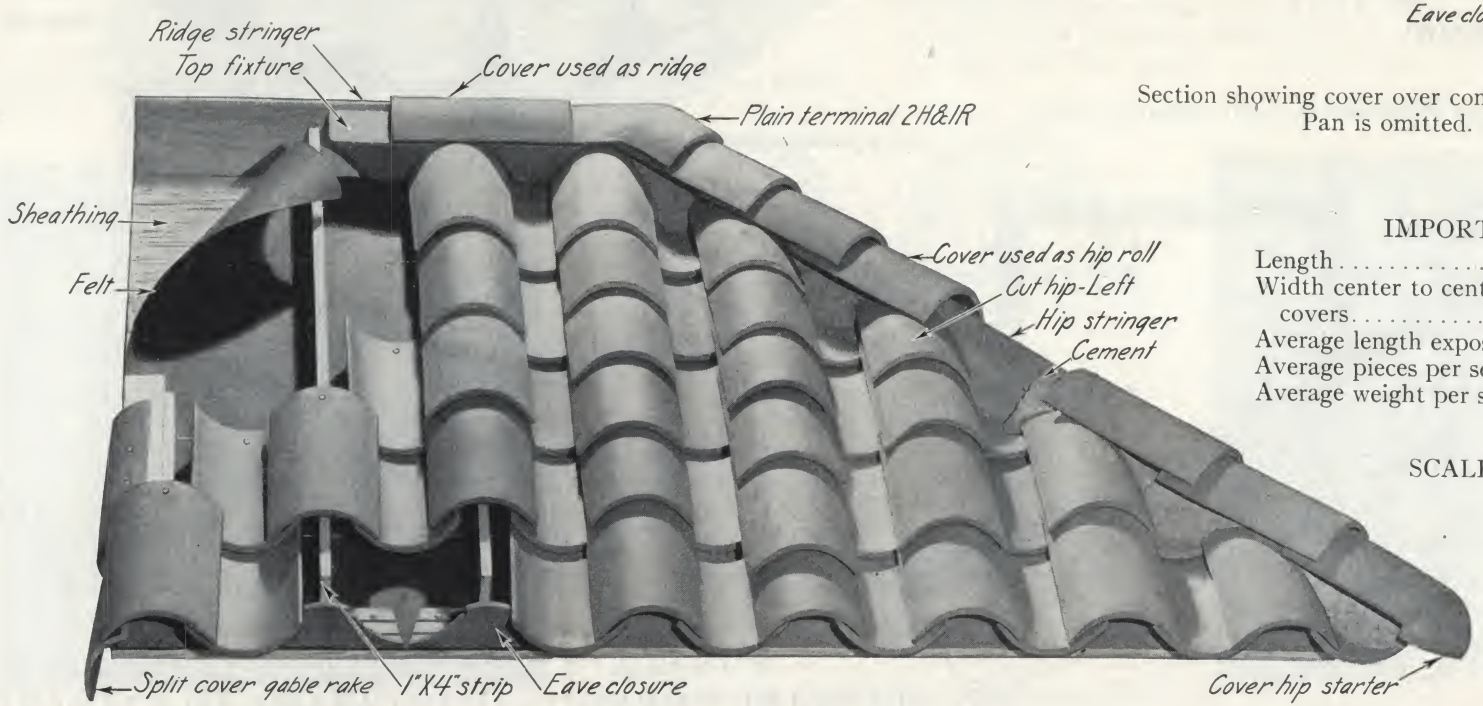
DETAILS OF IMPERIAL STRAIGHT BARREL MISSION TILES AND FITTINGS



Section showing split cover gable rake also flashing under side of tiles.



Section showing cover over concealed gutter.
Pan is omitted.



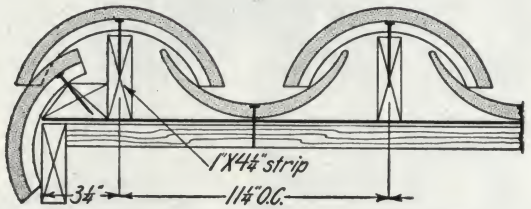
IMPORTANT DATA

Length	$14\frac{1}{4}$"	18 "
Width center to center of covers	$11\frac{1}{2}$"	$11\frac{1}{2}$"
Average length exposure	$11\frac{1}{4}$"	15 "
Average pieces per square	224	170
Average weight per square	1250 lbs.	1250 lbs.

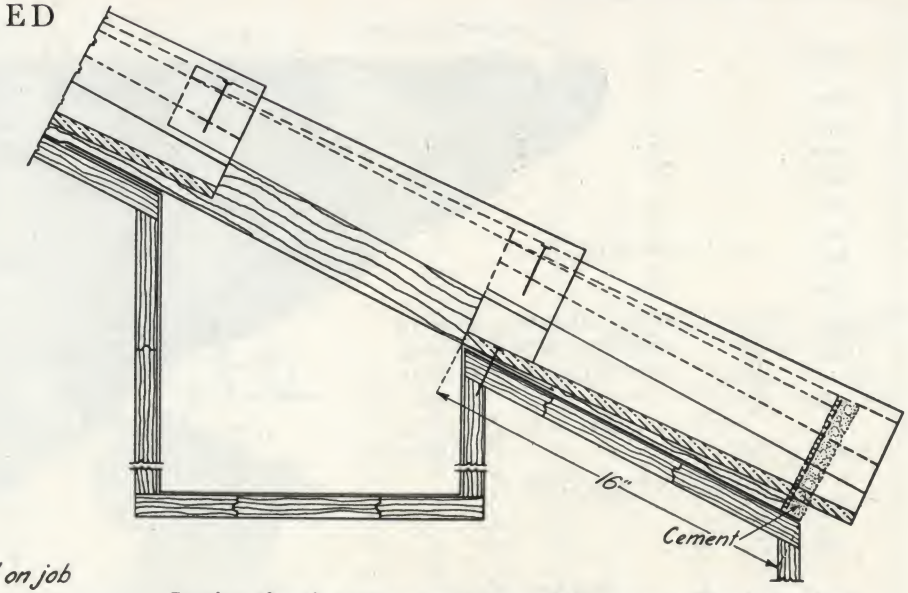
SCALE $1\frac{1}{2}$" = 1'-0"

Continued on next page

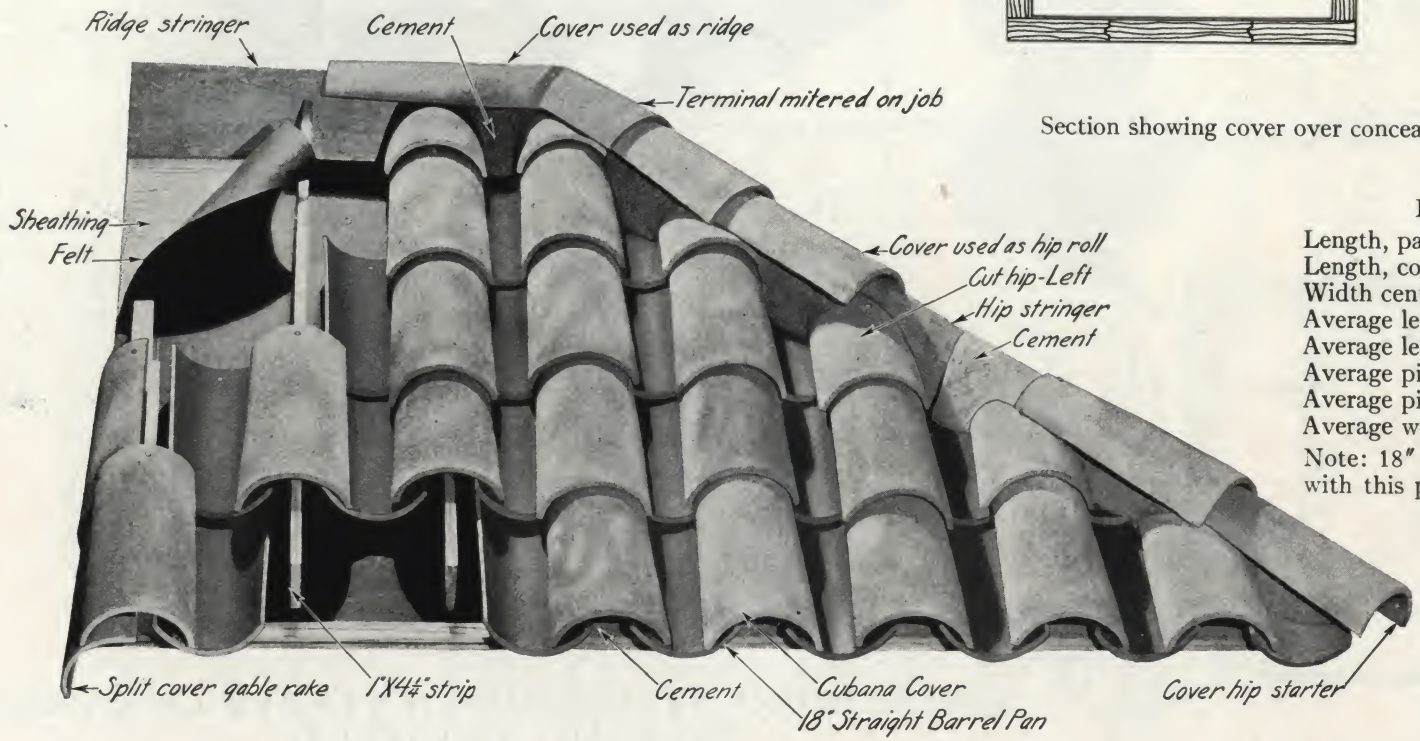
DETAILS OF IMPERIAL 18″ CUBANA TAPERED MISSION TILES AND FITTINGS



Section showing split cover gable rake.



Section showing cover over concealed gutter. · Pan is omitted.



IMPORTANT DATA

Length, pan	18 ″
Length, cover	18 ″
Width center to center of covers	11¼″
Average length exposure, pans	15 ″
Average length exposure, covers	15 ″
Average pieces per square, pans	85
Average pieces per square, covers	85
Average weight per square	1265 lbs.

Note: 18″ Straight Barrel pans furnished with this pattern.

SCALE 1½″ = 1′-0″

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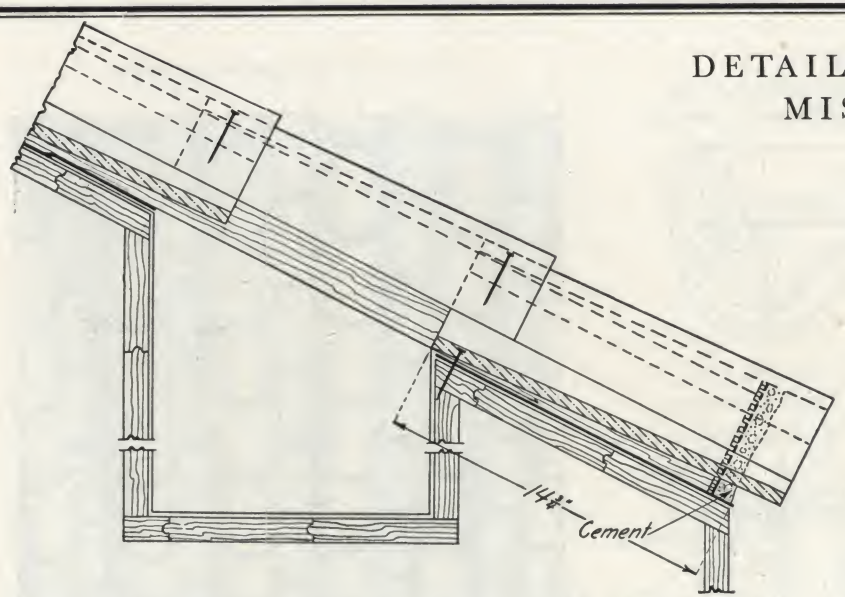
DETAILS OF IMPERIAL LARGE TAPERED MISSION TILES AND FITTINGS



Section showing cover over concealed gutter. Pan is omitted.

NOTE: When 18″ Straight Barrel pans are used, distance below gutter should be 16″.

IMPORTANT DATA

LARGE TAPERED PANS AND COVERS

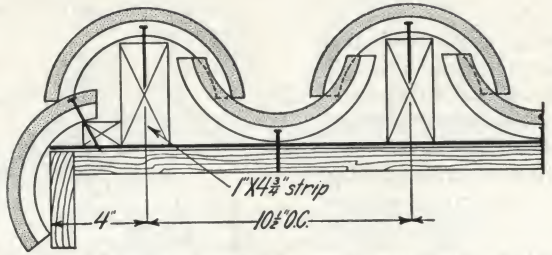
Length	16¾″
Width center to center of covers	10½″
Average length exposure	13¾″
Average pieces per square	200
Average weight per square	1600 lbs.

LARGE TAPERED COVERS AND 18″ STRAIGHT BARREL PANS

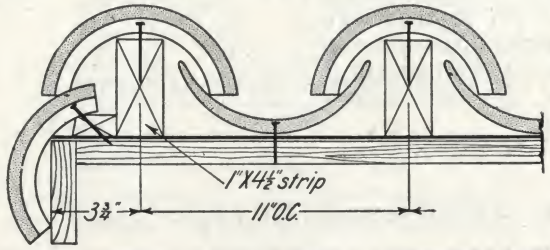
Length, pan	18 ″
Length, cover	16¾″
Width center to center of covers	11 ″
Average length exposure, pans	15 ″
Average length exposure, covers	13¾″
Average pieces per square, pans	87
Average pieces per square, covers	95
Average weight per square	1400 lbs.

SCALE 1½″ = 1′-0″

Large Tapered pans and covers.



Section showing Large Tapered pans and covers, also split cover gable rake.

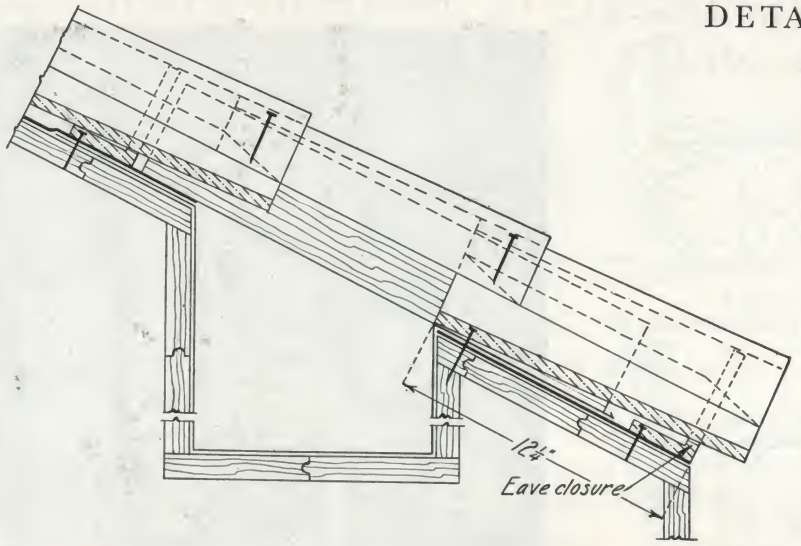


Section showing Large Tapered covers with 18″ Straight Barrel pans, also split cover gable rake.

Large Tapered covers and Straight Barrel pans.

Continued on next page

DETAILS OF IMPERIAL SMALL TAPERED MISSION TILES AND FITTINGS



Section showing cover over concealed gutter. Pan is omitted.

IMPORTANT DATA

Small Tapered Pans and Covers

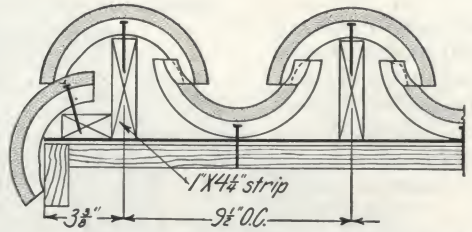
Length	14¼"
Width center to center of covers	9½"
Average length exposure	11¼"
Average pieces per square	270
Average weight per square	1380 lbs.

Small Tapered Covers and 14¼" Straight Barrel Pans

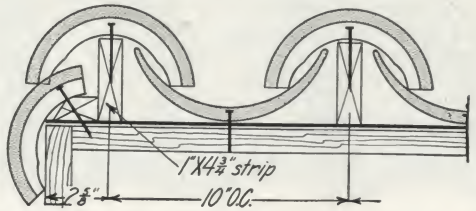
Length, pan	14¼"
Length, cover	14¼"
Width center to center of covers	10"
Average length exposure, pans	11¼"
Average length exposure, covers	11¼"
Average pieces per square, pans	128
Average pieces per square, covers	128
Average weight per square	1350 lbs.

SCALE 1½" = 1'-0"

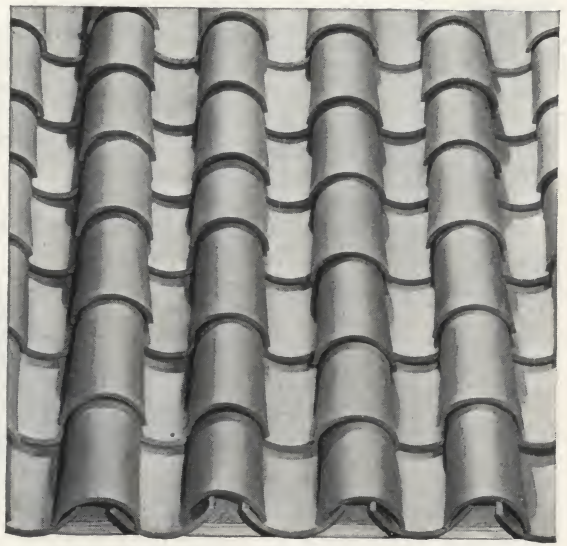
Small Tapered pans and covers.



Section showing Small Tapered pans and covers, also split cover gable rake.



Section showing Small Tapered covers with 14¼" Straight Barrel pans, also split cover gable rake.



Small Tapered covers and Straight Barrel pans.

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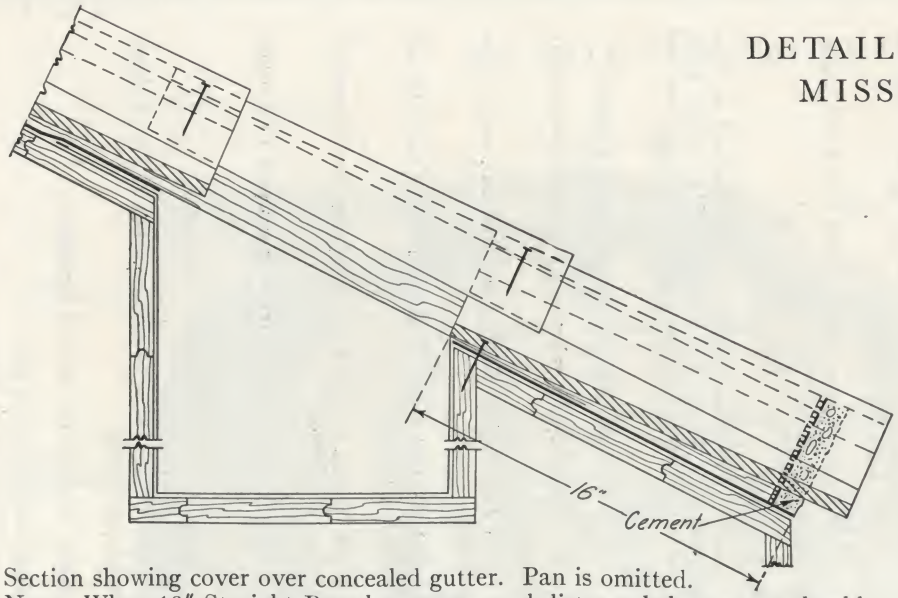
DETAILS OF IMPERIAL 18″ TAPERED MISSION TILES AND FITTINGS



Section showing cover over concealed gutter. Pan is omitted.
NOTE: When 18″ Straight Barrel pans are used distance below gutter should be 16″.

IMPORTANT DATA

18″ TAPERED PANS AND COVERS

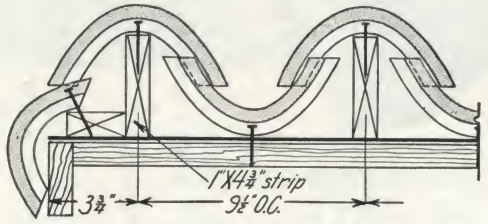
Length	18″
Width center to center of covers	9½″
Average length exposure	15″
Average pieces per square	204
Average weight per square	1600 lbs.

18″ TAPERED COVERS AND 18″ STRAIGHT BARREL PANS

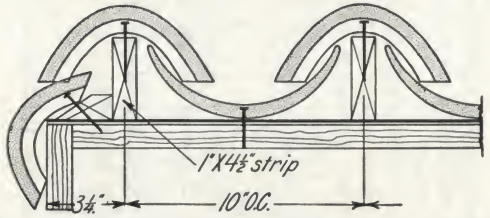
Length, pan	18″
Length, cover	18″
Width center to center of covers	10″
Average length exposure, pans	15″
Average length exposure, covers	15″
Average pieces per square, pans	96
Average pieces per square, covers	96
Average weight per square	1350 lbs.

SCALE 1½″ = 1′-0″

18″ Tapered pans and covers.



Section showing 18″ Tapered pans and covers, also split cover gable rake.



Section showing 18″ Tapered covers and 18″ Straight Barrel pans, also split cover gable rake.

18″ Tapered covers and Straight Barrel pans.

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Continued on next page

LUDOWICI-CELADON COMPANY

Makers of IMPERIAL *Roofing Tiles*

CHICAGO, 104 South Michigan Avenue

NEW YORK, 565 Fifth Avenue WASHINGTON, 738 Fifteenth Street, N. W.

Factories located at NEW LEXINGTON, OHIO—COFFEYVILLE, KANSAS—PERU, KANSAS

SPANISH TILES

This pattern is available in a range of colors in a variety of surface textures

SPECIFICATIONS

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Words in italics enclosed within parentheses are selective to suit particular condition. Include or omit as required.*

Note: *Clauses are selective. Include or omit as they apply.*

(1) Tiles

(1a) Cover roofs so indicated with Ludowici-Celadon Company's Imperial Spanish tiles and fittings of (*specify*) color.

(1b) (*Hips shall be cut*) (*and*) valleys shall be cut and closed before burning.

(2) Nails

All nails for flashings and tiles shall be copper.

(3) Felt

(3a) Lay asphalt felt weighing 30 lbs. per square, doubled on (*low pitches*) (*rough surfaces*) (*hips*) (*valleys*) (*and*) ridges. Lay parallel to eaves. Lap 2½″ horizontally and 6″ vertically. Fasten with large-headed galvanized nails.

(3b) Extend felt (6″ *up vertical walls*) (*and*) 4″ over (*gutter*) (*and*) (*valley*) metal.

(4) Wood Strips

(4a) Provide 1″ x 2″ strips under end bands and 1″ stringers of necessary height under (*hip rolls and*) ridges.

(4b) Embed parallel with the pitch on 20″ centers 1″ x 2″ beveled wood strips flush with surface of concrete. Fasten felt with lath nailed over these strips. At right angles to embedded strips, over lath, install 1″ x 2″ strips spaced to suit tiles.

Note: *Include* (4b) *if roof base is concrete.*

(5) Flashings

(5a) Line valleys with 16 oz. copper at least 20″ wide. Turn edge over ¼″. Lap joints at least 4″. Fasten with cleats. Do not solder.

(5b) At sides of vertical surfaces, extend base flashing at least 6″ up wall, 4″ under tiles and turn up edge 1½″.

(5c) At fronts, extend flashing at least 3″ up wall and 4″ over tiles.

(5d) Masonry wall shall be cap flashed and pointed.

(5e) Where tile and metal roofs intersect, extend metal up tile roof 12″ or more.

(5f) Extend gutter metal up roof to a point higher than outer edge of gutter.

(6) Laying

(6a) Lay tiles to straight lines, parallel and at right angles to eaves, lapped 3″. Fasten with 1½″ copper nails. Fasten tiles overlapping sheet metal with copper wire and elastic cement.

(6b) Leave opening of 6″ or more across valleys.

(6c) Cement gable rakes to field tiles and fasten with 2½″ copper nails.

(6d) Cement hip rolls in laps and fasten with 2″ copper nails.

(6e) Cement ridges in laps and fasten with 2½″ copper nails.

(6f) Where tiles join hip stringers make waterproof with elastic cement.

(6g) Cement small pieces of graduated tiles solidly with elastic cement.

Note: *Include* (6g) *on circular roofs.*

(6h) Cement all tiles in laps, using 30 lbs. of elastic cement per square.

Note: *Include* (6h) *on high buildings.*

Details concerning any roofing problem furnished on request.
If additional copies of this catalogue are desired, please write.

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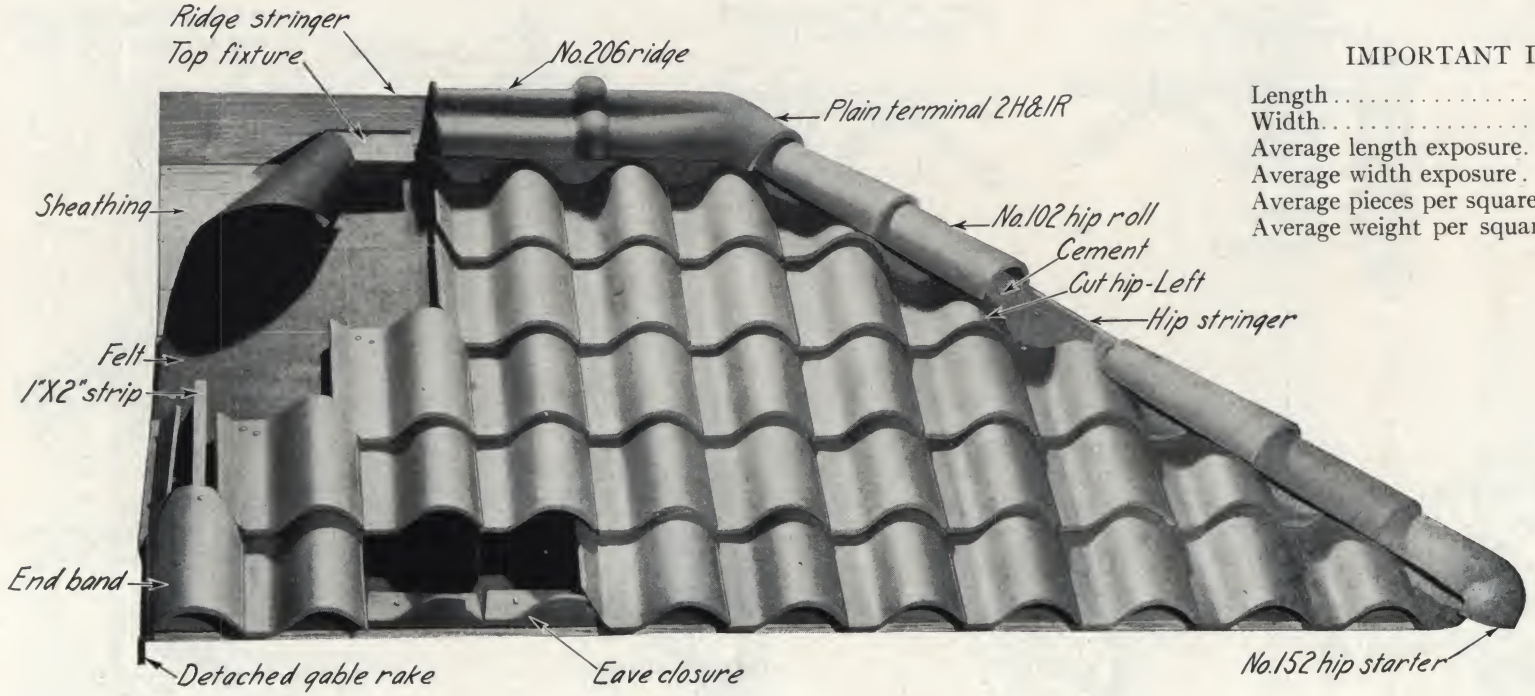
DETAILS OF IMPERIAL SPANISH TILES



IMPORTANT DATA

Length	$13\frac{1}{4}$"
Width	$9\frac{3}{4}$"
Average length exposure	$10\frac{1}{4}$"
Average width exposure	$8\frac{1}{4}$"
Average pieces per square	171
Average weight per square	900 lbs.

CORRECT RAFTER LENGTHS FOR FULL LENGTH TILES

Based on 2" projection at eave of roof.

COURSE	RAFTER
1	$11\frac{1}{4}$"
2	$21\frac{1}{2}$"
3	$31\frac{3}{4}$"
4	42"
5	$52\frac{1}{4}$"
6	$62\frac{1}{2}$"
7	$72\frac{3}{4}$"
8	83"
9	$93\frac{1}{4}$"
10	$103\frac{1}{2}$"
11	$113\frac{3}{4}$"

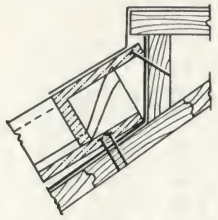
HIP AND RIDGE STRINGER HEIGHTS

ROOF PITCH	HIP NO. 102	RIDGE NO. 206
4" Rise to 12" Run	5"	$6\frac{1}{2}$"
5" Rise to 12" Run	$4\frac{7}{8}$"	$6\frac{1}{4}$"
6" Rise to 12" Run	$4\frac{7}{8}$"	6"
7" Rise to 12" Run	$4\frac{3}{4}$"	$5\frac{3}{4}$"
8" Rise to 12" Run	$4\frac{3}{4}$"	$5\frac{1}{2}$"
9" Rise to 12" Run	$4\frac{5}{8}$"	$5\frac{3}{8}$"
10" Rise to 12" Run	$4\frac{5}{8}$"	$5\frac{1}{4}$"
11" Rise to 12" Run	$4\frac{5}{8}$"	$5\frac{1}{8}$"
12" Rise to 12" Run	$4\frac{1}{2}$"	5"
13" Rise to 12" Run	$4\frac{1}{2}$"	$4\frac{7}{8}$"
14" Rise to 12" Run	$4\frac{1}{2}$"	$4\frac{3}{4}$"
15" Rise to 12" Run	$4\frac{3}{8}$"	$4\frac{1}{2}$"

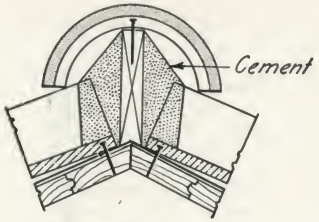
Continued on next page

DETAILS OF IMPERIAL SPANISH TILES AND FITTINGS

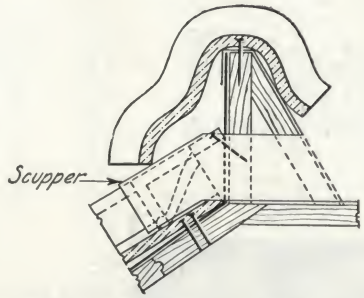
SCALE $1\frac{1}{2}'' = 1'\text{-}0''$



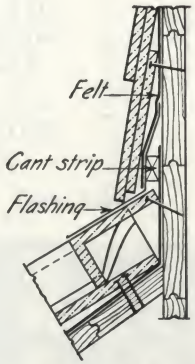
Deck section showing flashing over top of tiles.



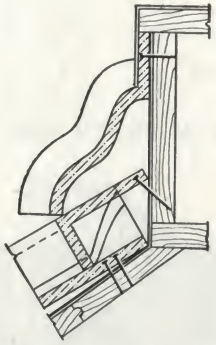
Hip section showing No. 102 hip roll.



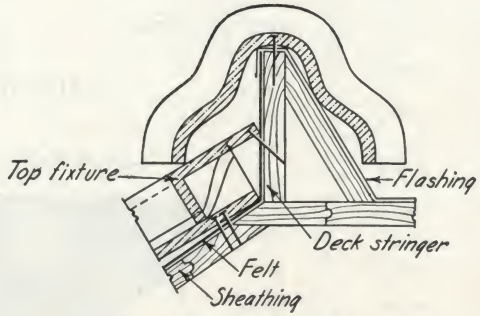
Deck section showing No. 206 cut-off ridge and 3″x4″ scuppers draining deck.



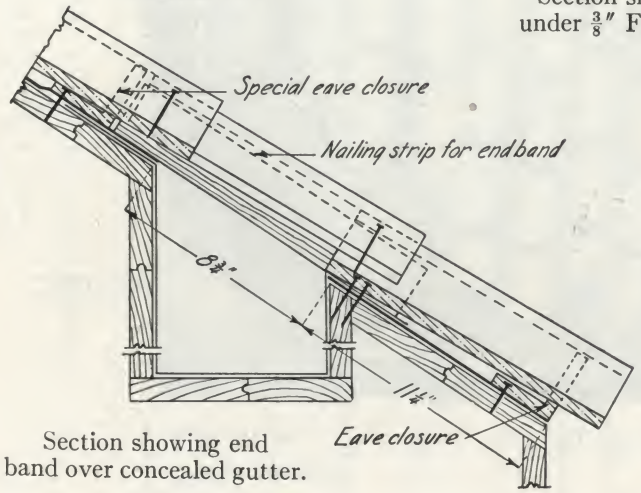
Section showing flashing under $\frac{3}{8}''$ Flat Shingle Tiles.



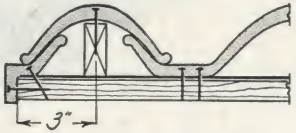
Deck section showing No. 206 deck mould-raised flange.



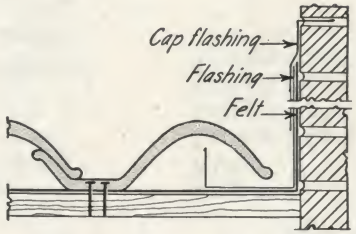
Deck section showing No. 206 ridge.



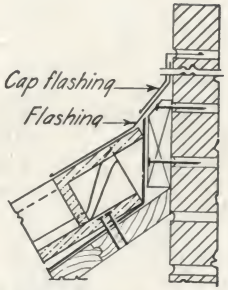
Section showing end band over concealed gutter.



Section showing left gable rake and end band.



Section showing flashing under side of tiles.



Section showing flashing over top of tiles.

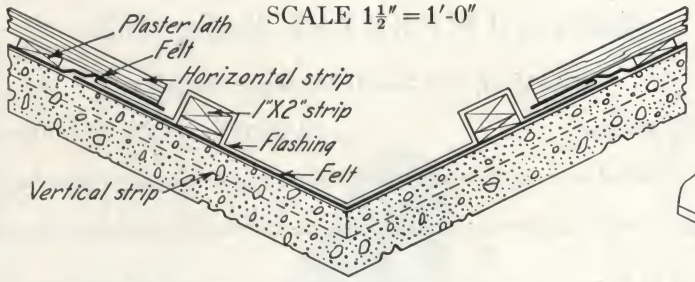
Continued on next page

DETAILS OF IMPERIAL SPANISH TILES AND FITTINGS

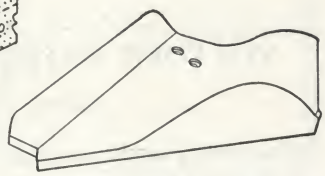
APPLICATION OVER CONCRETE

SCALE $1\frac{1}{2}'' = 1'\text{-}0''$

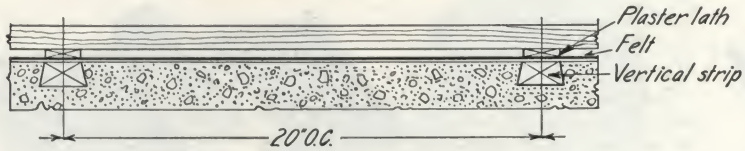
Cut hip—Left.



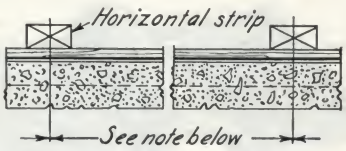
Section showing valley flashing on concrete roof base.



Closed valley—Left.



Longitudinal section through roof.

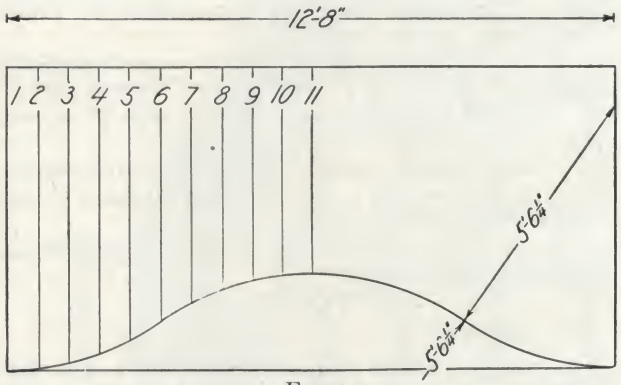


Cross section through roof.

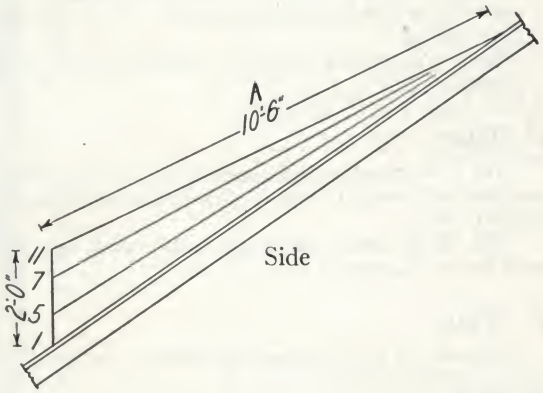
Application of wood strips to concrete roof base.
Exact spacing of horizontal strips determined by shade of tiles.

DIAGRAM OF EYEBROW DORMERS

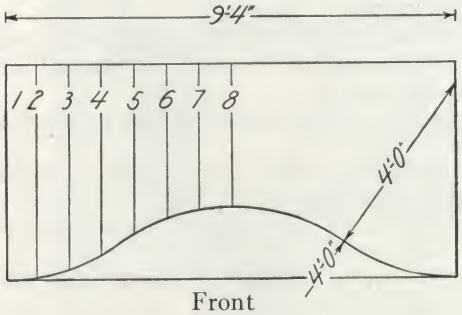
SCALE $\frac{1}{4}'' = 1'\text{-}0''$



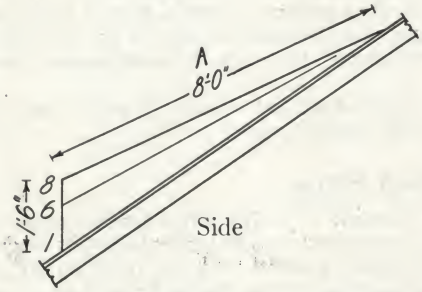
Front



Side



Front



Side

Eyebrow dormers must be constructed as shown above for Spanish tiles. Rafters and sheathing must show a straight line from the curved eave to the point directly above where it joins main roof and on a line with the point where center line of eyebrow meets main roof. See front elevation.

Larger or smaller effects can be secured providing vertical height and radii shown are increased or decreased proportionately.

Distance "A" should not be decreased and it must be increased when roof pitch is steeper than 12" rise in 12" run.

Continued on next page

LUDOWICI-CELADON COMPANY

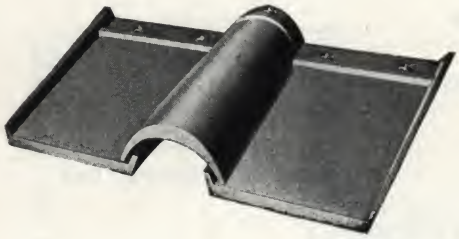
Makers of IMPERIAL *Roofing Tiles*

CHICAGO, 104 South Michigan Avenue

NEW YORK, 565 Fifth Avenue WASHINGTON, 738 Fifteenth Street, N. W.

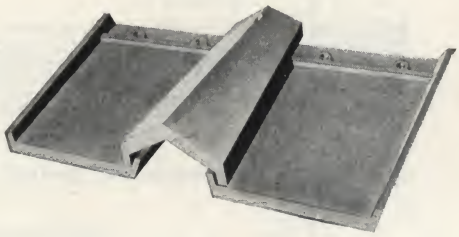
Factories located at NEW LEXINGTON, OHIO—COFFEYVILLE, KANSAS—PERU, KANSAS

ROMAN TILES



These patterns are available in a range of colors in a variety of surface textures.

GREEK TILES



SPECIFICATIONS

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*
Note: *Words in italics enclosed within parentheses are selective to suit particular condition. Include or omit as required.*
Note: *Clauses are selective. Include or omit as they apply.*

(1) Tiles

(**1a**) Cover roofs so indicated with Ludowici-Celadon Company's Imperial (*Roman*) (*Greek*) tiles and fittings of (*specify*) color.

(**1b**) (*Hips shall be cut*) (*and*) valleys shall be cut and closed before burning.

(2) Nails

All nails for flashings and tiles shall be copper.

(3) Felt

(**3a**) Lay asphalt felt weighing 30 lbs. per square, doubled on (*low pitches*) (*rough surfaces*) (*hips*) (*valleys*) (*and*) ridges. Lay parallel to eaves. Lap 2½″ horizontally and 6″ vertically. Fasten with large-headed galvanized nails.

(**3b**) Extend felt (6″ *up vertical walls*) (*and*) 4″ over (*gutter*) (*and*) (*valley*) metal.

(4) Wood Strips

(**4a**) Provide 1″ x 2⅝″ strips under covers and 1″ stringers of necessary height under (*hip rolls and*) ridges.

(**4b**) Embed parallel with the pitch on 20″ centers 1″ x 2″ beveled wood strips flush with surface of concrete. Fasten felt with lath nailed over these strips. At right angles to embedded strips, over lath, install 1″ x 2″ strips spaced to suit pan tiles.

Note: *Include* (4b) *if roof base is concrete.*

(5) Flashings

(**5a**) Line valleys with 16 oz. copper at least 20″ wide. Turn edge over ¼″. Lap joints at least 4″. Fasten with cleats. Do not solder.

(**5b**) At sides of vertical surfaces, extend base flashing at least 6″ up wall, 4″ under tiles and turn up edge 2″.

(**5c**) At fronts, extend flashing at least 3″ up wall and 4″ over tiles.

(**5d**) Masonry wall shall be cap flashed and pointed.

(**5e**) Where tile and metal roofs intersect, extend metal up tile roof 12″ or more.

(**5f**) Extend gutter metal up roof to a point higher than outer edge of gutter.

(6) Laying

(**6a**) Lay tiles to straight lines, parallel and at right angles to eaves, lapped 3″. Fasten with 1½″ copper nails. Fasten tiles overlapping sheet metal with copper wire and elastic cement.

(**6b**) Leave opening of 6″ or more across valleys.

(**6c**) Cement gable rakes to field tiles and fasten with 2½″ copper nails.

(**6d**) Cement hip rolls in laps and fasten with 2″ copper nails.

(**6e**) Cement ridges in laps and fasten with 2½″ copper nails.

(**6f**) Where tiles join hip stringers make waterproof with elastic cement.

(**6g**) Cement small pieces of graduated tiles solidly with elastic cement.

Note: *Include* (6g) *on circular roofs.*

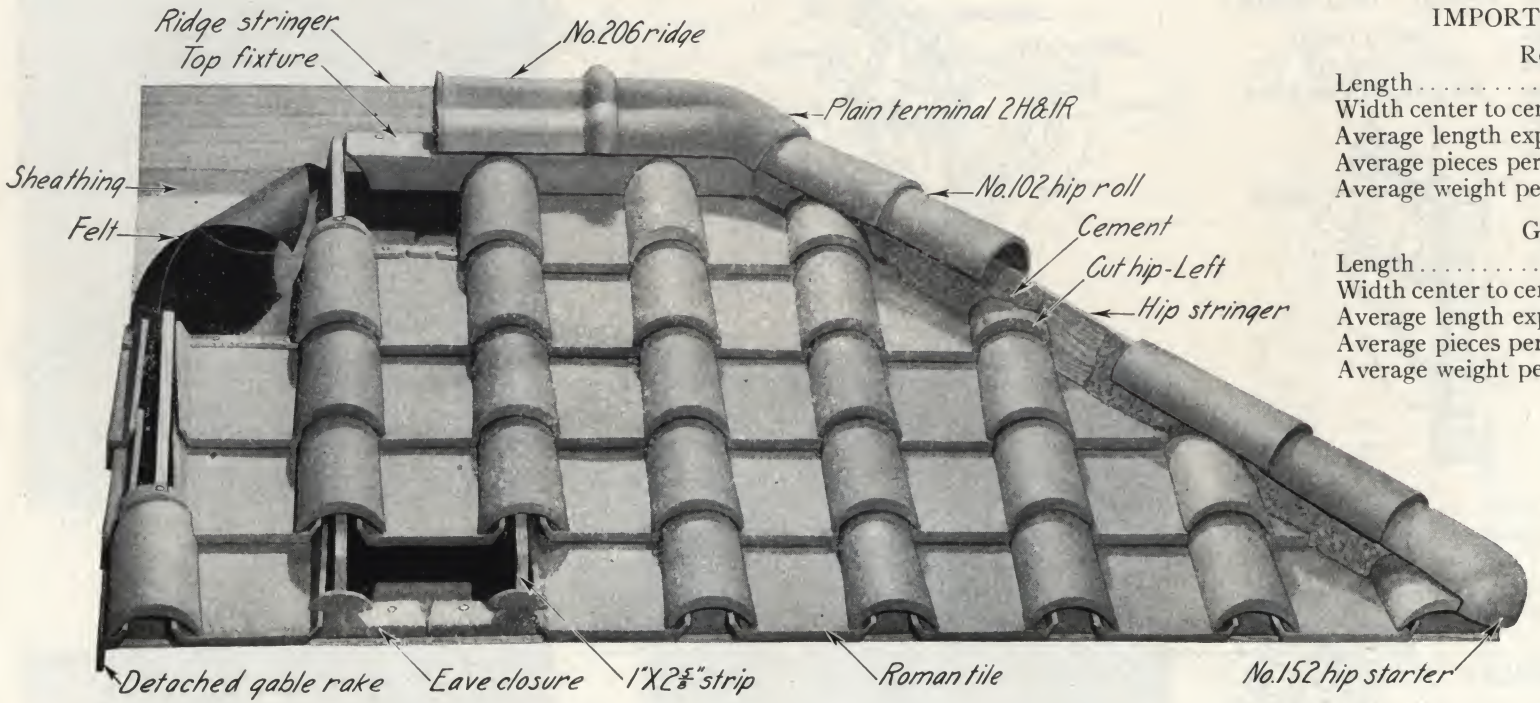
(**6h**) Cement all tiles in laps, using 30 lbs. of elastic cement per square.

Note: *Include* (6h) *on high buildings.*

Details concerning any roofing problem furnished on request.
If additional copies of this catalogue are desired, please write.

Continued on next page

DETAILS OF IMPERIAL ROMAN AND GREEK TILES



IMPORTANT DATA

ROMAN

Length	12¾"
Width center to center of covers.	12 "
Average length exposure	10 "
Average pieces per square	240
Average weight per square	1100 lbs.

GREEK

Length	12¾"
Width center to center of covers.	12 "
Average length exposure	10 "
Average pieces per square	240
Average weight per square	1250 lbs.

CORRECT RAFTER LENGTHS FOR FULL LENGTH ROMAN OR GREEK TILES

Based on 2" projection at eave of roof.

COURSE	RAFTER
1	10¾"
2	20¾"
3	30¾"
4	40¾"
5	50¾"
6	60¾"
7	70¾"
8	80¾"
9	90¾"
10	100¾"
11	110¾"

HIP AND RIDGE STRINGER HEIGHTS

ROOF PITCH	ROMAN		GREEK	
	HIP NO. 102	RIDGE NO. 206	HIP-COVER	RIDGE NO. 211
4" Rise to 12" Run	6⅜"	7¼"	7 "	6 "
5" Rise to 12" Run	6¼"	7 "	7 "	5¾"
6" Rise to 12" Run	6¼"	6¾"	7 "	5½"
7" Rise to 12" Run	6¼"	6½"	6⅞"	5¼"
8" Rise to 12" Run	6⅛"	6¼"	6⅞"	5⅛"
9" Rise to 12" Run	6⅛"	6⅛"	6⅞"	5 "
10" Rise to 12" Run	6⅛"	6 "	6⅞"	4⅞"
11" Rise to 12" Run	6⅛"	5⅞"	6⅞"	4¾"
12" Rise to 12" Run	6 "	5¾"	6¾"	4⅝"
13" Rise to 12" Run	6 "	5⅝"	6¾"	4½"
14" Rise to 12" Run	6 "	5½"	6¾"	4⅜"

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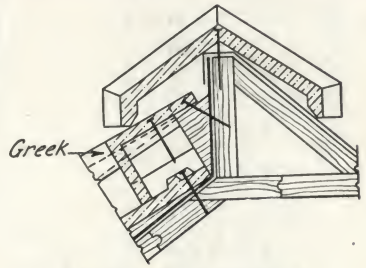
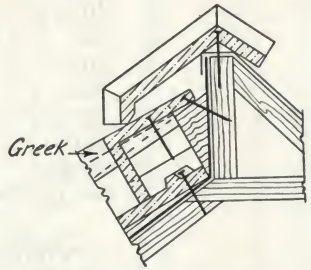
DETAILS OF IMPERIAL ROMAN AND GREEK TILES AND FITTINGS

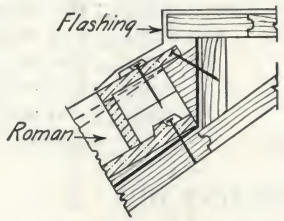
SCALE $1\frac{1}{2}'' = 1'\text{-}0''$



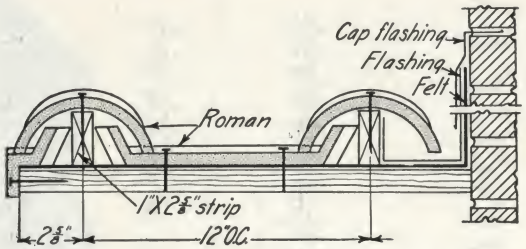
Deck section showing No. 211 ridge.



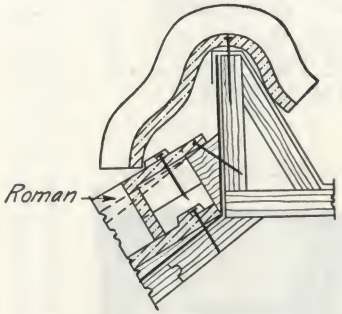
Deck section showing No. 211 cut-off ridge.



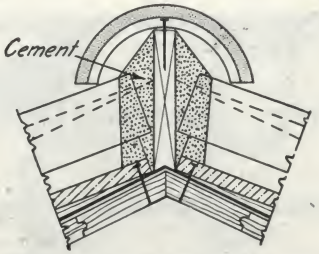
Deck section showing flashing over top of tiles (see note).



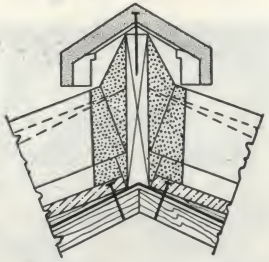
Section showing left gable rake, also flashing under side of tiles (see note).



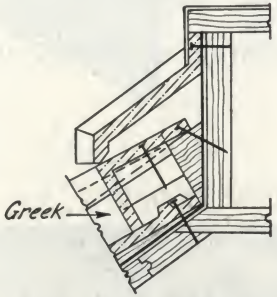
Deck section showing No. 206 cut-off ridge.



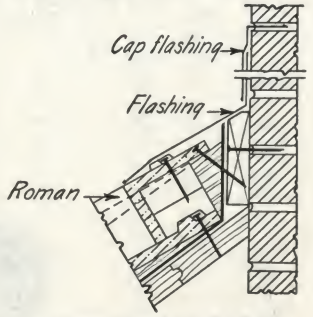
Hip Section showing No. 102 hip roll used with Roman Tiles.



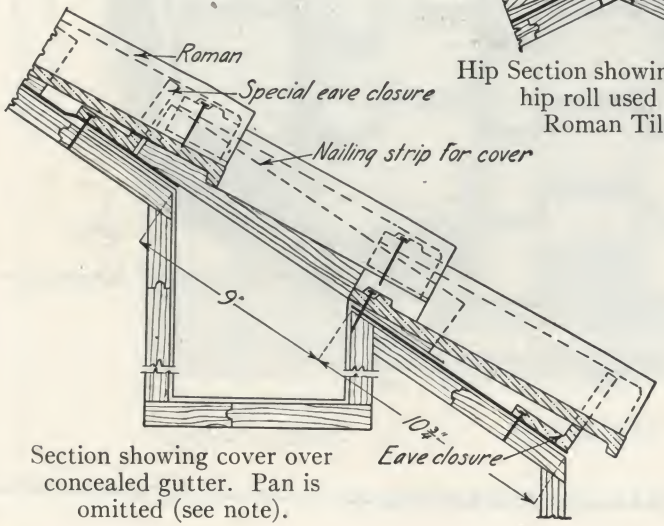
Hip section showing Greek cover used as hip roll with Greek Tiles.



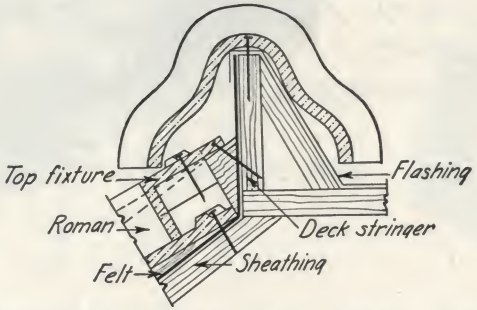
Deck section showing No. 211 deck mould-raised flange.



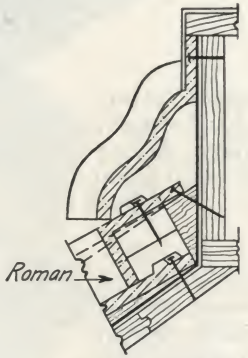
Section showing flashing over top of tiles (see note).



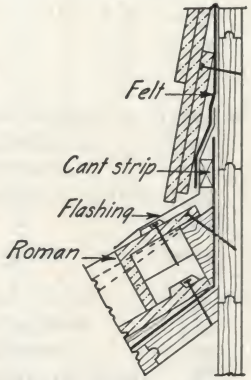
Section showing cover over concealed gutter. Pan is omitted (see note).



Deck section showing No. 206 ridge.



Deck section showing No. 206 deck mould-raised flange.



Section showing flashing under ⅜" Flat Shingle Tiles (see note).

NOTE: Gable, flashing, flush deck and gutter treatments for Greek are the same as detailed for Roman Tiles.

Continued on next page

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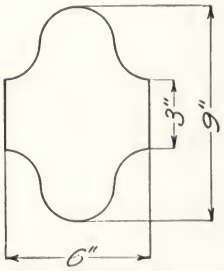
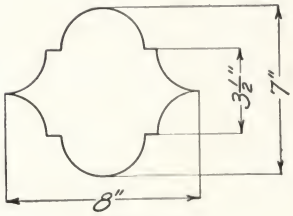
FLOOR TILES

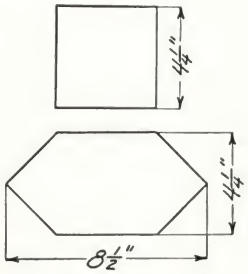
These shapes, in colors and textures originally manufactured for individual work of certain architects from their own designs, are now produced in quantities allowing their more general use. They are moderately priced.



Provence



Valencia



Renaissance

PIECES PER SQUARE FOOT

Based on ⅛" mortar joint.

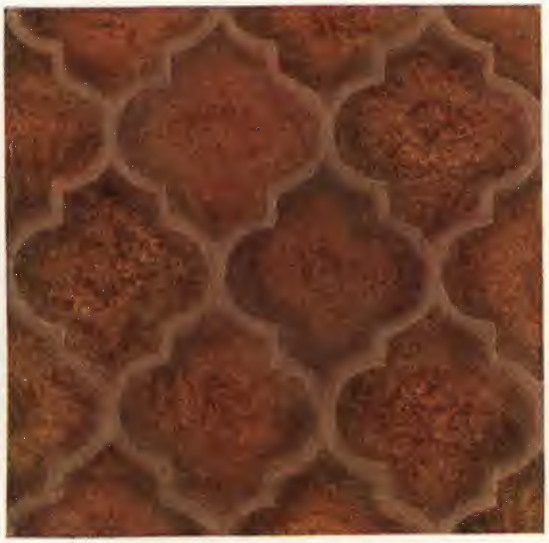
Provence, 3.86

Valencia, 4.28

*Renaissance, squares, 1.88

*Renaissance, hexagons, 3.76

*Based on design showing square surrounded by hexagons.



IMPERIAL ROOFING TILES

LUDOWICI-CELADON COMPANY

CHICAGO—104 South Michigan Avenue

NEW YORK—565 Fifth Avenue WASHINGTON—738 Fifteenth Street, N.W.

B. MIFFLIN HOOD COMPANY

Manufacturers of Roof and Floor Tiles, Face and Chemical Brick

DAISY, TENN.

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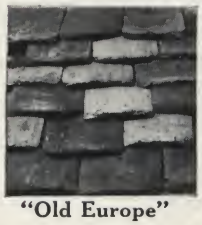
FLAT SHINGLE ROOF TILE; TRUE MISSION ROOF TILE; TAPERED MISSION ROOF TILE.

Also manufacturers of Brick of standard colors, shapes and textures. Fireplaces, Steps, Briquettes, Landscape Tile, Garden and Terrace Tile, Heavy Traffic Tile, Non-slip Ramps, Brick and Stucco Inserts, Chemical Stoneware, Cylindrical Spiral Rings.

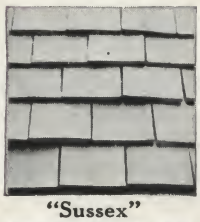
For our Floor Tile page, see Manufacturers' Index.



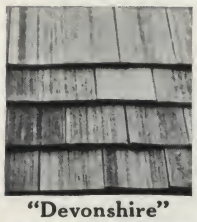
"Old Europe"

"Rugby"

"Yorkshire"

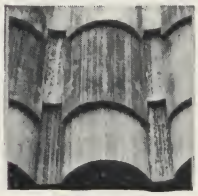


"Sussex"

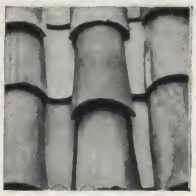


"Devonshire"

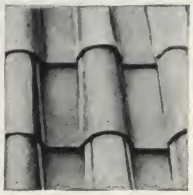
"Dresden"



"Riviera"



"Lombardy"



"Tuscany"

Shingle Tiles

"Old Europe"—Sanded, aged, mellow surface. Reproduced from tiles brought back from Europe.

"Rugby"—Matt, aged. Variety of sizes and thicknesses.

"Yorkshire"—Engobed, subdued reds, aged browns. Capable of wide variation.

"Sussex"—Smooth flat shingle in full range of fireflashed colors.

"Devonshire"—Rugg, fireflashed tans, reds, browns, bronzes and bluish purples. Also made in "Moss Mottle" to simulate moss on old hand riven wood shingles.

"Dresden"—Rugg, full range, fireflashed, flat rib, light weight interlocking.

Curved Tiles

"Riviera"—Smooth or rugg. Full range mingled flashes resembling autumn foliage.

"Habana"—Smooth, sanded or engobe; will grow moss; straight barrel with body of clay. Colors like old hand-made Cuban tiles.

"Lombardy"—Smooth, sanded or engobe, 18-in. tapered. True Italian. Range of cool pastel colors. Vegetating.

"Tuscany"—Smooth, sanded, or engobe, 15 in. flat Roman pans. Reproduced from tiles brought back from Italy and will grow lichen.

Textures—Smooth, matt, rugg, sanded, engobe. Vegetating and non-vegetating.

Specials or Fittings—Necessary authentic fittings furnished with each type. See chart below for size, texture, exposure, weight, etc. Complete data sheets cheerfully furnished on all upon request.

DATA CHART—ROOF TILE

Name	Type	Body	Size, in.	Texture	Exposure to weather, in.	Pieces per square	Weight per square, lb.
"Old Europe"	Latin Nordic	Clay and Shale	7x14	Sanded	5½	385	1750
"Rugby"	Latin Nordic	Clay and Shale	Varied	Matt	Random	Varied	2500
"Yorkshire"	Nordic	Clay and Shale	6x15	Engobe	6	415	1700
"Sussex"	Nordic	Clay and Shale	6x15	Smooth	6	415	1700
"Devonshire"	Nordic	Clay and Shale	6x15	Rugg	6	415	1700
"Dresden"	American Teutonic	Clay and Shale	8x13	Rugg	10	215	1100
"Riviera"	Latin	Clay and Shale	8x15	Smooth Rugg	11	230	1400
"Habana"	Latin	Clay and Shale	8x15	Smooth Sanded Engobe	11	230	1400
"Lombardy"	Italian	Clay and Shale	7x18	Smooth Sanded Engobe	15	225	1500
"Tuscany"	Italian pans	Clay and Shale	8x15	Smooth Sanded Engobe	12	130 pans used with 15-in tapered or S. B. covers	

HAWTHORNE ROOFING TILE

MANUFACTURED BY
HAWTHORNE ROOFING TILE CO.

TELEPHONE
LAWNDALE 6838

5850 Ogden Avenue, CICERO, ILL.

Hawthorne Roofing Tile—A National Product

TRADE Hawthorne MARK

Hawthorne Roofing Tile has been developed as a result of years of experience and study of the use of concrete as a roofing material. The originators of this company began with the manufacture of concrete slabs by hand process, which was later discarded and automatic power driven equipment developed to produce a perfect and uniform tile with a permanently embedded color coat.

When the HAWTHORNE ROOFING TILE CO. entered the field with this new type of tile, it began to attract the attention of progressive builders and architects. Because of the cheapness with which the machines could turn out the slabs it became possible for tile to be used where formerly the price had prohibited it. Today Hawthorne Tile is the popular permanent roofing material. This recognition has come only as a result of its following superior qualities:

(1) Permanence

Concrete is recognized as the most lasting of all building materials. Hawthorne Tile is made from a rich mixture of portland cement and a clean, correctly graded sand. The curing process developed after a long period of close observation, prevents the disintegration customary on the surface of ordinary coarse concrete construction. In other words, Hawthorne Tile is composed of a concrete mixture so cured that it will never wear out.

The tile passes all practical strength tests. Once placed on the roof it will not break under normal conditions.

(2) Fire Safeness

Hawthorne Tile is absolutely fireproof. Spectacular tests made at our plant have proven that the tile will not burn although the rest of the building may be destroyed. There is absolutely no danger from flying embers.

(3) Economy

The fact that the tile is practically indestructible eliminates the necessity of repeated repairs. Therefore, although the first cost may be somewhat higher than the perishable roofing materials, this first cost is more than saved during the first ten years of the life of the building. If it may be necessary to replace any tile, through accidental breakage, it can quickly be done and at very little expense.

Another saving is effected in that the method of laying the tile provides an insulating air space which saves in roof construction and fuel bills.

(4) Beauty

Hawthorne Tile is beautiful. The impervious surface is always clean; rain washes the dirt off and not in.

It is now possible for the particular architect or builder, with an eye to the combined effect of beautiful materials to select a roof having all the requirements of usage and at the same time becoming a part of a distinctive and pleasing architectural scheme.

Hawthorne Tile is now produced in the following colors:

Dark red	Bright red
Standard green	Pea green
Dark green	Tan
Yellow	Orange
Chocolate	Natural gray
Velvet gray	Velvet blue
Blue	Purple

Hawthorne Tile is made in the following styles:
French, Spanish.
Closed End Shingle (Chicago only).
Mission (California only).

(5) Utility

Hawthorne Tile is waterproof. The chemical action which takes place in the rich mixture of concrete when the cement comes in contact with water, renders the tile more waterproof than any competitive type of roofing material. We have on file in our office, laboratory tests showing that Hawthorne Tile has less absorption than similar types of competitive tile on the market. When the tile is laid according to our specifications, a roof is provided which will keep out driving rain or snow.

The fact that our roofing is applied all through the United States proves that it stands up under any sort of climate.

Method of Laying Hawthorne Roofs

The tiles are laid without the use of nails, and are so designed that they interlock securely in place. They will not become dislodged by wind or vibration. The use of nails in other roofing materials causes cracking at the time of application, and later, due to the shifting of the roof structure.

In those rare cases where an occasional tile may become broken it may easily be replaced by lifting the adjoining tiles and sliding the new one in place.

Hawthorne Tile Used from Coast to Coast

The geographical location of Hawthorne Tile plants ensures quick delivery of all orders, large or small, with minimum of transportation expense, to all parts of the country.

Continued on next page

Suggested Specifications for Use of Architects Specifying Hawthorne Roofing Tile

All sloping roofs shall be covered with Red (or other color or combination of colors) French, Spanish, or Closed End Shingle Hawthorne Roofing Tile of shade or shades approved by the architect and finished with Hawthorne Roofing Tile at the ridges, hips and gables (and eaves in Spanish tile). Specials are to be nailed with copper nails. The tile must be laid in accordance with the Standard Practice of the HAWTHORNE ROOFING TILE CO., which is a part of this specification.

Before laying the tile, roof sheathing is to be covered with an approved slater's asphalted felt weighing not less than 30 pounds per square, securely nailed with flat headed nails, lapped not less than 3 inches at intersections, and doubled at valleys, hips and ridges. Felt at the eaves must be laid over the sheet metal. All sheet metal work is to be installed before tile is laid and all stucco work, pointing or other finish on dormers and other vertical surfaces that rise above the roof is to be completed before the tile laying is started.

Standard Practice of Hawthorne Roofing Tile Company for Laying Hawthorne Tile Roofs

General—Roof framing should be of sufficient strength to support the tile roof. Weight of tile, as laid on the roof, is not more than 8½ pounds per square foot for French and Spanish Tile; 10 pounds per square foot for Closed End Shingle Tile. In residence construction, 2x6-inch rafters, 16-inch centers are sufficient to support Hawthorne Tile on ordinary spans, but where rafters exceed 18 feet in length they should be placed on 12-inch centers and collar beams be used to stiffen the roof. It is important that valleys and headers should be of ample size and securely framed together. Rafters should be covered with closed sheathing.

As total thickness above roof sheathing to the under-side of the tile is 1¼ inches, it is necessary to place gable rake boards so they project 1¼ inches above the roof boarding to receive the gable tile, as shown on detail drawings. Total width of this board may be 4, 6 or 8 inches to suit design of roof.

In order to obtain the proper pitch to the first row of French Tile, nail a 1x2-inch strip on edge over the lath and felt and place ¾ inch from the lower edge of the eave. Starting tile are furnished for Closed End Tile.

Felt—Over the sheathing roofers will lay slater's asphalted felt weighing at least 30 pounds per 100 square feet. Felt should be lapped 3 inches or more at intersections and doubled at valleys, hips and ridges, securely nailed to the sheathing with flat headed nails. Where moulding gutters are used felt should be brought down over the back edge of the gutter.

Sheet Metal Work—Before laying any tile, all necessary sheet metal work for flashings, gutters, valleys, etc., should be installed.

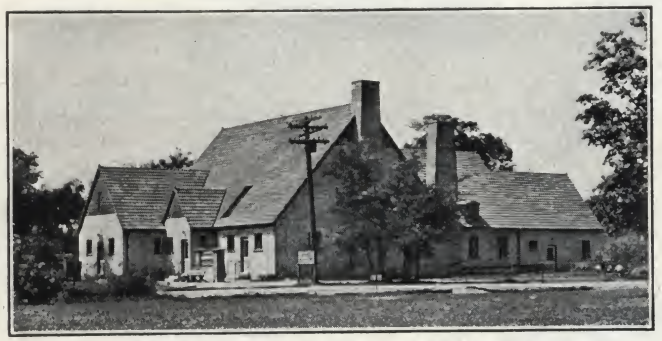
All sheet metal work should be of 16-ounce copper. Galvanized iron is often used, but this is not recommended as the life of sheet iron is short.

Weeper and Hanger Strips for French, Spanish and Closed End Tile—When all flashings and felt have been laid, the weeper strips are placed. These strips are laid at right angles to the eaves, about 2 feet apart over the entire roof.

Ordinary lath are suitable for this purpose. They should be securely nailed to the roof boarding with ⅞-inch shingle nails.

Over the weeper strips horizontal 1x2-inch battens or hanger strips are placed. They are placed parallel to the eaves and securely nailed through weepers to the sheathing, using 6d wire nails.

Hanger strips must be accurately and evenly spaced in order that the courses of the tile may be regular.



Edgebrook Country Club, Chicago, Ill.
HALL, LAWRENCE & RATCLIFFE, INC., Architects

Before laying strips, roof from eaves to ridge should be measured to determine spacing of hanger strips. French and Spanish Tile are usually laid 12 inches to the weather, but if distance from ridge to eave is not an even number of feet, it will be necessary to slightly increase or decrease spacing of the hanger strips from 12 inches on centers. In no case should this spacing be greater than 12½ inches.

Closed End Tile are laid 9 inches to the weather and therefore hanger strips should be spaced as nearly 9 inches from center to center as possible. Of course it is not always possible to space these strips exactly 9 inches from center to center, but they should be spaced an equal distance apart and in no case exceed 9½ inches.

On all hips and ridges a 1x4-inch strip is set vertically and securely nailed to the sheathing below. Ridge and hip tile are nailed to these, so that their weight does not bear on the roof tile. In some cases where pitch of roof is very flat or very steep, a 1x4-inch strip is not sufficient to keep ridge and hip tile clear of the tile below, or it may bring it too high. In this case, height of this strip should be slightly increased or decreased in order that the hip and ridge tile may set close to the surface of the field tile and yet allow its weight to be carried on the strip.

Tile Laying for French, Spanish and Closed End Tile—Tile are laid in horizontal rows starting at the lower left hand corner; lugs of the tile hook over the hanger strips. Each succeeding tile interlocks with the preceding tile. Upper rows of tile overlap the row immediately below by not less than 2½ inches. Gable starters and finishers are used on all gable ends.

The vertical joints of the Closed End Tile are offset one-half the width of the tile. This is made possible by starting alternating rows with the half tile. Tile should be neatly and carefully cut to fit hip and valley. Tile on either side of the valley should be cut so they show straight parallel lines, except in cases where the tapered valley may be specified. Rough, unsightly edges should not be permitted. In either case the edge of the tile at the valleys should show a straight line. Edges should be a minimum of 6 inches apart at all points.

Hip and ridge tile should be nailed to the 1x4-inch strip and bedded and pointed up with cement mortar, colored to match the field tile. This color to be furnished by the manufacturer of the field tile. With Spanish tile, ridge closers and eave closers are used to finish tile at ridge and eaves; pointing at ridges is unnecessary.

Note: The foregoing specifications have been carefully worked out. Architects therefore should insist they be closely followed.

Absorption Tests

The following report of absorption tests was made by the Los Angeles Testing Laboratory, 1300 South Los Angeles Street, Los Angeles, Calif., April 20, 1928:

REPORT OF ABSORPTION TESTS OF ROOFING TILE

Laboratory No.: 22520
Submitted on: April 16, 1928
Identification: Samples marked: Nos. 1-2-3-4-5-6-7-8

The tile were dried to constant weight at 110° C. They were then immersed in water for 16 and 48 hours. The per cent absorption was calculated on the dry weight of the tile.

Identification No.	Per cent absorption after 16-hour immersion	Per cent absorption after 48-hour immersion
1	13.1	13.4
2	11.3	11.7
3*	8.6	8.7
4	14.8	15.1
5	14.3	14.6
6	15.4	15.8
7	14.8	15.4
8*	7.8	7.9

Respectfully submitted, LOS ANGELES TESTING LABORATORY, by Chas. S. Howe.
(Seal)

*Samples No. 3 and 8 were Hawthorne Tile. All others were well-known makes of clay tile.

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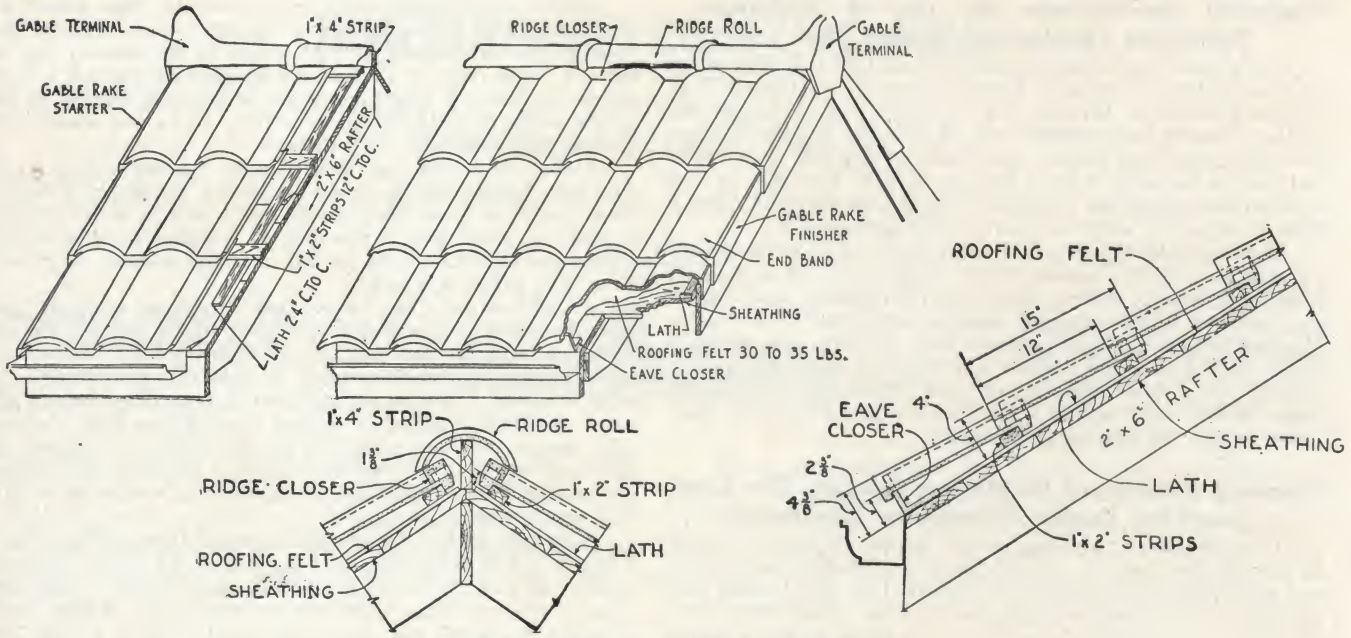
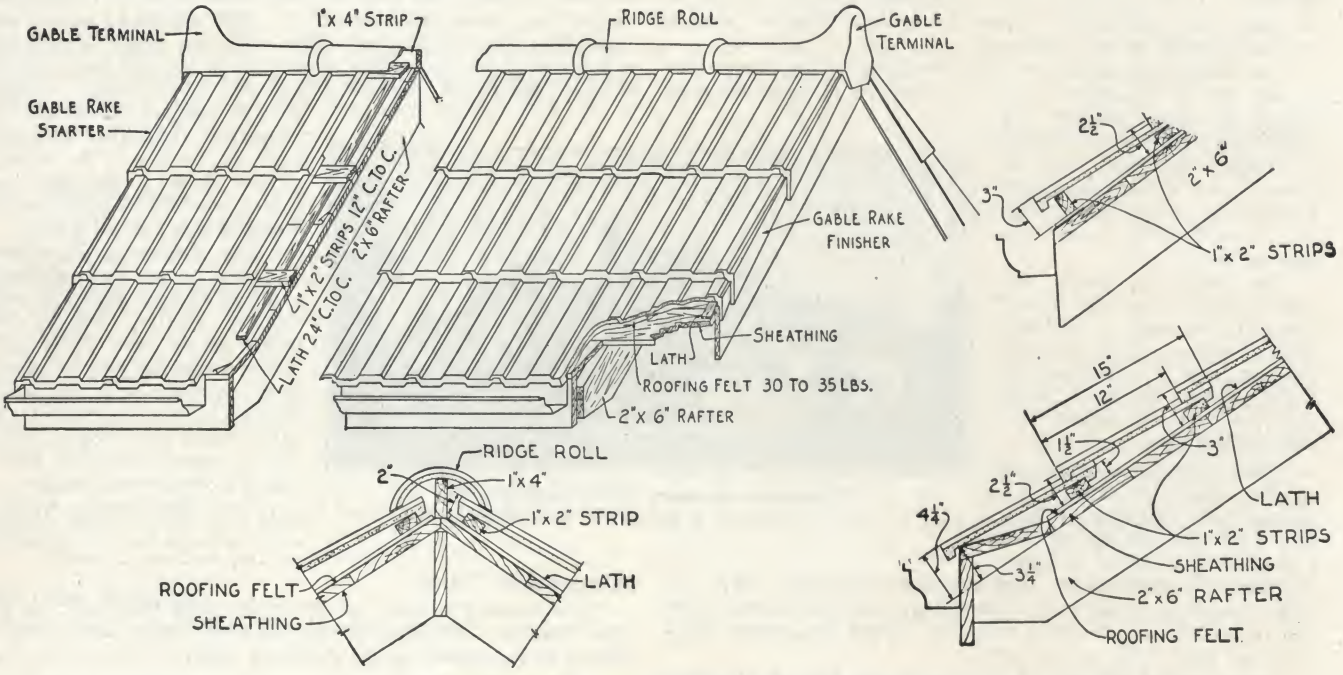
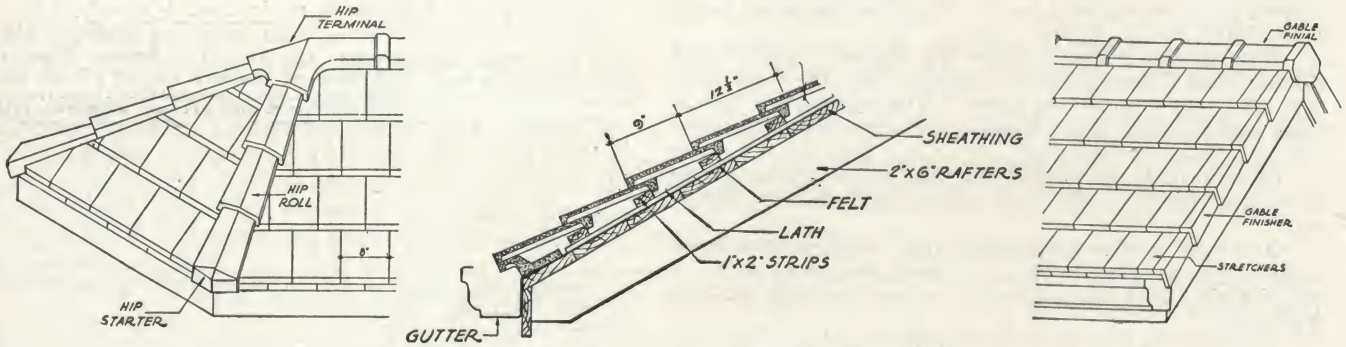


Details of Hawthorne Spanish Roofing Tile



Details of Hawthorne French Roofing Tile



Details of Hawthorne Closed End Shingle Roofing Tile

Continued on next page

Hawthorne French Tile

Size, 9¼x15 in. Exposure, 8x12 in.
Weight per square, 825 lb.
150 tile per square

Gable Rake Starter

Gable Rake Finisher

Hawthorne Spanish Tile

Size, 9¼x15 in. Exposure, 8x12 in.
Weight per square, 825 lb.
150 tile per square

Eave Closer

End Band

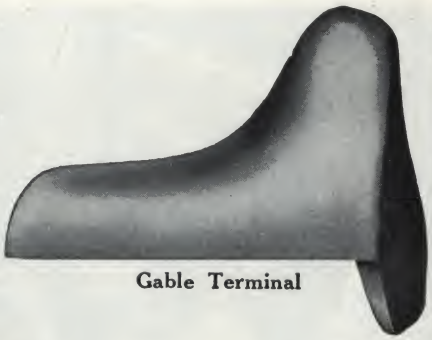
Ridge Closer

Gable Rake Starter

Gable Rake Finisher

Hawthorne Ridge and Hip Tile

Hip Starter



Gable Terminal

Gable Terminal with Bead

Hip Roll
Can also be used for Ridge

Hip Terminal

Hip Terminal with Bead

Ridge Roll
Can also be used for Hip

MILCOR STEEL COMPANY

1349 Burnham Street, MILWAUKEE, WIS.

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Products

"TITELOCK" METAL SPANISH and AMERICAN TILE.
RAIN CARRYING EQUIPMENT.
Also Metal Roofing of Various Types; Metal Shingle and Slate; Ventilators and Skylights; Marquees; and Architectural Ornaments.

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TRADE-MARK
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For our pages on Steel Basement and Fireproof Windows, Sheet Metal Products and Metal Lath, Corner Beads, Expansion Casings, etc., see Manufacturers' Index.

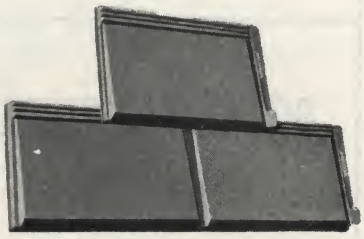
Metal Tile Roofing

Metal Spanish Tile

For those roofs on which metal is demanded and an attractive pattern highly desirable either Milcor "Spanish" or "American" Metal Tile is suggested. The type of roof will determine which is to be used.

Metal Spanish Tile—This metal tile simulates the "Spanish" roof effect and is handsome either painted or in copper. It is economical since its light weight requires no heavy supporting structure and since it requires no high priced labor for laying. Detailed instructions and working drawings are given in the Milcor Architectural Sheet Metal Guide.

Metal American Tile—The simplicity of the "American" style of Tile, its appearance of weight and age made by the deep shadows at the butts and in the channels between Tile, is very attractive and gives one an impression of great structural weight and value. The "Titelock" joint is effective against rain, snow or storm. Detailed instructions and working drawings are given in the Milcor Architectural Sheet Metal Guide.



Metal American Tile

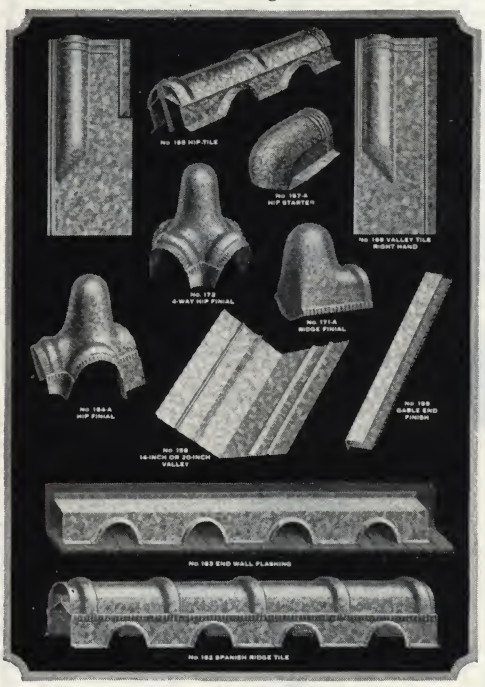
MECHANICAL SPECIFICATIONS MILCOR "TITELOCK" SPANISH METAL TILE

Mechanical specifications	Individual Spanish field tile	Individual closed-end Spanish starter tile	Twin Spanish field tile	Twin closed-end Spanish starter tile
Actual Size	10 x14	10 x14	18½x14	18½x14
Coverage Size	8½x11¾	8½x11¾	17 x11¾	17 x11¾
Number of Units per Square	144	144	72	72
Weights per square:				
IC—Painted	110 lb.	125 lb.	105 lb.	120 lb.
IX—Painted	135 lb.	150 lb.	130 lb.	140 lb.
IC—Galvanized after Formed	130 lb.	145 lb.	*	*
IX—Galvanized after Formed	155 lb.	170 lb.	*	*
Cut from Galvanized Sheets	*	*	115 lb.	130 lb.
26 Ga. ARMCO Painted	160 lb.	175 lb.		
26 Ga. ARMCO Galv. after	180 lb.	195 lb.		
14-Ounce Copper	175 lb.	190 lb.	*	*

*Not furnished in these grades.

MECHANICAL SPECIFICATIONS MILCOR METAL AMERICAN TILE

	Actual size	Coverage size	Weights per square: IX painted red or green	IX galv. after formed	26 Ga. armco painted	26 Ga. armco galv. after formed	Cut from 14-ounce anaconda copper	Number of American tile per square
American field tile	14x10	12x8	105 lb.	115 lb.	120 lb.	130 lb.	130 lb.	148
American starter tile	7x10	6x8	115 lb.	125 lb.	130 lb.	140 lb.	140 lb.	296

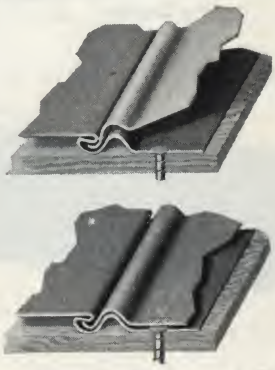


Trimmings for Metal Spanish Tile

The Milcor "Titelock" Feature

Any mechanic can lay "Titelock" Tile. When laid there is no possibility of any joints separating. The "Titelock" feature eliminates the use of solder.

Hook the flange into the groove of Tile preceding. As it is laid flat, the tile locks tightly. All nail holes and nails are covered by the overlapping Tile. Absolutely leakproof.

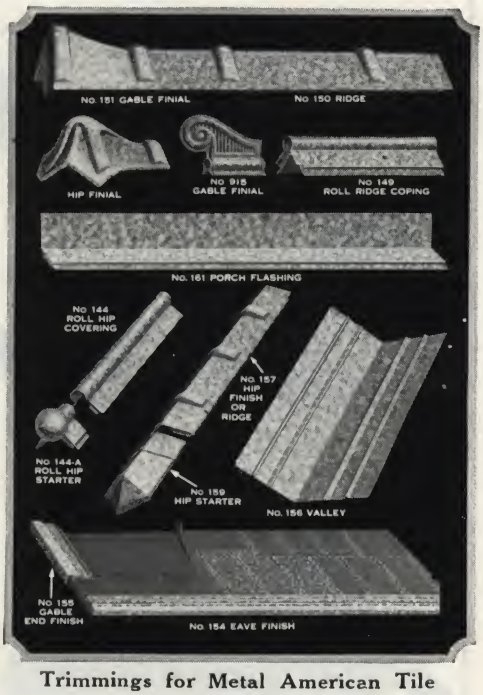


Milcor "Twodrain" Channel Roofing

The "Twodrain" Channel feature of this new Milcor roofing seals the roof against leaks in any weather. Seepage, or water driven over the first short V-crimp, drains off through the first drain channel. Next comes a high crimp with another drain channel on the other side. This second drain channel is the extra precaution positively insuring against leakage in any weather.

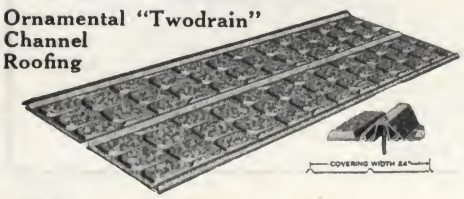
"Twodrain" Channel Roofing is made in two types—*Plain* and *Ornamental*. The *Ornamental* has a stamped shingle design giving a fine appearance to roofs of schools, churches, etc. Both types may be used for either roofing or siding.

"Twodrain" Channel Roofing is made in 3-V style only, with V formations on 12 in. centers. Each sheet has a covering width of 24 in. Made from 29, 28 and 26 gauge galvanized sheet steel.

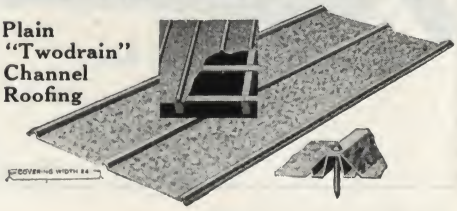


Trimmings for Metal American Tile

Ornamental "Twodrain" Channel Roofing



Plain "Twodrain" Channel Roofing



INCORPORATED 1902

MOUND CITY ROOFING TILE COMPANY

3301 Morganford Road
ST. LOUIS, MO.

Mound City Roofing Tile Is Made of Finest Grade of Shale

Our tile is made regularly in the various shades of red, also in dull and full green, and brown glazes.

We also produce sage, oak, burgundy and sumac shades, which can be assembled with the red, producing the beautiful autumn foliage roofs.

General Specifications

Cover all pitch roofs with one layer of asphalt felt weighing not less than thirty pounds per square. Same to be laid parallel with the eaves, each layer lapped at least three inches and nailed with capped or large-headed nails. The felt shall lap the valley metal at least six inches and on upright walls it shall lap under the tile at least four inches.

The metal contractor shall then place all valley metal, same to be held in place with clips fastened to the metal. The metal shall be bent over 1 by 2 strips running parallel on each side of the valley and must not be punctured in any manner. All eave strips and strips for hips and ridge shall be on hand ready for the roofer.

Cover all roofs so prepared with Mound City hard burned red (or green) ..... pattern tile with trimmings as designated by the manufacturer. All tile to be fastened with copper nails.

No attempt shall be made to stretch the courses. The tile shall be so laid that the vertical lines are parallel with each other and at right angles to the eaves. The tile that verge along the hip shall be cut close to the hip board and a water tight job made by cementing the cut tile to the hip board with elastic cement. The joints of the hips and ridge should be cemented, but the interior space of the hips and ridge must not be filled with the pointing material. After roofer has completed his work he shall remove all broken and damaged tile.

Cascade

Gable Roll

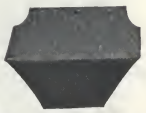
Detached Gable

Detached Gable

"C" Spanish Tile

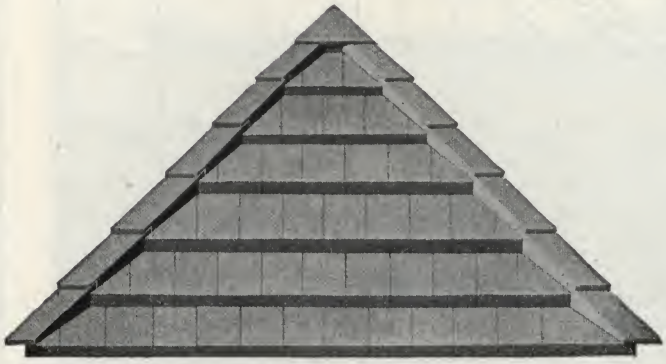
"A" Whole Tile

Detached Gable Coping



Top Closure

Eave Closure



Closed Panama Tile

With No. H-8 hip and H-8 plain hip-starter, No. R-6 ridge and No. T-2, 2-way terminal. Size of tile, 8½x13¾ in.

Mission Tile

Size 7¾x15 in.

MURRAY TILE COMPANY

INCORPORATED

Manufacturers of Roofing, Quarry and Promenade Tile

CLOVERPORT, KENTUCKY

REPRESENTATIVES

CINCINNATI, OHIO, J. P. Tarvin Supply Co., Building Industries Building
CHICAGO, ILL., Burt T. Wheeler Brick Co., 1222-1234 Builders Building
RALEIGH, N. C., J. Wilson Wood, 301 Lawyers Building
LOUISVILLE, KY., R. B. Tyler Co., 1446-1448 Levering Street
NEW ORLEANS, LA., Dixie Building Material Co., Hagan and Washington Avenues

Products

Roofing Tile, Flat Shingle and Spanish Type.

For our Quarry and Promenade Tile, see Manufacturers' Index.

Murray Roofing Tile

Murray Roofing Tiles are made from an extremely hard burning shale, impervious to moisture, not affected by the most extreme weather conditions. Roofs of Murray Tile after more than twenty years of service, free from roof troubles and repair costs, are today apparently as good as the day applied.

Flat Shingle Tile—

Murray Smooth Red—Smooth surface, even shades of light red, bright and attractive. Distinctively Murray's.

Murray Smooth Iridescent—Wide range of autumn colors, produced by flashing at high temperatures, smooth surface, red, brown and buff bodies blending with shades of tan, gun metal, green and purple. Colors are burned in and are permanent, not surface colors.

Murray Rough Velvet—Hand-scored surface, flame-flashed at high temperatures, producing a full range of reds, buffs and browns with hues of purple, tan, green and gun metal. Reds and buffs run from light to dark, browns from seal to chocolate; the extremely wide range in color offers many opportunities for artistic roofs with permanent roof satisfaction.

Murray Olde English—Beautiful range of English style shingles in same fireflashed colors as Murray Smooth Iridescent and Murray Rough Velvet, with irregular rough surface similar to weathered stone. Furnished in five different widths for random effects.

Spanish Type—This is a roll roofing tile of very pleasing appearance, made in Murray Smooth Red and Murray Rough Velvet, with solid and fireflashed colors the same as in flat shingle tile. Due to larger exposure, greater variation in color is obtained with Spanish tiles.

Trimmings—Hips, hip starters, ridges, finials, gable rakes, closures, and all necessary trimmings made in various styles to fit different designs of tile, including tile cut before burning for hips and valleys.

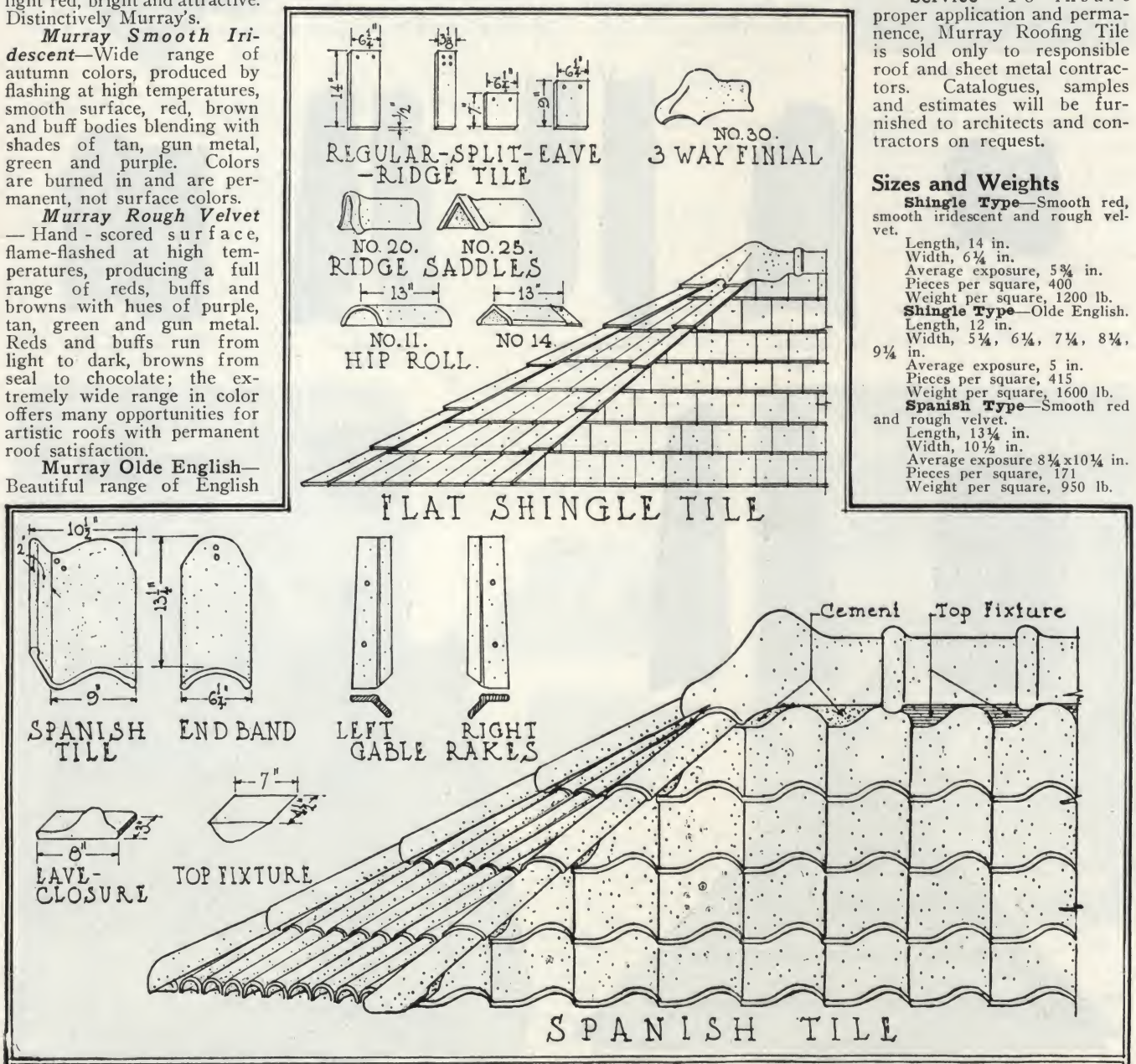
Service—To insure proper application and permanence, Murray Roofing Tile is sold only to responsible roof and sheet metal contractors. Catalogues, samples and estimates will be furnished to architects and contractors on request.

Sizes and Weights

Shingle Type—Smooth red, smooth iridescent and rough velvet.
Length, 14 in.
Width, 6¼ in.
Average exposure, 5¾ in.
Pieces per square, 400
Weight per square, 1200 lb.

Shingle Type—Olde English.
Length, 12 in.
Width, 5¼, 6¼, 7¼, 8¼, 9¼ in.
Average exposure, 5 in.
Pieces per square, 415
Weight per square, 1600 lb.

Spanish Type—Smooth red and rough velvet.
Length, 13¾ in.
Width, 10½ in.
Average exposure 8¼ x 10¼ in.
Pieces per square, 171
Weight per square, 950 lb.



DETAILS OF ROOFING TILE

ESTABLISHED 1856

JACOB RINGLE & SON, INC.

Contractors for General Roofing and Sheet Metal Work
Manufacturers and Installers of Our Special Jumbo Copper Tile Roofing

466-472 Grand Street, JERSEY CITY, N. J.

JUMBO COPPER SPANISH TILE

In quick changing temperatures nothing stands, as a permanent roof covering, quite so well as copper—especially copper tile—where they are securely fastened to the decking, and ample provisions made for expansion and contraction.

Jumbo Copper Tile are made of special annealed soft copper, equal in weight to 16-oz. copper.

They are classified as Standard Copper Tile, Lead Coated Copper Tile, and Dwarf and Oversize Copper Tile.

Standard Copper Tile

Standard Copper Tile are plain, 16x12 in. with heavy butts, interlocking at sides, top and bottom. Formed with rolled tapered section. Each tile is independent of the other with ample provision for expansion and contraction.

Lead Coated Copper Tile

Lead Coated Copper Tile are made exactly the same as the Standard Tile in form and size but in addition are treated with a heavy rough coating of lead on exposed side only.

With the use of Lead Coated Copper Tile the massive, heavy lead effect is secured without the necessity of providing additional framing which would be required to support a genuine lead tile roof.

The lead coating has no detrimental effect on the copper nor does it add to its life.

Standard Jumbo Copper Spanish Tile Roof, Municipal Building, Brooklyn, N. Y.
McKenzie, Voorhees & Walker, Architects
45,000 sq. ft.—installed in 1926

Dwarf and Oversize Copper Tile

Dwarf and Oversize Copper Tile are used to create our "Anteekcraft Tile" roof.

A complete roof is laid of our Standard Copper Tile after which Dwarf and Oversize tiles of various shapes and sizes are applied at random over the Standard Tile and soldered securely in place. There is no limit to the artistic effects that may be obtained.

Comparative Weight, Cost and Maintenance

Jumbo Copper Tile weighs 200 lb. per square and standard clay tile approximately 1500 lb. per square.

Jumbo Copper Tile is no more expensive than standard clay tile in that it does not require extra heavy or special framing to support its weight.

Jumbo Copper Tile does not break, loosen and fall, and its maintenance cost is small.

Coloring of Copper Tile—Not Coated with Lead

(1) Nature is the best artist in the coloring of copper where the permanent Verde Antique finish is desired.

After the copper has been installed the entire surface should be cleaned and given a coating of pure linseed oil, weather and time will accomplish the rest.

Locations usually determine the length of time needed by nature to produce the desired effect.

After cleaning and coating the tile with linseed oil,

Mayfair Apartments, Park Avenue and 57th Street, New York, N. Y.
Charles A. Rich, Architect
15,000 sq. ft.—installed in 1905

Continued on next page

a dull bronze effect is obtained for a short period of time, they then gradually darken and begin to take on the finish that will eventually be the pleasing light green or Verde Antique. This finish is permanent when created by nature and does not have to be renewed. Neither does it craze nor crack, affecting the body of the tile underneath.

(2) Artificial finishes are not permanent, and usually wash off during the first heavy rain, or a quick change in temperature.

Construction of the Various Jumbo Copper Tile Units

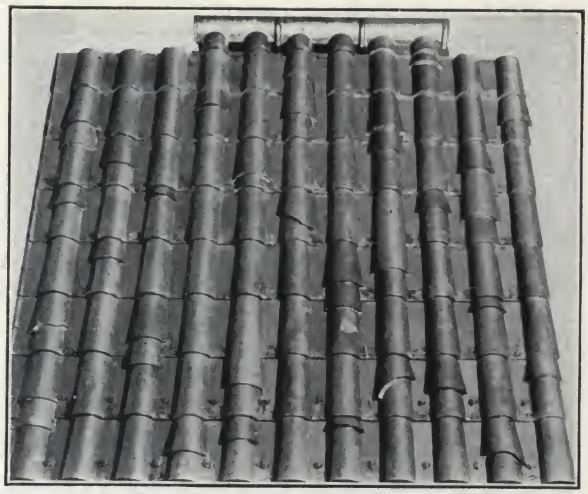
Ridge Units—Are made in split sections consisting of two pieces with rolled sides, extension apron for covering the top field tiles, round side laps, and an excess allowance at the top for standing seam or lock joint.

Standard size of the completed ridge unit in place—20½ in. long, 6 in. high and an average width over all of approximately 20 in.

Hip Units—Are made complete and ready to apply, formed with tapered roll, lap at bottom with 1 in. butt, shoulder at top and flanged at sides for soldering to the field tile. They are large and give a heavy massive effect.

Standard sizes of the completed hip unit in place—17 in. long, 9¼ in. wide, with a center height at butt of 7½ in.

Field Units—Are made complete and ready to apply, formed with a combination of flat valley surface and tapered roll, lap at bottom with 1 in. butt, shoulder at top and turned over flanges at sides for lock seams or joints.



"Anteekcraft" Jumbo Copper Spanish Roof Tile
Light, strong and durable

Standard size of a field unit in place — 14½ in. long, 10¾ in. wide, with a center height at butt of 3½ in.

Eave, Sunken Gutter and Valley Construction

The open butts of all field and hip tiles at eaves and top edge of sunken gutters are closed with copper closures soldered in place at the job.

Valley tiles are cut on the job and the open butts are closed with copper closures soldered in place. Standard valley linings are easily applied.

Gutters

All types of gutters such as hanging, moulded, sunken, cornice and parapet wall linings can be easily applied to Jumbo Copper Tile roofing.

Finials and Terminals

Special finials and terminals will be executed in strict accordance with architects designs and arranged to fit our Jumbo Copper Tile roofing.

Snow Guards

Copper wire snow guards placed in valley between rolls of all field tile at the two or three bottom rows at all eaves, form a natural and permanent barrier against sliding snow or slush.

Cast brass stanchions with flange for pipe guards can be easily installed, replacing a whole, or part of a copper tile.

Suggested Specification for Jumbo Copper Spanish Tile Roof

(1) The Contractor shall provide and install over all sloping roof surfaces Jumbo [Lead Coated] Copper Tile as manufactured by Jacob Ringle & Son, 466-472 Grand Street, Jersey City, N. J., in strict accordance with the following specification:

(2) **General**—The Contractor shall examine all surfaces to be covered with [lead coated] copper tile and shall see that all crickets are properly constructed, all surfaces properly graded and in proper condition to receive the copper tile.

(3) **Felt Base**—The Contractor shall provide and lay, over the entire roof surfaces, a single layer of 40-lb. asphaltum felt, extending over all ridges, hips, valleys and under all flashings, etc., securely nailed with tin disc washers and large headed roofing nails in an approved manner.

(4) **Copper Work**—All field tiles, hips, ridges, finials, valleys, flashings, etc., shall be 16-oz. special annealed soft copper [lead coated].

The field tile, hips, ridges and finials shall be formed to secure the true Spanish effect.

(5) ***Field Tile***—Each field tile shall be approximately 16x12 in. overall formed with rolled tapered section, 3½ in. wide valley, 15-in. exposure to the weather, 3½ in. high at center of butt, 1 in. butt with top, bottom and side locks. Each tile to hold down four adjoining tiles.

Each tile shall be securely nailed to nailing base with large head copper nails, two at the top of each tile, and fastened at the side with a copper cleat securely locked and nailed to the base.

(6) ***Hip Tile***—Each hip tile shall be approximately 20½x12 in. overall, formed with rolled tapered section, 17-in. exposure to the weather, 7½ in. high at center of butt, 1 in. butt, shoulder at top and flanged at sides for soldering to the field tile.

(7) ***Ridge Tile***—Each completed ridge tile shall be made in two sections, each section shall be approximately 22½x14 in. overall, formed with rolled section having an interlocking bead at the ends of roll, an apron with two rolled sections to lap and fit over two field tile.

The two sections shall be fastened together at top edge of ridge roll with a standing seam (or lock joint) thoroughly soldered.

(8) ***Finials and Terminals***—All finials and terminals shall be made in strict accordance with the detail drawing and shall be neatly fitted and soldered to all ridges, hips, etc.

(9) ***Finish at Eaves and Valleys***—All butts of field tile at all eaves and valleys shall be closed with [lead coated] copper closures thoroughly soldered.

Note: If sunken gutters are to be used, the words "sunken gutters" should be included in the heading and paragraph above.

Note: The design of the building and the type of roof will govern the balance of the specification. The following headings will suggest the various paragraphs to be added to the above specification to make it complete for a particular job.

Flashings and Linings for Valleys, Dormers, Chimneys, Pipes, Walls, Parapets, Cornices, Cornice Gutters, etc.

Sunken Gutters, Hanging Gutters, Down Spouts, Leaders, Leader Boxes, etc.

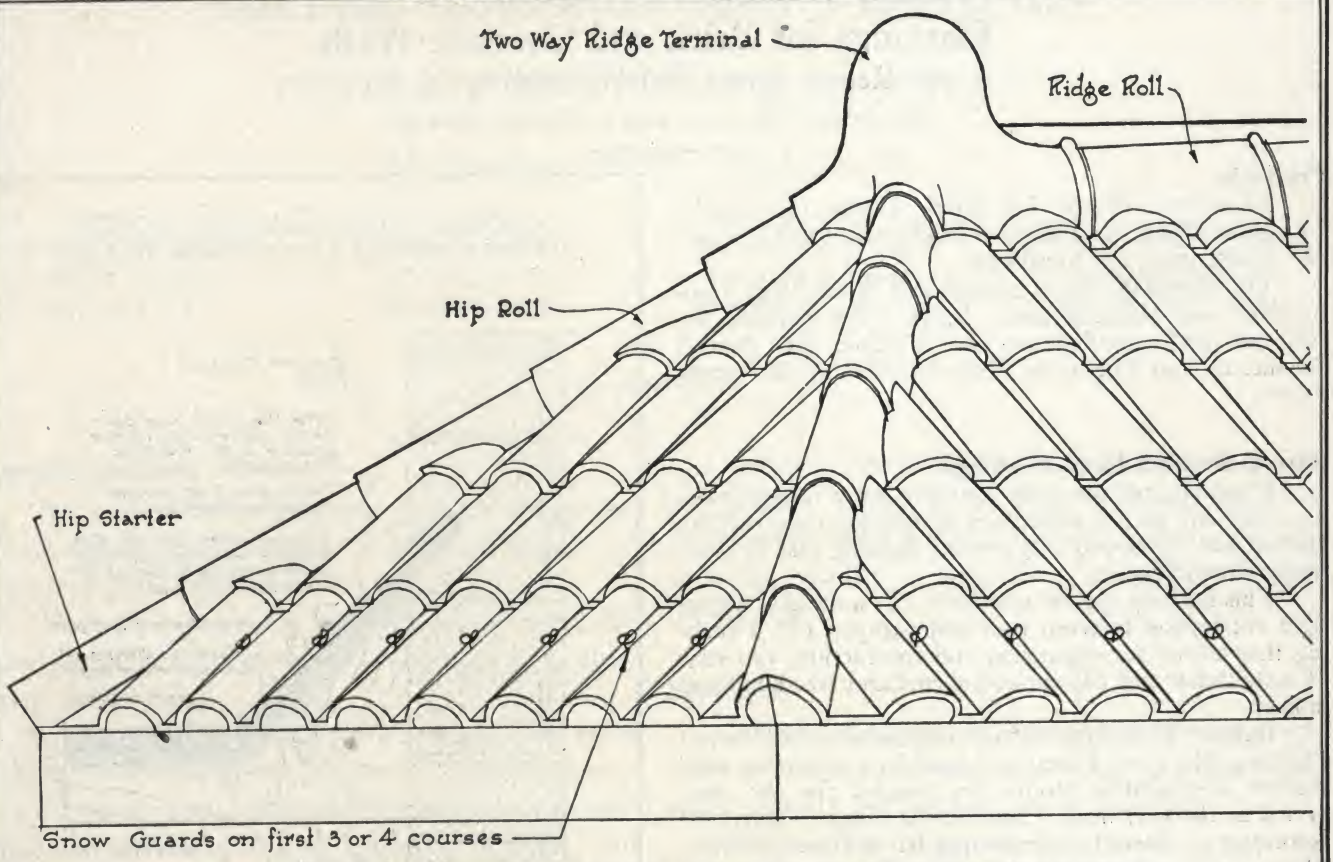
Note: The above specification with the addition of the various suggested clauses required to fit a particular job, makes it a complete specification for our Standard Plain (or Lead Coated) Copper Spanish Tile Roof. If our "Anteekcraft" roof is desired insert the following clause in the specification immediately after paragraph 9.

(10) ***Dwarf and Oversize Copper Tiles***—About 10% of total field tile area shall be covered with dwarf and oversize tiles of odd shapes and sizes scattered throughout the roof area to break up the regular straight line effect. No effort shall be made to place them in regular order.

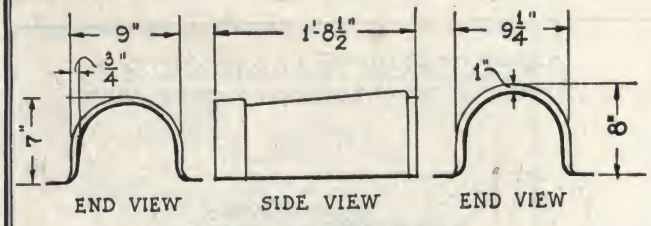
Note: When the roof is of plain copper (not lead coated) the following paragraph shall be inserted at the end of the specification.

Cleaning and Finish—After all the copper has been installed the entire surface of all exposed copper work shall be cleaned and given a thorough coating of pure linseed oil and then allowed to weather naturally. *No artificial coloring or acids shall be employed.*

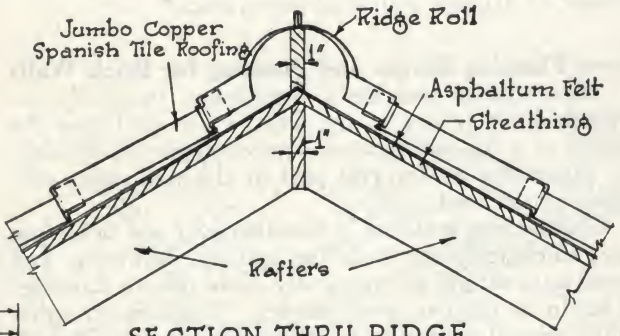
Continued on next page



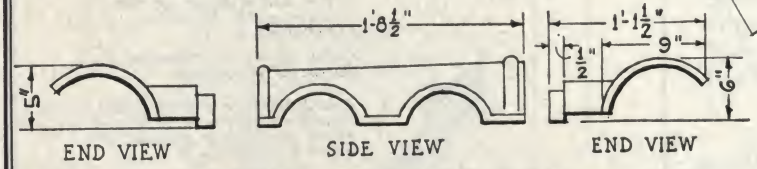
PERSPECTIVE VIEW SHOWING JUMBO COPPER SPANISH TILE ROOFING
Applied on any good nailing surface



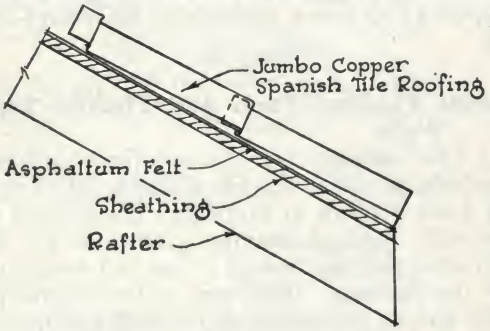
DETAIL OF HIP ROLL

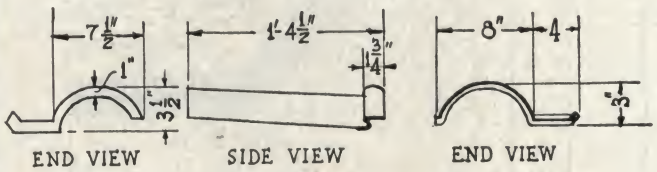


SECTION THRU RIDGE



DETAIL OF RIDGE ROLL





DETAIL OF ROOF TILE

SECTION THRU EAVES

DRAWN BY SWEETS CATALOGUE SERVICE	TYPICAL DETAILS OF JUMBO COPPER SPANISH TILE ROOFING	SCALE 3/4" EQUALS 1'-0" DATE JULY 28	DRWG 1

THE BARRETT COMPANY

Flashings for Brick and Concrete Walls

40 Rector Street, NEW YORK, N. Y.

For Branch Offices, see page on Roofing Materials

Products

FLASHING BLOCK for Brick Walls (Patented), FLASHING FORM for Concrete Walls (Patented), PLASTIC ELASTIGUM for Flashings.

For Roofing, Roof Leader and Roof Vent Connections, see Manufacturers' Index. For detailed description and specifications, see Volume III, Barrett Architects' and Engineers' Built-Up Roofing Reference Series.

Barrett Bonded Roof Flashings

Flashings are the most sensitive parts of any roof. To overcome all the difficulties of flashing construction, Barrett has developed a system of flashing that is absolutely dependable.

This flashing system provides: (1) a durable watertight connection between roof and parapet, (2) a flashing that allows for expansion and contraction, (3) ease of installation and (4) moderate cost and freedom from upkeep.

Barrett Flashings, when constructed with Barrett Flashing Blocks or Forms and used in conjunction with Barrett Specification Roofs, are *bonded for the same period as the roof itself*. Barrett Flashings, constructed according to Barrett Specification but without Flashing Blocks or Forms, are guaranteed for 10 years when used in conjunction with Barrett Specification Roofs.

Volume III Barrett's Architects' and Engineers' Built-Up Roofing Reference Series gives detailed description of Barrett roof flashing system.

Barrett Flashing Blocks and Flashing for Brick Walls

These blocks provide a permanent, upwardly inclined flashing groove in the wall, which performs the function of a cap and weather protection for the flashing. This cap, being an integral part of the wall, is as permanent as the wall itself.

The flashing material is installed over one unbroken plane, eliminating the buckling, tearing, pocketing, and special wear which so frequently occur where flashings are set in at right or acute angles. There is no strain from wind and gravity because the construction provides support from below throughout the extent of the flashing.

Barrett Flashing Form and Flashing for Concrete Walls

This flashing form is identical in principle with the flashing blocks described above. It is a metal flashing form (shown at the right) providing a permanent, upwardly inclined flashing groove in the wall, which performs the function of a cap and weather protection for the flashing. This cap is an integral part of the wall, and as permanent as the wall itself.

The flashing material is installed over one unbroken plane, eliminating the buckling, tearing, pocketing, and special wear, which so frequently occur where flashings are set in at right or acute angles. The cant construction provides support from below throughout the extent of the flashing, hence there is no strain from wind and gravity.

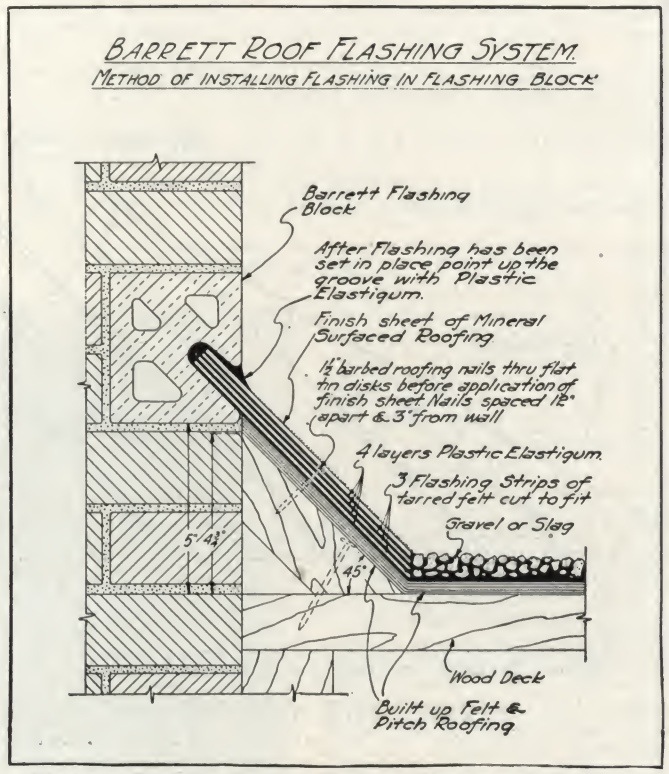


Diagram Showing Barrett Flashing Blocks and Flashing for Brick Walls

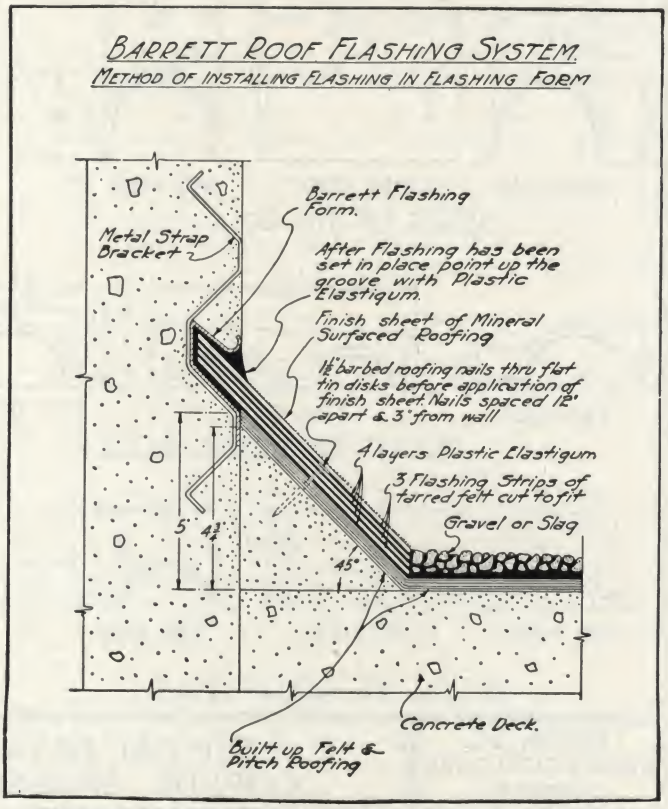


Diagram Showing Barrett Flashing Form and Flashing for Concrete Walls

COPPER ROOFINGS AND FLASHINGS

COPPER AND BRASS RESEARCH ASSOCIATION

25 Broadway, NEW YORK, N. Y.

MIDWESTERN OFFICE	CANADIAN OFFICE	SOUTHERN OFFICE	PACIFIC COAST OFFICE
Builders' Building	67 Yonge Street	Shoreham Building	Architects Building
CHICAGO, ILL.	TORONTO, ONT.	WASHINGTON, D. C.	LOS ANGELES, CAL.

Special Consulting Service

The scientific knowledge and practical experience of our Research and Building Service Departments are at your disposal at all times.

We will be glad to consult with you on any problems pertaining to the uses and applications of Copper, Brass and Bronze.

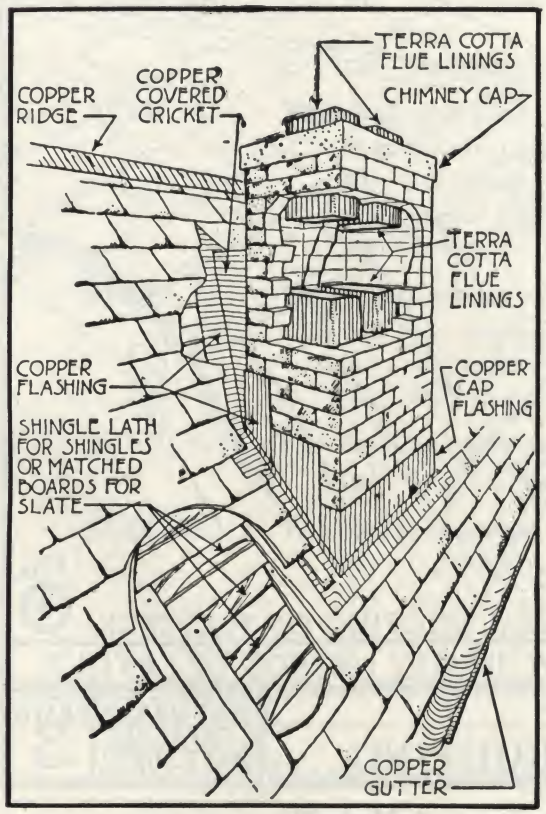
Our service covers constructive information about flashings and roofings, preparation of details, preparation of specifications, personal consultation with architects and contractors, and complete technical and scientific information about the physical and chemical properties of Copper, including its coloring.

Architects are invited to use this service freely for technical advice on all uses of Sheet Copper—for cornices, eaves troughs, flashings, gutters, leaders, skylights, ventilators, and sheet, shingle or Spanish tile roofing.

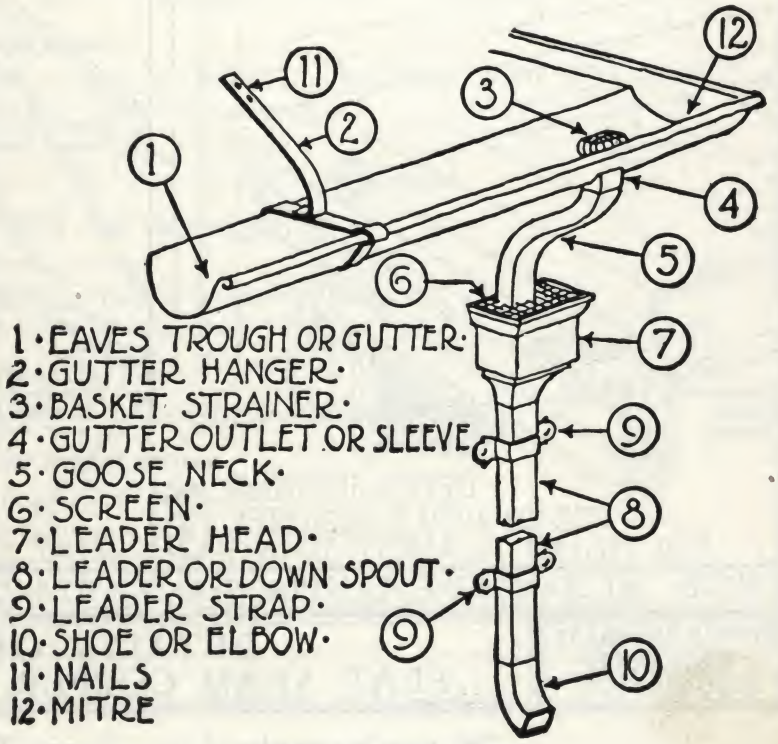
Literature

"Copper Roofings—A Manual"—Drawings, specifications and miscellaneous data on laying sheet-copper roofs. 8½x11 in., 29 pages. Sent on request.

"Copper Flashings—A Handbook"—Drawings, specifications and miscellaneous data on flashings of all kinds. 8½x11 in., 66 pages. Sent on request.



The Roof and Chimney



Gutter and Leader Detail

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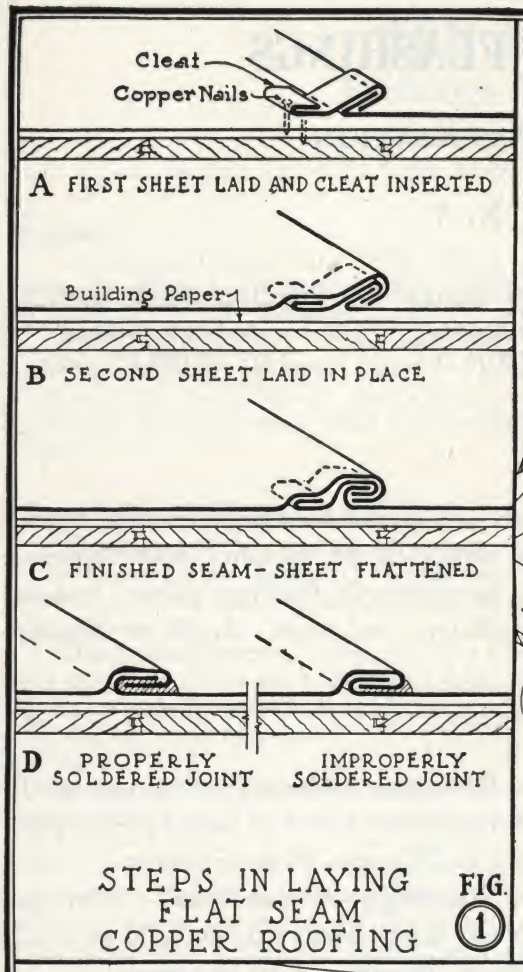
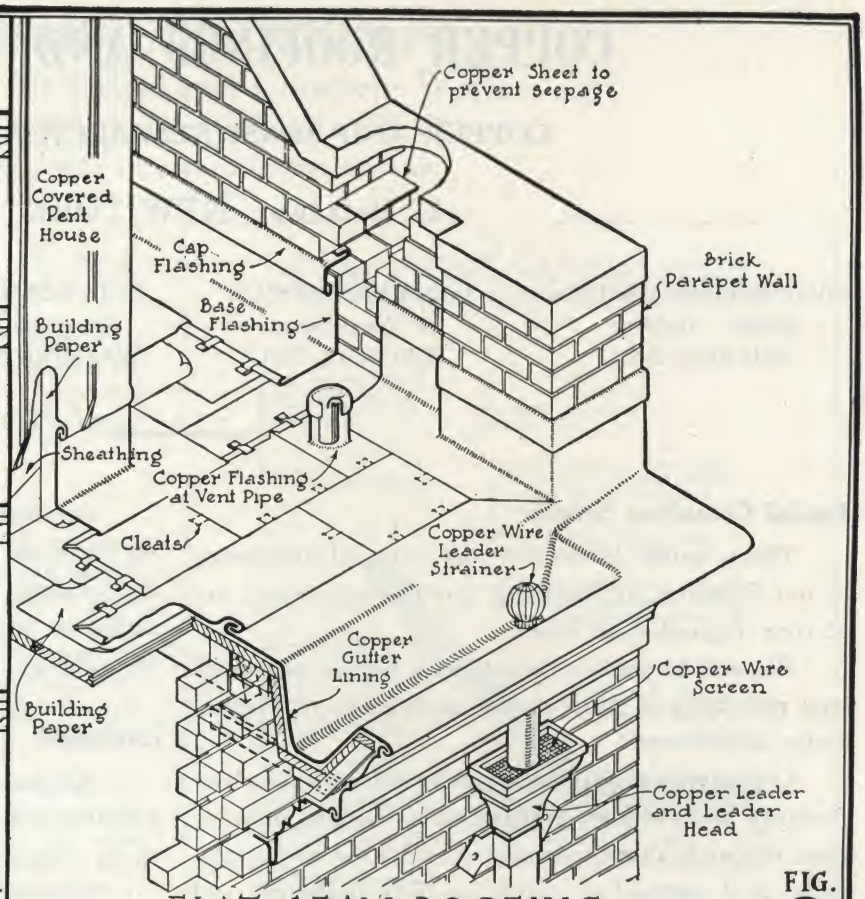
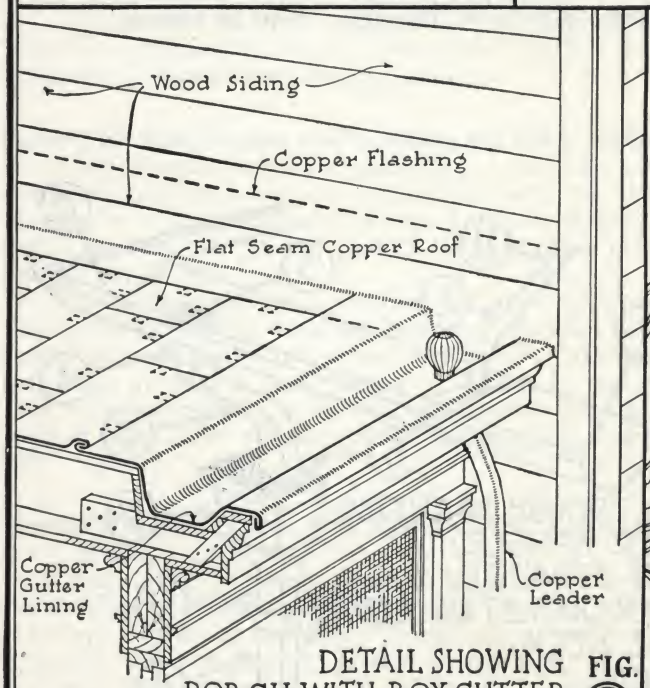


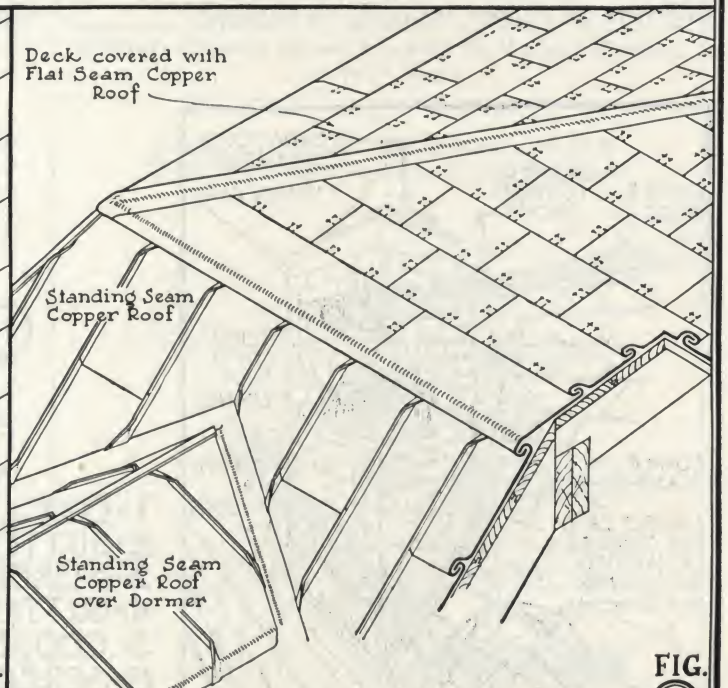
STEPS IN LAYING FLAT SEAM COPPER ROOFING FIG. 1



FLAT SEAM ROOFING ON FLAT ROOF FIG. 2



DETAIL SHOWING PORCH WITH BOX GUTTER AND FINISH AGAINST SIDING FIG. 3



FLAT SEAM ROOFING ON FLAT DECK FIG. 4

NOTE ALL SEAMS HAVE BEEN EXAGGERATED TO SHOW CLEARLY METHOD OF LAYING.

COPPER AND BRASS RESEARCH ASSOCIATION	DETAILS OF FLAT SEAM COPPER ROOFING	NOT DRAWN TO SCALE DATE JUN.22	DRWG 3

This page is reproduced from "Copper Roofings—A Manual"

Continued on next page

TEN RULES FOR APPLYING COPPER FLASHINGS

RULE 1. **Use 16-ounce soft (Roofing Temper) copper only.**

- **(a)** Do not use hard (Cornice Temper) copper except for cornice work.
- **(b)** Do not use lighter than 16-ounce copper.

RULE 2. **Prepare the laying surface carefully and see that it is smooth and even.**

- **(a)** All flashings, gutter-linings, etc., should be laid on rosin-sized paper or asbestos felt.
- **(b)** Sheathing boards should be ship-lap, tongued-and-grooved, or splined.
- **(c)** All nail heads should be set.

RULE 3. **Avoid sharp bends in copper sheets.**

- **(a)** Do not crease the sheets or bend them more than 90°.
- **(b)** Bend the sheets as little as possible before laying.

RULE 4. **Allow for the movement of copper at intersections of roof planes by large loose-locked joints.**

- **(a)** Never carry a copper sheet over an angle more than 3 or 4 inches.
- **(b)** Break the sheet and lock it to the adjoining one by means of a loose- or double-locked joint. This allows room for movement.

RULE 5. **Never nail copper sheets. Use cleats.**

- **(a)** By "sheet" is meant any piece over 12 inches wide.
- **(b)** Use two-nail cleats 1½ inches wide and place them not more than 12 inches apart.

RULE 6. **Use copper nails only—never iron or steel—for fastening strips and cleats.**

- **(a)** Flat-head, wire nails are the best.
- **(b)** Strip copper (pieces 12 inches or less wide) should be nailed along one edge only.
- **(c)** Nails should be spaced 4 inches maximum.

RULE 7. **Make full size joints and seams.**

- **(a)** Standing Seams at least 1-inch finished.
- **(b)** Flat Seams (locked) at least ½-inch finished.
- **(c)** Lapped Seams at least ¾-inch finished.
- **(d)** Double or copper-locked Seams at least ½-inch finished.

RULE 8. **Pre-tin all seams carefully and thoroughly.**

- **(a)** Use heavy tinning-coppers.
- **(b)** Use enough tin (or solder) to cover all the surface.
- **(c)** Proper tinning is essential for strong seams.

RULE 9. **Use rosin as a flux rather than acid.**

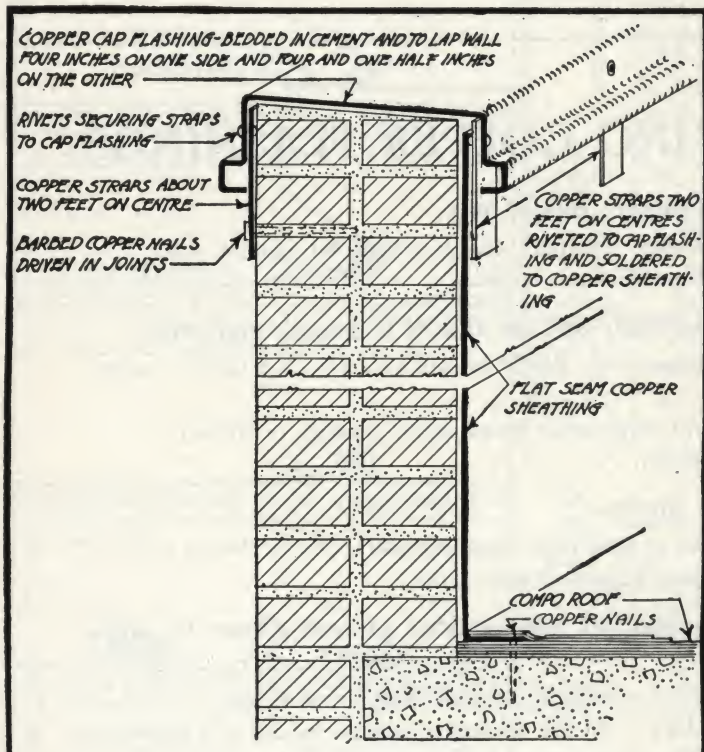
- **(a)** If acid is used see that it is properly and **thoroughly** killed.

RULE 10. **Well-sweated seams are strong seams.**

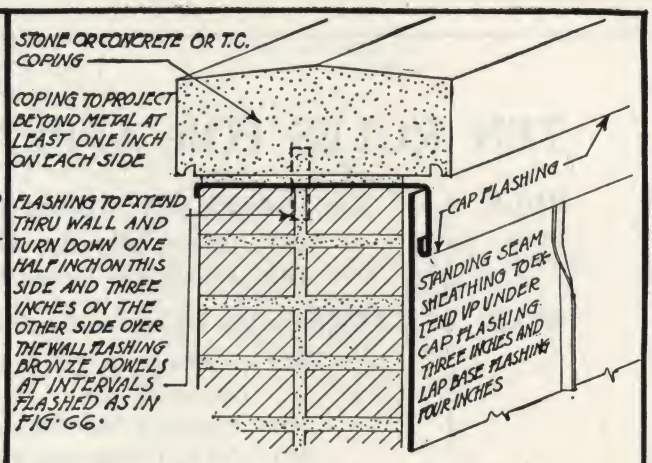
- **(a)** Use only the best half-and-half solder.
- **(b)** Heat the seam thoroughly, and sweat the solder into it.
- **(c)** Heavy, hot coppers are best for this.

This page is reproduced from "Copper Flashings—A Handbook"

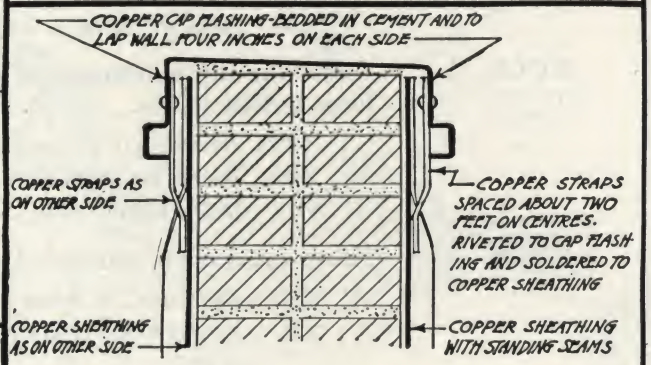
Continued on next page



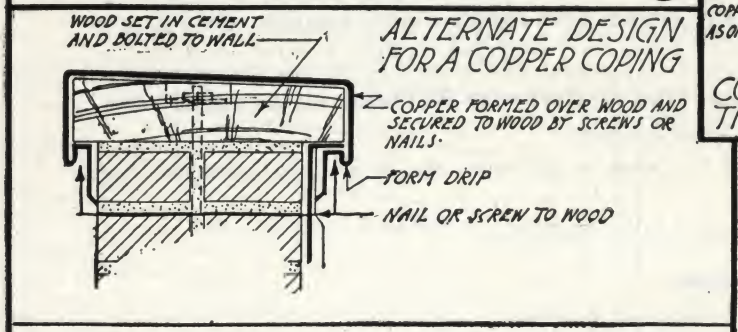
FLASHING FOR A BRICK WALL LESS THAN TWENTY FOUR INCHES HIGH (67)

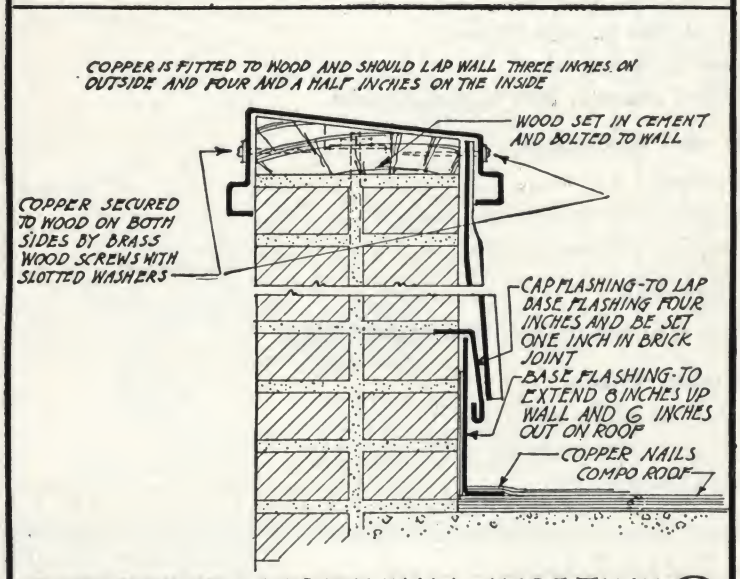


FLASHING FOR A BRICK WALL MORE THAN ONE FOOT HIGH ABOVE COUNTER-FLASHING (68)

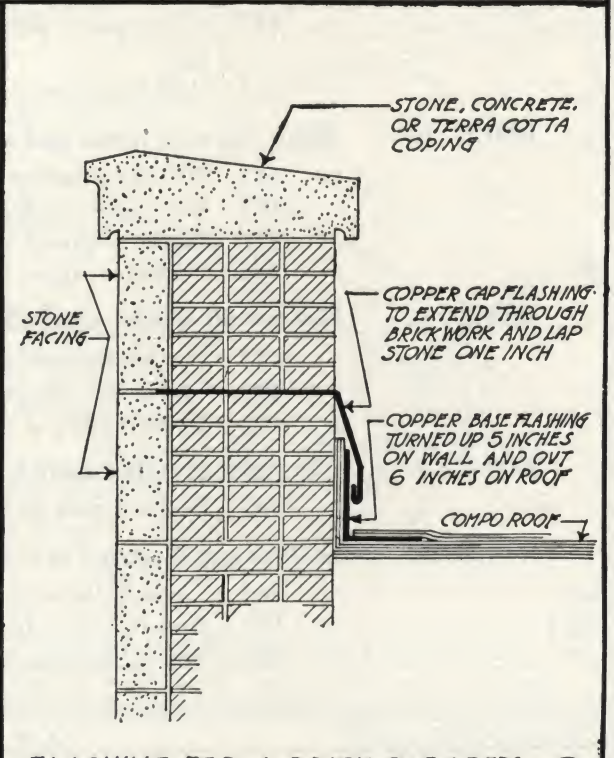


COPPER COPING AND FLASHING FOR THE TOP OF A BRICK WALL (69)





FLASHING FOR A BRICK WALL MORE THAN TWENTY FOUR INCHES HIGH (70)



FLASHING FOR A BRICK PARAPET WALL FACED WITH STONE (71)

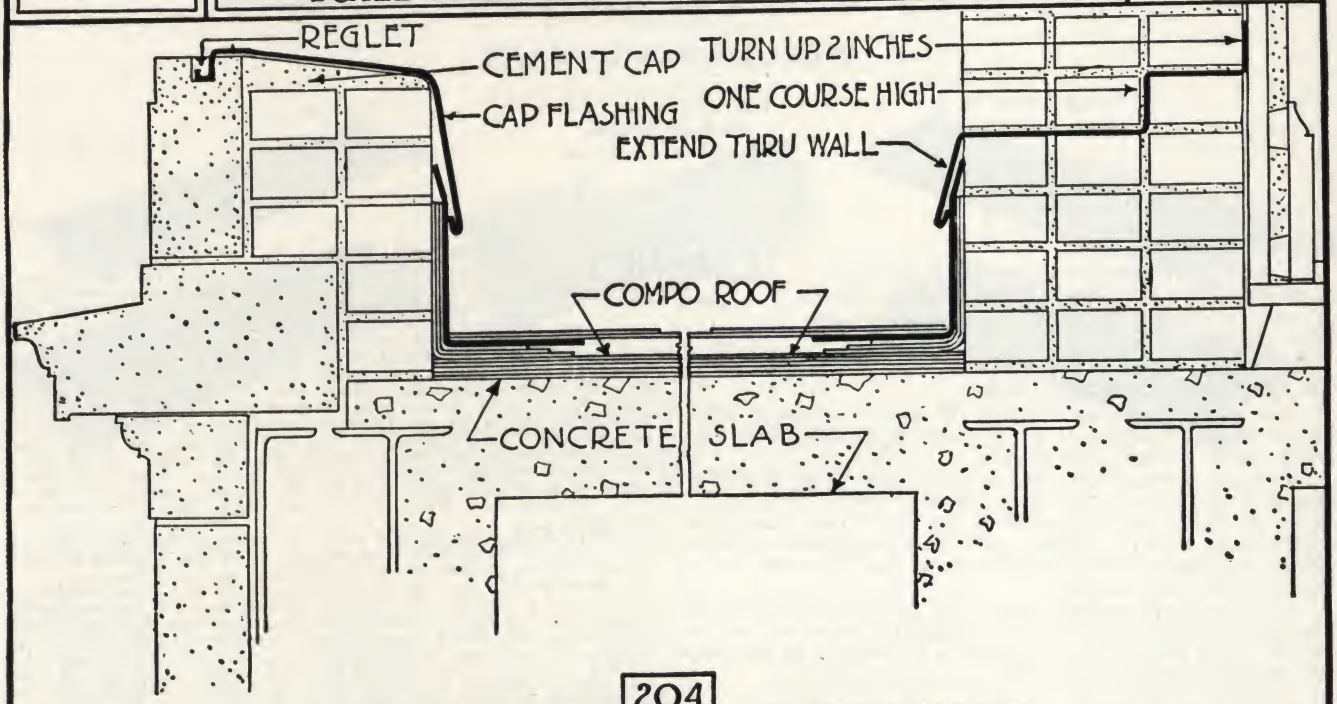
This page is reproduced from "Copper Flashings—A Handbook"

Continued on next page

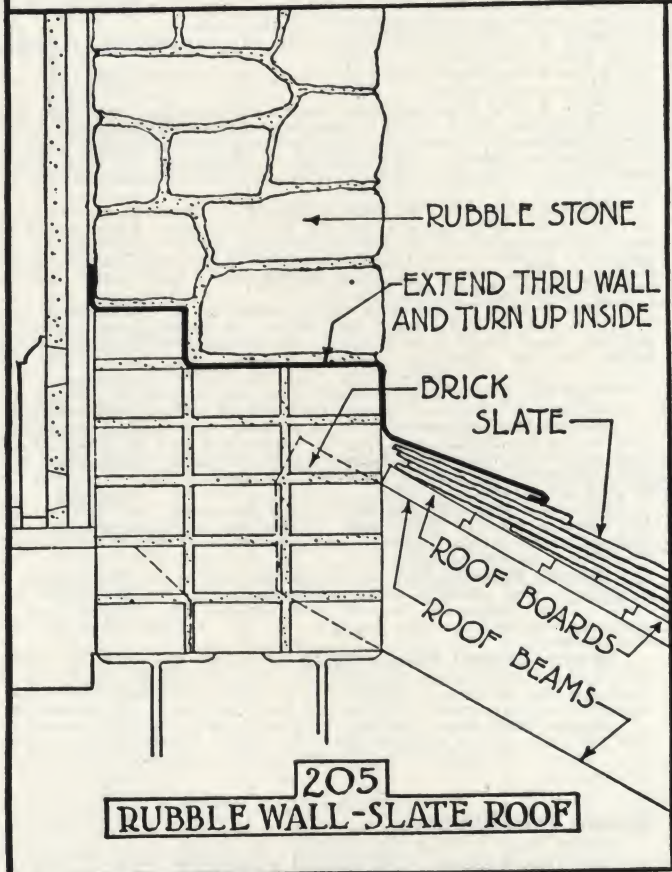
SERIES C

UNFREQUENT FLASHINGS
SET BACKS
SCALE - AN INCH AND A HALF EQUALS ONE FOOT

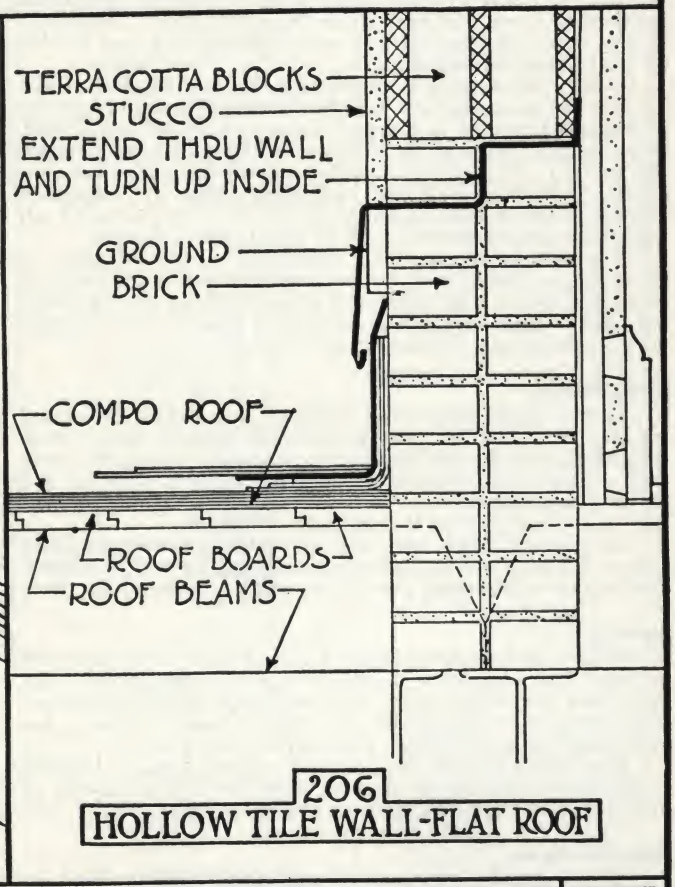
NUMBER TWO



204
SET BACK IN FIREPROOF CONSTRUCTION



205
RUBBLE WALL-SLATE ROOF



206
HOLLOW TILE WALL-FLAT ROOF

COPPER & BRASS RESEARCH ASSOCIATION
25 BROADWAY NEW YORK

THE CHENEY COMPANY

Manufacturers of Cheney Interlocking Wall Flashing

WINCHESTER, MASS.

NEW YORK, N. Y.
370 Lexington Avenue

PHILADELPHIA, PA.
Architects Building
17th and Sansom Streets

PITTSBURGH, PA.

Product

CHENEY INTERLOCKING THRU-WALL FLASHING in all standard sizes. Made of soft copper. Made to order in lead-coated copper, Hoyt Hardlead, and other metals.

To Overcome Seepage Leaks

The cause of leakage through the exterior masonry walls of the modern building is a very serious problem that confronts every architect and builder.

Seepage causes efflorescence, streaks, stains and discoloration of brick, cement and stone facings, which not only disfigure the appearance of a building, but many times destroy its architectural beauty. Seepage also very frequently develops into more serious leaks, which penetrate a building and deface interior walls and ceilings.

Architects and engineers generally have been reluctant to specify plain sheet metal flashing through the walls because the smooth metal breaks the bond between the courses of masonry and seriously weakens the wall.

Cheney Interlocking Wall Flashing

Is the only through-wall copper flashing that runs entirely through the masonry wall and forms a positive mechanical key-bond in every direction within the mortar bed. It prevents serious leaks, disintegration of walls, efflorescence, and rusting of steel spandrels and lintels.

Cheney Interlocking Wall Flashing does not break the bond. It is so designed that when properly laid it forms a positive mechanical key-bond in every direction within the mortar bed, owing to the fact that the flashing is keyed both horizontally and vertically on both sides. The ends of the strips hook together to form a continuous unbroken course of waterproof flashing. The design of the flashing also takes care of all expansion and contraction due to temperature changes.

The unbreakable key-bond feature of Cheney Flashing is of the utmost importance in the construction of high buildings where the sway of the structures tends to loosen coping stones and parapet walls with the possibility of loss of life or serious damage should they fall to the ground below.

Economical

Cheney Interlocking Wall Flashing comes ready-to-use and requires no soldering, special fitting or loss of time. It is economical in price and application, generally costing no more than ordinary copper flashing properly formed, soldered and set in place. There is no time lost as the flashing is built into the mortar bed as the masonry progresses.

Dowels and brick keys may be entirely eliminated when Cheney Flashing is used, this saving making the cost of Cheney Flashing less expensive than plain copper soldered in place.

Service

Cheney Interlocking Wall Flashing has been approved on sight and adopted as standard by leading architects, engineers, and contractors, and the many outstanding construction jobs throughout the country in which Cheney Flashing has been installed are sufficient proof of its merits.

Our technical staff has acquired a large fund of valuable experience in the use of flashing which is at the disposal of architects and engineers, without charge or obligation.

Specifications

All counterflashing and through-wall flashing shall be Cheney Interlocking Wall Flashing, and shall be placed in the wall with mortar below and on top of flashing, so that a mechanical bond is obtained. These flashings shall be furnished and installed according to the standard specifications of THE CHENEY COMPANY, Winchester, Massachusetts.

CHENEY
TRADE MARK

Types and Sizes

Cheney Interlocking Wall Flashing is made in standard strips 42 in. long, which includes the 2-in. interlocking lap. It weighs about 16 oz. per sq. ft. Standard widths range from 4 to 36 in. Special strips of any width or design are made to order. Inside and outside corners can be furnished on all types. Interlocks without soldering. For complete details see drawings.

Type 1—Furnished in all widths up to 36 in. For use below the roof line, under cornices and window sills, and over lintels and spandrel beams by extending beyond inside face of wall 1 or 2 in. and bending up after mortar is set, so that water collecting on flashing cannot run into building. Far superior and less expensive than the usual copper pan under window sill, which must be bent up at each end of sill to exact dimensions and soldered at inside corners. Type 1 flashing is carried 4 in. beyond each end of sill and bent up against inside of wall after mortar is set. Water cannot climb across keys or accumulate at low point.

Type 2—For all standard walls. Used above roof line under copings and over Barrett Flashing Blocks. Furnished with ½-in. bends on each side to prevent capillary attraction.

Type 3—Furnished in all widths up to 32 in. For use above the roof line as a combined through-wall flashing and 4-in. counterflashing. Comes ready for roofer to install standard metal base flashing or plastic base flashing underneath. Also for use through penthouse, chimney, skylight, party walls, and set back bases, by extending beyond inside face of wall 1 or 2 in. and bending up after mortar is set so that water collecting on flashing cannot run into the building. The keys on face of the 4-in. counterflashing materially strengthen the face, allowing it to be lifted and bent down again to hug the wall smoothly, which is not possible with plain sheet metal.

Type 4—For all standard walls. Used above roof line, under copings. Furnished with 4-in. counterflashing on one side and ½-in. turn-down on other to prevent capillary attraction. Recommended for all low parapet walls directly under coping stone.

Type 5—For 4-in. brick veneer walls as a counterflashing for piazza roofs, porch roofs, etc.

Type 6—For 4-in. brick veneer walls over window leaders and under sills and belt courses.

Type 7—For Waterproofing spandrel beams and at the same time bonding the 4-in. brick veneer to the spandrel beam fireproofing. Set in mortar as masonry progresses. No soldering necessary. Far superior to the ordinary plastic method, applied in advance of the brick laying, which usually dries out and blows off in sections before the bricklayers can cover it.

Type 8—All widths of walls up to and including 32 in. Identical in construction with Type 3 except that there is a ¼-in. flange turned up near the inside face of the wall, so that the moisture collecting on the top of the flashing cannot run to the outside of the wall, but must drain back to the roof. This ¼-in. flange embeds in the mortar joints without thickening the joint in any way.

Type 9—All widths up to and including 36 in. Identical in construction with Type 1, except that there is a ¼-in. flange turned up near the outside face of wall, so that the moisture collecting on the top of the flashing cannot run into the building, but must drain to the outside of wall. The ¼-in. flange does not thicken the joints.

Type 33—For all standard fire walls. Carries entirely through the fire wall and turns down 4 in. on each side of wall as counterflashing.

Special Gable Type—All widths of walls up to and including 32 in. Identical in construction with Type 3, except that keys all slope towards roof, preventing water from running down outside of wall to stain and cause efflorescence. Specify right and left on this type, as reverse lap is used on one side of gable.

Special Cornice Type—Made to any dimension. Covers entire top of cornice and goes through wall. Takes care of expansion and contraction on the exposed surface. Usually made of lead coated copper to prevent staining of stone.

Special Type 3—Vertically keyed, is used as a base flashing in conjunction with standard Type 3 counterflashing for promenade tile roofs. One course of vertical tile conceals the flashing and is positively bonded to the masonry by the vertical keys of the base flashing.

Cheney Vertical Ribbed Siding—For lining the inside of parapet walls. The vertical keys strengthen the siding materially, take care of expansion and contraction, and provide air space insulation. This special siding is installed without soldering and has an extremely nice appearance.

Copper Wall Tie—Used as a wall tie in brick veneer construction. Ties the brick veneer in both directions and is inserted in the mortar joints about 6 ft. apart in every eighth course, staggered and nailed to the boarding.

Recent Installations:

Empire State Building, New York, N. Y.
New York Hospital, Cornell Medical College, New York, N. Y.
Polytechnic Institute, Baltimore, Md.
U. S. Veterans Hospital, Lincoln, Neb.
Folger Shakespear Library, Washington, D. C.
Cleveland Electric Illuminating Co., Ashtabula, Ohio
U. S. Post Office, Baltimore, Md.
Klise Memorial Chapel, Grand Rapids, Mich.
U. S. Veterans Hospital, Lexington, Ky.

Continued on next page

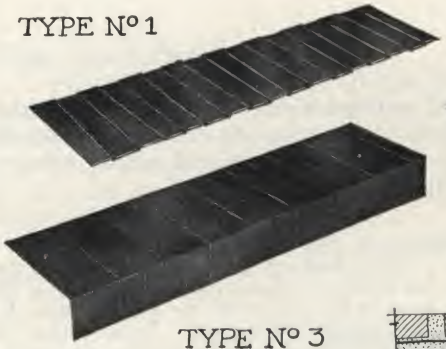
CHENEY INTERLOCKING WALL FLASHING

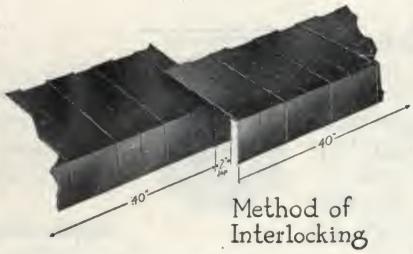
PATENTED MAY 26, 1908, SEPT. 24, 1909

CHENEY

DETAILS SHOWING APPLICATIONS OF 'CHENEY' FLASHING

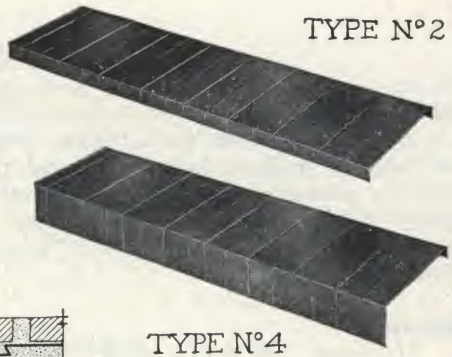
TYPE N° 1



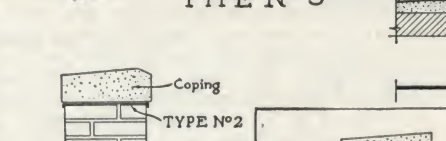


Method of Interlocking

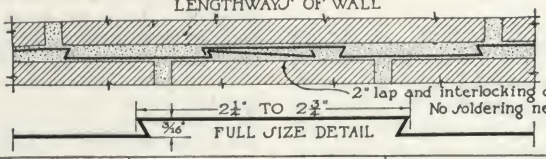
TYPE N° 2



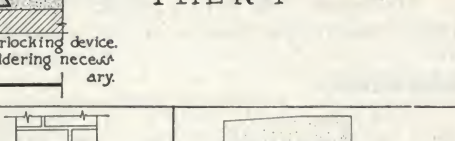
TYPE N° 3

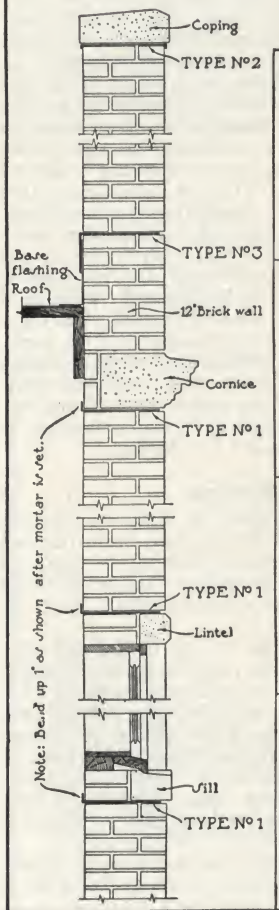


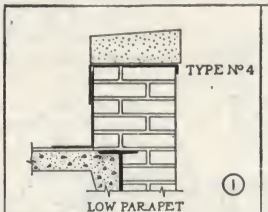
SECTION LENGTHWAYS OF WALL

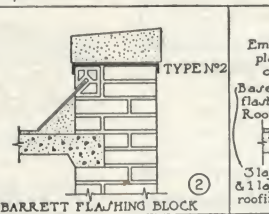


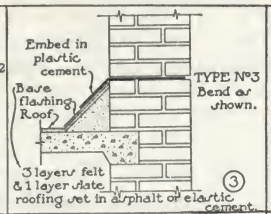
TYPE N° 4

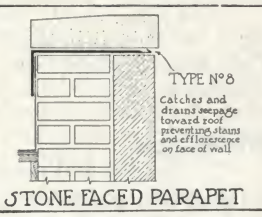


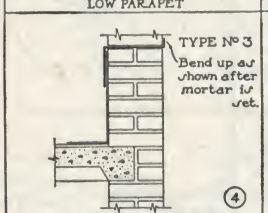


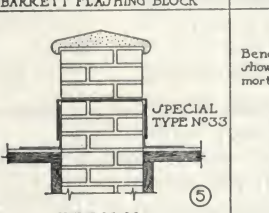


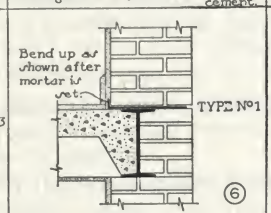


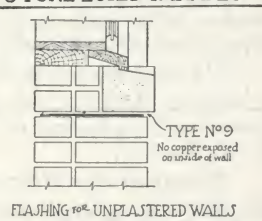


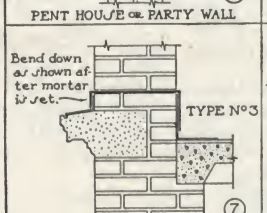


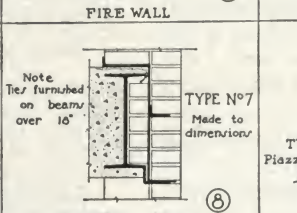


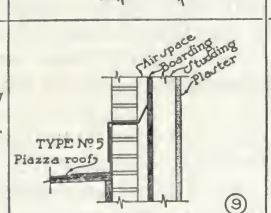


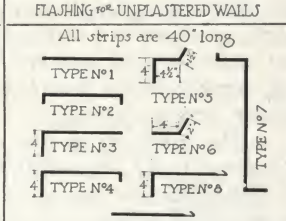


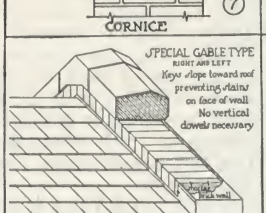


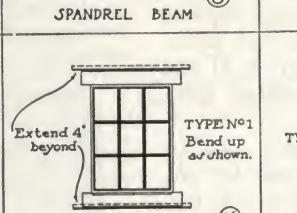


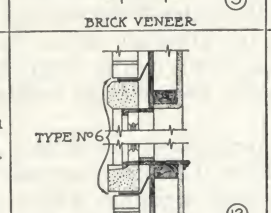


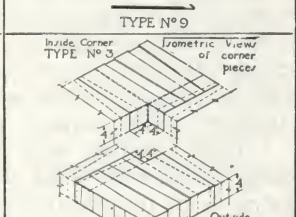


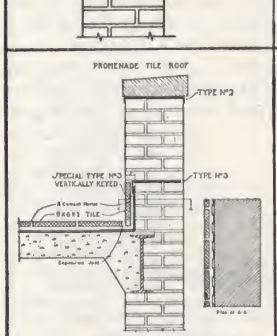


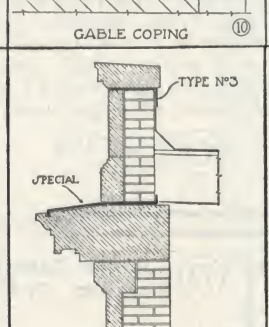


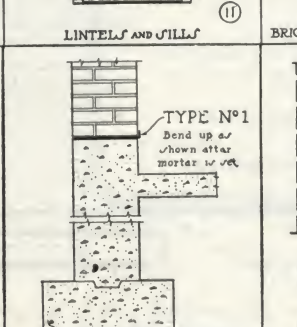


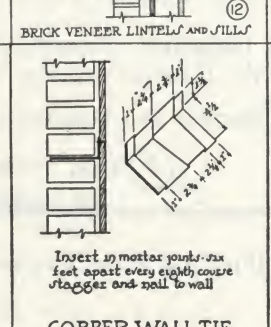


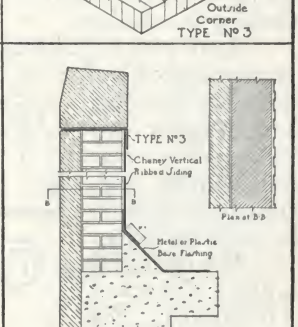












COUNTER-FLASHING RECEIVER CO.

Manufacturers of Permanent Leakproof Flashings

712 Park Street, MILWAUKEE, WIS.

AGENTS IN ALL PRINCIPAL CITIES

Product

SCHNEIDER COUNTER-FLASHING RECEIVER, a permanently built-in, leakproof metal raglet for masonry parapets and walls. Receives and securely holds, without calking, the standing flat-roof counter-flashing. Fully protected by patent.

Materials

16 ounce, cold rolled copper. 26 gauge galvanized Armco iron. Furnished in 8-ft. lengths.

Adaptability

Adapted to all classes of buildings with flat or slight pitch composition roofs such as those of industrial and commercial buildings, hotels, apartments, schools, etc.

Advantages

Furnished and installed by mason. Flashing receiver is furnished and built in by the masonry or general contractor with little labor cost as the masonry work of parapets and walls progresses.

Permanence—Made up of non-corrosive metals, it lasts as long as the masonry walls. Permits the removal and replacing of counter-flashing without injury to the receiver.

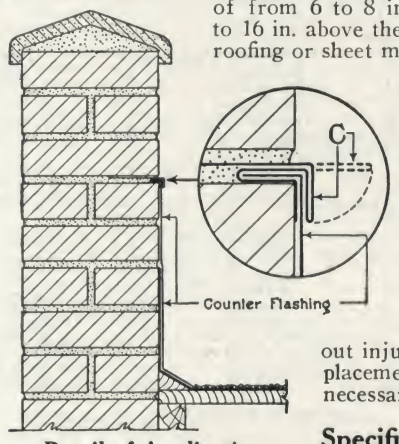
Leakproof—Most roof leaks occur at or about the flashing against parapets and walls. The counter-flashing when set with its top flange inserted in a cut out mortar joint secured with flashing hooks and calking cement is far from permanent and is the vital point where leakage occurs.

The turn-up at the back of the Counter-flashing Receiver body, not only securely anchors the receiver in the masonry mortar joint, but it permanently prevents wind driven rain or the water from melting banked snow from passing over the receiver body, and penetrating through the mortar joint to the interior of the wall to appear on the walls and ceilings beneath with resultant costly damage.

This positive and permanent assurance against leaks at this most vital point is a prime reason for the inclusion of the receiver on all buildings where counter-flashing is required.

Easily and Quickly Installed—Furnished in convenient lengths of 8 ft., the Counter-flashing Receiver is easily handled and quickly installed by the mason without special tools or skill in metal working.

Reduces Labor Costs—Eliminates the usual labor costs of roofing and sheet metal contractor in cutting out the mortar joint to receive the counter-flashing flange and the initial cost of flashing hooks and calking cement, and the labor of installation.



Detail of Application

Application

The Schneider Counter-flashing Receiver is furnished and set by the mason in the masonry mortar joint. The body of the receiver (A) is set level in the wall with the guide flange (E) pressed close against the vertical masonry face. Splice plates with turn-up at back edge, are furnished to fit snugly into the splicing plate groove (F) to firmly join abutting ends in perfect alignment. Corners and re-entrant angles are easily made without intricate fitting or special tools. On roofs with considerable pitch the receiver is installed in steps maintaining a minimum of from 6 to 8 in. and a maximum of 12 to 16 in. above the roof surface. After the roofing or sheet metal contractor has set the counter-flashing with its top flange inserted in the counter-flashing groove (D), he bends down the projecting flange (C) securely locking the counter-flashing in place, yet allowing for its normal and natural expansion and contraction. The locking flange (C) is easily lifted and re-bent to its customary position without injury when removal and replacement of counter-flashing is necessary in reroofing.

Specification

Include in Masonry Specifications—The Mason Contractor shall furnish and build into all parapet and similar walls where counter-flashing is required [copper] [galvanized armco iron] Schneider Counter-flashing Receiver as manufactured by the COUNTER-FLASHING RECEIVER Co., Milwaukee, Wis.

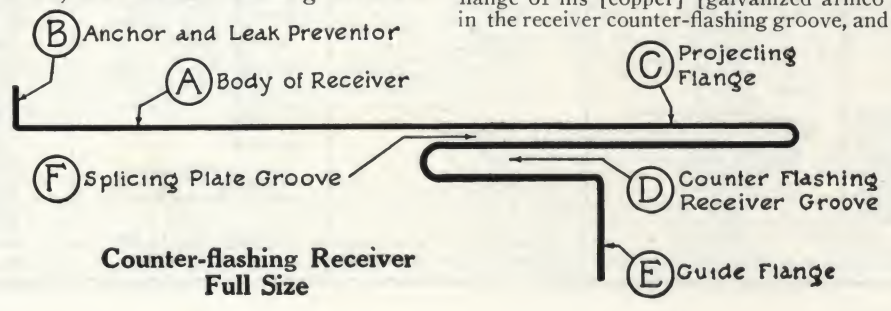
The Counter-flashing Receiver shall be set in the masonry mortar joint in accordance with the manufacturer's details. Butting end joints shall be secured in perfect alignment with splice plates, furnished by the receiver manufacturer, and all corners and re-entrant angles shall be lapped and joined as shown.

The receiver shall be set in a mortar joint approximately 9 in. at its lowest point from the roof level. Where steps are required by changing roof level, these shall occur at points where the maximum height above the roof surface is approximately from 12 to 16 in.

Include in Roofing and Sheet Metals Specification—[Copper] [galvanized armco iron] Schneider Counter-flashing Receiver is furnished and built in by the Mason Contractor (see page ... of specifications and details). This contractor shall insert the top flange of his [copper] [galvanized armco iron] counter-flashing in the receiver counter-flashing groove, and bend the projecting receiver flange over the counter-flashing top.

Note: No counter-flashing hooks or calking cement are required.

Note: To prevent electrolysis, the receiver and counter-flashing must always be of the same metal, i.e. copper receiver—copper counter-flashing; galvanized armco iron receiver — galvanized armco iron counterflashing.



Counter-flashing Receiver Full Size

THE FIGGE COMPANY

Manufacturers of the Patented Figge Roof Flashing

1110 West Adams Street, CHICAGO, ILL.

Figge Roof Flashing

Figge Roof Flashing eliminates 95% of roof leaks. It is applied by all leading roofing contractors.

Write for literature, specifications and prices on our Standard and Extra Heavy Types.

List of installations and samples furnished on request.

Materials Used

Figge Roof Flashing is made from suitable heavy woven cotton fabrics, thoroughly saturated and coated with a hot bituminous compound, and is furnished from stock in the following sizes:

Standard Type—
2-ply—8, 10 and 12 in. wide; 3-ply—8, 10 and 12 in. wide.

Extra Heavy Types—
1-ply—8, 10 and 12 in. wide; 2-ply—8, 10 and 12 in. wide.
Other sizes to order.

Specifications for Figge Built-up Roof Flashing

Standard Types

Coal Tar Pitch and Gravel Roofing, Asphalt Asbestos Felt Roofing, and Asphalt Rag Felt Roofing.

Roof Flashings—
The Roof Flashing shall be one-ply Extra Heavy type Figge Flashing applied in accordance with manufacturer's specifications. The flashing shall be at least 10 in. wide and must be carried 2 in. over the roof deck and 6 in. up the vertical surfaces or as otherwise shown on plans.

Extra Heavy Types

Coal Tar Pitch and Gravel Roofing, Asphalt Asbestos Felt Roofing, Asphalt Rag Felt Roofing.

Roof Flashings—
The Roof Flashing shall be two-ply Extra Heavy type Figge Flashing applied in accordance with manufacturer's specifications. The flashing shall be at least 10 in. wide and must be carried 2 in. over the roof deck and 6 in. up the vertical surfaces or as otherwise shown on plans.

Raggle in Walls

Raggle in brick, hollow tile and concrete walls must be provided approximately ½ in. wide and 1½ in. deep.

Add to specifications under "Masonry"—Raggle for Roof Flashing: Raggles for roof flashing shall be provided in accordance with instructions furnished by roofing contractor.

Bonded Roofs

Consult specifications of various roofing manufacturers for recommended use of Figge Roof Flashing in connection with bonded roofs.

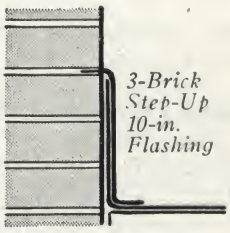
Figge Roof Flashing Simple to Apply

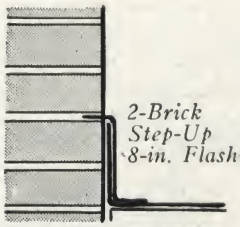
No special construction needed; provide raggle by raking mortar out of joint or insert wood strip in wall or form.

Securing device of non-corrosive metal carries flashing into wall, locking it securely.

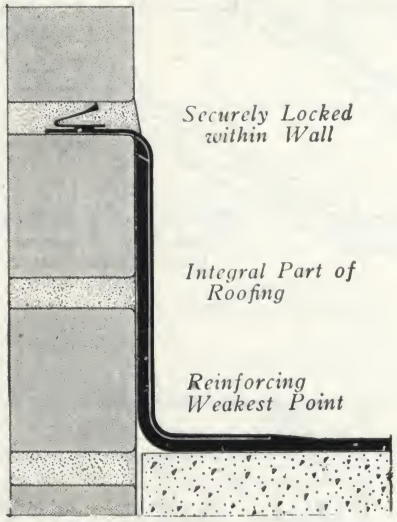
Roofing is turned up the wall, as usual, flashing turned down over it and mopped to walls and between layers.

Raggle pointed-up and mopped.

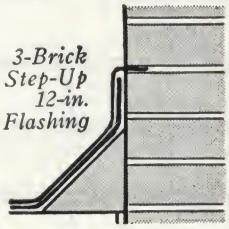


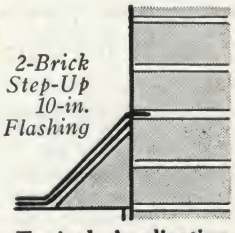


Typical Application No Cantstrip



Detail of Figge Flashing Showing Its Advantages





Typical Application Over Cantstrip

R. F. KNOX COMPANY

Manufacturers of "Ever-Tite" Flashing Lock

573-581 Marietta Street
ATLANTA, GA.

"Ever-Tite" Flashing Lock

The "Ever-Tite" Flashing Lock is an economical, practical and efficient device for *permanently* attaching flashing to parapet walls. It makes the flashing as permanent as the wall itself. It is the result of forty years of practical experience combined with sound engineering theory.

The "Ever-Tite" Flashing Lock provides absolute protection to flat roofs at their weakest point. Even the highest grade roof will leak eventually unless careful attention is given to the anchorage of the flashing. This important function is positively and economically accomplished by the "Ever-Tite" Flashing Lock.

Method of Installation

Description—"Ever-Tite" is made in 10-ft. lengths, of 16-oz. copper sheeting, or of galvanized armco ingot iron, 24 gauge, dipped in "National Tinners Red Paint." This is the weight regularly furnished although it can be made in any desired weight.

Installation—The lock is set in place by the brick mason while constructing the wall, being kept in alignment with clamps that fasten to brick course. As shown in the illustration, the half-ball legs set on top of the brick course at the desired height above the roof. The lock is installed so that the angle edge protrudes about 1 in. The half-ball legs support the lock in such manner as to provide space underneath at the front for the insertion of the counter or cap flashing. After the latter has been set in place, the 1-in. protruding edge of the lock is turned down over the cap flashing, securely and permanently fastening it in place.

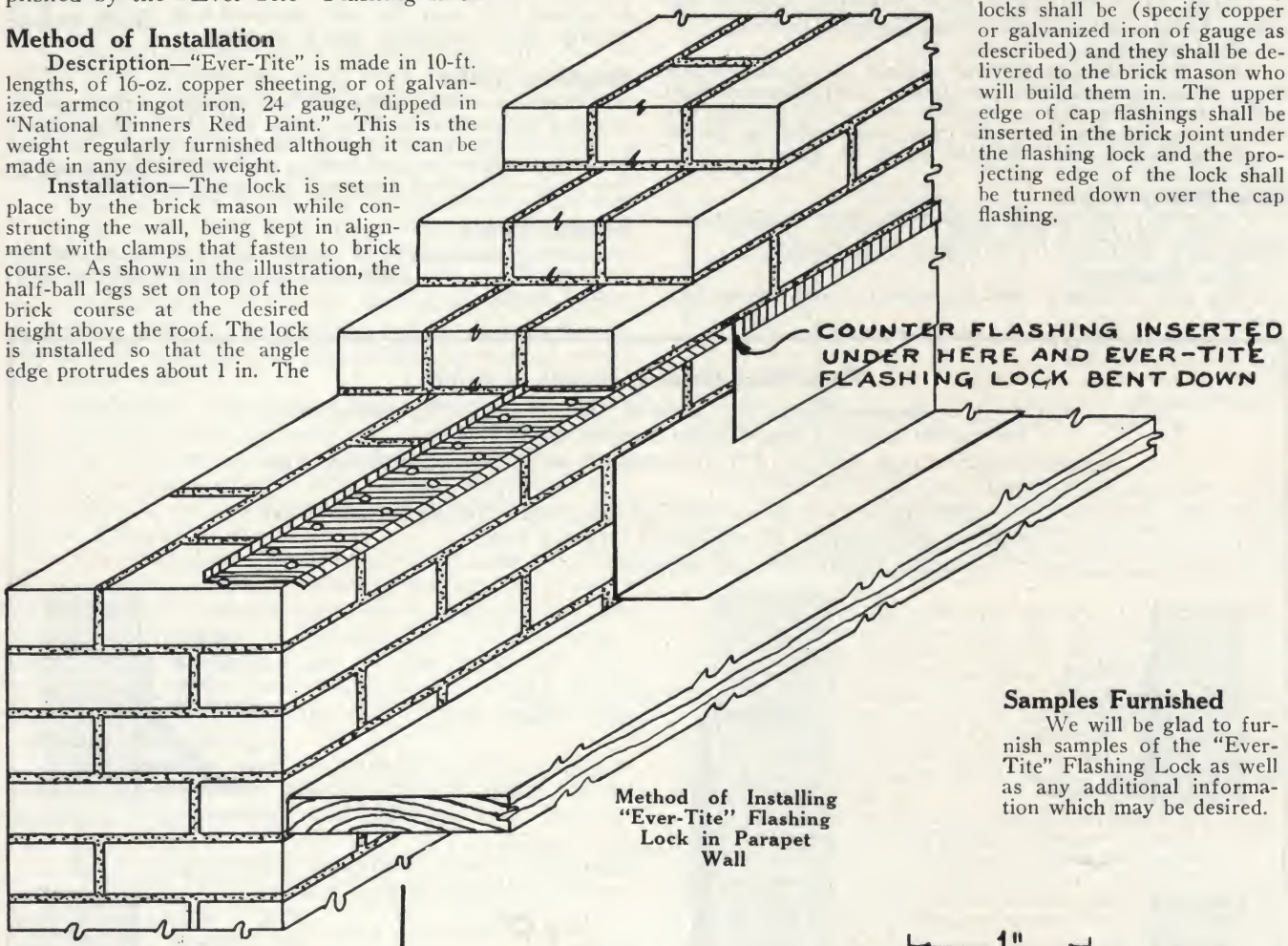
Prevents Water Seepage and Expedites Flashing

A study of the illustration will make its advantages apparent. The "Ever-Tite" Flashing Lock acts as a positive preventive of water seeping down the wall as its position in the wall enables it to intercept any water seepage and turn it out on the roof.

The use of "Ever-Tite" expedites the flashing of the roof—there is no cutting out of mortar joints, no mopping of parapet walls and no pointing up of mortar joints. The labor saving thus effected will go a long way toward paying for the material.

Specifications

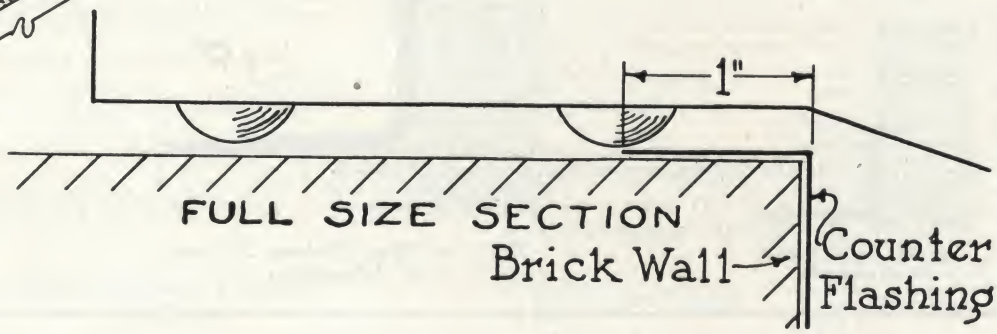
All metal cap flashings shall be secured by means of "Ever-Tite" Flashing Locks, as made by R. F. KNOX COMPANY, Atlanta, Ga. The said flashing locks shall be (specify copper or galvanized iron of gauge as described) and they shall be delivered to the brick mason who will build them in. The upper edge of cap flashings shall be inserted in the brick joint under the flashing lock and the projecting edge of the lock shall be turned down over the cap flashing.



Method of Installing "Ever-Tite" Flashing Lock in Parapet Wall

Samples Furnished

We will be glad to furnish samples of the "Ever-Tite" Flashing Lock as well as any additional information which may be desired.



ESTABLISHED 1860

HETZEL ROOFING PRODUCTS CO.

CABLE ADDRESS "HETZEL, NEWARK"

Manufacturers of Roofing Cements and Paints

67 Maine Street, NEWARK, N. J.

Products

HETZEL'S ELASTIC ROOF CEMENT for all roofs, glass skylights, coping stones, etc.

HETZEL'S INSULATION CEMENT.

HETZEL'S PLASTIC ROOF COMPOUND and FIBROUS KOTING.

HETZEL'S ELASTIC CALKING COMPOUND.

HETZEL'S PIPE JOINT COMPOUND.

HETZEL'S DAMP RESISTING PAINT for brick walls.

Also Hetzel's Asphalt Paints; Hetzel's "Rub-on" Roofing Paint; Hetzel's Enamel Paint for boiler fronts and steam pipes; Hetzel's Acidproof Paint for metal work, ammonia tanks and gas tanks; Hetzel's Structural Paint for exposed surfaces.

TRADE-MARK

Hetzel's Elastic Roof Cement

Hetzel's elastic roof cement, in use throughout the United States and Europe for many years, is especially valuable for covering and repairing all holes, cracked joints, breaks, or leaks in roofs of all kinds. Used also for pointing around chimneys, skylights, and dormer windows; for repairing coping stones, gutters, wood and stone work which require to be made watertight; for laying and bedding slate and tile roofs.

Asphalt shingles laid in Hetzel's cement will not curl, nor can snow or rain blow under them.

Colors: brown, gray, black, white, green and red. It is also made to order to suit every purpose, and is the only slaters', tinners' and tile roofers' cement.

Hetzel's elastic roof cement is equally well adapted for use on slate, tin, asbestos, glass, wood and metal roofs; is permanent; does not run or loosen from joints or cracks, and is not affected by any extreme of temperature or climatic changes. It does not harden, but preserves its complete elasticity even when exposed to extreme heat, cold, dryness or humidity.

Hetzel's Insulation Cement

For applying soundproofing and insulating materials to ceilings, floors, walls, oil and gas tanks, etc.

Ready for use—requiring no thinning or heating, nailing or shoring. Even alignment assured as material can be built down to proper level with Hetzel's Cement.

Hetzel's Plastic Roof Compound and Fibrous Koting (Liquid)

Specially prepared compounds for repairing and painting old wood, tin, iron or felt roofing; for repairing leaky chimneys; for waterproofing walls below and above grade, etc.

Hetzel's Elastic Calking Compound

For pointing window frames, hothouses, steel sashes, crevices, cracks in masonry, etc. Remains elastic indefinitely. Will not crack or dry up. Far superior to lead or oakum. Does not contain asphalt or coal tar. Can be painted over with any color. Also made in special consistency for use in guns.

Colors: white, gray, green, black and red.

Pipe Joint Compound (Red, Gray and White)

For joints of gas, steam, water, and air pipes. Will not harden, and prevents joints from rusting. Makes absolutely tight joints which can be disconnected at any time without injury to fittings.

Hetzel's Damp Resisting Paint

A compound black paint for dampproofing foundations and walls above and below grade. When applied to inner side of exterior walls, forms a good dampproof surface for direct application of plaster, rendering plaster stainproof, and saving cost of furring and lathing.

Specifications Hetzel's Elastic Roof Cement

All nailholes and joints between the slates shall be sealed with Hetzel's Elastic Roof Cement as manufactured by the HETZEL ROOFING PRODUCTS CO., Newark, N. J., in such quantities as to hold the slates in position should they break, or the nails rust away. (Fig. 1.)

The joints of all tiles shall be sealed with Hetzel's Elastic Roof Cement as manufactured by the HETZEL ROOFING PRODUCTS CO., Newark, N. J. To prevent leaking, the hip and ridge rolls shall be sealed in a like manner. (Fig. 2.)

All cap flashings shall be carefully pointed up with Hetzel's Elastic Roof Cement as manufactured by the HETZEL ROOFING PRODUCTS CO., Newark, N. J. (Fig. 3.)

The joints of all copings shall be set and sealed with Hetzel's Elastic Roof Cement as manufactured by the HETZEL ROOFING PRODUCTS CO., Newark, N. J. (Fig. 4.)

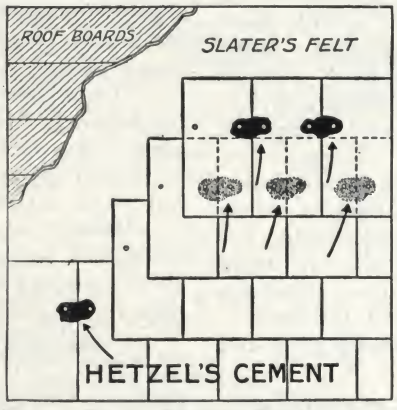


Fig. 1. For Slate Roofs

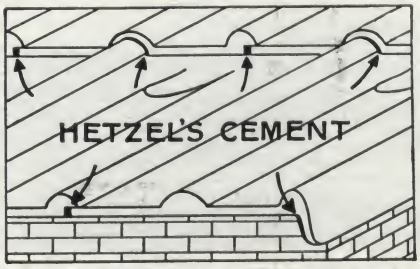


Fig. 2. For Spanish and Flat Tile Roofs

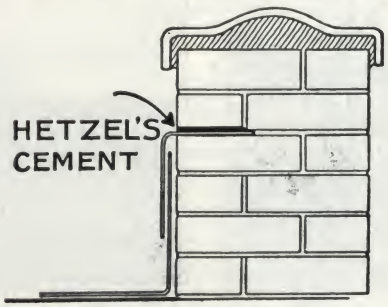


Fig. 3. For Pointing Up Cap Flashings

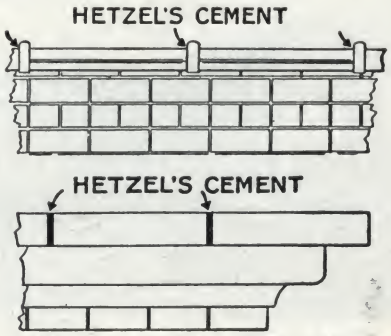


Fig. 4. For Tile and Stone Copings

Applications of Hetzel's Elastic Roof Cement

WILLIAM L. BARRELL CO. OF N. Y., INC.

Cotton Duck—Converted Fabrics

40 Worth Street, NEW YORK, N. Y.

BRANCHES

BOSTON, MASS., 52 Chauncy Street
CHICAGO, ILL., 323 South Franklin Street
KANSAS CITY, MO., 219 West 8th Street
LOS ANGELES, CALIF., 819 Santee Street
SAN FRANCISCO, CALIF., 225 Bush Street

Product

CON-SER-TEX, a canvas covering for roofs and floors.

CON-SER-TEX CANVAS ROOFING TRADE-MARK

Con-Ser-Tex Canvas Roofing and Floor Covering

Con-Ser-Tex is a specially woven cotton fabric, scientifically treated by a chemical process making it waterproof and, in addition, preserving the fibre from the ravages of dry rot, mildew germs and the elements. No oil or paraffin is used in our chemical process. The effectiveness of the process is proved by the great endurance of the similarly bitumen soaked mummy cloths of the ancient Egyptians. The canvas is so impregnated that paint will not come in direct contact with the cotton fibre, thus preventing the detrimental oxidizing action of the oils in paint.

Both sides of the canvas are finished with a "tooth" to which paint readily adheres.

Cotton duck, while desirable for many reasons as a roofing and floor covering, has not been entirely satisfactory because the cloth split, buckled and rotted in a short time. Investigation revealed this condition as being due to mildew, occasioned by the exposure of the duck to the elements owing to the checking of the paint —also the burning of the cotton fibre by the oils in paint.

An Ideal Covering for Roofs and Floors

Con-Ser-Tex being a specially woven, chemically treated, tough cotton duck meets the exacting requirements of an ideal covering for roofs and floors of porches, sleeping balconies, of residences, schools, hospitals, sanitariums, etc.; for floors of kitchens, laundries, garages; also used for the lining of wood gutters, valleys and hips, and flashings. Recommended for roof gardens or where the roof is often used as a recreation and dancing floor.

Con-Ser-Tex is so woven that there is absolutely no tendency to curl, as is the case with ordinary cotton fabrics. It lies flat permanently, will never split, not even under severe vibration or strain. It is comfortable under foot and may be turned up to form a sanitary, vermin- and water-proof base, integral with the floor.

Con-Ser-Tex is soundproof, non-heat-radiating and is a non-conductor of heat and cold.

Durability Proved Through Service

Con-Ser-Tex is more durable than ordinary wood shingles or tin, and nearly as durable as copper. The durability of Con-Ser-Tex has been proved by the many years of service it has rendered to the largest transportation companies, which have used it exclusively for passenger car roofing.

Con-Ser-Tex has found wide use in every climate and for every class of service with complete satisfaction.

A Lower Grade of Lumber May Be Used

In the construction of exterior and semi-exterior wood floors* it has been customary to use clear pine owing to its durable nature. Con-Ser-Tex will permit the use of a lower grade of lumber, as it protects the lumber from the action of the elements, and a surface so covered will have greater life than would an unprotected clear pine surface.

Easily and Quickly Laid—Conserves Labor

Con-Ser-Tex is easily and quickly laid, consequently it effects great savings in time and labor. *See methods of laying and flashing on plate of details opposite.*

How to Lay Con-Ser-Tex

Dress the surface by eliminating rough places and sharp edges, after which apply a heavy coating of white lead thinned in linseed oil as a bedding (see Note). Over this bedding (while still wet) lay the Con-Ser-Tex, slightly stretching it so as to insure a close adhesion to the surface, taking care to arrange laps so as to permit free drainage.

If Con-Ser-Tex is to be laid in parallel courses with the building, the strips start from the outer or lower edge of the surface to be covered. Con-Ser-Tex should be turned up or flashed 4 to 6 in. at walls to insure a watertight result.

While Con-Ser-Tex is stretched, fasten with galvanized or copper tacks 4 in. apart on edge to be lapped, and then apply the next strip, allowing a lap of not less than 1½ in., fasten with tacks ¾ in. apart.

*All wood surfaces to be covered with Con-Ser-Tex must be tongued and grooved stock. Shiplapped stock should not be used under any condition.

Centenary M. E. Church, South, Chattanooga, Tenn.
Con-Ser-Tex is giving satisfactory service on the large roof garden floor

Club House, Empire City Race Track, Mt. Vernon, N. Y.
Con-Ser-Tex is giving service on the porch floor and roof

Continued on next page

After Con-Ser-Tex is laid and set, apply a light coat of good quality lead and oil paint, and a heavy second coat of best grade Deck paint after the first is thoroughly dry.

Note: If desired, we can furnish a special bedding paint which has greater adhesive qualities than ordinary white lead and oil.

Grades of Con-Ser-Tex

Grade E—A light weight grade, suitable for roofing small porches and for floors where traffic is light.

Grade G—A medium weight grade, suitable for larger porch floors and roofs on residences and public buildings.

Grade I—The heaviest grade, used principally for public buildings and all places where severe conditions exist.

Reasonable in Cost

The first cost of Con-Ser-Tex is reasonable and its upkeep practically nil, requiring painting only as often as the rest of the building.

LIST PRICE OF CON-SER-TEX PER LINEAL YARD

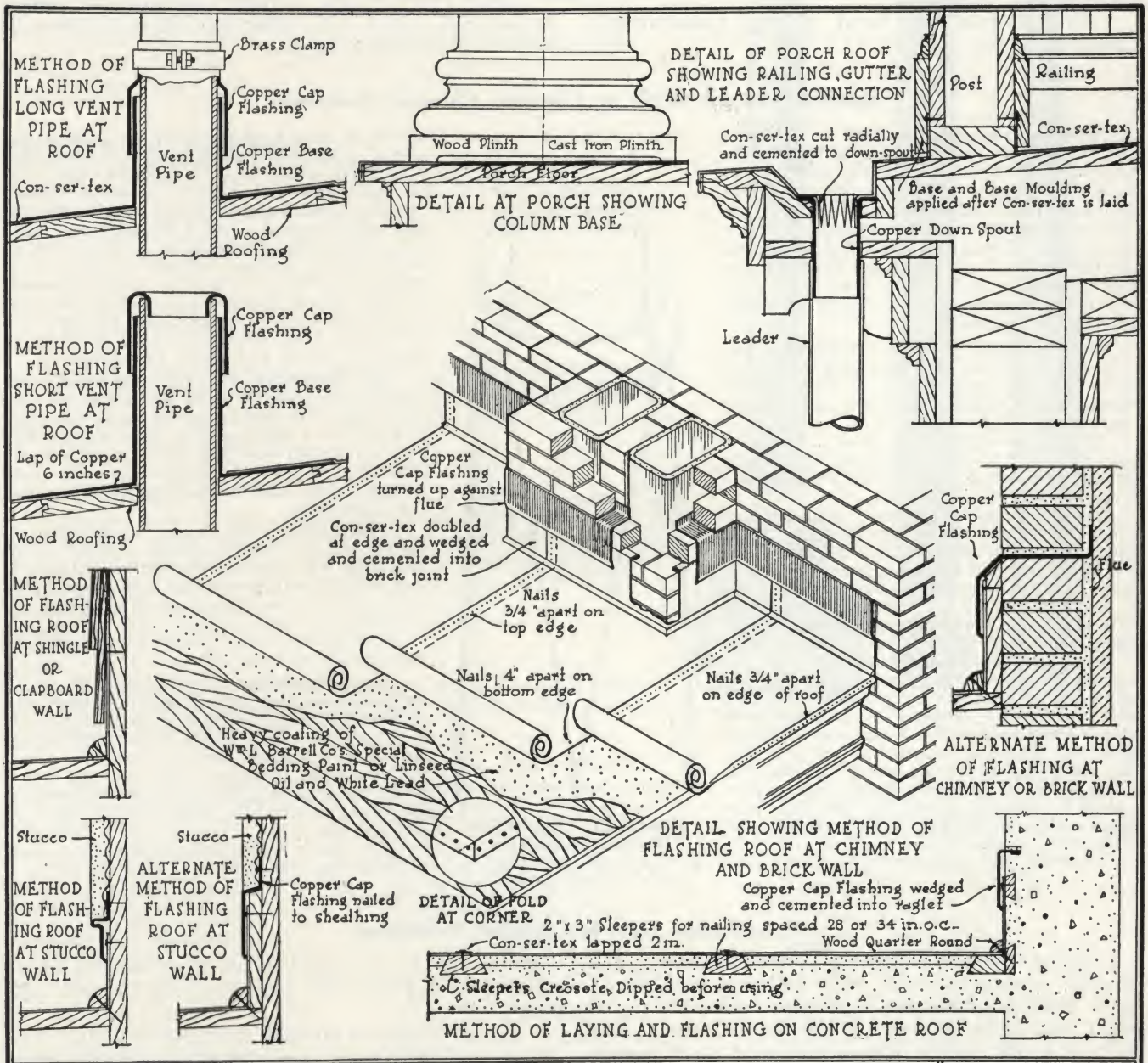
Width, in.	Grade E	Grade G	Grade I
30	$1.17	$1.38	$1.47
36	1.39	1.60	1.78

Discounts furnished on request. The above widths carried in stock. Other widths processed to order.

Consult Us Regarding Economical Laying

On receipt of dimensions of the surface to be covered, we will submit an estimate of cost, also a diagram showing the most economical method of laying Con-Ser-Tex, eliminating to the greatest possible extent all waste in cutting.

There is no charge for this service.



WM. L. BARRELL CO. OF NEW YORK, INC.

DETAILS SHOWING METHOD OF LAYING AND FLASHING CON-SER-TEX ROOFING CANVAS

DRAWING NO. 1
SCALE 3/4 & 1 1/2 IN. EQUALS 1 FT.

THE CARL BAJOHR LIGHTNING CONDUCTOR COMPANY

Manufacturers and Erectors of Lightning Conductors

4055 Keokuk Street
ST. LOUIS, MO.

Product

LIGHTNING CONDUCTORS for chimneys, churches, institutions, structural steel buildings, etc.

Experience

Over forty years' experience in protecting hundreds of power plant chimneys, churches, institutions and other buildings of every description.

Underwriters' Approval

All materials are listed by the Underwriters' Laboratories, Inc.

Important Feature

Be sure to specify *lead* covering to insure permanent protection for powerhouse chimneys.
(Note specifications.)

Installations

Complete list of notable installations on request.

Catalogue

Send for our new 16-page catalogue—"Chimney Protection"—which fully illustrates all our materials, manner of installations, etc.

Specifications for Brick or Concrete Chimney Protection

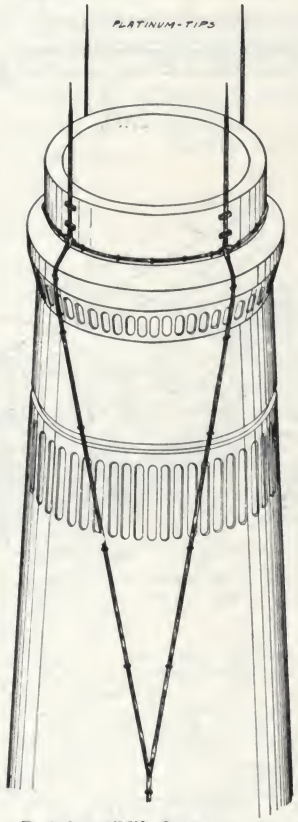
General—The chimney shall be provided with a complete Lightning Conductor System, consisting of: One circuit cable placed about 18 in. below top of chimney. If chimney is more than 160 ft. in height, same shall be provided with another circuit midway between top and bottom. Two ground terminals placed on opposite sides of the chimney. Four air terminals, equally spaced. If chimney is more than 11 ft. in diameter, same shall be provided with six air terminals.

Downrod and Ground Terminals—The conductor to consist of a pure copper cable ½ in. in diameter, composed of 28 wires twisted together into 7 strands of a solid cable, having a capacity of 137,200 circular mils.

The circuit cable shall form a complete ring, placed about 18 in. below top of chimney and securely spliced together with a bronze sleeve connection.

The upper end of downrod cable shall be firmly sweated and riveted into the bronze cable connection. This connection shall consist of two parts: one part as above described is connected to the downrod cable, the other half shall be connected to the air terminal. These two parts are firmly bolted together with non-corrosive monel metal bolts. The connection shall be so designed that the circuit cable will run through the center, making a compact electrical connection between the circuit cable, downrod cable and the air terminal. A short piece of cable is also provided with a cable connection on upper end where it connects to air terminal. This cable shall be carried into a "Y" shape to a distance of 15 ft. below circuit cable where it shall be securely spliced into the main conductor cable, thus omitting all sharp bends from air terminal to the ground.

To protect the conductor cable from damage, same shall be incased in a brass or copper pipe 8 ft. long, extending about 7 ft. above and 1 ft. below grade level. Conductor cable shall be well soldered to pipe for electrical contact.



Bajohr "Y" System of Chimney Protection
All sharp bends from air terminals to ground are omitted

The ground plate is made of No. 20 B&S gage sheet copper. This plate shall have four wings, each wing being 18 in. long and 3½ in. wide, making the total surface of ground area 252 sq. in. The plate shall be securely attached to end of conductor cable and shall be placed 15 ft. into the earth, 5 ft. off from the wall in a trench and 10 ft. down, unless the character of materials makes such steps impractical.

Air Terminals—The point rods shall consist of solid copper bars ⅝ in. in diameter and 4 ft. long. The upper ends of these bars shall be drawn to a point and 1½ in. of the tip shall be covered with pure platinum. The lower end shall be provided with the above described connection, which shall be connected to the downrod connection.

Fasteners—Bronze anchor or support fasteners shall be inserted during masonry progress every 5 ft. apart on the vertical conductors, and every 2 ft. apart bronze lead covered fasteners shall be inserted about 18 in. below top of chimney for the circuit cable.

Two bronze lead covered fasteners shall be inserted for each air terminal.

Lead Protection—The upper 25 ft. of the lightning conductor, including all fasteners, connections, air terminals and cables shall be covered with pure lead $\frac{1}{16}$ in. thick. This makes the system absolutely acid-proof and gas-proof and free from corrosion. The platinum tip on points shall not be lead covered, the lead sheathing being electrically connected to base of platinum tip.

The entire work shall be done in a neat, workmanlike manner.

Specification Data for Building Protection

Bajohr standard lightning conductor system for churches, institutions and other buildings consists of $\frac{7}{16}$-in. diameter cable for structures under 60 ft. in height and $\frac{15}{32}$-in. diameter cable for structures over 60 ft. in height. This cable is composed of 28 copper wires twisted together into 7 strands to a solid cable.

The air terminals consist of heavy bronze tubing with $\frac{1}{16}$-in. walls. A copper plug is firmly riveted at upper end to which point is screwed. The point is cast from the best bronze metal, 14 in. long, bayonet shape, tapering to a point with 1½ in. of tip covered with pure platinum.

The conductor is fastened to structure with bronze anchor fasteners which are inserted into brick joints and firmly calked with lead. On the roof bronze screw fasteners are used.

Note: Structural steel buildings require a different type of protection system. Full information sent upon request.

ESTABLISHED 1873 INCORPORATED 1911

BOSTON LIGHTNING ROD COMPANY

755 Boylston Street, BOSTON, MASS.
TELEPHONE, KENMORE 4034

NEW YORK OFFICE
Grand Central Terminal Building
Telephone, Vanderbilt 8824

PHILADELPHIA OFFICE
1211 Chestnut Street
Telephone, Rittenhouse 8329

WASHINGTON, D. C., OFFICE
3602 Ordway Street, N. W.
Telephone, Cleveland 3227

Product

Manufacturers and contractors for installation of APPROVED LIGHTNING CONDUCTORS on all classes of structures.

Description

The principle upon which the lightning conductor is based is universally accepted by engineers as being strictly scientific. Boston Conductors are made of pure copper, in two types as illustrated: (1) solid, 3/8-in. diameter and (2) of 7-strand, 3/8-in. diameter cable. Both types are of ample weight, surface and conductivity to afford complete protection under all conditions. They are exceptionally durable.

The cable conductor conforms to the U. S. Bureau of Yards and Docks Specifications. Both types are listed by the Underwriters' Laboratories, Inc.

Connections and Installations

On the solid rod, threaded joints are employed throughout. All points are of copper, plated with either nickel or platinum. Conductors are attached with copper clips; they are fastened to wood with screws and to existing metal work with solder. Metal finials, ridges, skylights, gutters, leaders, etc., are connected to the conductors. All ground leads terminate with heavy copper plates, sunk to an electrically tested level and embedded in charcoal; approved grounding rods; water service pipe or running water.

Every installation made by the BOSTON LIGHTNING ROD COMPANY is applied by thoroughly trained mechanics. Each finished job is as inconspicuous as is consistent with complete dependability and is fully guaranteed.

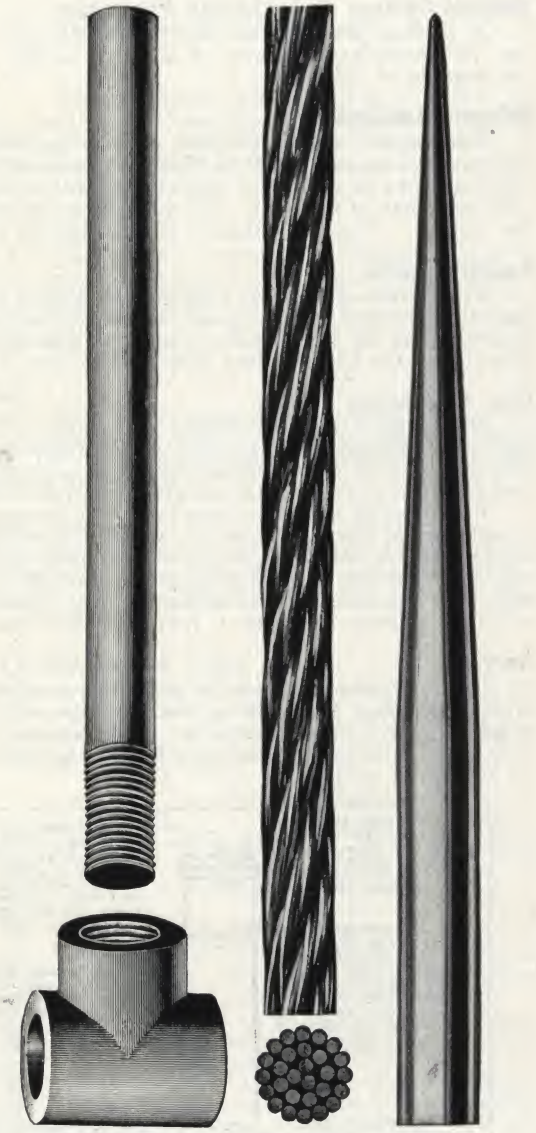
Recent Developments

We now manufacture and install a concealed equipment, which type of equipment is erected prior to the roof covering.

In modern skyscrapers we utilize the steel frame for grounding. This method of installation makes absolute protection available at a remarkably low cost.

Service

Upon receipt of complete information we will submit plans and estimates. We are equipped to make installations in any part of the United States.



Solid Copper Conductor | Copper Cable | Point for Copper

References

Architects and Contractors

John Russell Pope, New York, N. Y.
Dwight James Baum, New York, N. Y.
McKim, Mead & White, New York, N. Y.
Whitney Company, New York, N. Y.
Geo. A. Fuller Co., New York, N. Y.
Consolidated Engineering Co., Baltimore, Md.
Cross & Cross, New York, N. Y.
Carrere & Hastings, New York, N. Y.
Delano & Aldrich, New York, N. Y.
Jos. H. Freedlander, New York, N. Y.
Marc Eidlitz & Son, Inc., New York, N. Y.
A. L. Harris, Washington, D. C.
Walter Mellor, Philadelphia, Pa.
Andrews, Jacques & Rantoul, Boston, Mass.
Derby, Robinson & Shepard, Boston, Mass.
J. Williams Beal Sons, Boston, Mass.
Norcross Brothers Co., Worcester, Mass.
Bigelow & Wadsworth, Boston, Mass.
Arthur F. Gray, M. E., Boston, Mass.
Charles K. Cummings, Boston, Mass.
Hewitt & Brown, Minneapolis, Minn.
Roberts & Hoare, Manchester, Mass.
Geo. Hunt Ingraham, Boston, Mass.
Casper Ranger Co., Holyoke, Mass.
French & Hubbard, Boston, Mass.

Architects and Contractors (Continued)

F. Joseph Untersee, Boston, Mass.
Maginnis & Walsh, Boston, Mass.
Cram & Ferguson, Boston, Mass.
Matthew Sullivan, Boston, Mass.
Charles E. Patch, Boston, Mass.
Fox & Gale, Boston, Mass.
Ira G. Hersey, Boston, Mass.
J. T. Wilson, Nahant, Mass.
J. Henry Miller, Baltimore, Md.
Irwin & Leighton, Philadelphia, Pa.

Private Owners

Geo. L. Ohrstrom, Greenwich, Conn.
J. DuPratt White, Nyack, N. Y.
G. W. Perkins, Riverdale, N. Y.
Henry P. Erwin, Washington, D. C.
Paul B. Belin, Scranton, Pa.
Harvard University, Cambridge, Mass.
R. F. Haffenreffer, Fall River, Mass.
Hynicka Bros., Lebanon, Pa.
Rt. Rev. Mgr. James E. Cassidy, Fall River, Mass.
Fordham University, New York, N. Y.
Herbert Dumaresque, Center Harbor, N. H.
James E. Whitin, North Uxbridge, Mass.
R. Livingston Beeckman, Newport, R. I.

Private Owners (Continued)

Geoffrey G. Whitney, Woods Hole, Mass.
Mrs. G. R. Dodge, Madison, N. J.
Charles A. Kidder, Southboro, Mass.
John M. Woolsey, New York, N. Y.
Samuel E. Winslow, Worcester, Mass.
Henry L. Higginson, Boston, Mass.
Franklin MacVeagh, Dublin, N. H.
Prof. A. V. Phelps, Westerly, R. I.
R. T. Crane, Jr., Chicago, Ill.
Russell Robb, Boston, Mass.
Edmund Hayes, Buffalo, N. Y.
Perry Memorial, Put in Bay, Ohio
Edmund S. Burke, Jr., Chagrin Falls, Ohio
All Souls Church, Washington, D. C.
Emmanuel Baptist Church, Washington, D. C.
Yale University, New Haven, Conn.
Charles M. Schwab, New York, N. Y.
Langwater Farms, North Easton, Mass.
Eugene Endicott, Norwood, Mass.
Russell Grinnell, Providence, R. I.
R. H. Agassiz, Hamilton, Mass.
Burton K. White, Brewster, N. Y.
F. H. Metcalf, Holyoke, Mass.
Albert Clayburgh, Mt. Kisco, N. Y.
F. A. Kennedy, Windsor, Vt.
Independence Hall, Philadelphia, Pa.

ESTABLISHED 1870 INCORPORATED 1911

THE BURKETT LIGHTNING ROD COMPANY

Manufacturers and Installers of Modern, Scientific, All-copper, Invisible Lightning Protection

MAIN OFFICE AND FACTORY
FREMONT, OHIO

Burkett System of Lightning Protection

A modern, scientific, all-copper, invisible system for protecting structures of all kinds against the hazards of lightning.

Where Installed

The Burkett System provides adequate protection against lightning to churches, public buildings, schools, clubhouses, office buildings, etc., as well as to smokestacks, chimneys and industrial structures of all kinds. We specialize in the protection of fine homes.

Endorsements

The Burkett System of Lightning Protection conforms to the requirements of the National Bureau of Standards, Washington, D. C.; the National Fire Protection Association, Boston, Mass.; and the Underwriters' Laboratories, Inc., Chicago, Ill.

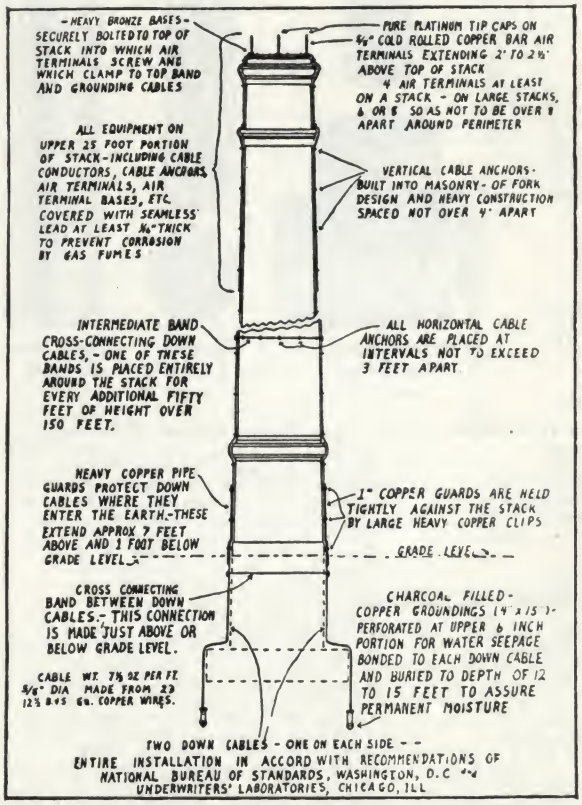
Our Guarantee

High grade materials are used throughout and installed by our own workmen who are thoroughly competent to make proper application of the Burkett equipment to any type of structure in a neat, permanent manner, anywhere in the United States.

Each Burkett installation carries with it our guarantee that it will provide adequate protection against loss by lightning for fifteen years. In case of default, we will refund the purchase price, with legal interest. This broad guarantee provides 100% assurance of protection. In over half a century, *we have not been called on to make a refund*—a record which speaks for itself.

Service

Write, telephone or *wire* for estimates, or advise us of the type of structure you wish to protect. We will immediately supply you with specifications for your particular job which will secure maximum protection and insure proper installation by competent workmen.



Typical Installation of Burkett Smokestack Lightning Protection

Lead covered equipment furnished for all types of stacks and chimneys

References

Thousands of buildings of various types all over the United States are equipped with the Burkett System. We list a few of the more recent installations below.

Public Buildings

Indiana World War Memorial and Obelisk, Indianapolis, Ind.
Walker & Weeks, Architects
Washington Monument, Baltimore, Md.
Bay View Hospital, Baltimore, Md.
Governor's Mansion, Baltimore, Md.
Farmer's-Mechanic's National Bank, Washington, D. C.
Beaumont Memorial Tower, Michigan Agricultural College, Lansing, Mich.
Donaldson & Meier, Architects
Ohio Sesqui-Centennial Building, State Fair Grounds, Columbus, Ohio
U. S. Powder Magazines, Proving Grounds, Camp Perry, Ohio
Municipal Filtration and Water Softening Plant, Fremont, Ohio

Churches

Grace Evangelical Lutheran Church, Fremont, Ohio
Cram & Ferguson, Architects
Holy Rosary Church, Pittsburgh, Pa.
Epiphany Church, Washington, D. C.
The Cathedral, Baltimore, Md.
St. Stephen's Catholic Church, Cleveland, Ohio
Plymouth Church—Shaker Heights, Cleveland, Ohio
Swazey Chapel, Dennison University, Granville, Ohio
St. Peter's Protestant Episcopal Church, Albany, N. Y.

Schools

Georgetown University, Washington, D. C.
The Notre Dame, Baltimore, Md.
McCoy Hall, Johns Hopkins University, Baltimore, Md.
St. Mary's Industrial School, Baltimore, Md.
Wm. S. Pierson School, Flint, Mich.
Malcomson & Higginbotham, Architects
J. R. Lowell Junior High School, Flint, Mich.
Wm. McKinley School and Power House Building, Flint, Mich.
Washington Junior High School, Pontiac, Mich.
University High and Elementary School, Ann Arbor, Mich.
Lochmoor School, Detroit, Mich.
Geo. J. Haas, Architect

Homes

MICHIGAN

L. D. Buhl, Country Estate, Detroit
James E. Vernor, Jr., Detroit
E. C. Hirschfield, White Lake
A. H. Buhl, Arbu Farms, Detroit
R. R. Motschall, Detroit
C. H. Hodges, Mt. Vernon

OHIO

O. P. and M. J. Van Schweringen, Shaker Heights, Cleveland
G. C. Kalbfleisch, Tiffin
W. C. Huber, Fostoria
Earle L. Johnson, Painesville
W. W. Farnsworth, Waterville
F. H. Anderson, Fremont
A. R. Christy, Fremont
Pratt E. Tracy, Toledo
Eugene Rheinfrank, Toledo
M. D. Ludwig, Painesville
B. I. Tuttle, Springfield
D. LaMar Christy, Fremont
Chas. Pratt, Old Brick Farm, Orweil

MISCELLANEOUS

Martin Lux, Washington, D. C.
J. C. Craft, Buffalo, N. Y.
D. S. Sommers, Indianapolis, Ind.
Prof. W. A. Henry, Sarasota, Fla.
Dr. H. L. Foss, Danville, Pa.
Dr. J. S. Rittenhouse, Lorane, Pa.

Cathedral of Our Lady Queen of the Most Holy Rosary, Toledo, Ohio

COMES, PERRY & MCMILLAN, Architects

The Burkett equipment furnished to protect this three million dollar structure included, approximately, one-half mile of copper cable conductors, connected to groundings at ten places distributed about the building. Eighty-five points were supplied and so placed that the entire system is practically invisible. The method of protection is similar to that specified for St. Paul's Cathedral in London, as well as the Vatican and the larger and more imposing edifice of St. Peter's in Rome

ELECTRA MANUFACTURING COMPANY

INCORPORATED

Manufacturers and Erectors of "Electra" Lightning Control

13 North Pearl Street
ALBANY, N. Y.

NEW YORK, N. Y., Grand Central Terminal—Telephone, Vanderbilt 5058 CHICAGO, ILL., 610 No. Oakley Boulevard—Telephone, Brunswick 1633

The "Electra" System of Complete Lightning Protection

Our equipment consists of pure copper conductors. These form a continuous circuit along all ridges, parapets, and other exposed points, to the various ground terminals. The copper air terminals are low and plain of design. Air terminals are placed on gables, chimneys, high projections, and along ridges. They are electrically connected to the main circuit. All extensive metal structural equipment is connected to the system and grounded. This insures maximum safety.

Invisible System for New Buildings

The equipment is entirely concealed within the structure, except for the air terminals. These are very inconspiciously located at all important points.

Where this system is desired the contract should be placed with us, when the plans for the structure are being drawn, rather than during the early stages of construction. We are then able to employ the best methods of concealment.

Outside Inconspicuous System for Existing Buildings

Through methods of our own we install a complete "Electra" protective system in a practically invisible form. Advantage is taken of the general architecture of the building, as well as avoiding all unnecessary and unsightly fittings.

"Electra" Equipment

Air Terminals—The copper air terminals have a patented clamp on one end. This reduces the electrical contact resistance to a negligible amount, at the same time providing a rigid mechanical connection.

Air terminals are 10 in. high for non-inflammable roofs, and 15 in. high for inflammable roofs, unless otherwise specified.

Conductor—The conductor is a ½-in. cable made of the purest copper. It is manufactured in continuous lengths to insure an uninterrupted electrical circuit.

Ground Terminals—The type of ground terminal varies, depending on the individual grounding conditions presented. Each ground is electrically tested. This operation insures the highest degree of protection.

Specifications (Abbreviated)

Lightning protection for this building is to be the "Electra" system, furnished by the ELECTRA MANUFACTURING COMPANY, Albany, New York, or its equal. Installation is to be made according to the Underwriters' code and the United States Bureau of Standards.

Installation

"Electra" equipment is installed by our trained men. All fastenings to masonry are secured by heavy expansion shields embedded in the brick or stone itself. Attachments to metal roofs are made by soldering.

Engineering Service

Our engineers have been very successful in co-operating with architects and owners. We gladly submit plans and estimates for approved lightning protection. Our technical force is always at your disposal.

Unusual Conditions of Color

All situations which require special attention are adequately managed. For example: air terminals and conductors can be colored to match the roof, or any part of the structure, by so doing the equipment is not noticeable.

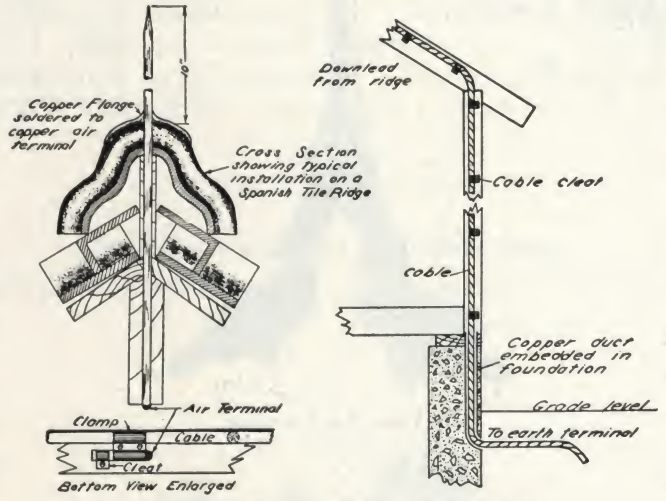


Diagram of "Electra" Concealed Method

Prompt Estimates

When located at considerable distance time will be saved if the following information is sent with the first inquiry:

(1) Plans showing side elevations of the building.

(2) A complete roof plan showing all ridges, ventilators, chimneys and vents.

(3) Location of all structural steel and extensive metal equipment.

(4) Location of supply water pipe in or near building.

(5) Nature of soil and depth of rock ledges if possible.

References

"Electra" equipment is protecting powder magazines, government buildings, State hospitals, churches, institutions, and private buildings.

A Few "Electra" Installations

United States Government, Savanna, Ill.
78 Powder and Ammunition Magazines
Illinois Bell Telephone Co., Warrenville, Ill.
E. F. Swift, of Swift & Co., Chicago, Ill.
American Can Co., Maywood, Ill.
Chicago & North Western R. R. Co., Chicago, Ill.
M. S. Florsheim, Chicago, Ill.
Utica State Hospital, Farm Building, Utica, N. Y.
First Presbyterian Church, Glens Falls, N. Y.
Troy Orphanage, Troy, N. Y.
St. Vincent's Orphan Asylum, Troy, N. Y.
La Sallette Seminary, Altamont, N. Y.
Hudson River State Hospital, Poughkeepsie, N. Y.
Harlem Valley State Hospital, Wingdale, N. Y.
Waldorf Stock Farms, North Chatham, N. Y.
Wapanachi Lodge, Mt. Tremer, N. Y.
Robert Goeler, Chester, N. Y.
Dr. E. G. Stillman, Cornwall-on-Hudson, N. Y.
Ann Lee Home, Albany, N. Y.
Frances C. Huyck, Albany, N. Y.
Voorhees Bros., Amsterdam, N. Y.
Howard M. Gillette, New Lebanon, N. Y.
Isaac Wheaton, Amenia, N. Y.
Charles Danforth, Ridge Avenue, Norwalk, Conn.
Christian Brothers Novitiate, West Park, N. Y.
Oliver Gould Jennings, Fairfield, Conn.

HAWKEYE LIGHTNING ROD COMPANY

Manufacturers of Lightning Protection Devices

MAIN OFFICE
CEDAR RAPIDS, IOWA
EASTERN OFFICE, 409 Bond Street, MANCHESTER, N. H.

Products

LIGHTNING PROTECTION DEVICES.

Complete Equipment for the protection of churches, schools, country clubs, estates, summer homes, smokestacks and other isolated objects, subject to damage from lightning. Conductor, air terminals, fasteners and connectors made of copper, making an installation that is rustproof and that assures permanency.

Experience

Thirty years' experience fits us to furnish the best in materials and workmanship.

Installations

Conductors concealed wherever possible and installed by our Engineers in a workmanlike manner, which meets the "Safety Code for the Protection of Life and Property Against Lightning," by Bureau of Standards.

Inspection and Labeling

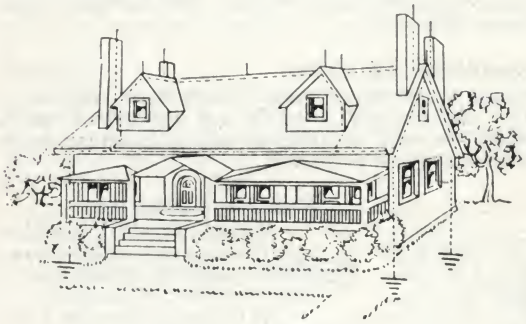
All the items that go to make up the Hawkeye System are inspected and labeled in our plant by the Underwriters' Laboratories, Inc. This also entitles the owner to inspection service and is further protection of a first class installation.

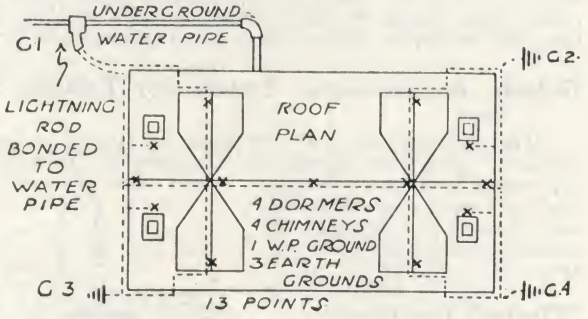
Estimates

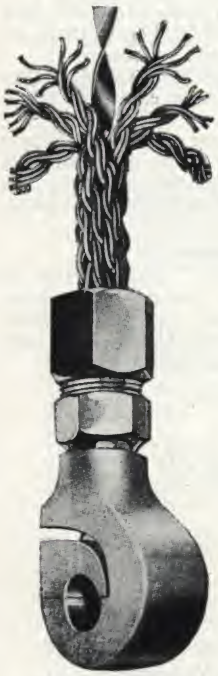
Furnished from plans or inspection of property. Our sales organization and engineers are prepared to render prompt and efficient service.

Literature

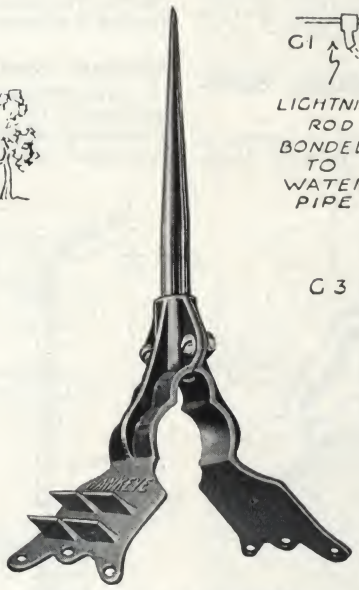
Write for A.I.A. File No. 35N61 for complete description of Hawkeye Products.



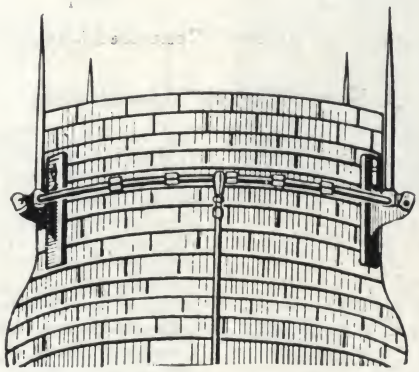




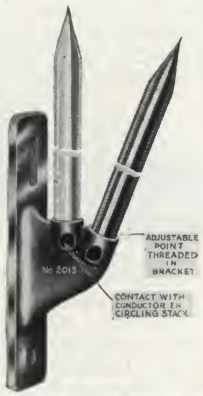
Conductor and Connector



De Luxe Air Terminal



Smokestack Installation



Air Terminal for Smokestacks

ESTABLISHED 1862

HAROLD K. JONES COMPANY

Lightning Conductor Systems and Art Metal Work

TELEPHONE
JOHN 1668

153 Maiden Lane
NEW YORK, N. Y.

Products

Registered manufacturers and installers of approved LIGHTNING CONDUCTOR SYSTEMS.

WEATHER VANES, SILHOUETTE VANES, ART METAL WORK and GATE POST SIGNS.

Lightning Protection

Modern lightning protective systems are recognized as a necessary safeguard for exposed buildings of the country estate, tall and isolated structures, valuable trees, etc., and are endorsed by insurance authorities when properly installed.

Installation Methods—

Copper cable is the best form of conductor, with solid copper air terminals, cast bronze fittings and fasteners. Conductors are applied to tile and slate roofs by specially fitted copper clamp fasteners, avoiding the use of nails and screws. Exterior metal work is bonded and made a part of the conductor system. Grounds are made in a permanent manner by the copper plate-charcoal method, supplemented by driven copper ground rods at the proper distance from building and sufficient depth to insure good electrical contact with large capacity.

Conductors are carefully harmonized with roof surfaces, making concealment practically complete without impairing efficiency, this being a special feature of our work.

Approved Material—

All material and installation methods subject to inspection service of the Underwriters' Laboratories, Inc.

References—

Our clientele includes prominent architects, builders and owners, for local reference.

Inspections and Estimates—

We will gladly co-operate with architects and builders in offering suggestions for lightning protection. Estimates furnished from plans or by inspection of property. Inspections and reports on old installations.

Installations Made Anywhere in the United States—

We are prepared to render our clients efficient service anywhere in the United States.

Weather Vanes and Art Metal Work

Manufacturers of a complete line of artistic weather vanes in various designs.

Ornamental metal work. Special designs executed from sketches.

Artistic Designs of Silhouette Weather Vanes Are Most Pleasing and Furnish the Finishing Touches for the Buildings of Country Estates

Construction: Bronze, copper, brass with weather-proof bronze ball bearings

CARPENTRY

Airolite Co.—
Transom Ventilators B2324–2325
Ventilating Windows B2294–2295
American Transom Co., Inc. B2326
American Wood Column Co. B2356–2359
Andersen Frame Corp. B2273–2292
Arkansas Soft Pine Bureau B2258–2259
Bessler Disappearing Stairway Co. B2346–2347
Carnahan Mfg. Co. B2298–2299
Carr, Ryder & Adams Co. B2300–2301
Compound and Pyrono Door Co. B2302–2303
Crooks, W. D., & Sons B2304–2305
Curtin-Howe Corp. B2266
Curtis Cos. Service Bureau B2306–2307
Ellison Bronze Co., Inc. B2327
Exchange Sawmills Sales Co. B2261
Farley & Loetscher Mfg. Co. B2348
Flexwood Co. B2267
Frazier Stair Co., Inc. B2349
Harbor Plywood Corp. B2268–2269
Hardwood Products Corp. B2308–2309
Hartmann-Sanders Co. B2360–2363
Hodgson, E. F., Co. B2272
Housing Co. B2270
Hyde-Murphy Co. B2310–2311
Indiana Quartered Oak Co. B2262
Jackson, Edwin, Inc. B2352
Jackson, Wm. H., Co. B2353
Jacobson Mantel & Ornament Co., Inc. B2354
Klise Mfg. Co. B2351
Marschke Co. B2350
Paine Lumber Co., Ltd. B2317
Penrod, Jurden & Clark Co. B2271
Port Orford Cedar Products Co. B2264–2265
Receivador Sales Co. B2344–2345
Roddis Lumber and Veneer Co. B2312–2316
Ross, Warren, Lumber Co. B2263
Schwerd, A. F., Mfg. Co. B2364–2369
Servidor Co. B2343
Stevens, F. W., & Son, Inc. B2296–2297
TrimPak Corp. B2293
Triumph Column Co., Inc. B2370–2371
Union Metal Mfg. Co. B2372–2373
Van Zile Ventilating Corp. B2328–2330
Ventilouvre Co. B2331–2342
Vibrex Co. B2355
Western Pine Mfrs. Assn. B2260
Wheeler, Osgood Co. B2318–2321
Williamsport Planing Mill Co. B2322–2323

ARKANSAS SOFT PINE BUREAU

LITTLE ROCK, ARK.

Products

ARKANSAS SOFT PINE INTERIOR FINISH, stock and special patterns; QUARTERSAWN (EDGE GRAIN) FLOORING; MOULDINGS; SOFT, NON-SPLITTING PLASTER LATH; COMMON LUMBER.

Sold by

Local lumber dealers and planing mills east of the Rockies.

Individual Advantages

Arkansas Soft Pine is the highest quality short leaf southern pine, known botanically as *pinus echinata.*

Due to its workable character and also because of certain definitely individual qualities—freedom from excessive pitch, light weight, soft lustrous texture and fine grain—the wood has received a marked preference, especially for interior finishing and woodwork.

It more closely resembles the northern white pine than any of the southern pines. Because of its tough fibered, non-resinous make-up, it yields readily to edged tools and does not "gum" saws, knives or chisels.

General Uses

Arkansas Soft Pine in the common grades supplies an all-around framing material for residences, stores, apartments, churches and buildings of like character.

Specific Uses

Satinlike Interior Trim—It is from the thick, clear, sap wood with its fine lustrous texture and virtual absence of resinous oils that the highest grade of interior trim is manufactured; and it is because of the large percentage of this clear material, peculiar to South Central Arkansas timber, that Arkansas Soft Pine attains its maximum of value, merit and beauty when employed as interior trim.

Flooring—Arkansas Soft Pine flooring is manufactured in approximately ten grades. Edge grain is the most satisfactory and admits of no pieces in which the angle of the grain exceeds 45° from vertical to any point.

The preferred pattern measures $\frac{25}{32}$ in. by 2⅜-in. face and usually runs 8 to 20 ft. in length, the greatest percentage being 10 to 16 ft. In the finished floor these long lengths entail comparatively few end joints and Arkansas Soft Pine Floor is therefore better looking, firmer and less costly to lay.

The finished floor will take any desired treatment in stain, varnish, gloss or wax, and produces a hard wearing floor of attractive appearance.

Knotty Panelling—Manufactured from Arkansas Soft Pine No. 1 Common, S4S selected for sound knots, freedom from split, worm holes, wind shake or torn grain; re-kiln dried to moisture content of B & Better finish. Sizes $\frac{25}{32}$-in. thickness by 4 to 12 in. Panels are usually made up of one 12-in. width and two 8-in. widths with the 12-in. width in the center. Stiles and rails are B & Better finishing available in same thickness and widths. Mouldings per 8000 or 7000 Moulding Book (copies on request from the Bureau).

Clear Panelling—Same as Knotty Panelling, except specify all B & Better grade.

Note: All stock bears the Arkansas Soft Pine registered trademark and grademark.

Individual Treatment for Stains and Enamel Finishes

Contrary to the necessary preliminary shellacking or filling of certain pine, often required to neutralize resin or oily content, stains are applied *directly* to Arkansas Soft Pine, permitting the color to permeate the fiber of the wood evenly, resulting in a uniform color throughout the piece.

When white or tint enamels are used, a preliminary coat of very thin shellac is applied, followed by the initial coat of zinc or lead. These first applications are likewise evenly absorbed and the subsequent coats are thus built up upon the wood itself and not upon a crust of heavy shellac. This factor of proper absorption is definite assurance against ultimate checking of enameled surfaces.

Arkansas Soft Pine for Knotty Panelling

Continued on next page

Charm Obtained with Arkansas Soft Pine Interior Finish
This satinlike interior trim provides beautiful enamel work

Properly Balanced Absorption

Any prejudice which may have existed against soft woods for interior trim has been due in part to the tendency of some of them to over-absorb varnishes or enamels.

Arkansas Soft Pine is not of that corklike softness which literally drinks up oil and varnish. The tough fiber prevents that possibility; moreover, the finished surface will hold its luster permanently.

For Tints or White Enamel

Particular emphasis is laid on the merit of this wood as a basis for painted and enameled woodwork. The absence of resin or oil content insures against any possibility of staining the surface from underneath. The close fiber takes the tinted or white coat with a perfectly uniform absorption, nor is any trouble experienced with raised grain, as the fine uniform texture and freedom from hard streaks prevent such tendency.

Proper Sanding

A prime prerequisite is that flat faced finish shall be machine sanded. This method is preferable, for it insures a smooth polished surface on the natural wood and eliminates the liability of scuffing the sap growth as it is often done when worked on the bench by hand. The Arkansas Soft Pine manufacturers now sand their interior finish at the mills, including stock of standard length and that sold in package units.

Source of Supply

Arkansas Soft Pine attains its greatest degree of perfection in the south central section of the state for which it is named. Certain favorable geological, topographical and climatic elements contribute to this condition; as for example, soil properties, rainfall and drainage. The Arkansas Soft Pine Bureau is composed exclusively of manufacturers whose plants are located in this identical region.

Grademarked, Trademarked Lumber

The product of these mills is grademarked according to the recommendations of the Hoover Standardization Committee, and also bears the registered trademark shown on the preceding page. These brands guarantee standard grades, uniform manufacture, scientific drying and seasoning and correct handling.

GRADE

MARK

This Grademark Is Your Guarantee of Standard Quality Lumber and Woodwork

For Your Information

In addition to the handbook described later, literature on painting and finishing, together with finished and natural samples, will be sent on request. Also brochure containing 25 architectural competition designs and building data.

Specifications

(1) Arkansas Soft Pine, stamped with the trademark and grademark of the Arkansas Soft Pine Bureau, shall be used throughout for structural and finishing purposes, as specified below.

(2) All lumber used shall conform to the grading rules of the Arkansas Soft Pine Handbook.

(3) **Framing**—All framing timbers, joists, girders, studs, etc., shall be Arkansas Soft Pine [No. 1 Common] [No. 2 Common] grade, of standard sizes.

(4) **Sheathing**—All outside walls and roofs shall be covered with Arkansas Soft Pine [shiplap] [sheathing boards], No. 2 Common grade. Sheathing boards shall be surfaced [one] [two] sides, shall be well nailed to the studs and shall be laid diagonally.

(5) **Window and Door Frames**—Shall be Arkansas Soft Pine rabbetted and moulded as detailed and of the dimensions shown.

(6) **Exterior Trim**—Shall be Arkansas Soft Pine, [B & Better finishing grade] ["C" finishing grade], and shall be worked strictly in accordance with the scale and detail drawings.

(7) **Bevel Siding**—All exterior walls, as shown or noted on the drawings, shall be covered with Arkansas Soft Pine bevel siding of B & Better grade, laid [2½ in. in 4-in.] [4 in. in 6-in.] width to the weather.

(8) **Lathing**—All walls and ceilings to be plastered shall be covered with Arkansas Soft Pine lath, No. 1 grade, laid horizontally, 2 in. on centers, with breaking joints. In no case shall the lath be laid vertically and all lath shall be well nailed to every stud or other bearing, using 4 nails to the lath.

(9) **Subflooring**—On all floors throughout, except as otherwise shown or noted, lay Arkansas Soft Pine subflooring, [No. 2 Common] [No. 3 Common] grade shiplap, each board well nailed to every joist.

(10) **Finish Flooring**—In (locations) ..... lay a finish floor (after plastering is completed) of Arkansas Soft Pine, edge grain, Grade ["A"] [B & Better], tongued and grooved and well strained and blind nailed to every [joist] [sleeper] with two 8d cut flooring nails.

(11) After laying, the finish floors shall be well protected by covering them with heavy paper, or other approved material.

(12) **Interior Trim**—Shall be Arkansas Soft Pine, Grade ["A"] [B & Better], worked in strict accordance with the scale and detail drawings (as selected from the Arkansas Soft Pine Bureau Handbook).

(13) **Mouldings**—All mouldings shall be run true and straight, carefully worked and finished, and shall be selected from the Handbook of the Arkansas Soft Pine Bureau, as designated by the numbers specified or shown on the drawings (in accordance with the detail drawings).

(14) All flat-surfaced trim shall be triple machine sanded before installation, and shall be turned over to the painting contractor ready for finishing. All nailholes shall be puttied up, using putty to match the color of the wood, and all wood that is to be stained shall have all finger marks removed.

(15) **Painting and Finishing**—All stains shall be applied directly to the wood without the use of filler, and followed by the subsequent coats of varnish as called for.

(16) Where tint or white enamel finish is called for, 1 coat of thin shellac followed by 2 coats of enamel undercoating and 2 coats of enamel, white or desired tint (detailed instructions on request).

Arkansas Soft Pine Handbook

The Arkansas Soft Pine Handbook contains complete grading rules, standard moulding designs, including numbers agreed to by the American Institute of Architects in conjunction with the Central Committee on Lumber Standards; also actuary, shipping weights, painting and finishing instructions, and concise description of the wood. Sent on request. Also natural and finished samples.

Member Companies

All stock bearing the Arkansas Soft Pine trademark is manufactured and sold exclusively by the following companies, who also adhere to the practice of grade markings:

Caddo River Lumber Co., Rosboro, Ark.
Sales Office: R. A. Long Building, Kansas City, Mo.
Crossett Lumber Co., Crossett, Ark.
Dierks Lumber & Coal Co., Dierks, Ark.
Sales Office: Gates Building, Kansas City, Mo.
Fordyce Lumber Co., Fordyce, Ark.
Southern Lumber Co., Warren, Ark.

The above companies compose the Arkansas Soft Pine Bureau, Little Rock, Arkansas.

WESTERN PINE MANUFACTURERS ASSOCIATION

Inland Empire Lumber, Lath and Woodwork
510 Yeon Building, PORTLAND, OREGON
MEMBERS' SALES OFFICES IN PRINCIPAL DISTRIBUTING CENTERS OF THE EAST AND MIDDLE WEST

Products

Members manufacture PONDOSA PINE and IDAHO (Genuine) WHITE PINE SELECT and COMMON LUMBER, Stock (or Special) Mouldings, Trim, Siding, Window Frames, Plaster Lath and Factory Lumber for Sash and Doors.

Smooth-wearing LARCH Flooring, Lumber and Small Timbers.

Sold By

Local lumber dealers and millwork firms carrying well-assorted stocks for immediate shipment.

Grades and Sizes

Pondosa Pine and Idaho White Pine are finishing woods, primarily. Larch is the structural wood of the Inland Empire. Larch Dimension comes in three grades—Nos. 1, 2 and 3 Dim. In the pines, Select lumber is divided into three grades—B&Btr., C and D Sel.; Common lumber, closely sorted by widths and lengths as well as by grades, is segregated into five grades—Nos. 1, 2, 3, 4 and 5 Com.

Association standard patterns and standard manufactured sizes as approved to conform to American Lumber Standards, and descriptions of the grades for all Inland Empire species are contained in the Association's Grading Rule Book, a copy of which will be furnished upon request.

Pondosa Pine

Pondosa Pine
The Pick o'the Pines

Pondosa is the common name applied to the tree species *Pinus ponderosa.* This soft-textured pine reaches a high degree of perfection in the Inland Empire of Washington, Oregon, Idaho and Montana. Soil, altitude and climatic conditions combine to produce in this tree, wood of unusually soft texture and even grain. Its lumber more nearly resembles White Pine *(Pinus strobus)* than does any other species that is not botanically a genuine white pine, and because of this similarity it is used satisfactorily and can be specified without hesitation for the same carpentry items, with the exception of finish flooring and framing lumber in residence, apartment, theater, office, store, industrial and farm building construction.

In the twenty-five years Pondosa Pine has been available in quantity, manufacturers of standardized woodwork, after years of experimentation with all species of wood, continue to use Pondosa in producing the bulk of the stock sash and doors made in the United States because it fulfills the requirements best.

Pondosa is readily workable, cuts smoothly with or against the grain, stays put, shows no tendency to split, is light to handle, is not a resinous wood and is light in color, providing a perfect base for paints and enamels, without grain raising, covers with fewer coats and requires fewer repaintings than most woods. Its smooth, lustrous surface and delicately figured grain add to its beauty under all types of finishing treatment of interiors. Because of its low-density cell structure, the thermal conductivity of Pondosa is much lower than the average for wood, whose high insulating value is well known. In all items, including also plaster lath and furring strips, the use of Pondosa will permit lower labor costs, without lowering the quality of the work done. If accorded normal care and protection, a well constructed installation of trademarked Pondosa Pine will last the life of the building in which it is used. Pondosa has been placed with satisfaction, under a wide range of climatic conditions, in thousands of buildings over a period of twenty-five years and longer. And instances of over sixty years of useful service are on record at the Association offices.

Idaho (Genuine) White Pine

IWP

This species, known botanically as *Pinus monticola,* occurs in largest volume in northern Idaho and bordering territory. It is one of three (Northern White Pine, Sugar Pine and Idaho White Pine) of the *Genuine* White Pines of commercial importance in the United States. It is smaller than Sugar Pine on the average and more like Northern White Pine, and though it produces all grades of lumber the wood stands out most distinctively because of its high percentage of small, tight-knotted Common lumber, such as is needed for the popular knotty pine paneled interior walls now specified in office and residence construction. It has been used extensively for this purpose and for all exterior woodwork, including siding, cornice, porch and entrance details. A particular feature about Idaho White Pine and Pondosa Pine is that, although in some grades the boards may contain knots, the grain is not torn out around the knots and they will paint over completely, and are not inclined to crack open or exude resin or acids to discolor the paint or cause it to peel.

The advantages mentioned for Pondosa apply to Idaho White Pine in even greater degree. The latter material is identical with Northern White Pine and individual pieces of the two woods oftentimes cannot be told apart by expert wood technologists. An appreciation of its value may be drawn from the fact that it has first call for intricate foundry patterns and other similar exacting work. Its straight grain and lack of hard and soft streaks have made it the match wood of America.

The uses given for Pondosa apply also for Idaho White Pine, except that because of a lesser production of factory lumber in Idaho White Pine, Pondosa is used almost exclusively for all stock sash and doors, while Idaho White Pine is used more for special or made-to-order millwork items. Idaho White Pine is also well suited for turned work, as balustrades and other stair parts, and for carved woodwork.

Idaho
GENUINE
White Pine
THE PINE WITHOUT A PEER

Larch

Larch (or *Larix occidentalis*), occurring in Montana and other parts of the Inland Empire, in many respects resembles cypress. Its wood is of a dark russet or chocolate brown color, of rather conspicuous grain, and is impregnated with natural preservative oils which cause the wood without aid of protective coatings to offer remarkable resistance against decay when placed in contact with the soil or in other intermittently moist surroundings. Larch is of moderate weight, unusually strong and stiff for its weight and moderately hard in texture. Because of these properties it should be specified for house, store and farm building framing, for house and factory flooring, and for finishing work calling for stained or oiled and waxed treatment. It lends itself to rustic effects as through use in shore or mountain week-end cottages. Edge-grained Larch floors, due to the fine, even grain and tightly knit fibers, show no tendency to sliver or scuff under ordinary abrasive wear.

Identified Lumber and What It Means

At the left of the preceding captions is illustrated the mark by which each species may be positively identified by an inexperienced lumber buyer. The mark denoting the species is imprinted on or near the end of a board. Under restricted use this registered trade mark of Pondosa Pine, for example, is to be found only on boards manufactured by a member of the WESTERN PINE MANUFACTURERS ASSOCIATION. This fact protects the purchaser against lumber of uncertain quality and assures him that the stock has been rigidly graded only by lumber graders of recognized ability, whose work is supervised and checked monthly by a corps of trained Association inspectors; and further, that the purchaser can confidently buy this trade-marked lumber knowing also that it has been thoroughly seasoned, smoothly milled to standard sizes *after* drying, and carefully loaded and handled through the entire manufacturing and shipping operation in a manner in keeping with a quality article. Grademarked lumber, where the grade is actually marked on the piece by the expert grader at the mill, also is available in these species.

Specifications

Short form specifications, covering house construction, free upon application.

Supply and Distribution

Millions of feet of lumber produced by Association mills are carried in stock in the mill yards and sheds, ready for immediate shipment. Well assorted stocks are also found in the yards of local lumber dealers.

Co-operative Service

The Association assists architects, carpenters, contractors in matters pertaining to use of its woods. Samples, descriptive literature, supplied free. Research laboratory available for investigating special problems. Association membership list may be obtained by writing the WESTERN PINE MANUFACTURERS ASSOCIATION, 510 Yeon Building, Portland, Oregon.

EXCHANGE SAWMILLS SALES COMPANY

ESSCO Trade-Marked and Grade-Marked Lumber

KANSAS CITY, MO.

SALES OFFICES

HOUSTON, TEX., 701 Public National Bank Building
NEW YORK, N. Y., 2623 Grand Central Terminal
CHICAGO, ILL., 1814 Buckingham Building
ERIE, PA., 12th and Cascade Streets
ST. LOUIS, MO., 1488 Arcade Building
NEW ORLEANS, LA., 1313 Pere Marquette Building
DALLAS, TEX., 1217 Magnolia Building
OKLAHOMA CITY, OKLA., 504 Oklahoma Savings Building

EXCHANGE SAWMILLS SALES CO.

Products

ESSCO Southern Pine (Long and Short Leaf); ESSCO California White Pine.

Also ESSCO Southern Hardwoods; ESSCO Southern Pine Flooring, Siding, Trim, Dimension Lumber and Lath; ESSCO California White Pine Siding, Trim, Finish, Paneling, Shop Lumber and Lath.

Distribution

ESSCO Lumber is sold by reliable retail lumber merchants.

ESSCO Southern Pine

ESSCO Southern Pine (long and short leaf) is grade-marked and trade-marked. It has a specified moisture content guaranteed for each grade. It is carefully manufactured and requires minimum hand labor for installation. It is a product that because of its uniform high quality assures complete satisfaction for the user. The grade-marking on every piece assures receipt of grade specified. The specified moisture content enables the user to figure load stresses accurately. The minimum moisture content is protection against damage resulting in shrinkage and swelling. It is a utility wood for general building purposes.

ESSCO End-matched and Side-matched Lumber

One of the specialty products of ESSCO Mills is end-matched lumber. The end-matched feature makes this lumber

ESSCO End-matched Lumber Insures Large Labor Savings

especially desirable for boxing, sheathing and subflooring. It makes a tighter and stronger job with no lumber waste and insures a labor saving of from 10% to 30%. In practice it has distinct insulating qualities superior to ordinary sheathing.

ESSCO California White Pine

ESSCO California White Pine is manufactured at Pine Ridge, Ore. The timber from which it is made grows at an average altitude of 5500 feet, under particular growing conditions which give it a very soft texture, fine grain and a color almost white. This lumber is particularly suitable for trim finish and cabinet work. It cuts easily with and across the grain, takes fine details in mouldings and patterns, takes and holds paint and finishes well. Because of its minimum resin content, it may be exposed to sun and heat without damage to finish or damage from warping and shrinkage. It is grade-marked and trade-marked for the buyer's protection. It is carefully manufactured and sold with a gauaranteed specified moisture content. It is specified by users of high grade lumber in woodwork plants and in general construction.

ESSCO Knotty Pine, a Specialty Product

One of the specialty products of ESSCO California White Pine is ESSCO Knotty Pine used for interior paneling of dens, libraries, recreation rooms, clubs and commercial establishments. ESSCO Knotty Pine is carefully selected for the character of natural defects so as to enable the user to obtain the charming effects found in the New England colonial interiors so popular today. With it the user may achieve the warm, graceful and simple charm that the colonial artisan found so effective and which is today much sought after by architects and decorators. The machine work on ESSCO Knotty Pine is excellent. It is carefully dried so that the panels will stay in place without damage from shrinkage. It takes the stain and finish in such a way that the user may obtain exactly the "deal wood" effects most popular in pine rooms. It may be had in random widths and lengths or specified widths and lengths and is sold by retail lumber dealers.

ESSCO Knotty Pine is not ordinarily stocked by dealers and orders should be placed somewhat in advance of time for installation.

Informative Data

Literature on most any lumber item and its uses may be obtained from our Kansas City office.

ESSCO Knotty California White Pine Is Admirably Adapted to Charming Interiors

This Knotty Pine is available through reliable lumber dealers

PHILIPPINE INDOAKO WOOD

TELEPHONE
STILLWELL 4141, 4142, 4143

IMPORTED AND SOLD BY
INDIANA QUARTERED OAK CO.
226 East Avenue, LONG ISLAND CITY, N. Y.

Products

PHILIPPINE INDOAKO LUMBER, DOORS, TRIM, FLOORING, MOULDINGS and PANELS.

Supply and Facilities

We are the Eastern Sales Agents for the Insular Lumber Co. of Manila, who operate a large, modern hardwood mill, with dry kilns, planing mill, etc., on the island of Negros, P. I.

The Insular Lumber Co. are operating on a tract of 100 square miles of virgin forest, and have an output of from four to five million feet per month, thus insuring a steady supply, available for years to come.

We carry at all times in our Brooklyn and Long Island City yards and in cargoes afloat, arriving monthly, several million feet ready for quick delivery.

Better Doors

We carry in stock in our warehouse, "Better Doors" made for us by the Pacific Door & Sash Co. of Los Angeles, Calif., where they have an immense modern plant with an area of nine acres under roof.

Nomenclature

Philippine INDOAKO Wood is our registered trade-name for a superior quality of the wood which has for many years been marketed under the trade name, "Philippine Mahogany." You, of course, are at liberty to use either name in drawing specifications.

Use of the term INDOAKO, however, insures your getting our superior, trade-marked lumber, carrying a rigid guarantee of quality.

Uses

For building purposes alone, INDOAKO Wood has many uses, some of which are:

Doors	Paneling
Flooring	Mouldings
Ceilings	Partitions
Mantels	Interior trim
Built-in bookcases	Exterior trim
Stepping	Porch flooring
Balusters	Shelving, etc.

Advantages

Beauty of grain, durability, ease of working, adaptability to a wide range of finishes, unlimited supply and moderate cost make this one of the best all round trim woods.

Moderate Cost

Due to a heavy stand of inexpensive timber, low manufacturing costs, low ocean freight rates and freedom from import duty, Philippine INDOAKO Wood successfully competes not only with mahoganies, but with many domestic hardwoods as well.

Dining Room in the Home of Major John K. White, Mooncaine, Wincoma, Huntington, L. I., N. Y.
Finished in Philippine INDOAKO Wood

Characteristics

Beauty—Rich in color and figure, Philippine INDOAKO far surpasses most trim woods.

The quartered stock shows the beautiful "ribbon" grain, not obtainable in any of the domestic woods.

Ease of Working—Its mild, even texture renders it easy to work and insures its "staying put."

Durability—It wears well as evidenced by its use for boat planking, one of the most exacting tests to which a wood is put, requiring not only durability and strength but resistance to rot and weather as well.

Freedom from Defects—As we import only the upper grades to the United States, our stock runs free of knots, thus materially reducing the item of waste.

Economy of Installation

Due to the fact that no boring is needed for nailing, and because the wood cuts easily and draws into place readily, many builders report that they can trim from 30% to 50% more openings per day in Philippine INDOAKO than in many other hardwoods.

Ease of Finish

The ease with which Philippine INDOAKO Wood adapts itself to a wide range of color effects is one of its most valuable characteristics. Many delightful and permanent effects may be achieved, ranging from light, soft grays, creams and greens to mellow old mahogany and rich walnut tones.

Service to Architects

Architects are invited to write for descriptive circular or information concerning the characteristics, uses and finish of INDOAKO Wood.

On request, we will gladly send various finishing formulae which have been found especially satisfactory, together with unfinished samples, large enough for experimental finishing. Please state color and type of finish about which information is desired—whether varnish, oil or wax.

If your regular dealer does not handle Philippine INDOAKO lumber and doors, we will gladly send names of dealers in your vicinity handling our products.

How to Specify

Philippine INDOAKO Trim is furnished by us in two grades:

Grade "A"—Clear face, free from all defects of every description.
Grade "B"—Clear face, except for microscopic wormholes. This grade is generally used for trim, the wormholes being so minute as to be almost invisible. They are completely obliterated during the usual finishing process.

Installations

Following are typical installations of Philippine INDOAKO Wood doors, trim, pews, etc.:

BUILDING	ARCHITECT
First National Bank and Trust Co., Elmira, N. Y.	Pierce & Bickford Alex B. Trowbridge
Bank of Philadelphia & Trust Co., Philadelphia, Pa.	Ballinger Co.
First National Bank, Toms River, N. J.	Clinton B. Cooke
Second National Bank, Wilkes-Barre, Pa.	McCormick & French
Essex County Hall of Records, Newark, N. J.	Guilbert & Betelle
Mather Tower Building, Chicago, Ill.	Riddle & Riddle
Congress Building, Portland, Me.	Herbert W. Rhodes
Postum Building, New York, N. Y.	Cross & Cross
St. Casimir's Church, Baltimore, Md.	Palmer, Willis & Lamdin
Russ Building, San Francisco, Calif.	George K. Kelham
Church of the Strangers, New York	Rosario Candela
Church of the Incarnation, Bellaire, N. Y.	A. F. Meissner
Erie R. R. Station, South Trenton, N. J.	Ethan Allen Dennison
Eastland Hotel, Portland, Me.	Herbert W. Rhodes
Hotel Waterbury, Waterbury, Conn.	E. S. Flannigan
Penwell Hotel, Wellsboro, Pa.	W. H. Lee
Nesbitt Memorial Hospital, Kingston, Pa.	McCormick & French
Moses Ludington Memorial Hospital, Ticonderoga, N. Y.	M. H. Westhoff
North Carolina State College (Holladay Hall), Raleigh, N. C.	Hobart B. Upjohn

WARREN ROSS LUMBER COMPANY

Largest and Oldest Manufacturers and Distributors of Red Cherry Lumber

JAMESTOWN, N. Y.

NEW YORK REPRESENTATIVE: ALBERT F. HALL, 5 Columbus Circle

Interior Finish

Our "Red Cherry Wood" is a most serviceable lumber for inside woodwork, either for natural color tone, stain, enamel, or paint base, because it has a very low moisture content and no lesions result from contraction or expansion to crack the surface of the finish, either enamel, paint or varnish.

Freedom from Temperature Variations

Extreme heat or cold has no effect on Cherry, as evidenced in its use for baker's peels in blazing hot ovens which would shatter any other wood; in carpenter's levels out in all kinds of weather, and it is especially used for patterns and flask work (subject to any kind of conditions), sink drainboards, ship trim outside and inside. Also used on street car doors in Canada, subject to 30 degrees below zero outside and 90 degrees above inside, or where a sudden climatic change ranges from 30 degrees above to 30 degrees below zero. It is standard street car trim, and is specified by engineers where it is being subjected to the hardest abuse from mass transportation.

Freedom from Contraction and Expansion

"Red Cherry Wood" is freer from warping, swelling, shrinking, cupping, twisting, end or side contraction or expansion than any known wood and we stand back of it with a guarantee under bond if required. It is used for electrotype blocking, where only wood that is free from warping and swelling can be used.

Price Range and Utilization

Our "Red Cherry Wood" is 35% cheaper in price than the better mahoganies or walnut, and the utilization is much greater than the latter. It costs 10% to 25% more than ordinary woods. But Cherry is much cheaper in the end.

A good enamel will last 20 or more years on Cherry while on other woods, if the building is to be kept up in good condition, a renovation is required in 2 or 3 years.

A good varnish finish on Cherry will last the life of a building, as is evidenced by many Cherry interiors (trim and furniture) now 75 to 100 years old, and in many pieces of furniture, 150 years old. It meets every requirement of the architect.

Colors

Due to its structural texture any color can be produced. We can prove helpful in your color problems. We are bringing out between 400 and 500 color tones, mostly original, which have never been shown before. This is a free service to Architects.

Representative Users of Warren Ross Cherry Lumber

For Interior Work—Ammann-Coertz Co., Inc., New York, N. Y.; Duval Planing Mill Co., Jacksonville, Fla.; Hayden Company, Rochester, N. Y.; Irving & Casson, A. H. Davenport Co., Boston, Mass., and New York, N. Y.; McCormick Hannah, Inc., Orlando, Fla.; H. H. Ramsey, Miami, Fla.; Rauwold Woodwork Co., Milwaukee, Wis.; William Somerville, Inc., New York, N. Y.; U. S. Lumber & Supply, South Bend, Ind.

Red Cherry Used in Notable Buildings

Colony Club, New York City, one of the finest women's clubs in the world
Union League Club, New York, N. Y.
Aetna Life Insurance Bldg., Hartford, Conn.
Two duPont homes, Wilmington, Del.
Statler Hotel, Cleveland, Ohio
New York Ferry Boat, Donegan Hills
Museum of the City of New York

and many other notable jobs. Cherry has also been used in such well-known places as the $7,000,000 residence of President Parsons of the Woolworth Company, at Shadow Lawn (all enameled work being on Cherry); Metropolitan Museum, in New York, and many others.

Colony Club, Park Avenue, New York, N. Y.
Finished in Warren Ross "Red Cherry Wood"

Endorsements

"Cherry is the best wood I know of that is grown in this country for withstanding warping, twisting or shrinkage and is also the best either for natural wood colors or for enameling purposes."

By: Robert Casson, President.
IRVING & CASSON, A. H. DAVENPORT Co.
Boston, Mass. and New York, N. Y.

Specification

Specify for lasting satisfaction during the life of the building, WARREN ROSS LUMBER COMPANY'S "Red Cherry Wood," Select A Grade.

PORT ORFORD CEDAR PRODUCTS COMPANY

MARSHFIELD, ORE.

SALES AGENTS: DANT & RUSSELL, INC., Porter Building, PORTLAND, ORE.
REPRESENTATIVES AND DEALERS THROUGHOUT THE UNITED STATES

PORT ORFORD CEDAR

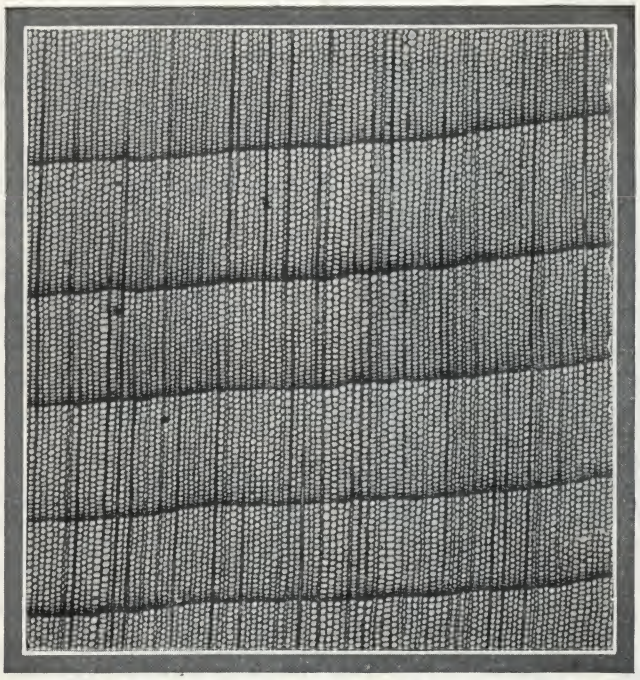
The Aristocrat of Woods

Products

PORT ORFORD CEDAR: Finish and Clears; Panel Plywood and Closet Lining; Dimension Plank and Small Timbers; Factory Stock; Boat Boards; Aircraft Lumber; Ship Decking; Venetian Blind Stock; Packaged Closet Lining; Common Lumber; Railroad Ties; Logs and Veneer Logs.

Description

Many nations seek it—many pay it honor. For Port Orford Cedar is the one wood of today most closely resembling the ancient cedars of Lebanon. The British seek it for finishing their public buildings and paneling their manor homes. The Japanese revere it as the wood worthy of taking the place of the now carefully guarded "hinoki" sacred wood of Nippon.



Micro-photograph of a Cross Section of Port Orford Cedar Showing Evenness of Growth and Uniformity of Cellular Structure

Port Orford Cedar is found in a small but favored area in the extreme southwestern corner of the State of Oregon and in a few counties in the adjacent State of California. It is moderately light in weight, and is nearly as strong as white oak and falls only 16% below it in stiffness. The color of the wood is almost white, having a creamy yellow tinge. It is straight and even grained, moderately hard, yet easy to work. The accompanying micro-photograph of an end section of the wood reveals the uniformity of the growth rings, uniform structure, and relatively thin layers of summer wood. This combination of factors is responsible for the fine even and uniform texture of the wood of Port Orford Cedar, and explains the precision to which it may be machined and the accuracy that may be maintained. On a veneer lathe Port Orford Cedar may be peeled to remarkable thinness and tolerances as low as five one-thousandths inch may be maintained with ease. This quality, along with its exceptional ability to resist the decays of soils, rotting from dampness and attacks of acids, coupled with its long life under the most grinding wear, makes Port Orford Cedar one of the most valuable woods of commerce.

Grades

Port Orford Cedar clear comes in four grades: rough green; No. 2 clear and better; No. 2 clear and better, flat grain; No. 3 clear. Boat boards: No. 1 special; No. 1 unedged or tapering. Common: select common; merchantable; No. 1 common. Description of all grades is contained in the Port Orford Cedar Export and Domestic Grading Rules Book, a copy of which will be furnished upon request. Natural and finished samples will also be sent upon request.

Uses

Interior Trim—"No wood is more adaptable to various architectural styles than Port Orford Cedar," writes Wade Pipes, A. I. A. The delicate mouldings of the Eighteenth Century in French and English interiors, the refined detail of our own Colonial work, and the more robust style of the Mediterranean and Seventeenth Century England, find in this wood a perfect medium for their execution.

The grain of Port Orford Cedar is never coarse, and it may be obtained with either a handsome figure or with a grain scarcely perceptible. One of its outstanding qualities is the ease with which it can be worked, requiring comparatively little sanding if any, to bring it to a suitable finish, as it does not splinter or pit while being put through the planer. Its smooth and even surface makes it most suitable for enameling, the undercoats requiring less than the usual amount of sanding to bring it to a perfect finish. When enameled, no trace of the grain shows through, and the surface has a beautiful, velvety quality which remains for years. Staining is particularly successful when applied to Port Orford Cedar, the light color of the wood making it easy to obtain delicate tones. When it is desirable to keep the wood as natural appearing as possible, though dark in tone, this wood may receive a coat of stain and slight waxing. The various shades of light brown so much

Beautiful Arches and Fine Detail with Port Orford Cedar
GORDON B. KAUFMANN, Los Angeles, Architect

Continued on next page

used in early American work may be obtained with little effort. These effects never look crude or raw, as the wood itself gives a soft and glowing quality to the stains.

Cabinet Work—For the fittings of libraries, for shelving, cupboards, corner cupboards, mantelpieces and for any architectural cabinet work of fine quality, the craftsman will find Port Orford Cedar the ideal material. It is also suitable for finely moulded base and trim, and doors. Fine and even of texture, Port Orford Cedar machines easily to special designs. It does not warp or twist, will not check, split or splinter, and holds nails tenaciously.

Venetian Blinds

Leading Venetian blind manufacturers recognize Port Orford Cedar as the outstanding wood for Venetian blinds. This enduring wood will not warp or twist. Its exceptionally smooth surface facilitates finishing, and the wood itself is permeated with oils which seem to have a special affinity for enamels, stains and lacquers, and holds them for years without blistering or peeling. Owing to the cream-white color of this wood, Port Orford Cedar Venetian Blinds may be stained, lacquered or enameled to any desired shade. This wood is impervious to weathering and is not affected by the extremes of heat and cold. Neither moisture nor acids stain it.

Closet Lining

Port Orford Cedar is recognized as one of the most satisfactory closet linings. Its exceptionally smooth surface and homogeneous fibre insure against splintering and roughening. Its cream-white color has a cleanly appearance that appeals to the housewife while its delicate cedar odor pervades the closet with a delightfully refreshing aroma. Port Orford Cedar closet lining is now procurable in packaged form.

Entrances and Garden Furniture

Entrances and porch columns of fine detail are best executed in Port Orford because of the ease and precision with which this wood yields to carving and planing tools. Even more desirable is the tenacity with which Port Orford Cedar holds paints and enamels, and its remarkable resistance to weathering. These qualities also make it one of the outstanding woods for garden furniture.

Flooring

Port Orford Cedar is one of the most satisfactory woods for flooring subject to constant grinding wear. Steel tired wheels and the sharp impact of heavy crates fail to splinter it. Oils and acids do not affect it. Because of these qualities it was chosen for the flooring of the passenger terminal of the city of Los Angeles dock, and the San Francisco ferry building dock. These same qualities led to its selection for the flooring of the bowl of Madison Square Garden, New York. Port Orford Cedar block flooring is extensively used in gymnasiums because of its exceptional resilience insuring utmost foot comfort and ease.

No greater proof of the wearing qualities of any wood can be made than the Port Orford Cedar block flooring in the erecting department of the Caterpillar Tractor Co., San Leandro, California.

Industrial Uses

Port Orford Cedar's exceptional resistance to acids, demonstrated by its use as separators in over 90% of the world's electric storage batteries, gives Port Orford Cedar an outstanding place in industry. It requires no preservative treatment for piling, bulkheading, tunnel lining, and other construction where lumber must come in contact with the soil and dampness.

Boat Building

Marine architects are discovering in Port Orford Cedar one of the finest woods for small pleasure and fishing boats. The lightness, toughness and resilience that has won it wide recognition in the airplane industry, make it an outstanding wood for boats that must withstand hard buffeting. The cellular structure of the wood is so dense that either vertical or flat grain lumber can be used. Nails cling tenaciously in Port Orford Cedar boats, and paints hold for years. In larger boats, Port Orford Cedar is extensively used for decking, framing and interior trim.

Proof of its exceptional suitability for decking is found in the San Francisco ferry boats, which since 1866 have been decked with this fine cedar.

Panels and Plywood

On these six points Port Orford Cedar bids for paneling and interior trim: (1) It is rotary cut and comes with a beautiful, handsome figure. (2) It takes stains readily with evenness and warmth. Particularly successful are walnut, mahogany, maple and pastel stains. It also enamels with a beautiful, enduring luster. (3) The natural oils of the wood protect it from the severest weathering. (4) It resists checking and warping. (5) It works easily and speedily. (6) It is available in sizes up to 48x96 in.

Booklets

"Port Orford Cedar, Its Properties and Uses," a 48-page illustrated booklet, presents the dramatic story of the discovery and rise to recognition of Port Orford Cedar and details the many and varied uses of this exceptional cedar.

"Beautiful Interiors with Port Orford Cedar," by Wade Pipes, A. I. A., is a 20-page brochure on the suitability of Port Orford Cedar for interior trim.

"Venetian Blinds, A New Note in Interior Decoration," by Margaret McElroy, New York authority on interior decoration, demonstrates the practicability of Venetian blinds for the home.

Copies of this literature will be sent upon request.

Venetian Blind of Port Orford Cedar

Linen Closets of Satin-smooth, Fragrant Port Orford Cedar
WARD & BLOHME, San Francisco, Architects

CURTIN-HOWE CORPORATION

Timber Preservation Engineers

415 Lexington Avenue
NEW YORK, N. Y.

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SPOKANE, WASH., Old National Bank Building
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CHICAGO, ILL., Joyce-Watkins Co., Daily News Building
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Product

ZMA Wood Preservative.

Uses

ZMA is a wood preservative which can be specified for preservative treatment of all forest products, to protect them from decay and termites or white ants.

TRADE-MARK

- ZMA Lumber
- ZMA Siding
- ZMA Roofing
- ZMA Flooring
- ZMA Sash
- ZMA Shingles
- ZMA House Lumber
- ZMA Mill Lumber
- ZMA Fence Posts
- ZMA Poles
- ZMA Cross Arms
- ZMA Railroad Lumber
- ZMA Ties
- ZMA Trunking
- ZMA Car Lumber
- ZMA Car Decking
- ZMA Capping

Advantages

(1) ZMA is odorless, colorless, permanent, clean and paintable.

(2) It penetrates the wood evenly and thoroughly.

(3) It is non-bleeding, non-corrosive and does not affect the strength of the wood.

(4) It is very repellant to white ants or termites.

Commercial Application of ZMA

ZMA is adapted for treating forest products, such as poles, ties, industrial lumber, fence posts, mine timbers, railroad lumber, ship construction, car lumber, textile building lumber, house lumber.

Wherever lumber is used and has a tendency to decay or become attacked by termites, you should specify ZMA treatment.

Service Records

ZMA has been tested by the Government and independent commercial associations, both for its high toxicity against all the common forms of wood-destroying fungi and termites, and found to be equivalent to creosote and much superior to many other salt preservatives due to its higher toxicity and greater permanence.

Welfare House, Nashua, N. H.
All siding, trim, blinds, sash, doors and framing ZMA treated

Inspection Service

Notify Curtin-Howe Corporation, 415 Lexington Avenue, New York, N. Y., when order is placed for ZMA treated wood. A Curtin-Howe chemist is located at each licensee plant to assist in an engineering capacity, in obtaining the best possible treatment of forest products with ZMA. Certified inspection reports will be furnished if desired.

Licensees

ZMA treated forest products may be obtained from the licensed commercial wood preserving companies listed above.

Specifications for ZMA Treatment

Timber—Timber shall be any commercial species specified sound, free from defects which would reduce its value for the purposes for which it is to be used treated.

Preservative—ZMA, ¼ lb. per cu. ft. of wood treated.

Preparation for Treatment—Any charge shall be confined to one kind of designated group or kinds of wood, of pieces approximately equal in size and moisture and sapwood content, into which approximately equal quantities of preservative can be injected, and so separated as to insure contact of preservative and steam, if used, with all surfaces.

Treatment—The ranges of pressure, temperature and time duration shall be controlled so as to result in maximum penetration.

Inspection after Treatment—Penetration shall be determined by sampling timbers from each charge as may be specified by the purchaser. Any holes which may be bored shall be filled with tight fitting ZMA treated plugs.

THE FLEXWOOD COMPANY

Genuine Wood Made Pliable

GENERAL OFFICES
919 North Michigan Avenue
CHICAGO, ILL.
EASTERN OFFICE, 602 Chrysler Building, NEW YORK, N. Y.

"FLEXWOOD—FOR BEAUTY, PERMANENCE AND ECONOMY"

Flexwood offers the opportunity to use wood for interior decoration without the limitations of size, structural difficulties or excessive costs associated with conventional wood paneling.

Physical Properties

Flexwood is genuine wood, cut thin and backed with cloth. The wood is rendered thoroughly pliable, so that it can be easily bent around corners without cracking, the grain being parallel to the edge about which it is bent. The same process that renders it flexible removes its power to warp or check. Therefore, it can be applied to walls of plaster or wall board, without the necessity of mouldings, though these may be used where design requires.

Application

It is as pliable as canvas and is applied to the wall with paste. Flexwood is hung by the paperhanger.

Sizes

Flexwood is furnished in sheet 8, 9 and 10 ft. long and from 10 to 30 in. in width.

Finishing

The finishing should be done by a competent wood-finisher.

The natural beauty of the wood is best revealed by transparent varnishes and lacquers, which preserve, without hiding, the pattern of the grain.

A dull or waxed finish is best though any finish used with ordinary wood may also be used with Flexwood.

Wood Used

Flexwood is produced from trees of the four major cabinet woods: American walnut, with its rich color and intricate patterns; white oak, sturdy and masculine, with a well-defined grain, plain-cut or quarter-cut; mahogany, in both the close grain of the sliced plain-cut wood or the ribbon effect of the quarter-cut with the delicate color that is so typical of that wood; and *prima vera,* an ivory colored wood also called white mahogany.

Ask for Specification No. 3 for application of Flexwood to plaster walls; No. 20 for application to metal; No. 40 for application to wall boards.

Office of B. Becker, Chicago, Ill.
WOLFGANG & POLA HOFFMAN, New York, N. Y., Decorators
Matched walnut Flexwood applied to plaster walls. No mouldings used

Office of Delphian Society, Chicago, Ill.
Mahogany Flexwood applied to plaster walls. Paneled mouldings nailed to plaster

HARBOR PLYWOOD CORPORATION

Manufacturers of Plywood Products, Veneers and Fir Doors

GENERAL OFFICES
1444 West 22nd Street
CHICAGO, ILL.

MILLS
MILLS IN HOQUIAM AND ABERDEEN, WASH.
AMERICAN DOOR & MFG. CO. HARBOR PLYWOOD CORPORATION KNOX AND TOOMBS, INC. DURABLE DOOR CO.

WAREHOUSES
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BUFFALO, N. Y. MILWAUKEE, WIS. CINCINNATI, OHIO CHICAGO, ILL. PHILADELPHIA, PA. ROANOKE, VA.

Products

HARBORD Plywood, a modern form of lumber—real wood, splitproof and non-shrinking.

We manufacture and distribute complete lines of VENEERS, FIR HOUSE DOORS and GARAGE DOORS.

Harbord

TRADE-MARK REGISTERED

Harbord Plywood

Harbord Plywood is made of thin layers of selected old-growth Douglas fir cemented firmly together with the grain of one layer at right angles to those above and below it.

Plywood is a very strong structural material for its weight, combining strength, durability and light weight. It is lumber, with all of the properties that has made wood man's universal raw material, plus the advantages secured by crossing the grain of several layers, which gives a balanced construction and prevents splitting, shrinking, swelling or warping.

Advantages—Harbord Plywood can be used anywhere that thin, strong lumber is required and it can be built up into any thickness desired. It saws easily in any direction. It will not split, so can be nailed close to the edge, and the strength of the wood keeps it from working loose from the nails. It takes paint, stain, varnish or enamel well and can be finished in any of the modern decorative styles. Sandblasting plywood makes the hard grain stand out and produces the popular rough effects. Plastic paints adhere to it perfectly.

Harbord Plywood Panels Used for Ceilings, Walls, Floors and Cabinet Work

Joints in walls and ceilings are invisible when finished with plastic paint

Thin Plywood Panels Bent to Curves in the Walls of This Stair Well

Nation-Wide Distribution

Quick delivery is assured by our extraordinary facilities for distribution through our factory branch distributing warehouses. These are located in the principal market centers of the country where extensive stocks are carried at direct-from-factory prices, insuring prompt delivery and low distributing cost. Our mills are located at Grays Harbor, Washington, in the heart of the great Douglas fir district of the Pacific Northwest.

Continued on next page

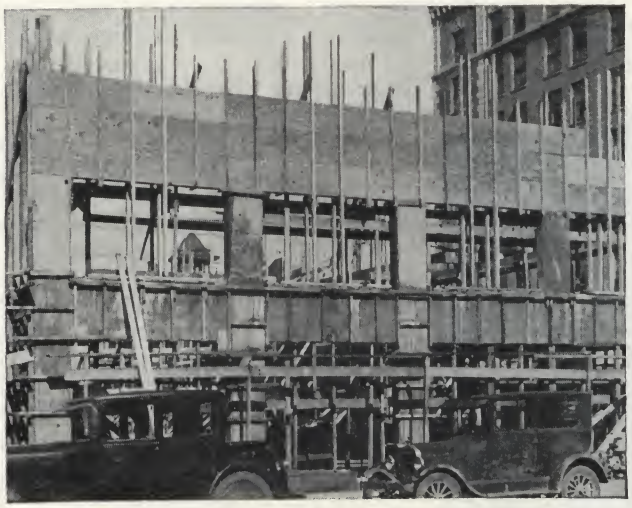
Plywood Uses

In new building Harbord Plywood can be used for walls, ceilings, floors, closet linings, shelving, cabinet work, drawers, etc.

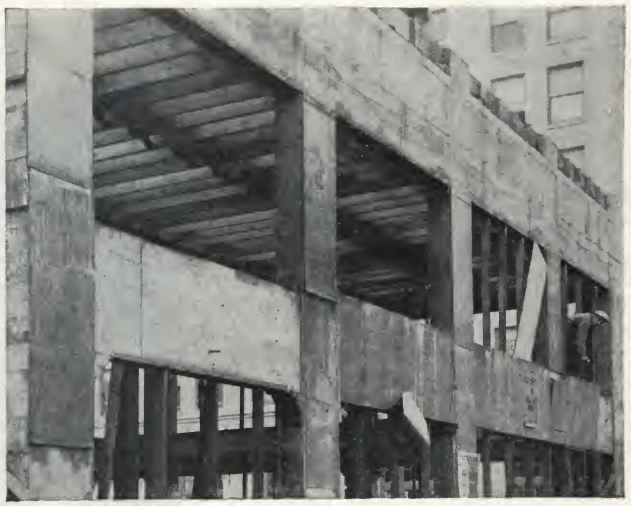
It offers many advantages as material for sheathing and for subfloors.

In remodeling houses or finishing attics, basement rooms, etc., Harbord Plywood makes an ideal wallboard, being light, strong and easily applied. It is extensively used for temporary partitions, for adding closets or cupboards or building in storage lockers. It is convenient for dust-proofing coal bins, or for vegetable bins, etc.

For garages, summer cottages, portable buildings and similar structures, Harbord Plywood is particularly useful as its tremendous strength stiffens the whole building, securing a rigidity unusual in buildings of this character.



Plywood Panels Used for Concrete Forms
Convenient and economical



Concrete Walls Where Forms Were of Plywood
Note the smooth surface, very little finishing work is required

Harbord Plywood can be used in the construction of all kinds of built-in cabinet work and for "novelty" furniture.

Harbord Plywood has been adopted as standard material in many manual training schools and has a wide diversity of industrial uses.

For concrete construction where smooth surfaces are desired, Harbord Plywood makes excellent form material—easily handled and can be used over and over.

Thin sheets of plywood can be bent to curves, with a large saving in expense over the use of sheet metal.

Sizes—Harbord Plywood is made every 2 in. in width beginning with 12 in. and up to 102 in. It is made every 12 in. in length beginning with 60 in. and up to 192 in. The foregoing sizes can be furnished in 3, 5 and 7-ply thicknesses ranging from 1/8 in. to 1¾ in.

While the 3-ply has the greatest range of uses, the 5-ply and 7-ply are adapted for many purposes in building.

Plywood is easy to handle and easy to work. Every panel is sanded to satin smoothness.

Doors

Harbord Kayan-Tee Doors, Harbord Durable Doors, Harbord American Doors—"The Ideal."

Our door factories are located in the great Douglas fir district of the Pacific Northwest and are operated in conjunction with the Harbord Plywood mills, so that the very finest of fir lumber and plywood is available for manufacturing these doors.

Under the different well-known brands listed above we manufacture all the standard sizes of outside and inside doors in three established grades and in a wide variety of designs and types of construction.

Long experience in door manufacturing and materials of the highest quality combine to produce lines of fir doors that have no superiors.

Specifications Provided Upon Request

For specifications covering the use of Harbord Plywood for walls, ceilings and soundproof floors, or for information as to the economy of plywood for concrete forms, write to Harbor Plywood Corporation, Chicago, Illinois.

HOUSING COMPANY

HEIRLOOM PANEL DIVISION
40 Central Street, BOSTON, MASS.
PLANTS
PORTSMOUTH, N. H. CAMBRIDGE, MASS. WAVERLEY, MASS.

HEIRLOOM PANEL

Products

HEIRLOOM PANEL—an interior finish wood panel, with non-warping fireproof composition core. Prefitted to specifications. Installed by the HOUSING COMPANY or local finish carpenters.

For Acoustex Sound Absorbent Tiles, Thermatex Insulation and Framing Steel, see Manufacturers' Index.

Description

In Heirloom Panel, the HOUSING COMPANY presents a material which meets every modern building requirement, yet retains the most desirable features of the antique paneling which it reproduces.

When wood was plentiful and time meant little, practically all paneling was solid wood sawed from air-dried lumber.

Moulded and carved by craftsmen, such paneling is justly considered the most beautiful of all interior finishes.

Heirloom Panel was developed to meet the increasing demand for a permanent modern panel. It is made up of front and back surfaces of wood, bonded and sealed to a rigid mineral core.

It may be used wainscot height or run from floor to ceiling.

Bookcases, cupboards, window seats, mantels or other special features to match may be incorporated as desired.

Genuine Heirloom Panel faithfully reproduces the beauty of antique paneling and meets every modern building requirement. Heirloom Panel creates and retains that permanent pleasing setting identified with cultural well being

Finishes

Heirloom Panel is available in smooth and antique hand-planed surfaces, in plain and knotty wood, in sectional or batten paneling, or in the old sheathing type random widths.

Four beautiful finishes are standard:
Old English—(Antique Oak)
Flemish—(Oak)
Colonial—(Knotty Pine)
Normandy—(Wormy Chestnut)
Special panels furnished in any desired wood veneer.

Heirloom finishes are made from wood specially chosen for grain and color, and carefully matched to give the mellow warmth and beauty of the original paneling of a bygone day. For lasting satisfaction, nothing surpasses the Heirloom Paneled room.

Advantages

Carved and Moulded—Heirloom Panel with a full 1/8-in. face (contrasting with the 1/28-in. face of modern veneer panels) permits the beauty of the old-time moulded and carved panel made of solid wood. Heirloom Panel is authentic.

Permanence—The difficulty of being sure of the use of properly seasoned studding makes the rigid construction of Heirloom Panel especially desirable. Built up with a solid core of mineral composition, Heirloom Panel does not warp, shrink, crack or swell.

Fire-resistant—The fireproof core makes Heirloom Panel an efficient fire-stop.

Moistureproof—Moisture is stopped both by the special waterproof paint used on the back surface and the mineral core. It is not necessary to back-plaster when Heirloom Panel is used.

Easily Installed — Heirloom Panel is delivered ready for immediate installation, either made up in large sections or for batten-type construction. It is prefitted to specifications and prefinished by expert craftsmen at the HOUSING COMPANY, who for years have enjoyed a reputation for the finest mill and finish work. A key plan accompanies the shipment and simplifies the installation, which can be handled by any finish carpenter.

Finished as Planned — The specifying of Heirloom Panel is an assurance to the architect that his interior paneling will be exactly as planned. No fitting or finishing is left to the installer.

Identification—Several features make it possible to identify genuine Heirloom Panel quickly.

(1) Its outer surface is thick enough to be moulded.
(2) The back of each panel is painted red—the only panel so marked.
(3) The name Heirloom Panel is imprinted on a single panel in each room finished. This is an absolute assurance that genuine Heirloom Panel has been used.

Service

From its modern plant in Waverley, Mass., HOUSING COMPANY has exceptionally fine shipping facilities. Heirloom Panel can be shipped to any destination.

The closest co-operation with the architect is part of every Heirloom Panel installation. HOUSING COMPANY engineers take every precaution to insure complete satisfaction on every job. Their services are available to architects without obligation of any kind.

Heirloom Panels, being precut, require no nailing. They are set right into the batten grooves easily and quickly

PENROD, JURDEN & CLARK COMPANY

Manufacturers of American Walnut Lumber and Veneers and Importers of Foreign Cabinet Woods

MILLS

KANSAS CITY, MO. DES MOINES, IOWA CINCINNATI, OHIO

SALES OFFICES

KANSAS CITY, MO., Sheffield Station—American Walnut Lumber and Veneer

CINCINNATI, OHIO, St. Bernard—Fancy Veneer and Lumber, Domestic and Foreign

American Walnut Lumber

A superior raw material, obtained from the region of the best stands of Walnut Timber. Modern equipment and facilities in our plant for conversion, a skillful corps of workmen, and more than fifty years' experience of our supervising staff, is the guarantee for the high quality of our complete and diversified stock of Walnut lumber.

ith a well-organized Service Department, our business is operated for the purpose of supplying every need of the market at competitive prices. The heart of our entire organization is in our work, and being the largest manufacturers of American Walnut, we are in a position to satisfy any of your requirements of lumber for interior trim, flooring and other sorts of woodwork.

American Walnut Veneer

We carry a complete stock of rotary, half-round, back cut, sliced, quartered, bastard and flat cut, stumps, butt, crotch and burl veneer of beautiful figure effects and of various colors and shades, well manufactured and from the very choicest material. In our stocks you will find many trees whose grain and markings will suggest new conceptions of design that will inspire the best of creative effort.

Features of American Walnut

American Walnut is the King of decorative woods because of its unsurpassed natural beauty, for its valuable properties of holding its place, resistance to decay and abuse, its excellent blending and finishing qualities, its exceptional variety of figure effects and dignified color. When made up into panels and trim it adds more value to the room than its original cost. It is inexpensive in maintenance and retains its mellow, beautiful effects for ages. It combines economy with beauty, giving lasting satisfaction to the architect as well as the owner.

Imported and Fancy Veneers

In addition to our stock of American Walnut, we carry a complete line of the following imported and fancy veneers:

Ash
Avodire
Ayous
Bilinga
Black Bean
Bosse
Bubinga
Bulletwood
Cherry
Cocobolo
Ebony, Macassar
Framire
Goncalo Alves
Graywood
Harewood
Kambala
Koa
Laurel, Indian
Lovea
Maple
Mahogany, African
Mahogany, Mexican
Movingui
Oak, American
Oak, English Brown
Oak, Russian
Oak, Australian Silky
Oriental Wood
Pearwood
Padauk, African
Padauk, Andaman
Padauk, Burma
Palo Blanco
Prima Vera
Rosewood, Brazilian
Rosewood, East Indian
Rosewood, Madagascar
Sapelie
Satinwood, East Indian
Sycamore
Tamo
Teak
Tulipwood
Walnut, Circassian
Walnut, English
Walnut, French
Walnut, Italian
Zebrano

Burls

Ash
Elm, French
Madrona
Maidhu
Maple
Myrtle
Poplar
Redwood
Soleye
Thuya
Walnut, Circassian
Walnut, French

Crotches

Faux Satine
Mahogany
Oak
Rosewood, Brazilian
Walnut, Circassian

Butts

Ash
Maple
Walnut, French

Swirls

Ash
Oak

Sample Rooms and Stock

We extend a cordial invitation to you to visit our conveniently arranged sample rooms and inspect our stocks, or if preferable, we shall be pleased to submit samples for your selection according to your specifications. Sales offices in the principal cities of the United States and Canada.

E. F. HODGSON CO.

Manufacturers of Hodgson Houses

BOSTON, MASS.

OFFICES AND SHOWROOMS

BOSTON, MASS., 1108-10 Commonwealth Ave. BRADENTON, FLA. NEW YORK, N. Y., 6 East 39th Street

Outdoor Exhibit, South Sudbury, Mass., seventeen miles from Boston on the New York and Boston State Road, near Wayside Inn

Description

Hodgson houses have been used in all climates for thirty-four years, proving practical for many purposes through the year. Sides and roofs are of clear red cedar, floors of hard pine. They are made in sections, each section complete with doors and windows fitted with locks, etc. Finished neatly inside and painted three coats outside.

Sections are securely fastened together with wedge key bolts; no threads to rust; quickly assembled by unskilled labor.

They are attractive in appearance, practical for all purposes and durable, saving expense and annoyance of building.

Hodgson houses are used on the estates of the Ameses, Hunnewells, Fricks, Rockefellers, McAlpins, Carnegies, Astors, Fennos, Lowells, Vanderbilts, Bancrofts, Gardners, Belmonts, Goulds, Cranes, Iselins, Forbeses, etc., being used for overflow houses, play houses, garden houses, chauffeurs' houses, servants' houses, garages, poultry houses, kennels, etc.

Complete catalogue mailed on request.

Hodgson Play House—8x12 Ft.

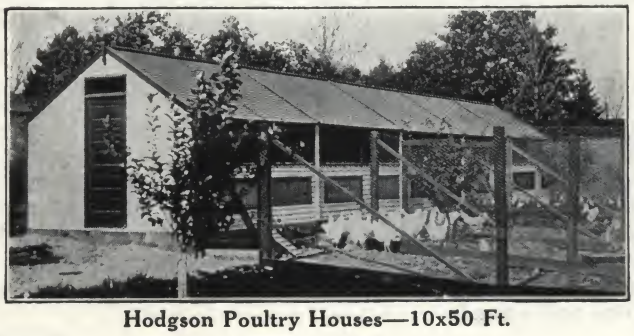
Cabanya (Bath House)—12x24 Ft.

Hodgson Garage—20x36 Ft.

Portable School Annexes—20x42 Ft.

Hodgson Bungalow—12 Rooms

Hodgson Club or Tea House—24x72 Ft.



Hodgson Poultry Houses—10x50 Ft.

Hodgson Dog Kennel

WINDOW and DOOR

Andersen

FRAMES

For Specification Writers

Details of the New *Andersen* Master *Frames*

LOCAL REPRESENTATIVE OF

ANDERSEN FRAME CORPORATION

BAYPORT, MINNESOTA

ANDERSEN FRAME CORPORATION

Manufacturers of Andersen White Pine Frames for Windows and Doors

BAYPORT, MINNESOTA

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ANDERSEN MASTER FRAMES

THE Andersen Frame Corporation, Bayport, Minnesota, manufactures frames for basement, double-hung and casement windows, and outside door frames for buildings of frame, stucco, brick veneer, and masonry construction.

The Andersen Master Frame is a product of twenty-five years of specialization in the manufacture of window and door frames.

Outstanding Features

(1) **Genuine White Pine**—The New Andersen Master Frames are made entirely of clear Genuine White Pine.

(2) **Workmanship**—the highest class of smooth, accurate mill workmanship.

(3) **Noiseless, Wear-Proof Pulleys**—An exclusive feature covered by Andersen patents. (See page 3.)

(4) **Locked Sill-Joint Construction**—Holds sill and jamb rigid so they cannot pull apart when weight is applied to sill. Prevents leakage at this point. This construction has all the advantages of both sill-dadoed and jamb-dadoed frames with none of their disadvantages. Jamb lugs resting on header below sill give permanent support which eliminates blocking under sill and trimming of lugs. (Patent No. RE. 17,552, Jan. 7, 1930.) (See pages 7 and 8.)

(5) **Provisions for Weathertight Installation**—The Andersen frame, through special patented features, provides for home comfort because of its exclusive weathertight features. (See pages 7, 8, and 9.)

(*a*) ***Patented Grooves for Wide Blind-Stop***—As every architect and builder knows, the use of wide blind-stops makes possible a weathertight joining between frame and wall. Narrow outside casings (less than 3¾") can be used only on frames provided with wide blind-stop extensions.

(*b*) ***Insulated Mullion***—The patented groove feature is applied to the mullion. When the continuous blind stop is inserted, there is an insulating dead-air space between casing and blind stop. (The continuous mullion blind stop is furnished with all Andersen mullions.)

(*c*) ***Mortar Clinch Grooves in Masonry Frames***—The masonry frames have mortar clinch grooves on all surfaces which have contact with masonry, making them practically self-caulking. Further weathertight provision is made by caulking rabbet back of the moulding. (See page 9.) (Patent Pending.)

(6) **Adaptability**—There is an Andersen Master Frame for every type of building construction. (See page 3.) Andersen Master Frames are adaptable to varying wall thicknesses. (See pages 17 and 18.)

(7) **Casement Frame**—The combination casement frame is adapted to either inswinging or outswinging sash using the same frame and same size sash for both types.

These outstanding features and other advantages of Andersen Frames are illustrated on pages 7, 8, and 9.

Continued on next page

Materials Used in Andersen Master Frames

Technical Data on Woods

Genuine White Pine

Andersen Master Frames are furnished in 100% Genuine White Pine when so specified* (except exterior door sills when specified to be White Oak).

**Andersen Master Frames are also made of Pondosa Pine, all important joints primed with aluminum paint.*

Nomenclature— Faulty and misleading nomenclature has made it *dangerous* to specify simply "white pine" when the best in wood durability is required. To establish definite appreciation of the fact that all parts of Andersen Frames are of *genuine White Pine* and assist the architect to clearly differentiate in his specification between this and the many mis-named varieties of so-called "white pine" the following technical information is given.

General Classification of Pine—Pine is botanically divided into two general groups, *White Pine (Genuine White Pine) and Yellow Pine (including many miscalled White Pines).*

These are marketed commercially under various trade names. Each variety has its distinct use and selection should be made carefully based upon the individual characteristics.

Genuine White Pine was used in early Colonial and Pioneer homes which have stood 300 years or more, often under the most trying circumstances of neglect. They are wonderful examples of the permanence of this wood.

Western white pine, Oregon white pine, California white pine and other so-called white pines are of the *yellow pine group.* They are excellent material when used where this variety is best adapted. They often pass in general appearance and degree of hardness for *White Pine.* Only recently have they begun to be marketed under the trade name of *Pondosa Pine* (derived from the botanical name *Pinus Ponderosa*). Pondosa Pine is quick growing with more sap wood and consequently less heart wood. It generally has a harder, stronger fibre than soft white pine but when exposed to the weather it is less durable and does not hold paint as well.

The impression has grown that the White Pine growth of timber has been entirely consumed. This is true in many localities. The *genuine White Pine* will be obtainable, however, for many years to come in large quantities and in the finest grades. Large stands exist in many parts of the United States especially in California where the sugar pine abounds.

Characteristics—*Genuine White Pine is slow growing with a minimum of sap wood* and a *maximum of heart wood.* The trees are large and yield a high percentage of clear stock free from knots, sap and other defects. The uniformly *even texture* and *softness of fibre* make it extremely workable. It combines *strength with light weight.* It endures for years *without cracking, shrinking, warping* or *swelling.* It *resists decay* to an unbelievable degree and holds paint better than any other wood.

White Pine Markets—The Andersen Frame Corporation obtains *genuine White Pine* from the following sources:

(1) Sugar pine *(Pinus Lambertiana)* from California.

(2) Western Idaho white pine *(Pinus Monticola)* from Idaho.

(3) Eastern white pine *(Pinus Strobus)* from Minnesota, Wisconsin and Ontario.

The characteristics of these three varieties are practically identical. All have the five needle leaf cluster.

Technical Note No. 215 issued by the Forest Products Laboratory, United States Forest Service, Department of Agriculture at Madison, Wisconsin, states:

"Of the dozen or so botanical species of true white pines grown in the United States, three are of outstanding importance in the lumber industry. They are, Eastern White Pine *(Pinus Strobus)*, Western (Idaho) White Pine *(Pinus Monticola)* and Sugar Pine *(Pinus Lambertiana).*

"There is no absolutely positive means of identifying the three white pines one from another, microscopically."

Grade Used—The *Genuine White Pine* used in Andersen Frames is virtually *clear stock.*

White Oak

Exterior door sills where so specified are of White Oak.

Characteristics—A hard wood of straight, close fibre that is well suited for hard, abrasive wear. White oak is one of the most decay-resisting woods of all the commercial hard woods.

White Oak Market—The Andersen Frame Corporation obtains the white oak for its products from the states east of the Rocky Mountains where it grows on the higher altitudes. No white oak grown in the lowlands or swamps is purchased.

Grade Used—The white oak used in Andersen Door Frames is *clear* grade, plain sawed.

Continued on next page

Andersen Noiseless Pulley

An Exclusive Feature

The Andersen Noiseless, wear-proof pulley is an exclusive Andersen feature and is used in all Andersen double hung window frames.

Housing—Cast gray iron designed to prevent sash cord slipping off wheel or jamming. (Size of face plate—1″x4⅝″.)

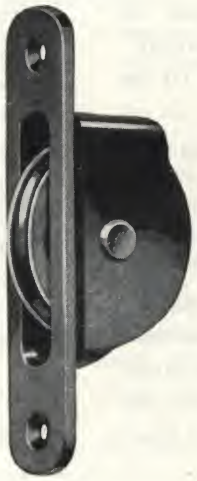
Wheel—Cast gray iron, machine turned, with "U" groove for sash cord or chain; 2″ diameter.

Axle—Polished Steel; 5/16″ diameter.

Axle Bearing— Hard white maple, permanently saturated with a non-drying lubricant. This special feature is patented. (Patent No. Re. 16594).

Finish—Entire pulley is treated with rust-resisting lacquer.

Every Andersen Noiseless Sash Pulley is *guaranteed* to be noiseless in operation, to carry any size sash weight, and to function perfectly for an unlimited period.



PATENT NO. RE. 16594

Tests made at the University of Minnesota of various makes of pulleys resulted as follows:

After tests equivalent to 186 years of ordinary wear, this Andersen pulley was in excellent condition. The engineer in charge stated that "at the end of the test, the bearing appeared to be as good as new" and "the pulley ran very quietly throughout." Of six other types of pulleys in this test, the most enduring operated perfectly for 3½ years, and stopped altogether at 24 years. Copies of this test will be gladly furnished on request.

For Special Pulleys See Sweet's Index

A Frame for Every Type of Construction

Fulfill Rigid Specifications—Great care has been exercised in producing Andersen Frames so that they will meet the *architect's most rigid specifications* as to design, materials and workmanship, and yet fulfill the widest possible use. There is an Andersen Frame admirably adapted for every type of building. Many special patented features can be obtained *only* in Andersen Frames. See pages 7, 8, and 9.

Made for Permanence—Every part of Andersen Frames is particularly designed for strength and rigidity and to permanently prevent the leakage of air or water into the building. Genuine White Pine insures that the frames will last forever.

Shipped Unprimed for Inspection—Andersen Frames are shipped without priming paint so that all materials and workmanship may be examined. Any distributor will gladly pick a frame at random from stock for inspection. A uniform product is guaranteed.

Better Than Custom Made Frames—Andersen Standard Frames are better than expensive, specially designed custom made frames milled from special details. *Clear, genuine White Pine* lumber as used in Andersen Frames can not be used for special millwork without great waste.

Machines used interchangeably for a variety of mill products in different woods can not economically produce the quality and accuracy of workmanship or the smooth finish that can be produced with special machines used for but *one product.*

Speed of manufacture, which is the great economy of specialized quantity production, is lost when machines and operators work at a variety of operations.

Individual Designs Possible—The design of Andersen Master Frames is such that by a slight addition or alteration of the exterior trim, individual architectural design may be incorporated without loss of economy or the fine materials and workmanship built into the working parts of the frame.

Continued on next page

Andersen Standard Frame Sizes

ANDERSEN Master window frames are made in all sizes to take standard stock windows that have 4" wood allowance in width and 6" wood allowance in height over glass size.

Sizes are also available for sash having 4½" wood allowance in width and 6" wood allowance in height over glass size.

Cellar Frames

Details Nos. 551, 552, 553, 554 and 555

Widths:

Opening size
2'4"
2'5"
2'7"
2'9"
2'10"
3'4"

Add ½" to the above widths for sash having 4½" wood allowance.

Heights:

Opening size	
1'2"	1'9"
1'3"	1'10"
1'4"	1'11"
1'5"	2'0"
1'6"	2'1"
1'7"	2'5"
1'8"	

Double Hung Window Frames

Details Nos. 601, 601A, 602, 602A, 603, 603A, 604, 604A, 651, 670, 671, 672

Widths: (Head & Sill Bundle)

Glass Size	*Sash Opening Size*
12" 2 Lt.	1'4"
14" "	1'6"
16" "	1'8"
18" "	1'10"
20" "	2'0"
10" 4 Lt.	2'1"
22" 2 Lt.	2'2"
24" "	2'4"
12" 4 Lt.	2'5"
26" 2 Lt.	2'6"
27" 2 Lt. or 13" 4 Lt.	2'7"
28" 2 Lt.	2'8"
14" 4 Lt.	2'9"
30" 2 Lt.	2'10"
32" "	3'0"
34" "	3'2"
36" "	3'4"
38" "	3'6"
40" "	3'8"
42" "	3'10"
44" "	4'0"
48" "	4'4"

Above widths also available in mullion or triple heads and sills.

Add ½" to the above widths for sash having 4½" wood allowance.

Heights: (Side Bundle)

Glass Size	*Sash Opening Size*
12" 2 Lt.	2'6"
14" "	2'10"
15" "	3'0"
16" "	3'2"
18" "	3'6"
20" "	3'10"
21" "	4'0"
22" "	4'2"
24" "	4'6"
26" "	4'10"
28" "	5'2"
30" "	5'6"
32" "	5'10"
34" "	6'2"
36" "	6'6"

Above heights also available in mullion center bundles for use in multiple frames.

Stock Brick Opening Sizes

To estimate brick opening sizes for brick veneer and masonry, add dimensions as indicated below to sash opening sizes above:

	Width	Height
Frame No. 651	4"	4⅝"
Frame No. 670	4"	5⅜"
Frame No. 671	4"	4⅝"
Frame No. 672	4"	4⅝"

Continued on next page

Andersen Standard Frame Sizes (Continued)

Casement and Stationary Sash Frames

Details Nos. 701, 702, 703, 704, 751, 752, 761, 762, 771 and 772

Widths: (Head & Sill Bundle)

Sash Opening Size

1'0"	2'8"*
1'2"	2'10"*
1'4"	3'0"*
1'6"	3'2"
1'8"	3'4"
1'10"	3'6"
2'0"*	3'8"
2'2"	3'10"
2'4"*	4'0"
2'6"*	4'4"

Above sizes available in mullion and triple heads and sills.

Add ½" to above widths for sash having 4½" wood allowance.

Sizes marked * are most popular sizes.

Heights: (Side Bundle)

Sash Opening Size

1'5"	2'8½"	3'5½"	4'5"
1'7"	2'9"	3'6"*	4'5¾"
1'9"	2'11"*	3'9¾"	4'6"*
1'11"	2'11½"	3'10"	4'10"*
2'1"*	3'0"*	3'11"	5'1¾"
2'3"	3'1"	3'11½"	5'2"*
2'5"*	3'2"	4'0"	5'6"
2'7"	3'5"	4'2"	5'10"

Above sizes available in mullion center bundles for use in multiple frames.

Stock Brick Opening Sizes

To estimate brick opening sizes for brick veneer and masonry, add dimensions as indicated below to sash opening sizes above:

Frames Nos. 751 and 752	4½"	4-½"
Frames Nos. 761 and 762	5"	4-¾"
Frames Nos. 771 and 772	4½"	4-½"

Types and Sizes Carried by Dealers

Andersen Master Frames are distributed nationally. For Andersen stock sizes see pages 4 and 5. However, every type and size is not carried by the local distributor in every district. Local custom and demand govern the supply. The dealer can only profitably stock those types or designs and those sizes most used in his particular territory.

Before detailing or specifying Andersen Master Frames, check the stock carried locally with your nearest dealer. We will furnish his name upon request.

Outside Door Frames

Details Nos. 801, 802, 805, 806, 809, 851, 852, 853, 854, 855, 856 871, and 872.

SINGLE

Widths: (Head & Sill Bundle)	Heights: (Side Bundle)
2'6"	6'6"
2'8"	6'8"
2'10"	6'10"
3'0"	7'0"

Above sizes for either 1⅜" or 1¾" doors.

SIDE LIGHT DOOR FRAMES

	Door Widths:	Sidelight Widths:	Sidelight Heights:
	2'6"	1'0"	6'6"
	2'8"	1'2"	6'8"
	2'10"	1'4"	6'10"
	3'0"	1'6"	7'0"
Rabbeted:	1¾"	2⅞"	2⅞"

Continued on next page

Standard Frames in Brick Masonry

IN the dimensional design of wood window and door frames, the architect has customarily designed the frame to fit the *theoretical* dimensions for widths and particularly heights established by the brick unit (brick plus the selected thickness of mortar joint). These dimensions ordinarily disregard entirely standard glass sizes—the glass is cut to fit the sash.

Andersen Standard Frames are dimensioned to take standard sash which in turn are made to fit standard glass sizes—a worth while economy.

Standard wood frame dimensions adapt themselves to the customary brick dimensions with but slight, entirely inconspicuous adjustment in the thickness of the mortar joints as hereinafter set forth. No more difficulty is encountered in the use of Standard Wood Frames than in the case of Standard Steel Windows, which are dimensioned entirely without regard to brick unit measurements.

Dimensions of Brick—The standard dimensions of a rough textured face brick, as established by The American Face Brick Association is "approximately" 8"x2¼"x3¾". The smooth brick is "approximately" 8"x2¼"x3⅞". It is, however, very important to keep in mind that clays cannot always be made to burn to an exact dimension. This is particularly true of brick of mingled shades where considerable variation in dimensions often exists between the lighter and darker toned bricks taken from the same kiln.

Brick Units— Vertical brick units are based on the theoretical height of the brick, plus a mortar joint and the various vertical heights of brick, and brick veneer buildings are customarily based on multiples of this unit.

Careful inspection of actual brick masonry will establish the fact that while the vertical heights may adhere approximately to multiples of the brick unit, the elements, consisting of the brick and the joint, both vary considerably from the theoretical dimensions, (depending on the varying thicknesses of the individual bricks) without being in the least apparent to the eye or detrimental to the general character of the masonry wall.

Horizontal brick units, due to the greater length and width of the brick, vary much more from the theoretical dimensions than do the vertical dimensions. Again the length of the horizontal unit is materially affected by the particular bond or pattern in which the bricks are laid.

How to Adapt Brickwork to Standard Frame Sizes—

Widths—Standard window and door frames vary in widths on multiples of 2" with, in many cases, several sizes varying on multiples of 1". (See pages 4 and 5.) In any of the brick bonds customarily used slight adjustment in the thickness of vertical joints together with the handling of the face brick bond, will easily accommodate the brick masonry to any window width selected.

Heights—Generally, Standard Cellar Frames vary in height on multiples of 1"; Double Hung Frames on multiples of 4"; Casement Frames on multiples of 2" and 4"; and Door Frames on multiples of 2" (see page 5). Even where the variations are in multiples of 4", any window frame height selected may, by slight adjustment of the *theoretical* thickness of the horizontal mortar joints between brick courses, be adapted perfectly to the brick masonry as shown by the example below.

Example—Adaptation to Height—For the purpose of illustrating how a standard frame will adapt itself to any brick height unit 5'2" high window opening, No. 651, Double Hung Brick Veneer Frame has been arbitrarily selected. (For schedule of heights see pages 4 and 5.) To obtain the actual frame height for the masonry opening there should be added to the 5'2" window opening height, 2" at the head from jamb measuring point to underside of angle lintel and 2⅝" at sill, from measuring point to bottom outer edge of sill, making a total over all frame height of 5'6⅝".

The table below shows the number of brick units (brick and joint required.) There is also given the actual theoretical brick masonry height and the actual total amount that the brick work must be stretched or compressed to fit the actual 5'6⅝" frame dimensions. Note that under the most unfavorable conditions where the brick unit of 2⅝" (2¼" brick ⅜" joint) is used, each of the 25 joints would be compressed but 1/25".

The theoretical brick height would vary slightly, depending upon the type of stone or brick sill used, but this would have no material effect on the figures given below.

NO. 651 DOUBLE HUNG WINDOW

Andersen Height 5' 2"+4⅝"=5' 6⅝" Total Masonry Height

Brick Unit B-J	Joint	No. of Courses	Theoretical Brick Height	Stretch (S) or Compress (C)
2⅜"	⅛"	28	5'6½"	(S) ⅛" in 28C
2½"	¼"	27	5'7½"	(C) ⅞" in 27C
2⅝"	⅜"	25	5'5⅝"	(S) 1" in 25C
2¾"	½"	24	5'6"	(S) ⅝" in 24C
2⅞"	⅝"	23	5"6½"	(S) ½" in 23C
3"	¾"	22	5'6"	(S) ⅝" in 22C

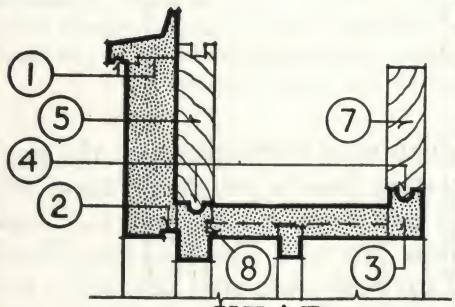
Continued on next page

Andersen Special Features

Window and Door Frames for Frame Construction

PATENT NOS. 1,595,958, 1,648,712, RE. 16,594, RE. 17,552, 1,735,559, 1,767,569—OTHER PATENTS PENDING

Double Hung Window Frame for Frame Construction



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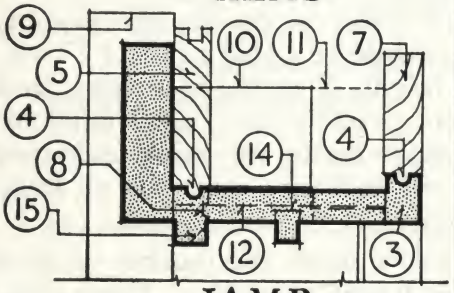

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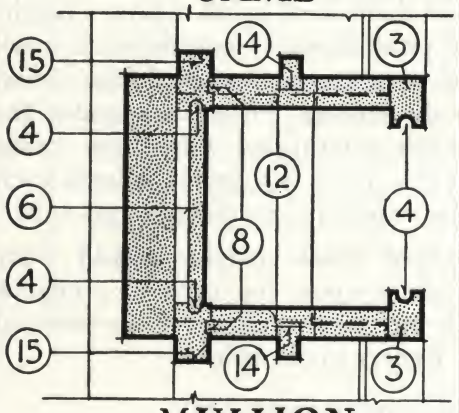
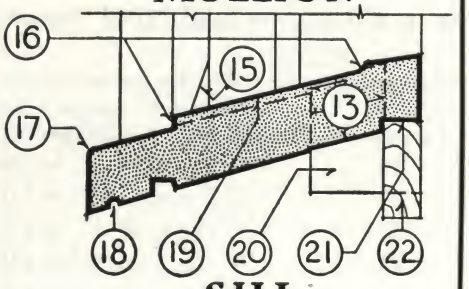


MULLION



SILL

Note the following distinctive features. Many of them are found only in Andersen Master Frames.

The parts outlined in heavy lines are Andersen Frame members.

(1) Rabbet and drip groove in water drip prevent water leakage.

(2) Closed joint between head and side casing for more weather-tight construction.

(3) Inside liner provides more space for nailing inside trim. Permits variation of jamb width for wallboard or plaster base without ripping.

(4) Patented groove‡ to receive (5) piece of stock matched lumber forming a wide blind stop; in mullion, this groove receives a (6) double-tongued filler piece *furnished* for continuous blind stop; in inside liner, it receives (7) an inside ground casing. This groove also makes it possible to convert this standard frame to a brick veneer or masonry box frame.

(8) Jamb is tongued into blind stop to prevent air and water leakage.

(9) Sill ends are trimmed and smooth cut.

(10) Extension of sill backs up joint between sill and side casing.

(11) Extension of head jamb supports wide blind stops.

(12) Jamb and sill dadoed to make locked sill-joint. Mullion jambs also are dadoed for locked sill-joint and are dadoed into continuous head jamb.

(13)* Locked sill-joint insures rigid and leak-proof construction.

(14) Groove for parting stop is shallower than dado for sill to prevent water leakage.

(15) Chamfered blind stop insures better sill drainage.

(16) Shoulders on sill prevent air and water leakage under lower sash and storm sash. Note high front shoulder on sill which, on sill extension (10) backs up joint between sill and side casing.

(17) Front edge of sill is rounded to prevent slivering and denting.

(18) Water drip groove under sill.

(19) Three-inch slope to sill insures better drainage. Designed to receive stock stool.

(20) Jamb lugs below sill (resting on header) give permanent support. No trimming or blocking necessary.

(21) Rabbet to receive (22) an inside ground casing to prevent air leakage.

‡*See page 9 for Air Leakage Test on this feature.*

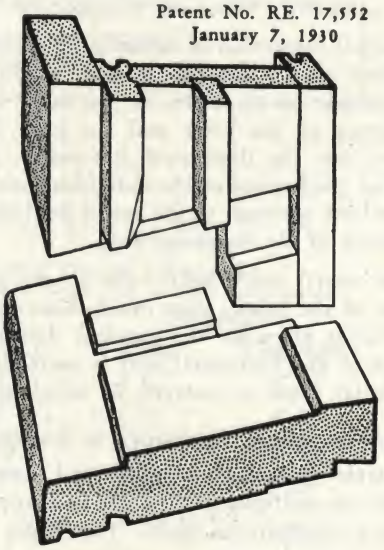
*The Locked Sill-Joint on Double-Hung Frames

The illustration at the right shows how both jamb and sill are dadoed to lock the sill-joint, and prevent air and water leakage at this point.

To lock the sill-joint slide jamb dadoes into sill dadoes.

The locked sill-joint is an exclusive feature of Andersen Master Frames and is protected under U. S. Patent No. RE. 17,552, January 7, 1930.

Patent No. RE. 17,552
January 7, 1930



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Andersen Special Features

Combined Inswinging and Outswinging Casement Frames

PATENT NOS. 1,595,958, 1,623,772, 1,648,712, RE. 17,552, 1,767,569 — OTHER PATENTS PENDING

The combined casement frame can be used for either inswinging or outswinging sash, the sash in either case being exactly the same size.

The head jamb at (23) the outer sash rabbet is 15/16" thicker than at (24), the inner sash rabbet, thus equalizing the normal difference in height at (25) due to the sill slope.

The sill filler stop (26) is inserted when frames are to be used for outswinging sash, forming a shoulder for the bottom rail and a level surface back of the sash for outswinging casement hardware.

When screens or storm sash are used with inswinging casement sash it is recommended that the screens or storm sash be set in the outer sash rabbet for better appearance. We recommend the use of ordinary butt hinges or hardware similar to Phenix Hanger No. 20.

When outswinging sash are used, the screens can be fastened to the inner rabbet with ordinary butt hinges, or pivot hinges similar to Phenix No. 45 or by using casement fastener similar to Phenix No. 69.

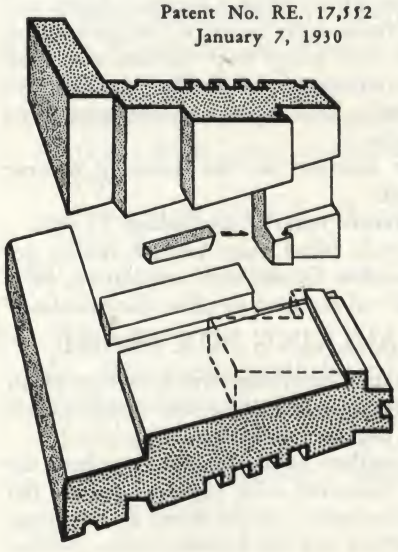
(27) Perpendicular groove in side rabbets prevents water being driven around sides of inswinging sash.

(28) Mortar clinch grooves on all surfaces making contact with mortar insure weathertight installation of casement frames in masonry construction.

(29) White oak wedge furnished with frame to lock sill in place.

By ripping down the outside casing or substituting staff beads, the frame is adapted to brick veneer or masonry construction.

When multiple casements are desired it is recommended that single sash closing against a dividing mullion be used, as it is difficult to make rabbeted meeting stiles weather tight.



Patent No. RE. 17,552
January 7, 1930

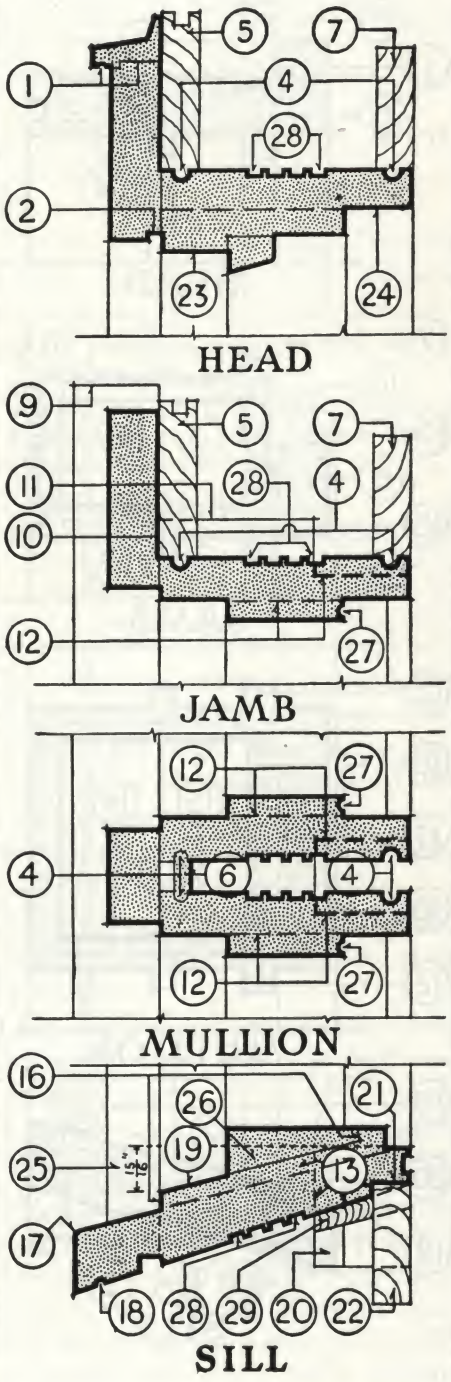
*The Locked Sill-Joint
on Casement Frames

The illustration at the left shows how both jamb and sill are dadoed to lock the sill-joint and prevent air and water leakage at this point.

To lock sill in place, slide jamb dadoes into sill dadoes and insert White Oak wedge in jamb dado under sill. (White Oak wedges are furnished with all Andersen Master Casement Frames.)

The locked sill-joint is an exclusive feature of Andersen Master Frames and is protected under U. S. Patent No. RE. 17,552, January 7, 1930.

Casement Frame for Frame Construction



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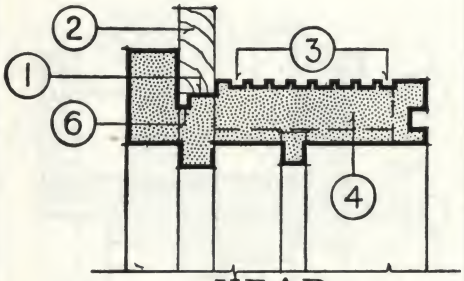
Andersen Special Features

Window and Door Frames for Masonry Construction

PATENT NOS. 1,595,958, 1,735,559—OTHER PATENTS PENDING

Double-Hung Window Frame for Masonry Construction



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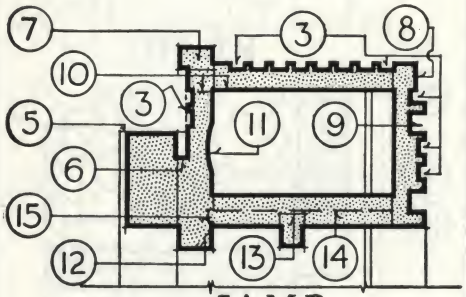

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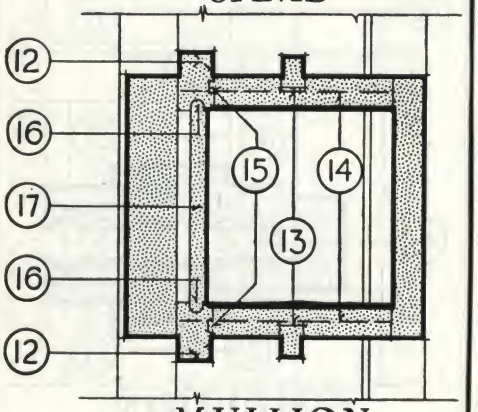
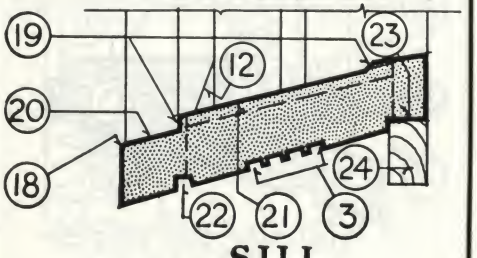


MULLION



SILL

(1) Rabbet (patented) to receive (2) wind stop. Especially desirable when used with steel lintels.

(3) Mortar clinch grooves‡ to insure better joining between frame and masonry. (Patent pending on this feature.)

(4) Extra heavy (1⅜") head jamb.

(5) Sill ends are trimmed and smooth cut.

(6) Recess to permit mortar clinch or to receive caulking material.

(7) Anchor strip furnished with frame (side only). By turning this strip the overall jamb width can be reduced.

(8) Rabbet for flush plaster in 9-inch wall construction. Allows use of standard trim.

(9) Extra groove on inside box casing to permit use of extension jambs, either flush or with reveal.

(10) Extension of sill backs up joint between brick moulding and sill, and closes pulley box.

(11) Blind stop is hollow backed for sash weight.

(12) Chamfered blind stop insures better sill drainage.

(13) Groove for parting stop is shallower than (14) dado for sill to prevent water leakage.

(15) Jamb is tongued into blind stop to prevent air and water leakage.

(16) Patented grooves to receive (17) double-tongued filler piece which is furnished to make continuous mullion blind stop. Mullion jambs are dadoed into continuous sill and head jambs.

(18) Front edge of sill is rounded to prevent slivering and denting.

(19) Shoulders on sill prevent air and water leakage under lower sash and storm sash. Note high front shoulder on sill which, on sill extension (10) backs up joint between sill and side casing.

(20) Brick moulding stands on sill for better drainage.

(21) Three-inch slope to sill insures better drainage. (Designed to receive stock stool.)

(22) Groove for water bar.

(23) Rabbet to receive (24) an inside ground casing to prevent air leakage.

‡*See below for report of Air Leakage Test on this feature.*

Air Leakage Tests

ANDERSEN PATENTED WIDE BLIND STOP FEATURE

To accurately measure the amount of air leakage between frame and wall in the case of ordinary window frame installation as compared with a frame installed with the Andersen wide blind stop feature, two wall sections were built and tested in the laboratory of the Engineering Department at the University of Wisconsin. Air leakage was measured and recorded by accurate scientific apparatus.

Air leakage through the frame installed in the ordinary manner amounted to 174 cubic feet per hour.

The Andersen wide blind stop feature reduced air leakage 53.4%.

The engineers reported—"the wide blind stop feature makes for comfort by reducing drafts around window frames and, in addition, saves on the radiation to be installed and the coal required to offset the heat loss."

THE ANDERSEN SELF-CAULKING BOX FRAME

A similar test was made to accurately determine the reduction of air infiltration between frame and masonry, as a result of the mortar clinch grooves on surfaces which come in contact with masonry.

Air leakage through the frame caulked by slushing mortar into the clinch grooves was reduced 42% as compared with the frame with flat surfaces on the sides and back. The engineer's report shows an estimated saving of one-third of a pound of coal per day *per opening* under average winter conditions.

Continued on next page

Master Specifications

For Architects and Builders

GENERAL PROVISIONS:

A1. Construction: Construction and workmanship shall be of the highest class of machine millwork, smooth and accurate, with all joints sealed against infiltration and water leakage.

A2. Erection: Erection of frames shall be done in accordance with Andersen details, using casing nails, neatly set in for putty where exposed for painting. (See (D) for leading and priming.)

A3. Blind Stop and Ground Casings: Furnish and install in accordance with Andersen details outside blind stop and inside ground casings of sound common pine of stock matched flooring of width detailed.

(Note: Where outside blind stops are specified, outside trim casings shall not be permanently nailed in place until building paper wind flashing has been installed.)

A4. Special Trim: (List here any special items of revised special details, such as outside casing or staff bead design, used in conjunction with the main standardized frame members.)

A5. Protection: Properly protect frames from injury both before and after setting. Protect in an adequate manner against moisture until primed.

B. WINDOW FRAMES:

B1. General:

B1a. All window frames, unless specially otherwise noted, shall be ANDERSEN MASTER FRAMES, made by Andersen Frame Corporation, Bayport, Minnesota.

B1b. Numbers on plans and details, designating window frames ((x) including exterior casings, mouldings, etc.) are taken from the Andersen catalog No. 500.

(Note: Omit clause (x) if special trim is substituted in A4.)

B1c. (List frames, if any, not Andersen made.)

B2. Materials:

B2a. All parts shall be of clear *Genuine White Pine* (eastern white pine), (Pinus Strobus), Western (Idaho) White Pine (Pinus Monticola), Sugar Pine (Pinus Lambertiana).

B2b. (For box frames in masonry.) Inside casings and backs of pulley boxes shall be of sound common pine.

C. EXTERIOR DOOR FRAMES:

C1. General:

C1a. All exterior door frames, unless otherwise noted, shall be ANDERSEN MASTER FRAMES, made by Andersen Frame Corporation, Bayport, Minnesota.

C1b. Numbers on plans and details, designating exterior door frames, ((Y) including exterior casings, mouldings, etc.) are taken from the Andersen Catalogue No. 500.

(Note: Omit clause (Y) if specified trim is substituted in A4.)

C1c. (List Exterior Door Frames, if any, which are not Andersen made.)

C2. Materials:

C2a. All parts shall be of clear Genuine White Pine (same as B2a for window frames) ((z) except where sills are indicated to be of clear plain sawed White Oak.)

(Note: Omit clause (z) if sills of pine are to be used.) (Identify by number or location if both pine and oak sills are used.)

D. LEADING AND PRIMING:

(Note: Andersen frames are shipped unprimed for inspection. Since it is the manufacturers' desire to assist in the greatest satisfaction in the use of his product, proper protection to the raw wood is desirable and these provisions are therefore suggested.)

D1. Leading: When assembling and erecting the several units, all joints of frames shall be carefully leaded with pure white lead paste to seal joints permanently from the action of the moisture.

D2. Priming: Prime all frames immediately before or after delivery to the building.

D2a. Pulley stiles and head jamb of double-hung windows shall be primed with pure linseed oil only.

D2b. All exposed frame parts shall be thoroughly primed with lead (or lead and zinc) and oil paint.

(Note: If ready mixed paints are used, it is suggested that the priming coat shall consist of the following: Reduce the paint as it comes from the manufacturer with one (1) quart of turpentine and one-half (½) gallon of pure linseed oil to each gallon of paint.)

D2c. Where plank cellar window, casement and exterior door frames come in contact with wet masonry, prime the backs (jambs, heads and sills) with asphalt paint.

Continued on next page

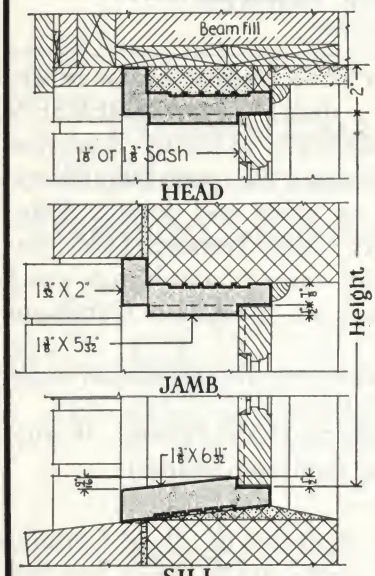
= Andersen MASTER Frames =

Cellar Frames for Brick, Concrete or Tile Walls

PATENTS PENDING

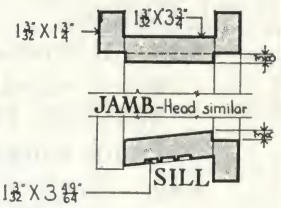
Quarter Size Details Furnished Upon Request. *All parts of Genuine White Pine.*

FRAME NO. 551

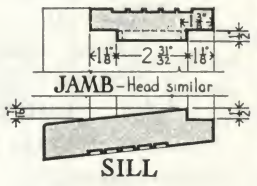


Scale—1½ inch equals one foot.

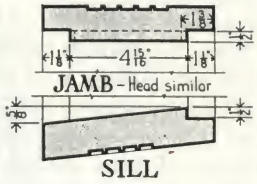
FRAME NO. 553



FRAME NO. 554



FRAME NO. 555



FRAME NO. 552

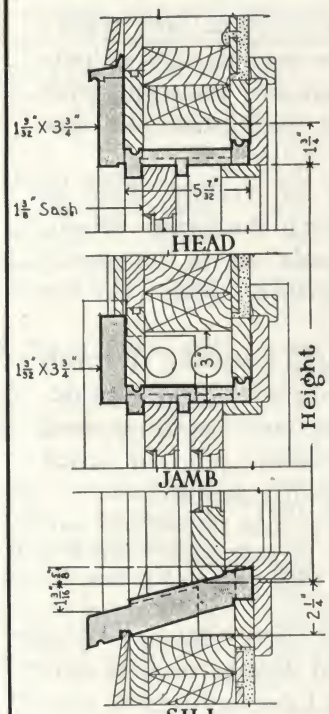
Narrow Sill
Otherwise Same as No. 551.

Double Hung Window Frames for Frame Buildings

Patent Nos. 1,595,958, Re. 17,552 and 1,735,559

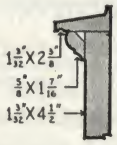
Quarter Size Details Furnished Upon Request. *All parts of Genuine White Pine.*

FRAME NO. 601



Scale—1½ inch equals one foot.

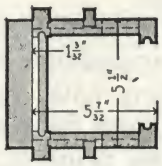
FRAME NO. 601-A



Moulded Cap Head Casing

Otherwise Same as No. 601

MULLION NO. 601-M



For Frames No. 601 and No. 601-A

(Head Jamb and Sill for Multiple Frames furnished in one piece.)

This frame may be easily converted to a frame for Brick Veneer Construction or a box frame for Masonry Construction.

The Locked Sill-Joint

The illustration at the right shows how both jamb and sill are dadoed to lock the sill-joint, and prevent air and water leakage at this point.

To lock the sill-joint, slide jamb dadoes into sill dadoes.

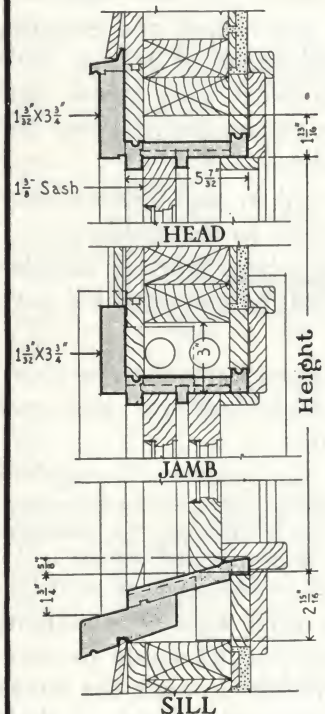
Patent No. RE. 17,512 January 7, 1930

Double Hung Window Frames for Frame Buildings

Patent Nos. 1,595,958, Re. 17,552 and 1,735,559

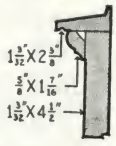
Quarter Size Details Furnished Upon Request. *All parts of Genuine White Pine.*

FRAME NO. 602



Scale—1½ inch equals one foot.

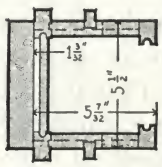
FRAME NO. 602-A



Moulded Cap Head Casing

Otherwise Same as No. 602

MULLION NO. 602-M



For Frames No. 602 and No. 602-A

(Head Jamb and Sill for Multiple Frames furnished in one piece.)

This frame may be easily converted to a frame for Brick Veneer Construction or a box frame for Masonry Construction.

The Locked Sill-joint

The illustration at the right shows how both jamb and sill are dadoed to lock the sill-joint, and prevent air and water leakage at this point.

To lock the sill-joint, slide jamb dadoes into sill dadoes.

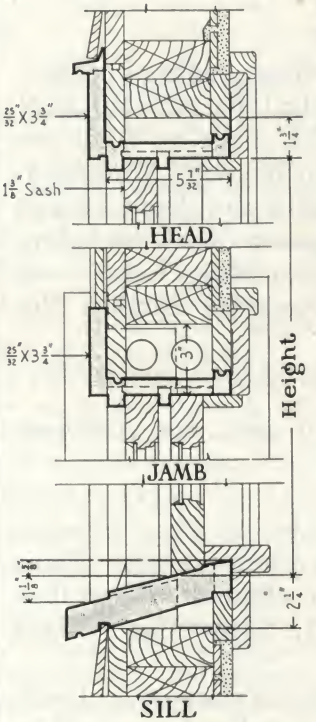
Patent No. RE. 17,512 January 7, 1930

Double Hung Window Frames for Frame Buildings

Patent Nos. 1,595,958, Re. 17,552 and 1,735,559

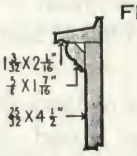
Quarter Size Details Furnished Upon Request. *All parts of Genuine White Pine.*

FRAME NO. 603



Scale—1½ inch equals one foot.

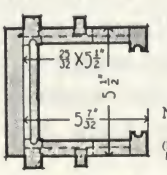
FRAME NO. 603-A



Moulded Cap Head Casing

Otherwise Same as No. 603

MULLION NO. 603-M



For Frames No. 603 and No. 603-A

(Head Jamb and Sill for Multiple Frames furnished in one piece.)

This frame may be easily converted to a frame for Brick Veneer Construction or a box frame for Masonry Construction.

The Locked Sill-joint

The illustration at the right shows how both jamb and sill are dadoed to lock the sill-joint, and prevent air and water leakage at this point.

To lock the sill-joint, slide jamb dadoes into sill dadoes.

Patent No. RE. 17,512 January 7, 1930

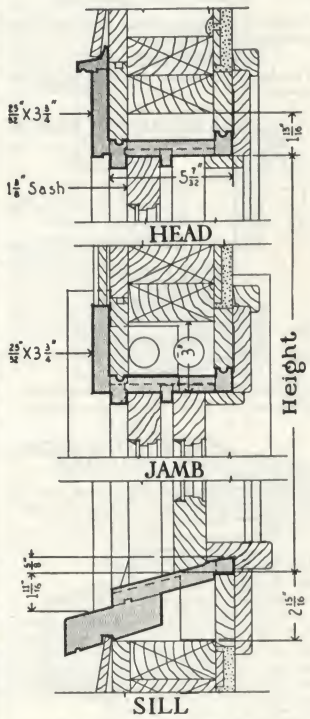
Continued on next page

= Andersen MASTER Frames =

Double Hung Window Frames for Frame Buildings

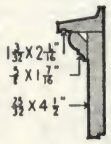
Patent Nos. 1,595,958, Re. 17,552 and 1,735,559—Other Patents Pending
Quarter Size Details Furnished Upon Request. *All parts of Genuine White Pine.*

FRAME NO. 604



Scale—1½ inch equals one foot

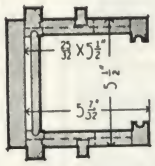
FRAME NO. 604-A



Moulded Cap
Head Casing

Otherwise Same as No 604

MULLION NO. 604-M



For Frames No 604 and No 604-A

(Head Jamb and Sill for Multiple Frames furnished in one piece)

This frame may be easily converted to a frame for Brick Veneer Construction or a box frame for Masonry Construction.

The Locked Sill-Joint

The illustration at the right shows how both jamb and sill are dadoed to lock the sill-joint, and prevent air and water leakage at this point.

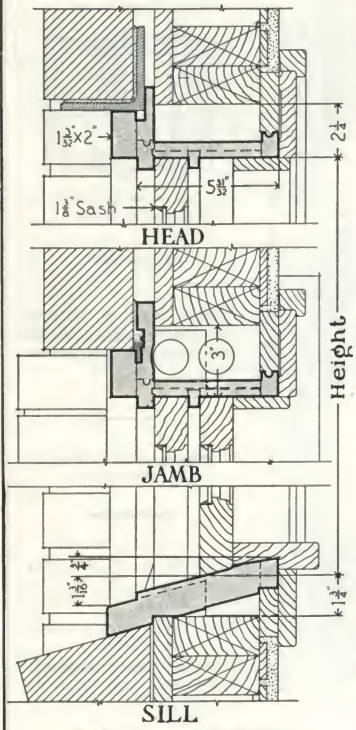
To lock the sill-joint, slide jamb dadoes into sill dadoes

Patent No RE 17,552 January 7 1930

Double Hung Window Frames for Brick Veneer

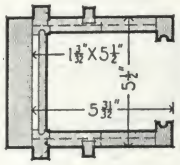
Patent Nos. 1,595,958, Re. 17,552 and 1,735,559—Other Patents Pending
Quarter Size Details Furnished Upon Request. *All parts of Genuine White Pine.*

FRAME NO. 651



Scale—1½ inch equals one foot

MULLION NO. 651-M



For Frame No. 651

Head Jamb and Sill for Multiple Frames furnished in one piece.

Frames Nos. 601-602-603 and 604 may also be adapted for Brick Veneer Construction

The Locked Sill-Joint

The illustration at the right shows how both jamb and sill are dadoed to lock the sill-joint, and prevent air and water leakage at this point.

To lock the sill-joint, slide jamb dadoes into sill dadoes.

Patent No. RE. 17,552 January 7, 1930

STOCK BRICK OPENING SIZES

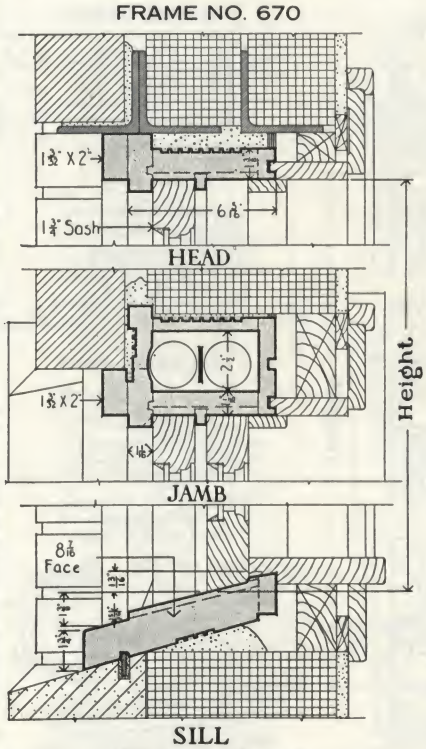
Widths 1' 8", 1' 10", and every 2" up to 4' 8"
Heights 2' 10⅛" 3' 2⅛" and every 4" up to 6' 10⅛"

Mullions twice a single opening *plus* 1½"
Triples three times a single opening *plus* 3"

Double Hung Window Frames for Masonry Buildings

Patent No 1,735,559—Other Patents Pending
Quarter Size Details Furnished Upon Request. *All parts of Genuine White Pine*

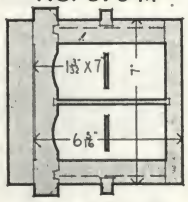
FRAME NO. 670



Scale—1½ inch equals one foot.

2½" Andersen Noiseless Pulleys with 1¼"x1¾" face plate, (any standard finish) furnished installed, or in cartons to be installed after frames have been set

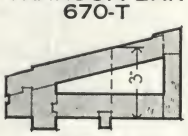
MULLION NO. 670-M



For Frame No 670

Head Jamb and Sill for Multiple Frames furnished in one piece.

TRANSOM BAR 670-T



For Frame No. 670

Segment boards furnished on special order

STOCK BRICK OPENING SIZES

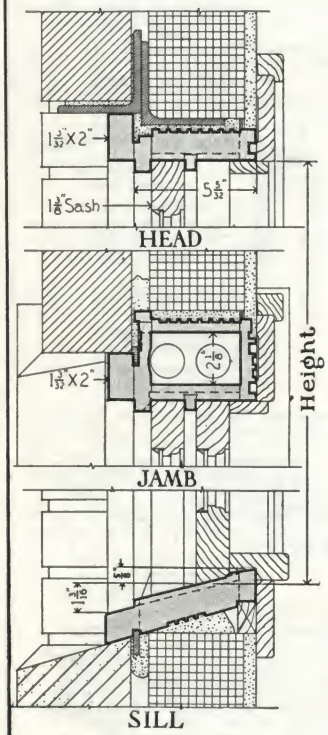
Widths: 1' 8", 1' 10" and every 2" to sizes required
Heights: 2' 11⅜", 3' 3⅜" and every 4" to size required

Mullions twice a single opening *plus* 3"
Triples three times a single opening *plus* 6"

Double Hung Window Frames for Masonry Buildings

Patent No 1,735,559—Other Patents Pending
Quarter Size Details Furnished Upon Request. *All parts of Genuine White Pine*

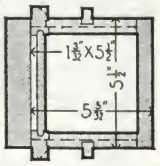
FRAME NO. 671



Scale—1½ inch equals one foot.

MULLION NO. 671-M

For Frame No 671



Head Jamb and Sill for Multiple Frames furnished in one piece

Frames Nos. 601-602-603 and 604 may also be adapted for Masonry Construction

Segment boards furnished on special order

STOCK BRICK OPENING SIZES

Widths: 1' 8", 1' 10" and every 2" up to 4' 8"
Heights: 2' 10⅛", 3' 2⅛" and every 4" up to 6' 10⅛"

Mullions twice a single opening *plus* 1½"
Triples three times a single opening *plus* 3"

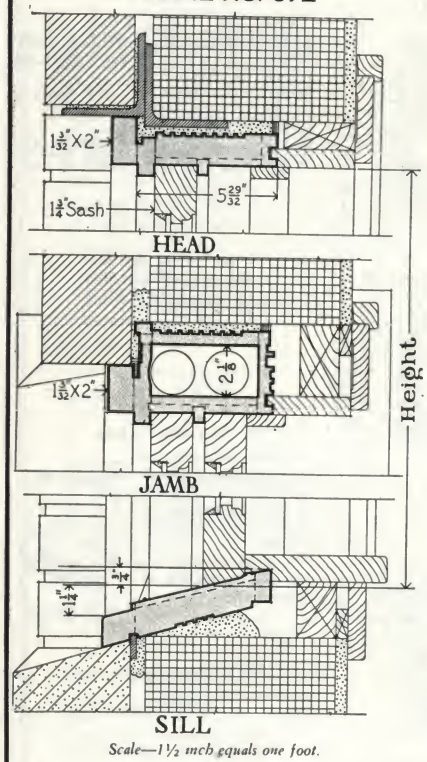
Continued on next page

= *Andersen* MASTER *Frames* =

Double Hung Window Frames *for* Masonry Buildings

Patent Nos. 1,595,958, Re. 17,552 and 1,735,559—Other Patents Pending
Quarter Size Details Furnished Upon Request. *All parts of Genuine White Pine.*

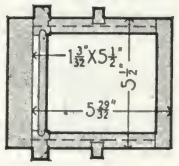
FRAME NO. 672



Scale—1½ inch equals one foot.

MULLION NO. 672-M

For Frame No. 672



Head Jamb and Sill for Multiple Frames furnished in one piece.

Frames Nos. 601-602-603 and 604 may also be adapted for Masonry Construction

Segment boards furnished on special order

STOCK BRICK OPENING SIZES

Widths: 1' 8", 1' 10" and every 2" up to 4' 8"

Heights: 2' 10⅛", 3' 2⅛" and every 4" up to 6' 10⅛"

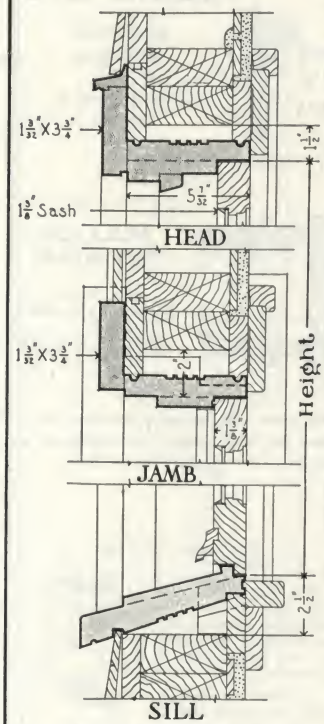
Triples three times a single opening *plus* 3"
Mullions twice a single opening *plus* 1½"

Casement Frames (*Inswinging-Outswinging*) *for* Frame Buildings

Patent Nos. 1,623,772, 1,648,712, Re. 17,552—Other Patents Pending
Quarter Size Details Furnished Upon Request. *All parts of Genuine White Pine*

FRAME NO. 701

Inswinging



Scale—1½ inch equals one foot

Outswinging Adaptation

The Andersen Combination Casement Frame (patented) is convertible to either inswinging or outswinging sash, same opening size, using the same main frame members.

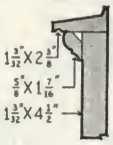
To obtain the outswinging casement frame of the same type detailed on this page, specify

FRAME NO. 702

For Detailing use No 704 on opposite page for sill, otherwise same as 701

FRAME NO. 701-A

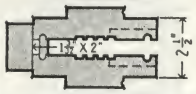
Moulded Cap Head Casing



Otherwise Same as No 701
For Outswinging Casement Frame similar to 701 A, Specify

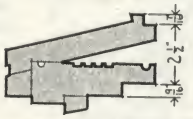
FRAME NO. 702-A

MULLION



For Frames Nos. 701, 701-A, 702, and 702-A
Head Jamb and Sill for Multiple Frames furnished in one piece.

TRANSOM BAR



For Frames Nos 701 701-A, 702, and 702-A

The Locked Sill-joint

The illustration at the right shows how both jamb and sill are dadoed to lock the sill-joint and prevent air and water leakage at this point.

To lock sill in place, slide jamb dadoes into sill dadoes and insert White Oak wedge in jamb dado under sill. (White Oak wedges are furnished with all Andersen Master Casement Frames.)

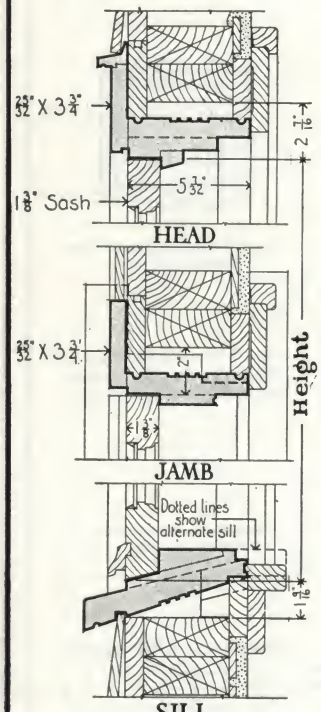
Patent No RE 17,512 January 7, 1930

Casement Frames (*Outswinging-Inswinging*) *for* Frame Buildings

Patent Nos. 1,623,772, 1,648,712, Re. 17,552—Other Patents Pending
Quarter Size Details Furnished Upon Request. *All parts of Genuine White Pine*

FRAME NO. 704

Outswinging



Scale—1½ inch equals one foot.

Inswinging Adaptation

The Andersen Combination Casement Frame (patented) is convertible to either inswinging or outswinging sash, same opening size, using the same main frame members.

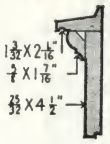
To obtain the inswinging casement frame of the same type detailed on this page, specify

FRAME NO. 703

For Detailing use No 701 on opposite page for sill, otherwise same as No 704

FRAME NO. 704-A

Moulded Cap Head Casing



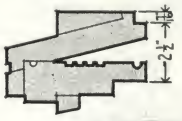
Otherwise Same as No 704
For Inswinging Casement Frame similar to 704-A. Specify Frame

NO. 703-A

MULLION

For Frames Nos. 704, 704-A, 703, and 703-A
Head Jamb and Sill for Multiple Frame furnished in one piece

TRANSOM BAR



For Frames Nos. 704, 704-A, 703 and 703-A

The Locked Sill-joint

The illustration at the right shows how both jamb and sill are dadoed to lock the sill-joint and prevent air and water leakage at this point.

To lock sill in place, slide jamb dadoes into sill dadoes and insert White Oak wedge in jamb dado under sill. (White Oak wedges are furnished with all Andersen Master Casement Frames.)

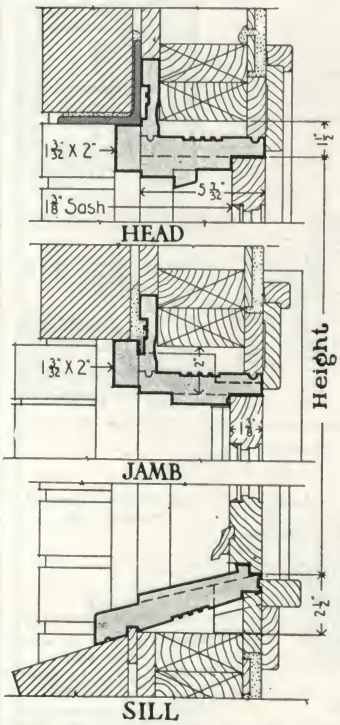
Patent No. RE. 17,512 January 7, 1930

Casement Frames (*Inswinging—Outswinging*) *for* Brick Veneer

Patent Nos 1,623,772, 1,648,712, Re 17,552—Other Patents Pending
Quarter Size Details Furnished Upon Request. *All parts of Genuine White Pine*

FRAME NO. 751

Inswinging



Scale—1½ inch equals one foot.

Outswinging Adaptation

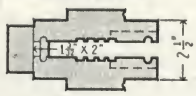
The Andersen Combination Casement Frame (patented) is convertible to either inswinging or outswinging sash, same opening size, using the same main frame members

To obtain the outswinging casement frame of the same type detailed on this page, specify

FRAME NO. 752

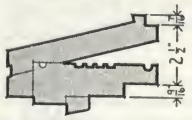
For Detailing add sill filler

MULLION



For Frames Nos 751 and 752
Head Jamb and Sill for Multiple Frame furnished in one piece

TRANSOM BAR



For Frames Nos. 751 and 752

The Locked Sill-Joint

The illustration at the right shows how both jamb and sill are dadoed to lock the sill-joint and prevent air and water leakage at this point

To lock sill in place, slide jamb dadoes into sill dadoes and insert White Oak wedge in jamb dado under sill (White Oak wedges are furnished with all Andersen Master Casement Frames.)

Patent No RE 17,512 January 7, 1930

STOCK BRICK OPENING SIZES

Widths 1' 4½", 1' 6½" and every 2" up to 4' 8½"
Heights 2' 10½", 3' 2½" and every 2" up to 6' 2½"
Mullions twice a single opening *less* 2"
Triples three times a single opening *less* 4"

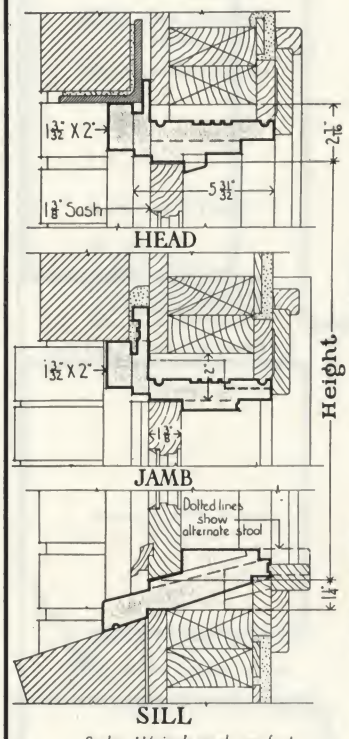
Continued on next page

= Andersen MASTER Frames =

Casement Frames (Outswinging—Inswinging) for Brick Veneer

Patent Nos. 1,623,772, 1,648,712, Re. 17,552—Other Patents Pending
Quarter Size Details Furnished Upon Request. *All parts of Genuine White Pine.*

FRAME NO. 762
Outswinging



Scale—1½ inch equals one foot.

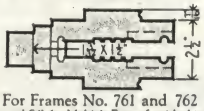
Inswinging Adaptation

The Andersen Combination Casement Frame (patented) is convertible to either inswinging or outswinging sash, same opening size, using the same main frame members.

To obtain the inswinging casement frame of the same type detailed on this page, specify

FRAME NO. 761
For Detailing do not show sill filler.

MULLION



For Frames No. 761 and 762
Head Jamb and Sill for Multiple Frame furnished in one piece

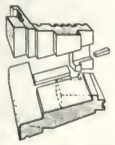
TRANSOM BAR

For Frames No. 761 and 762

The Locked Sill-Joint

The illustration at the right shows how both jamb and sill are dadoed to lock the sill-joint and prevent air and water leakage at this point.

To lock sill in place, slide jamb dadoes into sill dadoes and insert White Oak wedge in jamb dado under sill. (White Oak wedges are furnished with all Andersen Master Casement Frames.)



Patent No. RE. 17,512 January 7, 1930

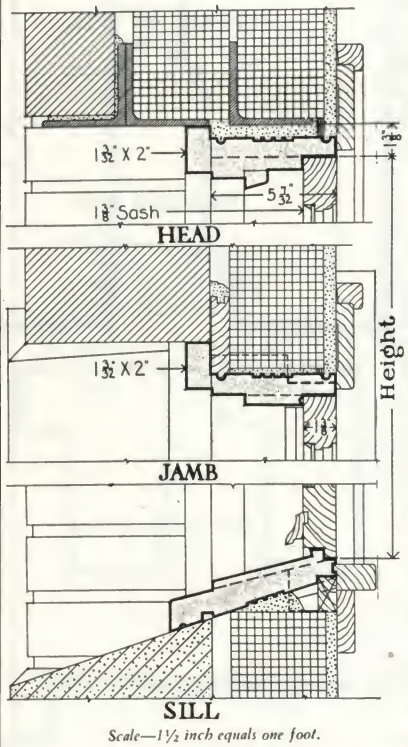
STOCK BRICK OPENING SIZES

Widths: 1'5", 1'7" and every 2" up to 4'9"
Heights: 2' 10¼", 3' 2¼" and every 2" up to 6' 2¾"
Mullions twice a single opening *less* 2½"
Triples three times a single opening *less* 5"

Casement Frames (Inswinging—Outswinging) for Masonry

Patent Nos. 1,623,772, 1,648,712, Re. 17,552—Other Patents Pending
Quarter Size Details Furnished Upon Request. *All parts of Genuine White Pine.*

FRAME NO. 771
Inswinging



Scale—1½ inch equals one foot.

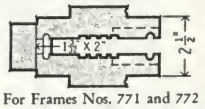
Outswinging Adaptation

The Andersen Combination Casement Frame (patented) is convertible to either inswinging or outswinging sash, same opening size, using the same main frame members.

To obtain the outswinging casement frame of the same type detailed on this page, specify

FRAME NO. 772
For Detailing add sill filler.

MULLION



For Frames Nos. 771 and 772
Head Jamb and Sill for Multiple Frames furnished in one piece.

TRANSOM BAR

For Frames Nos. 771 and 772

The Locked Sill-joint

The illustration at the right shows how both jamb and sill are dadoed to lock the sill-joint and prevent air and water leakage at this point.

To lock sill in place, slide jamb dadoes into sill dadoes and insert White Oak wedge in jamb dado under sill. (White Oak wedges are furnished with all Andersen Master Casement Frames.)

Patent No. RE. 17,512 January 7, 1930

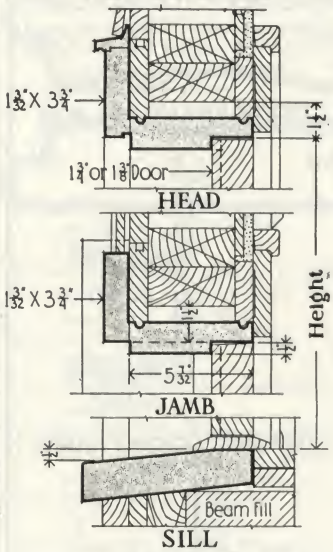
STOCK BRICK OPENING SIZES

Widths: 1'4½", 1'6½" and every 2" up to 4'8½"
Heights: 1'9½", 1'11½" and every 2" up to 6'2½"
Mullion frames twice a single opening *less* 2"
Triples three times a single opening *less* 4"

Outside Door Frames for Frame Buildings

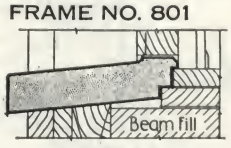
Patent No. 1,648,712—Other Patents Pending
Quarter Size Details Furnished Upon Request.
All Parts of Genuine White Pine (except Sills of White Oak, when Specified)

FRAME NO. 802



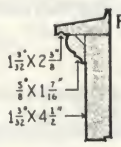
Scale—1½ inch equals one foot.

FRAME NO. 801



Threshold Sill
Otherwise Same as No. 802

FRAME NO. 802-A



Moulded Cap
Head Casing

Otherwise Same as No. 802

FRAME NO. 801-A

Moulded Cap Head Casing
like No. 802-A

Otherwise Same as No. 801

TRANSOM BAR

For Frames Nos. 801, 801-A, 802, 802-A

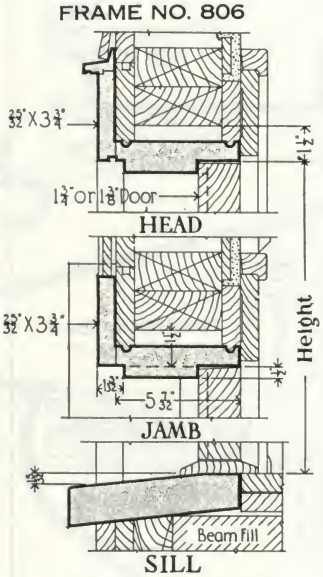
See Page 16 for Narrow Transom Bars Nos. 971 and 972

Sills of Clear White Oak or Clear Genuine White Pine

Outside Door Frames for Frame Buildings

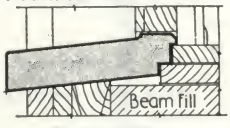
Patent No. 1,648,712—Other Patents Pending
Quarter Size Details Furnished Upon Request.
All Parts of Genuine White Pine (except Sills of White Oak, when Specified)

FRAME NO. 806



Scale—1½ inch equals one foot.

FRAME NO. 805



Threshold Sill
Otherwise Same as No. 806

FRAME NO. 806-A

Moulded Cap
Head Casing

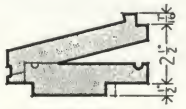
Otherwise Same as No. 806

FRAME NO. 805-A

Moulded Cap Head Casing
like No. 806-A

Otherwise Same as No. 805

TRANSOM BAR NO. 805-T



For Frames Nos. 805, 805-A, 806, and 806-A

For Narrow Transom Bars See Page 16

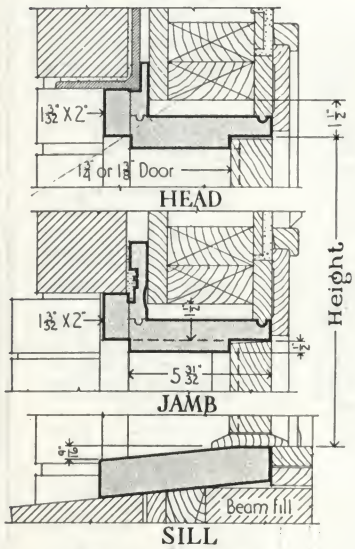
Continued on next page

= Andersen MASTER Frames =

Outside Door Frames for Brick Veneer Buildings

Patent No. 1,648,712—Other Patents Pending
Quarter Size Details Furnished Upon Request.
All Parts of Genuine White Pine (except Sills of White Oak, when Specified)

FRAME NO. 852



Scale—1½ inch equals one foot.

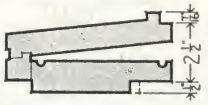
FRAME NO. 851

Threshold Sill
Otherwise same as No. 852

FRAME NO. 853

No Sill
Otherwise Same as No. 851

TRANSOM BAR



For Frame Nos. 851, 852, and 853

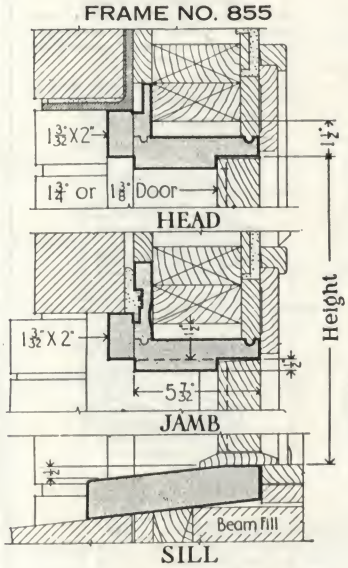
Other Staff Beads shown on Page 16

STOCK BRICK OPENING SIZES
Widths: 2' 10", 3' 0", 3' 2", and 3' 4"
Heights: 6' 10¼", 7' 0¼", 7' 2¼", and 7' 4¼"

Outside Door Frames for Brick Veneer Buildings

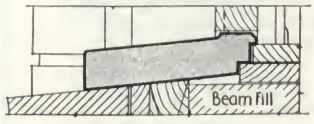
Patent No. 1,648,712—Other Patents Pending
Quarter Size Details Furnished Upon Request.
All Parts of Genuine White Pine (except Sills of White Oak, when Specified)

FRAME NO. 855



Scale—1½ inch equals one foot.

FRAME NO. 854

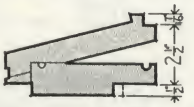


Threshold Sill
Otherwise Same as No. 855

FRAME NO. 856

No Sill
Otherwise Same as No. 855

TRANSOM BAR



For Frames Nos. 854, 855, and 856

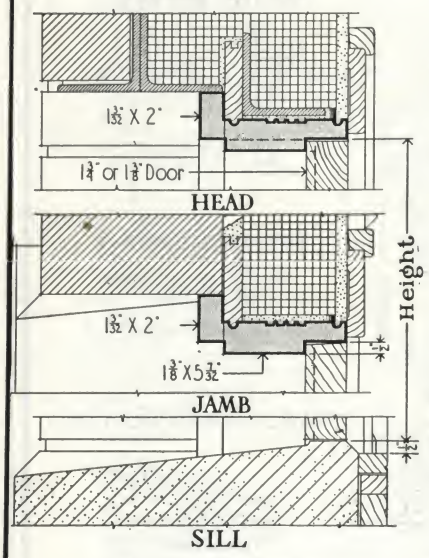
Other Staff Beads shown on Page 16

STOCK BRICK OPENING SIZES
Widths: 6' 10¼", 7' 0¼", 7' 2¼", and 7' 4¼"
Heights: 2' 10", 3' 0", 3' 2" and 3' 4"

Outside Door Frames for Masonry Buildings

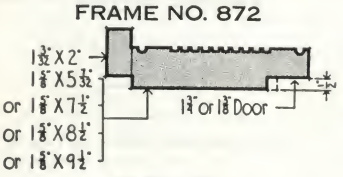
Patent No. 1,648,712—Other Patents Pending
Quarter Size Details Furnished Upon Request.
All Parts of Genuine White Pine (except Sills of White Oak, when Specified)

FRAME NO. 871



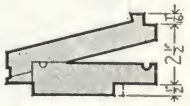
Scale—1½ inch equals one foot.

FRAME NO. 872



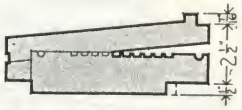
No Wood Sill

TRANSOM BAR NO. 871-T



For Frame No. 871

TRANSOM BAR NO. 872-T



For Frame No. 872

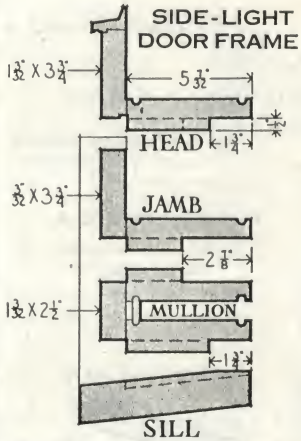
Other Staff Beads shown on Page 16

STOCK BRICK OPENING SIZES
Widths: 2' 10", 3' 0", 3' 2", and 3' 4"
Heights: 6' 9", 6' 11", 7' 1", and 7' 3"

Miscellaneous Door Frames for Frame Buildings

Patent Nos. 1,595,958 and 1,648,712—Other Patents Pending
Quarter Size Details Furnished Upon Request. *All parts of Genuine White Pine.*

SIDE-LIGHT DOOR FRAME

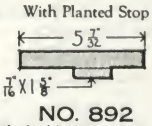


This frame is made to correspond with all single door frame details.
When ordering specify single door frame numbers, as: Side-Light Door Frame No. 801, 802, 803, 804, 805, 806, 812, 851, 852, 853, 854, 855, 856, 871, 872.

Scale—1½ inch equals one foot.

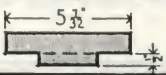
INSIDE DOOR JAMBS NO. 891

With Planted Stop



NO. 892

With double 1⅜ inch Rabbet

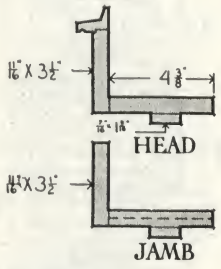


CIRCLE TOP HEADS

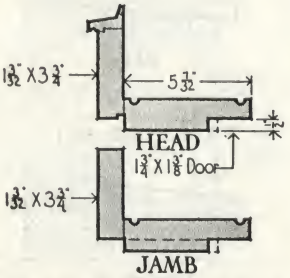
Circle top heads are furnished on special order for all standard Andersen Frames.
Write for description and details.

DOOR FRAME NO. 809

To Match No. 609



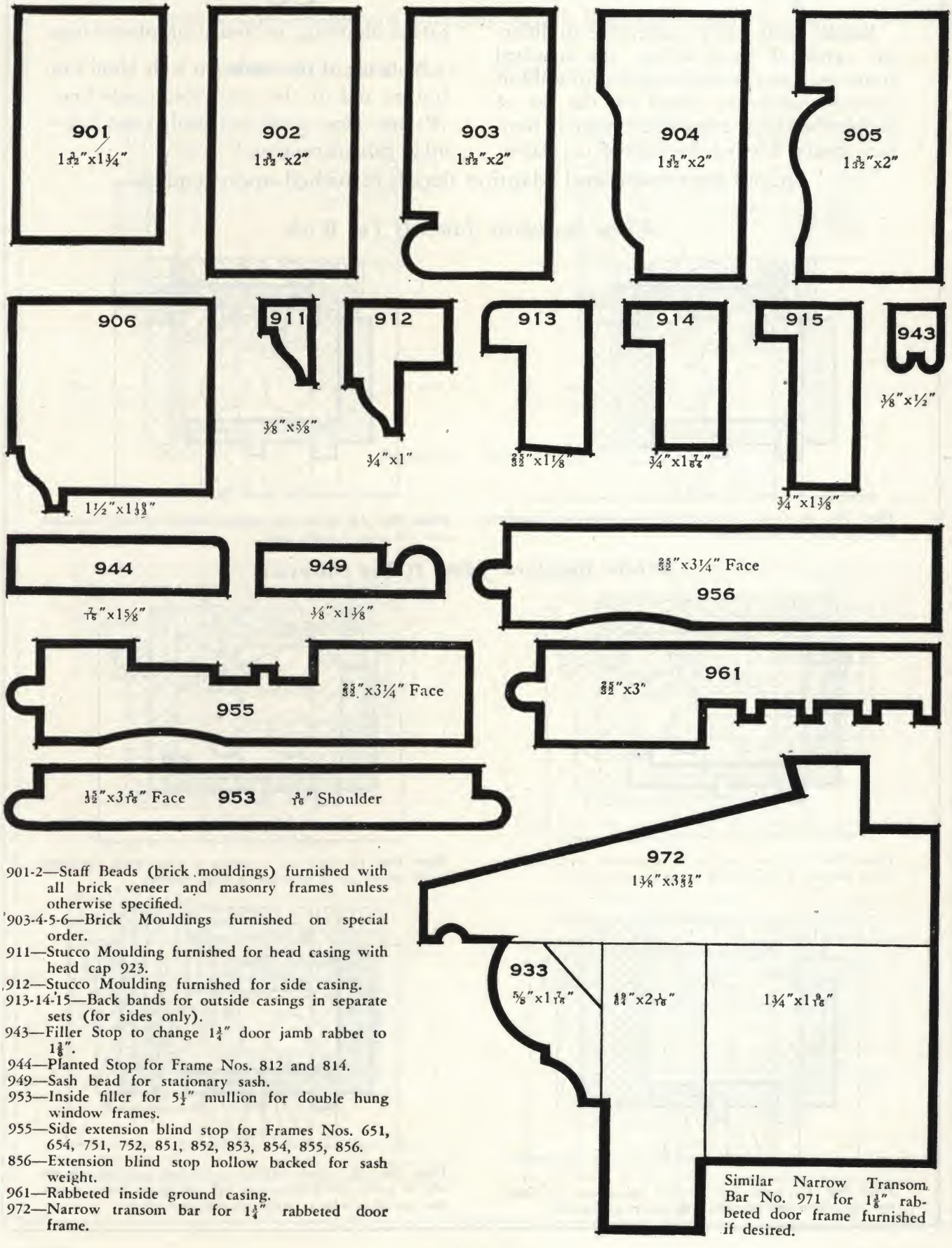
GARAGE DOOR FRAME NO. 881



Head casing furnished ½ inch longer than standard to accommodate swing-out doors.

Continued on next page

Genuine White Pine Frame Mouldings *Full Size Details*



901-2—Staff Beads (brick mouldings) furnished with all brick veneer and masonry frames unless otherwise specified.
903-4-5-6—Brick Mouldings furnished on special order.
911—Stucco Moulding furnished for head casing with head cap 923.
912—Stucco Moulding furnished for side casing.
913-14-15—Back bands for outside casings in separate sets (for sides only).
943—Filler Stop to change 1¼" door jamb rabbet to 1⅛".
944—Planted Stop for Frame Nos. 812 and 814.
949—Sash bead for stationary sash.
953—Inside filler for 5½" mullion for double hung window frames.
955—Side extension blind stop for Frames Nos. 651, 654, 751, 752, 851, 852, 853, 854, 855, 856.
856—Extension blind stop hollow backed for sash weight.
961—Rabbeted inside ground casing.
972—Narrow transom bar for 1¼" rabbeted door frame.

Similar Narrow Transom Bar No. 971 for 1⅛" rabbeted door frame furnished if desired.

Continued on next page

Special Construction Suggestions

Besides being easily convertible to different types of construction, the standard frame may also be easily adapted to walls of various thicknesses caused by the use of double sheathing, extra thick framing lumber, special furring for stucco or plaster, patent sheathing, or insulating plaster base.

Note use of the Andersen wide blind stop feature and of the removable inside liner. (Patent Nos. 1,595,958 and 1,648,712—other patents pending.)

Special conversion and adaption details furnished upon request

Where Standard Jamb Is Too Wide

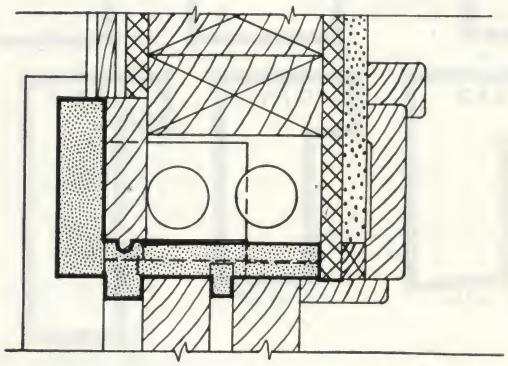


Plate No. 13. Inside liner removed and plaster base extended over the edge of pulley stile.

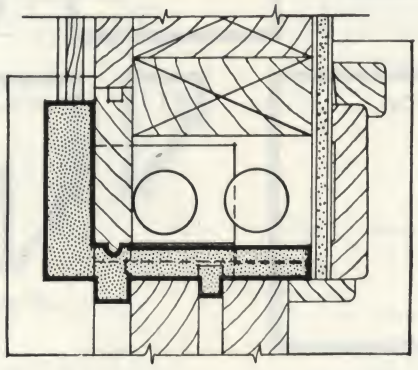


Plate No. 14. Inside liner removed and wall board extended over the edge of pulley stile.

Where Standard Jamb Is Too Narrow

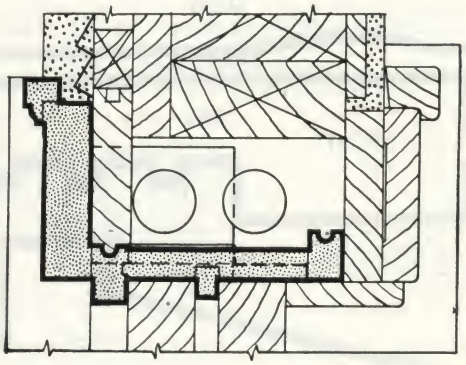


Plate No. 15. Stucco on lath with standard 25/32" furring. Jamb widened as shown with inside ground casing.

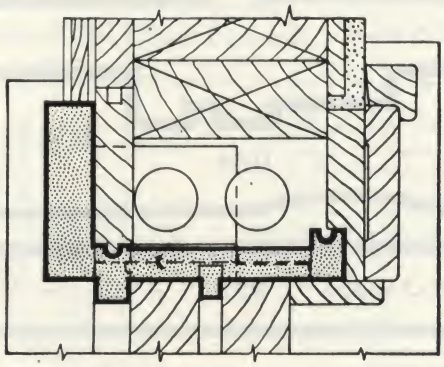


Plate No. 16. Full 2x4" studding or extra thick sheathing. Inside ground casing rabbeted to depth required.

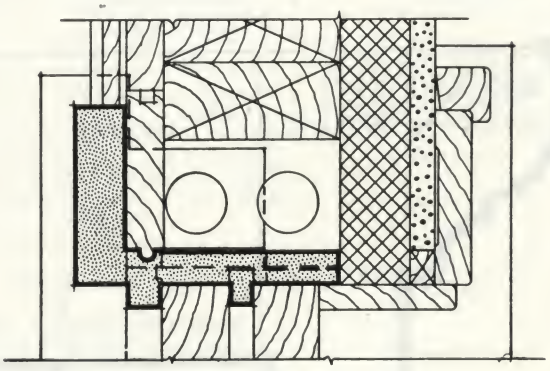


Plate No. 17. Inside liner removed and special 1½" insulation and plaster base extended over edge of pulley stile.

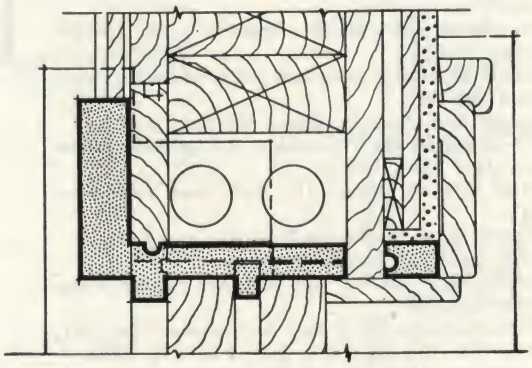


Plate No. 18. Standard thickness sheathing extended over the edge of pulley stile with furring, lath and plaster inside. Inside liner placed on edge to make required jamb width.

Continued on next page

Special Construction Suggestions (Continued)

Special conversion and adaption details furnished upon request

Where Standard Jamb Is Too Narrow (Continued)

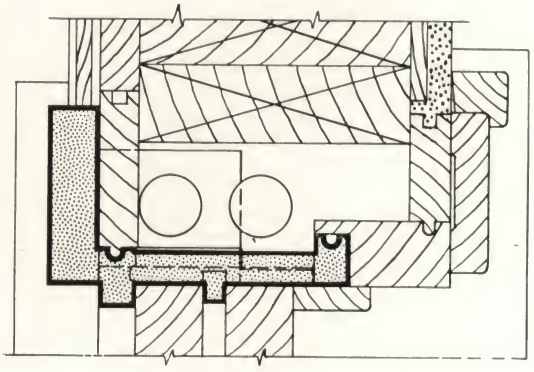


Plate No. 19. Standard jamb in 6" studding wall with extension jamb and standard trim.

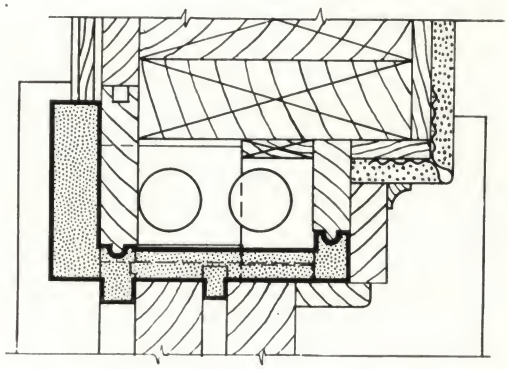


Plate No. 20. Standard jamb in 6" studding wall with plaster reveal and narrow trim.

Masonry Box Frames

The standard box frames may be used with any type of masonry wall. Below are given some suggestions not covered in the details on pages 12 and 13.

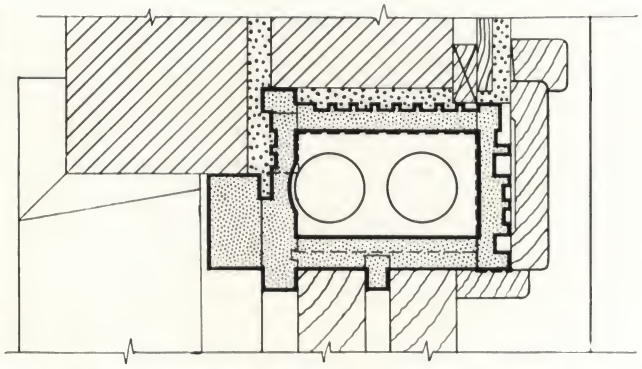


Plate No. 21. Box frame No. 671 in 8" two brick wall with lath and plaster on ½" furring strips.

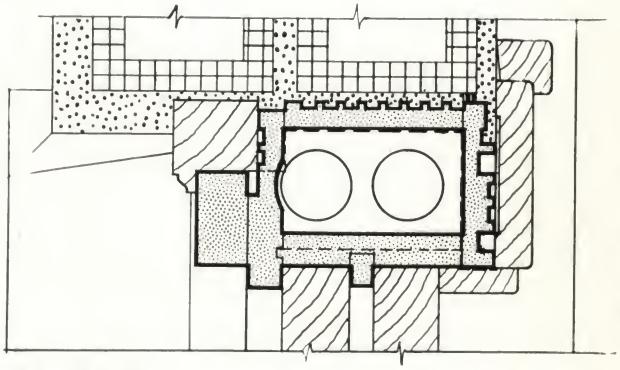


Plate No. 22. Box frame No. 671 in standard block or tile wall. (Anchor strip omitted.)

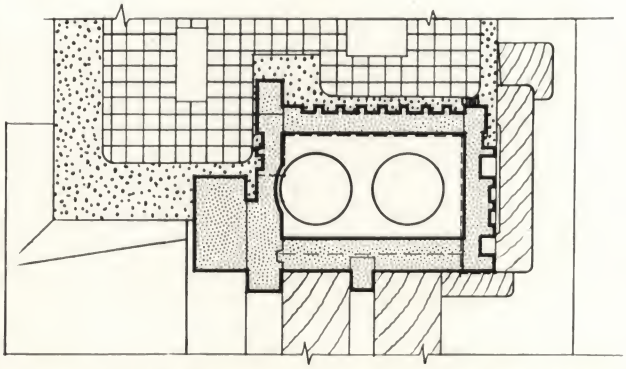


Plate No. 23. Box frame No. 671 showing 8" tile with special jamb block and plaster on tile. Note position of anchor strip to give narrower jamb width.

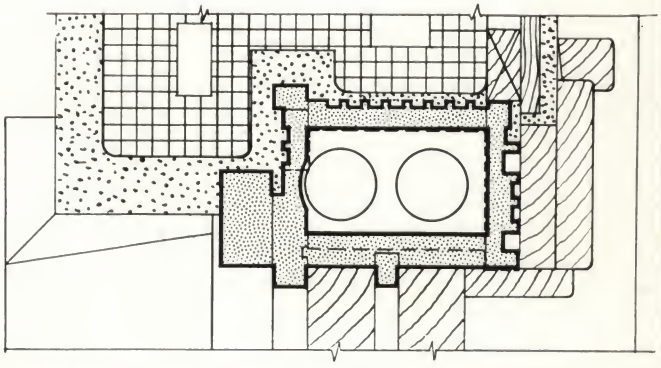
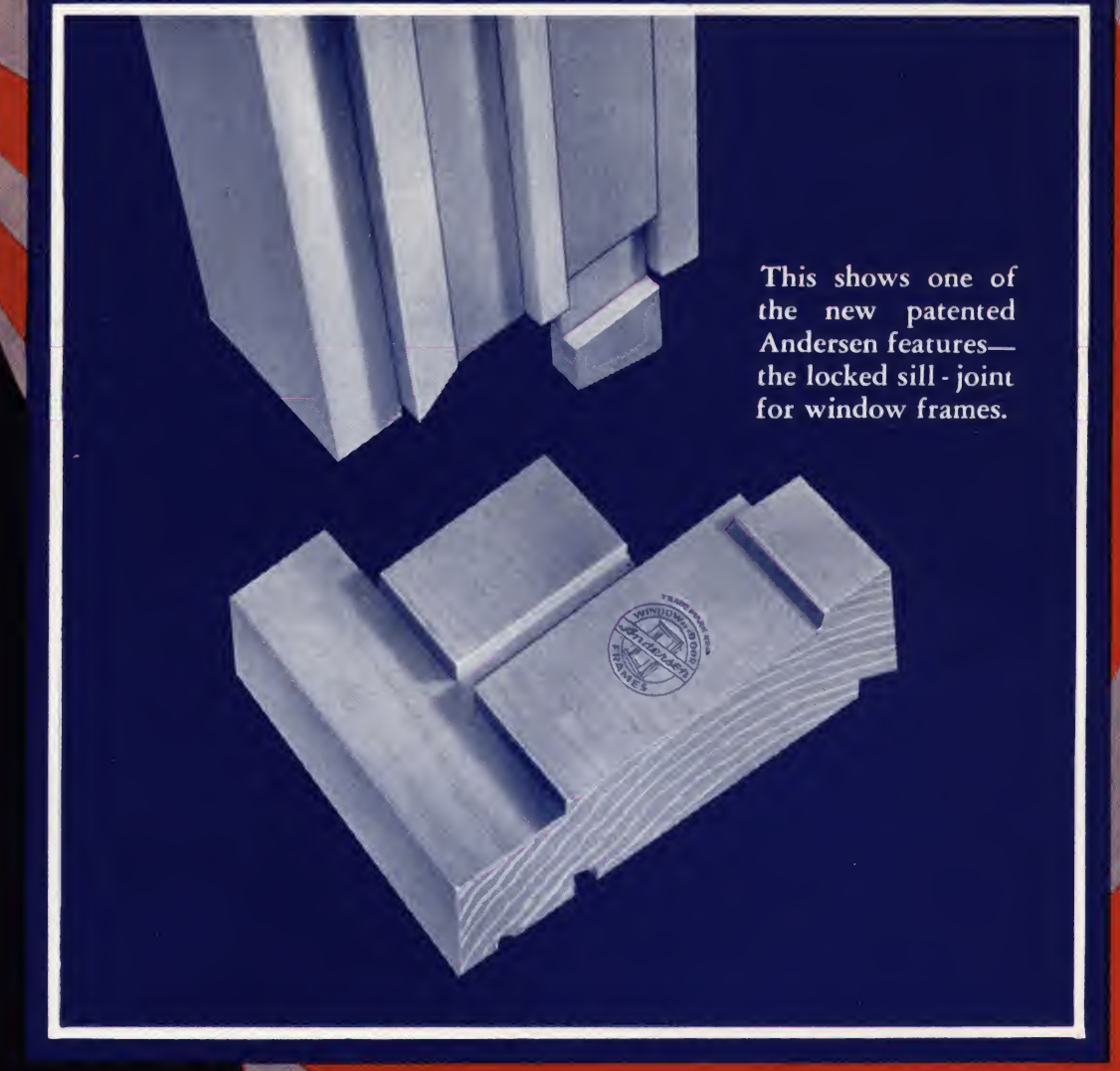


Plate No. 24. Box frame No. 671 showing 8" tile with special jamb block on ¾" furring. Jamb widened as shown with inside ground casing.

WINDOW and DOOR

Andersen

FRAMES



This shows one of the new patented Andersen features—the locked sill - joint for window frames.

TRIMPAK CORPORATION

Manufacturers of TrimPak, Interior Trim for Doors and Windows

44 Whitehall Street
NEW YORK, N. Y.

19 South La Salle Street
CHICAGO, ILL.

Product

TRIMPAK is Interior Trim for doors and windows of the highest grade, cut to approximate lengths at the mills to minimize waste, and packed in sturdy, moisture-proof cartons to insure delivery to the job in perfect condition. The necessary finish for each door or window opening is shipped in two sealed cartons, one containing the vertical parts and the other the horizontal parts.

TrimPak is manufactured at the source of supply, on special machinery, in the following lumber manufacturing plants, thus insuring perfect quality:

The Long-Bell Lumber Co., Washington
E. L. Bruce Co., Arkansas
Dierks Lumber & Coal Co., Arkansas
Louisiana Red Cypress Co., Louisiana
St. Croix Manufacturing Co., Minnesota
The Sun Lumber Co., West Virginia
Moore Lumber Co., Georgia
M. B. Farrim Lumber Co., Ohio

Various Styles and Woods

As Package Is Shipped from Mills

TrimPak is made in the various styles in demand in the different sections of the country, in the following woods:

Arkansas soft pine, Pondosa pine, Douglas fir, oak, chestnut, birch, red gum, sap gum, Louisiana red cypress, basswood, soft yellow poplar, medium texture poplar, Georgia yellow pine, soft selected short leaf pine, super-tupelo and aspen.

We guarantee TrimPak to be made only of carefully selected, kiln-dried, clear stock, perfect as to workmanship, and with all flat surfaces sanded to a smooth finish just before packing.

Advantages of Using TrimPak

Under the old method of handling trim the carpenters spent a large percentage of their time matching stock, sanding and looking for different pieces to fit the particular openings they were trimming. With Trim Pak they get trim of the highest grade in perfectly seasoned wood, already cut to approximate length for quick erection. Many times when a job was finished they were over or short on some or all the items, which meant material wasted or time lost waiting for additional stock. With TrimPak, only half the saw-cuts formerly made are required.

Each pair of TrimPak cartons contains the exact number of pieces needed for trimming a door or a window, ready to use without guesswork or searching. The saving in time is tremendous. Every architect knows the annoyance and delay caused on a job that is nearly finished when shortage or damage is discovered in the trim, and additional stock must be obtained before the work can proceed. The old way of piling bulk trim on the floor in one room of the house delays completion of the work in that room until most of the trim has been used, whereas TrimPak may be distributed about the job when it is received, with cartons placed near the openings on which they will be used.

The protection of TrimPak from the mill to the job, and the fact that all flat surfaces are sanded, means that much of the painter's time is saved, too, for he does not have to do a lot of cleaning and scraping before he can paint. Thus an attractive finished job is obtained in minimum time, and at a cost no greater than with the use of ordinary trim.

Advantages to the Architect

In much residential and apartment construction today standard styles of trim are used, even more would be used if architects could be assured of high quality workmanship and attractive finished jobs. TrimPak styles offer the architect both appearance and inherent quality. TrimPak can be made to order in any design specified by the architect.

It is carried in stock by the lumber dealer in standard styles as shown in the Standard Moulding Book.

The savings made with the use of stock TrimPak, release funds for the use of other of the many new attractive building specialties recently brought into the market.

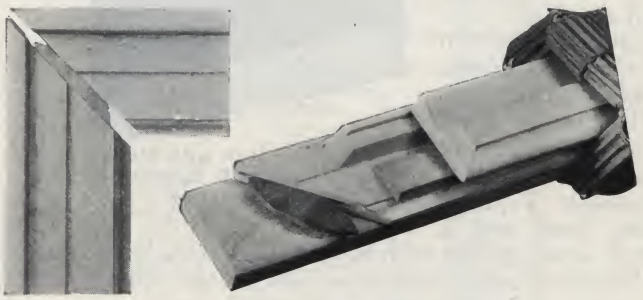
Opened Carton Showing How Pieces Are Securely Packed

How to Specify TrimPak

Most lumber dealers today sell TrimPak in the styles and woods in vogue in their communities, and every good dealer can obtain it. TrimPak dealers will be glad to provide you with detail sketches of the styles they stock, and give samples of the woods in which they carry it. Merely specify that all interior door and window trim shall be TrimPak.

In ordering, it is only necessary to state the number and sizes of openings to be trimmed, and your dealer will deliver TrimPak in cartons, ready to use.

While TrimPak may be placed around the job without danger of damage, and may be delivered in advance of its use, an order that must be held up until the last minute may be obtained on short notice, as the average order is filled in less than an hour. No more weary hours figuring lineal trim needed when you use TrimPak!



Moulded Patterns

TrimPak can be obtained in moulded patterns, all ready mitred grooved for splines and splines supplied and prepared for assembly with stools and aprons returned

Literature, Samples and Information

Any TrimPak dealer or office will gladly send descriptive literature, samples, and any information you may desire on TrimPak. If unable to secure information locally, address our nearest office.

Complete samples will be mailed to any architect who requests them on his own letterhead.

THE AIROLITE COMPANY

Manufacturers of Natural Air Ventilating Equipment

MARIETTA, OHIO

NEW YORK, N. Y., 280 Madison Avenue
Telephone Caledonia 6841

CHICAGO, ILL., 1314 Builders Building, 228 No. La Salle Street
Telephone, Franklin 8259

AGENCIES IN ALL PRINCIPAL CITIES

Products

THE WINDOW-WALL UNIT, a patented type of window and wall construction for bedrooms and sleeping porches built in combination with either double hung or casement windows.

"AIROLITE" ADJUSTABLE WINDOW VENTILATORS.

"AIROLITE" VENTILATING SASH.

Also Steel Sash Ventilators.

For Airolite Adjustable and Stationary Louvers, see Manufacturers' Index.

Window-Wall Unit

The Window-Wall Unit is a combination of screen, glass and "Airolite" Ventilating Sash, ideal for sleeping porches, fresh air bedrooms and sun parlors, both in private homes and institutions.

Affords protection, ventilation, privacy, comfort, convenience and health to the occupants of any room in which it is installed, and the original cost is only slightly more than the cost of an ordinary window. With Window-Wall, no awnings, inside window blinds or drapes are necessary. In other words, with Window-Wall you live outdoors with indoor protection. It is installed practically the same as an ordinary window.

Window-Wall Unit with Double Hung Sash as It Appears When Installed

The Window-Wall Unit consists of a wooden frame, a screen which is hung on the outside, a set of glass sash, a set of "Airolite" Adjustable Ventilating Sash and a tuck-a-way pocket with hinged sill. When the glass and "Airolite" Sash are lowered into the tuck-a-way pocket, a screened opening effect is obtained.

With the glass sash run up into place, you have a regular window or sun parlor. With the "Airolite" Sash raised and the glass sash lowered you have an all-year, open air, sleeping room. Both glass and "Airolite" Sash can be run up into place at the same time. By this arrangement the "Airolite" Sash serves as an awning or shade. The steel louvers can be tilted or adjusted to keep out excessive sunlight and at the same time retain absolute privacy.

Window-Wall Sleeping Porch, in Use More Than Ten Years in Home of W. R. Metcalf, Marietta, Ohio

Mr. Metcalf Says: "I would give up the rest of the house before I would my Window-Wall Sleeping Porch. We sleep in the fresh air every night, regardless of the weather and the Window-Wall is the only thing I ever heard of that will permit of this and at the same time give you proper protection. I am strong for the Window-Wall."

Suggested Window-Wall Specifications for Architects' Use

(For insertion in Carpentry section.)

Specifications vary with the designs and construction desired. The following specifications cover all items, which may be segregated and used to specify construction for double hung windows:

Where indicated on the plans, the [Carpenter] [Contractor] shall furnish and install Window-Wall Units as manufactured by THE AIROLITE COMPANY, Marietta, Ohio.

Each Window-Wall Unit as shipped by the manufacturer shall consist of a substantially constructed wood framework built with window openings, each unit built up by framing pulley jambs (with pulleys, outside blind stops and parting stops), head jamb, weather pan board and copper weather pan in the proper manner. This does not include any interior or exterior trim.

The following material shall be furnished by the manufacturer and be installed by the [Carpenter] [Contractor].

One pair double hung, metal louvered "Airolite" Adjustable Ventilating Sash (louvers to be finished in standard baked enamel paint, olive green color; frames, three coats air-dried enamel paint, olive green color).

One pair double hung glazed sash, one full length copper wire screen, outside sill, hinged sill, inside sill, sash weights and weight guides.

One pair sill hinges, one pair copper drain tubes and one set full length screen hangers.

The [Carpenter] [Contractor] to leave proper openings to receive Window-Wall Units and to furnish all labor and material required to install these units in first class workmanlike manner and in line with all exterior and interior construction.

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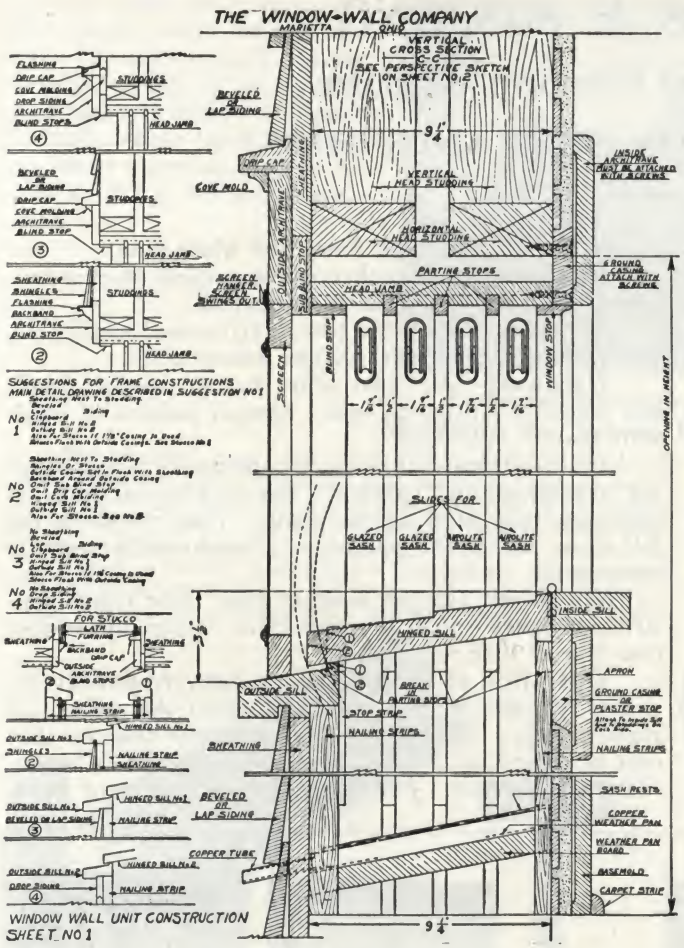
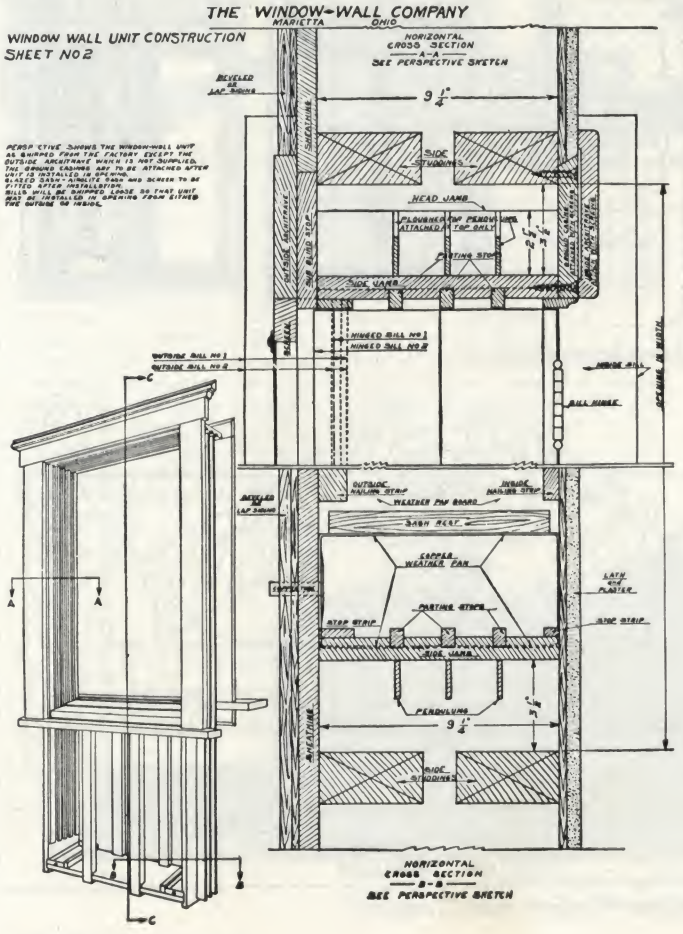




Detail Drawings of Window-Wall Units

The details in the next column are for frame construction, also for stucco if 1⅛-in. casing is used. For casement windows, brick or other construction write for detail drawings.

STANDARD SIZES OF WINDOW-WALL UNITS

Widths

Glass size, in.	Over-all glass sash, in.	*Over-all clearance required between studding or structure opening, in.
20 in.—One-light wide . .	24	31¾
22 in.—One-light wide . .	26	33¾
24 in.—One-light wide . .	28	35¾
26 in.—One-light wide . .	30	37¾
28 in.—One-light wide . .	32	39¾
30 in.—One-light wide . .	34	41¾
32 in.—One-light wide . .	36	43¾
18 in.—Two-lights wide .	41	48¾
20 in.—Two-lights wide .	45	52¾
22 in.—Two-lights wide .	49	56¾
24 in.—Two-lights wide .	53	60¾

**Note:* For brick construction, etc., where weight boxes are required, add 1½ in. to the above dimensions on over-all width clearance required.

Mullion Casing: When the Window-Wall Units are to be installed with mullions between units, the ground casing and finished interior casing fitting between the units will each be 10¾ in. wide. This will be increased by 1½ in. when used in brick or masonry walls.

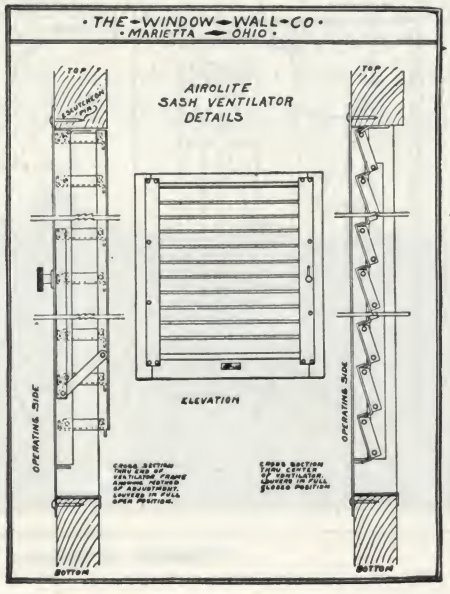
Heights

Glass size, in.	Over-all glass sash, in.	Floor line to top of inside sill, in.	Over-all clearance required between floor line and headers, in.
20	46¾	31 1/16	78 5/8
22	50¾	33 1/16	84 5/8
24	54¾	35 1/16	90 5/8
26	58¾	37 1/16	96 5/8
28	62¾	39 1/16	102 5/8
30	66¾	41 1/16	108 5/8

Caution: The above dimensions cover the actual openings required to receive the Window-Wall Unit. Take care of top and side trim. "Airolite" Ventilating Sash, Glazed Sash and Screen are the same in width.

"Airolite" Sash, an All-weather Sash

"Airolite" Sash is a patented ventilator constructed with wood frame, and adjustable louvers made of rust resisting steel, each louver having a ¼-in. flange. A slight pressure of the thumbscrew sets the louvers at any desired angle, quickly and silently, thus affording privacy, shade or light as desired, fresh air without draughts and protection against storms. While "Airolite" Sash is used as part of the Window-Wall Unit it can be installed as a separate unit in old and new construction as ordinary double hung glazed sash, as full length screen, or as half sash to fit against outside blind stops and flush against upper glass meeting rail; the bottom to rest upon the main sill. "Airolite" Sash can be supplied with or without screen. When screen is desired, we use 16-mesh copper wire cloth. On large sizes, the "Airolite" Sash is divided up into various size lights.



F. W. STEVENS & SON, INC.

Manufacturers of Unit Casement Windows

70 Needham Street, NEWTON HIGHLANDS, MASS.

Products

STEVENS UNIT CASEMENT WINDOWS and SCREENS.

Patented in United States of America and Canada.

Unit Casement Windows

Advantages—A completely assembled product including frames, sash, glass, screens, weatherstrips. Suitable for all kinds of construction, and architect's details. Guaranteed to be weathertight. Complete control of ventilation without direct drafts. Our ventilated transom window is especially suited for schoolhouses and hospitals. Transoms operated without disturbing screens or shades, or may be fixed.

Ease with which windows can be cleaned on the outside from within—thus eliminating danger in cleaning.

Simplicity of construction. May be installed in old frames without disturbing interior or exterior finish.

Materials—***Frames***—Either for brick or wood construction from good seasoned white pine made to our standard or architect's details.

Sash—1¾ in. thick from best white pine.

Glass—Selected quality in the varying thicknesses. Glazed with the best glazing compound.

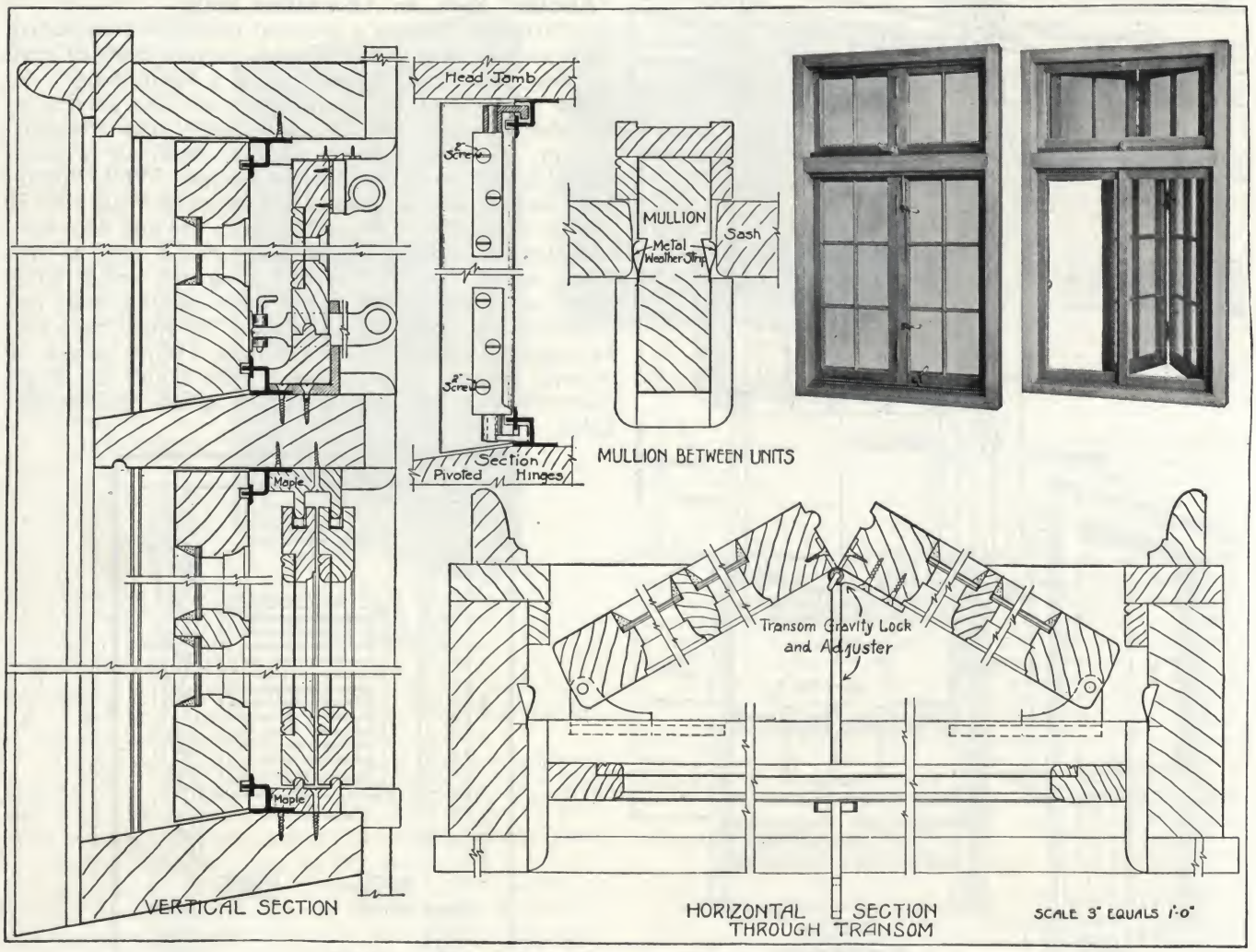
Screens—Made from best of rift sawed white pine, wired with 16-mesh dark copper screen cloth.

Hardware—All solid brass to our special detail, and completely fitted to sash. Special finishes of hardware may be furnished.

Installation—Windows are delivered at the building assembled, and carpenter has only to set units in openings designated on the plans. This completes the job in so far as the operation of sash and screens is concerned.

We do not furnish interior trim. For frame construction make rough openings 5 in. wider and higher than size of sash to be used.

Operation of Sash—A slight outward push in the center of each pair of sash will make the units fold together; they can then be slid to either side, or they may be placed in any position so as to give as little ventilation as desired. For single sash or groups of three,



Details of Stevens Unit Casement Windows with Transom

Continued on next page

the odd single sash opens similar to the units, except that one of the pivoted corner hinges is replaced by an arm, one end of which is secured to sash, other being fastened to jamb, allowing sash to remain rigid in outswung position.

Note: Sashes may be glazed with "Vitaglass," the health-giving window glass, which transmits the curative ultra-violet rays of daylight.

Further information and full sized details for either brick or wood construction furnished upon request.

Hardware for Stevens Unit Casement Windows

The extruded brass track (Fig. 1) is screwed to stool and head jamb the entire width of each opening; the horizontal projecting tongue of track acts as a weatherstrip, fitting into a groove in the sash. The pivoted hinges (Fig. 2) are of cast brass; each hinge slides in extruded track from which it is impossible to become disengaged. Commercial spring bronze weatherstrips are furnished full length for each pair of jambs. Butts are 3x2 in. and are solid wrought brass; two or more being required for each pair of sash, depending on height of sash. The polished cast brass handle and lock (Fig. 3) is used as a lock, a slight turn securely fastening the sash. Polished cast brass top lock for use on high sash (Fig. 4); one lock required for each pair of sash. Transom gravity lock and adjuster for operating transom only (Fig. 5). Loose pin butt (Fig. 6). Handle to open and close the window (Fig. 7).

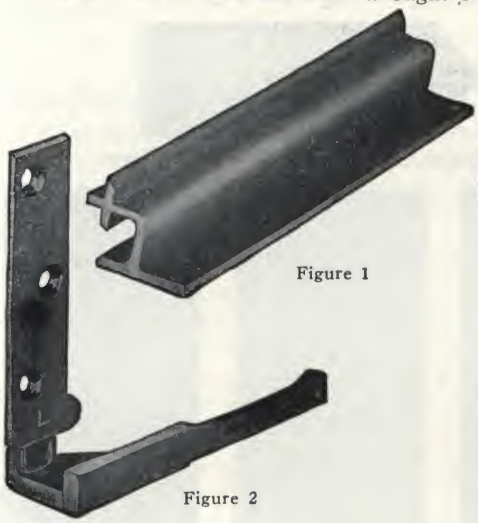


Figure 1

Figure 2

Figure 3

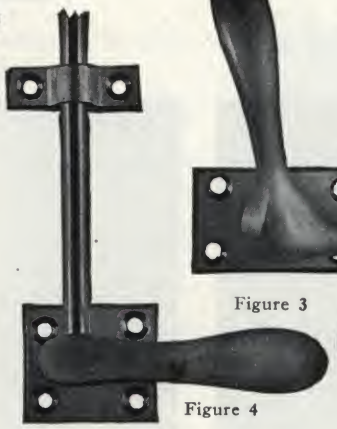


Figure 4

Figure 6

Figure 7

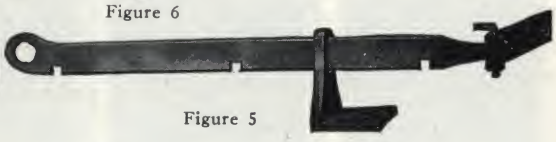


Figure 5

A Few Installations and Their Architects

Tampa Municipal Hospital, Tampa, Fla., Stevens & Lee, Boston, Mass., and M. Leo. Elliott, Tampa, Fla.
Deaconess Hospital, Boston, Mass., E. W. Dearing
Quincy City Hospital, Quincy, Mass., Stevens & Lee
Norwood Hospital, Norwood, Mass., J. Williams Beal Sons
Lawrence Memorial Hospital, Medford, Mass., Chas. B. Dunham
Heywood Memorial Hospital, Gardner, Mass., Stevens & Lee
Home for Aged, Somerville, Mass., Charles M. Baker
Children's Hospital, Washington, D. C., Stevens & Lee
Palmer Memorial Hospital, Boston, Mass., E. W. Dearing
Mary Lane Hospital, Ware, Mass., Stevens & Lee
Freeman Hospital, Joplin, Mo., E. W. Dearing
Nurses Home, Fall River Hospital, Fall River, Mass., E. M. Corbett
St. Luke's Hospital, New Bedford, Mass., Stevens & Lee
Waltham Hospital, Waltham, Mass., J. R. Worcester, Engr.
First Church of Christ, Scientist, Wellesley Hills, Mass., E. W. Dearing
Nurses' Home, Lawrence Memorial Hospital, Medford, Mass., Charles B. Dunham
Wellesley Friendly Aid Society, Wellesley Hills, Mass., Stevens & Lee

Tampa Municipal Hospital, Tampa, Fla.
Architects: Stevens & Lee, Boston, Mass. and M. Leo Elliott, Tampa, Fla.

ESTABLISHED 1870

CARNAHAN MANUFACTURING CO.

Special Veneered Doors and Millwork to Detail Since 1870

303 Mill Street
LOOGOOTEE, IND.

Products

VENEERED DOORS: INTERIOR DOORS, FRONT DOORS, HOLLOW SANITARY DOORS; RING JOINT; ASSEMBLED TRIM.

Also, all kinds of Millwork, Interior Trim, Stairs, Wainscoting, Mouldings, etc.

Special Millwork and Facilities for Production

The CARNAHAN MANUFACTURING Co. makes a specialty of interior and exterior millwork made to architects' detailed plans. All the details of mouldings, etc., are carefully cut and detailed drawings are followed accurately.

The workmanship is of the highest grade, as our equipment consists of the most advanced type of machinery and the men are thoroughly trained.

Large quantities of materials are carried in our yards and storage buildings so as to have seasoned stock from which to execute work on short notice.

Guarantee for Veneered Doors

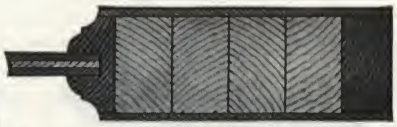
Veneered doors are guaranteed against defective workmanship and material, when properly handled, and we agree to replace "in the white" (unfinished) any veneered door of our manufacture that proves defective.

Carnahan Standard Veneered Doors

Interior Doors—The standard veneered doors are made with white pine cores, and can be furnished veneered in all woods, sizes and thicknesses. A copy of price folder No. 28 will be mailed on request.

Front Doors—Made in any kind of wood desired, glass paneling or divided lights in different designs.

Stock or odd doors our specialty.



Construction of Standard Veneered Door

No. 22 | No. 17 | No. 13 | No. 12 | No. 8 | No. 10

Standard Veneered Interior Doors
Veneered in any kind of wood

No. 36. Cove and Bead Sticking | No. 36. Raised Mould | No. 41 | No. 37 | No. 30 | No. 14

Standard Veneered Front Doors

Continued on next page

Evans Process Hollow Sanitary Flush Doors

The Evans process flush door has a frame of core wood the size of the door, into which is placed a series of vertical ribs with air spaces between. Over this frame is glued a $\frac{3}{16}$-in. cross band, with an edge strip of hardwood along the edges covering the glue joint between core and cross banding, thus avoiding the exposure of any end wood. The face veneer, consisting of a sheet of $\frac{1}{8}$-in. veneer, is then applied, completely covering the surface of the door. (See detail.)

This sanitary door is as soundproof as a hollow partition, and is heat and cold resisting. It does not shrink in length or breadth; it stays straight, and does not distort. Light in weight (one-half that of a solid core door, or 3½ lbs. per sq. ft.). Light on its hinges; easy to open and close.

Solid doors of the ordinary 5-ply construction are also manufactured.

Assembled Door and Window Trim

We are in position to furnish doors and window trim assembled with the well-known Evans ring joint.

Estimates

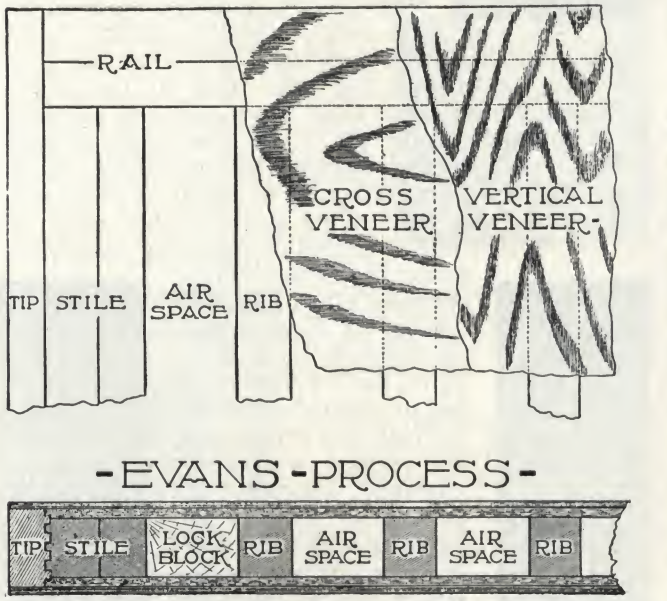
Send us your lists for estimates.

Installations of Carnahan Doors

In the following partial list of installations, the name of the architect is also given:

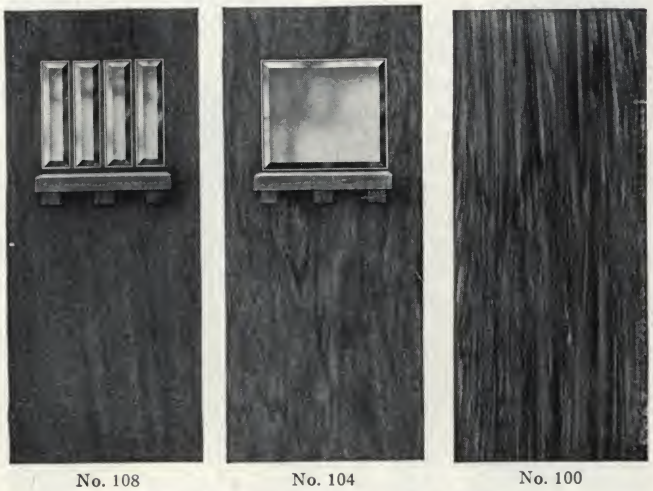
Continental Bank Building, Indianapolis, Ind., R. F. Daggett
Duke University Dormitories Nos. 1 to 5, inclusive, and the Library, Durham, N. C.
Bertha M. Fisher Nurses' Home, Detroit, Mich., Weston & Ellington
Riley Hospital, Indianapolis, Ind., R. F. Daggett
City Hospital Surgical Unit, Indianapolis, Ind., Adolph Scherer
Longden Hall, DePauw University, Greencastle, Ind., R. F. Daggett
Indiana Limestone Co. Office Building, Bedford, Ind., Granger & Bollenbacher
Hyde Park M. E. Church, Hyde Park, Ohio, Granger & Bollenbacher
Cathedral High School, Indianapolis, Ind., Adolph Scherer
East Side High School, Terre Haute, Ind., Johnson, Miller & Yeager
Magnolia Building, Dallas, Tex., Alfred C. Bossom
Chemical Laboratory, Bozeman, Mont., Fred E. Wilson
Home for Aged Baptists, Ironton, Mo., L. Baylor Pendleton
Deaconess' Hospital, Evansville, Ind., H. E. Boyle & Co.
St. Mary's Hospital, Evansville, Ind., C. Shoppell & Co.
Home Lawn Sanitarium, Martinsville, Ind., Wilson B. Parker
Dormitory, University of Cincinnati, Harry Hake
First National Bank, Richmond, Ind., C. C. & E. A. Weber
Infirmary, St. Mary's of the Woods, Terre Haute, Ind., D. A. Bohlen & Son
Good Samaritan Hospital, Cincinnati, Ohio, Gustave W. Drach
Federal Reserve Bank, Houston, Tex., Sanquinet, Staats & Gottlieb
North Dallas High School, Dallas, Tex., Wm. B. Ittner
La Salle Hotel, South Bend, Ind., Nicol-Scholer-Hoffman
Harper Hospital Nurses' Home, Detroit, Mich., Albert Kahn
Herman Kiefer Hospital, Detroit, Mich., Albert Kahn
Jennie Edmunsen Memorial Hospital, Council Bluffs, Iowa, Jansen & Larsen
School of Commerce and Finance, Indiana University, Bloomington, Ind., R. F. Daggett
McKinley School, Canton, Ohio, Geo. F. Hammond
John H. Lehman School, Canton, Ohio, Thayer & Johnson
Hotel Sontag & Victory Theater, Evansville, Ind., J. E. O. Pridemore
Medical Building and University Hospital, University of Michigan, Ann Arbor, Mich., Albert Kahn
Ford Hospital, Nurses Home, Detroit, Mich., Albert Kahn

If you do not find anything in the above list that is near you, we can refer you to one in your immediate vicinity.



Detail of Construction, Evans Process Hollow Sanitary Door

No. 100 Inlay B | No. 100 Inlay A | No. 100 Inlay C



No. 108 | No. 104 | No. 100

Evans Process Sanitary Flush Doors

ESTABLISHED 1866

CARR, RYDER & ADAMS COMPANY

Bilt-Well Millwork of All Kinds for All Types of Buildings

DUBUQUE, IOWA

PLANTS IN OTHER PARTS OF U. S. A.

ADAMS & KELLY CO., Omaha, Neb.
ADAMS-ROGERS CO., Indianapolis, Ind.
CARR-CULLEN CO., Minneapolis, Minn.
CARR & JOHNSTON CO., Peoria, Ill.
CARR-TROMBLEY MFG. CO., St. Louis, Mo.
CARR & YOUNG CO., Des Moines, Iowa
COLLIER-ADAMS MFG. CO., St. Joseph, Mo.
THE COLLIER-BARNETT CO., Toledo, Ohio

Products—Wood

CABINETS: Broom, Buffet, Built-in Conveniences, Ironing Board, Kitchen, Linen, Medicine, Telephone, Utility.
COLUMNS: Interior, Exterior.
DOORS: Exterior, Interior, Garage, Cupboard, Special, Hardwood (Veneered), Flush, Paneled.
FRAMES: Casement, Interior and Exterior Door, Window, Tracery.
SASH: Casement, Circle, Storm.
SCREENS: Window, Door, Porch.
WINDOWS: Church, Double Hung.

Also Bookcases, Mantels, Cabinetwork, Porchwork, Stairwork, Interior and Exterior Mouldings.

We are also general distributors for Maizewood Cornstalk Insulation and Barcol Overdoors, described in this edition of SWEET'S CATALOGUE (see Products Index).

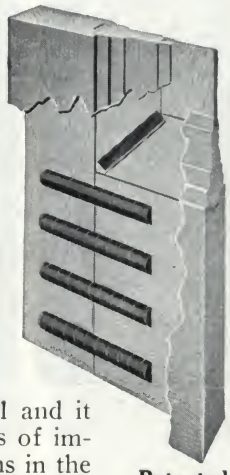
Facilities

Complete facilities to manufacture fine quality millwork of all kinds is provided. Many operations are automatic and production is rapid and economical. A staff of experimental and practical experts is in charge. Loading platforms connect with four railroads and the Mississippi Barge Line.

Hardwood (Veneered) Doors

BW-457
Marvelous
(Insert Type)

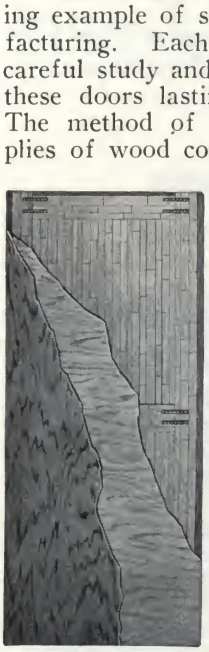
One of the principal Bilt-Well products is hardwood veneered doors for hospitals, schools, hotels, churches, public buildings, apartments, and residences. Manufactured in either special or standard designs. Door illustrated at left is one of our standard designs of patented construction. Illustration below shows a cut away view of lower left hand corner of this door. The insert including the mouldings is one solid piece of wood moulded to give the desired appearance in a very practical way. The giant spiral glue cell dowels which are used in construction of all Bilt-Well doors are also illustrated in the sectional view. The spiral groove is an outstanding feature of these dowels as the holes in stiles and rails are several hundredths of an inch smaller than the diameter of dowel and it is here that the spiral groove proves of importance as a coating of glue remains in the grooves in assembling doors. All Bilt-Well panel doors are assembled with hydraulic pressure and have either 3 ply laminated panels $\frac{5}{16}$ in. thick or solid raised panels $\frac{5}{8}$ in. thick according to the design or unless otherwise specified.



Patented
Construction

Bilt-Well Flush (Slab) Doors

Bilt-Well flush (slab) doors are an outstanding example of scientific door manufacturing. Each operation is given careful study and precaution to make these doors lasting and satisfactory. The method of construction is five plies of wood consisting of a sturdy constructed center ply, cross-banding and face veneers. The construction of core or center ply is designed on the principal of a two panel door with the core doweled together as illustrated. The dowels as described in the preceding column are giant in size made of hardwood with spiral glue cells. The core is built up into 9 sections, each section is tongued or grooved on each adjoining edge, thereby adding extra strength to the most important joints of the door. All core blocks are carefully dried to the correct moisture content and after glued up are manufactured into the center ply. The center ply is again redried and carefully seasoned before putting on the cross-banding. The direction of grain in the cross-banding is horizontal to the grain of the center ply or core thereby almost entirely eliminating reaction of center ply during climatic changes. After proper seasoning the face veneers are applied, these being $\frac{1}{8}$ in. thick, before sanding, of either sliced, sawn, or rotary cut veneers and are applied with grain running vertically. In addition to the scientific handling and the cross-banding of veneers in opposite direction of grain in core, a highly water resistant glue is used exclusively throughout each operation.

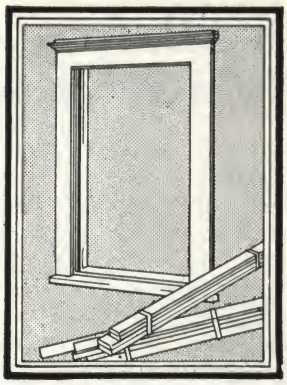


BW-470
Flush (Slab) Door

BW-468
Six Panel

BW-469
Eight Panel

Continued on next page



Set-up and Bundled Frames

Bilt-Well Frames

Window, door, and tracery frames are also Bilt-Well products. Manufactured in accordance with architects details and specifications or according to our details submitted for architects' approval. Clear soft pine material is used throughout unless otherwise specified. There is an entire floor of our large plant devoted to the manufacturing of all types of frames, both special and standard. Each particular type of frame has requirements which make it entirely individual and for this reason we suggest the guidance of details or the opportunity to submit details for architect's approval.

Information Required for Estimates on Millwork — Complete plans and specifications are necessary to give quotations. Estimates from architect's plans are prepared by competent estimators in position to figure for buildings from the smallest residence to the largest structure.

Cabinet Work

The majority of cabinetwork produced in our plant is for special requirements governed by architect's plans and specifications. Among this work is some of the most impressive examples of characteristic panelwork, Rostrum, Sanctuary, and Altar Fronts. A large percentage of this work is for Public Buildings. Endless lists of apartments have been equipped with our built-in conveniences such as those illustrated for Kitchenette and Dinette. Divider Cabinets BW-4446 unless otherwise specified are furnished in pairs —left and right cabinets size 2 ft. wide, 3 ft. 6 in. high, and 11¾ in. deep overall. Bars for divided lights in doors may be added instead of the one light as illustrated. Exposed end and one side of cabinet has a recessed panel. The base is usually furnished under separate order of interior trim, and the cap mould can be furnished in corresponding profile to intersect with chair rail.

BW-4446 Divider Cabinet

Exterior Millwork

Complete equipment to reproduce exterior millwork for entrances and cornices of various periods of architecture offers to architects millwork executed by master craftsmen. Details from the simple Colonial treatment to the ornamentations of the Renaissance period are carried out by skilled men. There is a large demand for exterior millwork of the several types which permits us to maintain a department exclusively for the manufacture of exterior millwork.

Service to Architects and Contractors—We will be very glad to offer our assistance and suggestions in reference to all millwork, and are pleased to have architects and contractors confer with us.

Entrance BW-427

Stairwork

Stair manufacturing or stair building as it is often called requires great accuracy. Only thoroughly trained men of sufficient experience in technical problems are employed in this department. Stair building is truly a work of art. A stairway can be made graceful by correct curves or lose its charm when lacking the necessary touch which it is possible to add by correct designing of full size working details. Our circular rail and stringers on rake are shaped by guidance of full size patterns of consistent pitch. These patterns are in technical terms called stretch-outs which are laid out by method of determining points of location and are not merely scribed free hand, thus avoiding flat surfaces. In regular practice face stringers are mitered to receive risers. Wall stringers are housed for treads, risers, and wedges. Treads and risers have tongued and grooved joints and are assembled with triangular blocks glued into position. Architects always compliment us on our splendid construction and fine workmanship of stairwork.

Stairway BW-1351

Built-In Conveniences

Ironing board cabinet design BW-1097-D is one of our many built-in conveniences which we offer for residence and apartment requirements. Dimensions of BW-1097-D are as follows:

Ironing board, 10⅞ in. wide x 4 ft. 3 in. long. Sleeve board, 5⅛ in. wide x 2 ft. 2½ in. long. Cabinet overall, 1 ft. 2 in. wide x 6 ft. 8½ in. high. Recess required, 1 ft. 2¼ in. wide, 6 ft. 9 in. high, 4 in. deep. Fits between standard 2x4 studs, spaced 16 in. O.C.

There is among our list of specialties a type of ironing board cabinet which is intended to be fastened to the wall or similar places; for instance, this cabinet can be attached to a closet door. In specifying this ironing board cabinet kindly refer to it by design number BW-4445.

In addition to cabinets mentioned we manufacture a complete line of built-in conveniences.

BW-1097-D Ironing Board Cabinet

THE COMPOUND AND PYRONO DOOR CO.

Manufacturers of Compound Key-Veneered Doors; Pyrono Fireproof Veneered Doors and Trim

ST. JOSEPH, MICH.

BRANCH OFFICES

NEW YORK, N. Y., 5723 Grand Central Terminal
CLEVELAND, OHIO, 511 Guarantee Title Building
COLUMBUS, OHIO, 596 So. Ohio Avenue
DETROIT, MICH., 420 U. S. Mortgage Building
CHICAGO, ILL., 612 No. Michigan Avenue
ST. LOUIS, MO., 717 Louderman Building
BOSTON, MASS., 40 Central Street
LOCKPORT, N. Y., 399 High Street
WICHITA, KAN., Lusco Brick & Stone Co., 201 W. Douglas Street

For Trimount Sound-Insulated Doors, see Manufacturers' Index

COMPOUND KEY-VENEERED WOOD DOORS

Guarantee

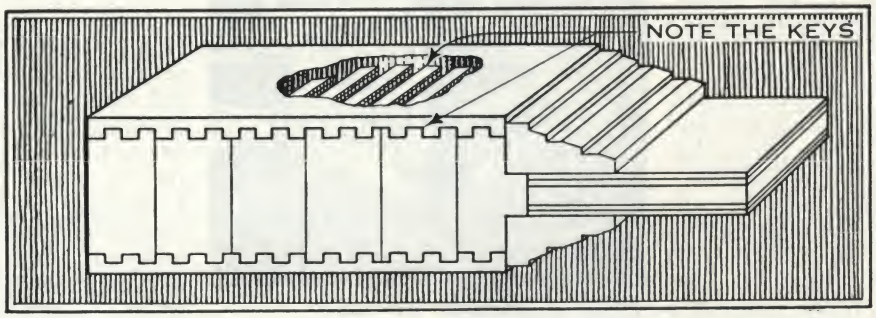
Full and complete without reservations. Covers defects in material and workmanship.

Construction

Stiles and rails have 7/8-in. core strips of chestnut or white pine cut from air dried lumber and thoroughly kiln dried. No scraps or refuse blocks used in cores.

Heavy sawed veneers applied in this way practically eliminate veneer trouble. Doors outlast the building.

Finishing Department—A very complete and adequate finishing department is maintained for the purpose of applying whatever part of the finish is desired by the customer. It is frequently a great convenience to have stain and filler, or even a complete finish applied before shipment is made.



Key-Veneered Construction

Showing method of applying veneers by tongue and groove process which gives twice the gluing contact of the ordinary method of applying the veneers flat and locks the structure in an inseparable bond

Veneers are sawed 1/4-in. thick, tongued and grooved to the core and rolled on under pressure by special patented process.

All panels are five-ply with face veneers either sawed, rotary cut or sliced, per the architect's specifications.

Panel cores are all thoroughly re-dried, with face veneers ironed flat and re-dried in plate driers.

All wood stock goes into work dried within two to three percent of moisture and continues through a mill where every possible effort is made to keep atmospheric moisture to a minimum.

Advantages of Construction—Glue surface between core and veneer is double that of any other veneer construction. (See illustration for core and veneer contact.) The shearing strain that is bound to occur between hardwood veneer and softwood core caused by changes in temperature is overcome by this construction.

Strains and stresses are further neutralized by reversing the grain in core strips. All surplus glue and all air pockets are *rolled out* and are absolutely eliminated with this process.

Specifications Key-Veneered Panel Doors

All interior stile and rail doors shall have stile and rail cores built up of strips of softwood not thicker than 7/8-in., glued together under pressure, with 3/4-in. edge strips of same wood as face veneer. All stile and rail veneers shall be sawed 1/4-in. thick to finish 3/16-in. thick, and shall be tongued and grooved to the core with at least four tongues and four grooves to the inch and glued with best grade of glue.

Tongues and grooves shall be cut not less than 1/16-in. deep.

All panels shall be laminated five-ply with grain crossed on alternate plies.

All stile and rail joints to be mortise and tenon construction.

All doors to be hand or belt smoothed and entirely free from cross grain sander scratches on plain surfaces and from knife marks on mouldings and moulded edges.

Outside doors to conform to above specifications, except to be put together with waterproof glue.

All doors to receive one coat of stain and shellac (including filler if necessary), or lead and oil priming before shipment.

Continued on next page

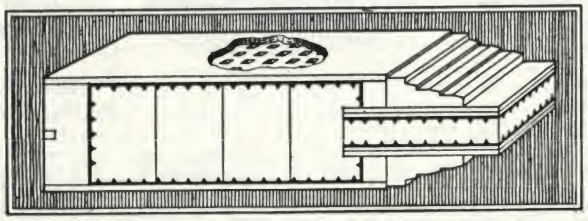
PYRONO FIREPROOF WOOD DOORS

Process of Construction

The PYRONO process is a mechanical method of fireproofing wood cores in the manufacture of doors and trim.

In PYRONO construction, cores of non-resinous wood are used and these when assembled are covered with pure, long fiber asbestos sheathing mechanically bonded to their surfaces, excluding oxygen, thus preventing ignition and assuring against spread of flame from the place of origin to other parts of a building—the one essential province of a fire door.

Designs—Flush doors with or without inlay. Panel doors, any arrangement of panels. Sash doors with glass lights not exceeding 720 sq. in. PYRONO doors and trim furnished in all cabinet woods used in interior finish.



Section of Stile or Rail Illustrating Pyrono Asbestos Interlined Fireproof Construction

Appropriate Use

PYRONO doors are used for stairways, elevators, corridors and partitions, in office buildings, hotels, hospitals, apartments, schools, dormitories and similar types of fireproof buildings.

Fully Tested

PYRONO, first introduced in 1910, has fully demonstrated in official tests and actual fires its perfect efficiency as a fire retardant.

Specifications of Pyrono Fireproof Doors

Pyrono Panel Doors—Fireproof paneled veneered doors to be constructed as follows: Stile and rail cores to consist of narrow softwood strips, thoroughly kiln-dried, not more than ⅞-inch thick and glued together under pressure. This wood core to be covered on face and edges with pure long fibre asbestos sheathing thoroughly glued and indented with not less than twenty-five indentations to the square inch. Each indent to be perforated at its base to perfect the glue bond between core and veneer. Hardwood veneer as specified to be applied to face of such stiles and rails, and edge strips to match veneer to be applied to all edges.

Panels shall be laminated seven-ply with grain crossed on alternate wood plies. The ply next to the core on each side shall be pure long fibre asbestos sheathing thoroughly glued and indented to the core as indicated for stile and rail construction. Face veneer to be as specified by architect. All panels to be not less than ¾-inch thick.

All stile and rail joints to be of mortise and tenon construction.

All doors shall be hand or belt smoothed and entirely free from cross grain sander scratches.

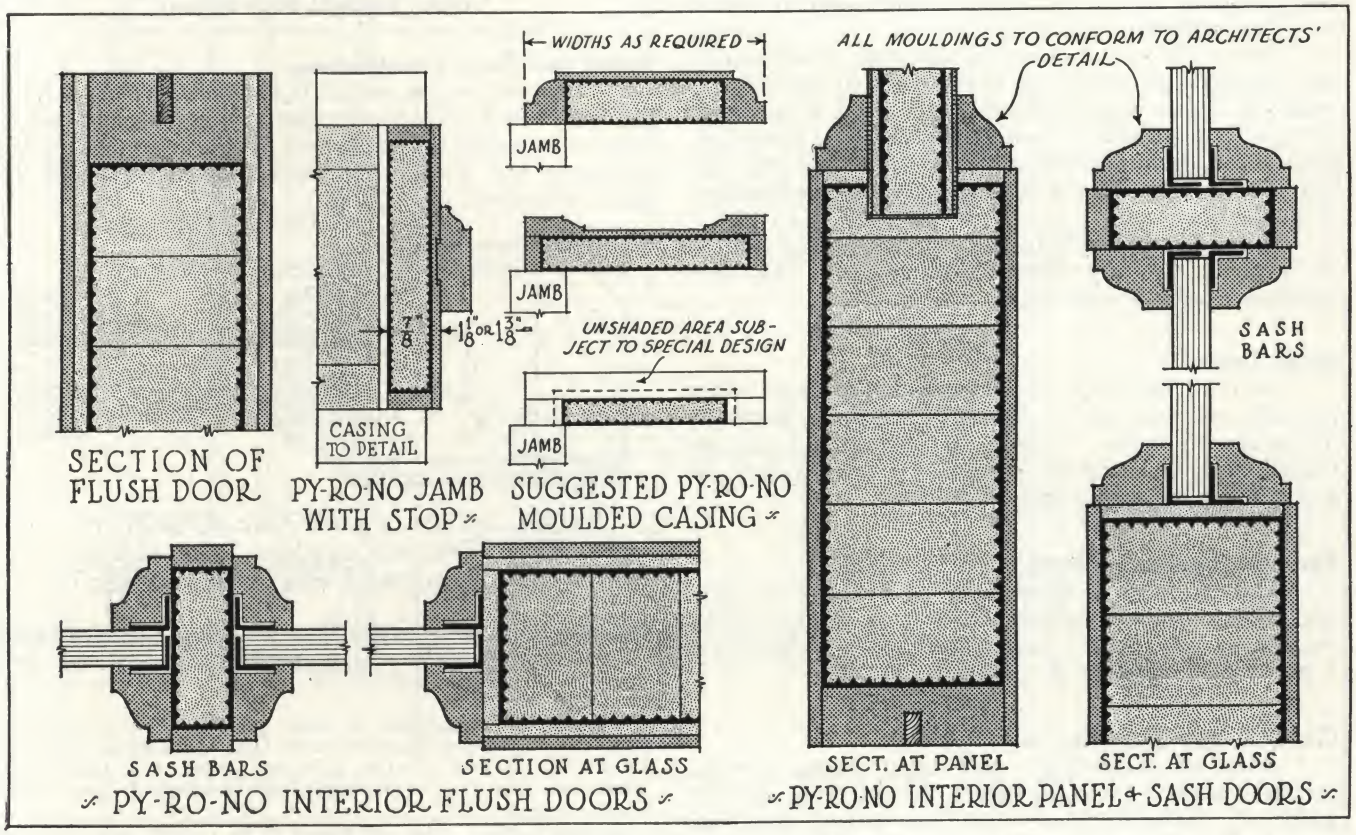
All doors to receive one coat of stain and shellac (including filler if necessary), or lead and oil priming before shipment.

Pyrono Flush Doors—Fireproof flush veneered doors to be constructed as follows:

Cores to consist of narrow softwood strips, thoroughly kiln-dried, not more than ⅞-inch thick, glued together to form stiles, cross rails and flush panels, and framed together with mortise and tenon joints. This wood core to be covered on face and edges with pure long fibre asbestos sheathing thoroughly glued and indented to the core, with not less than twenty-five indents to the square inch. Each indent to be perforated at its base to perfect the glue bond between core and cross band.

Hardwood edge-strips of same wood as face veneer to be applied on all edges and door to be completed by application of 1½-inch cross-band and face veneer not more than ⅛-inch thick.

All doors to be hand or belt smoothed and absolutely free from machine or sander marks that will appear on application of stain or varnish. All doors to receive one coat of stain and shellac (including filler if necessary), or lead and oil priming before shipment.



Pyrono (Fireproof) Doors and Trim Are Built to Architect's Designs Regardless of Period or Type

ESTABLISHED 1886

W. D. CROOKS & SONS

For Over Forty Years Manufacturers of Hardwood Veneered Doors, Exclusively

GENERAL OFFICE AND MILLS

WILLIAMSPORT, PA.

Products

HARDWOOD VENEERED DOORS of every description to architects' specifications and details.

SANITARY (FLUSH) DOORS.

STOCK DOORS of all designs.

CROOKS 1886 DOORS

TRADE-MARK

Guarantee

W. D. CROOKS & SONS guarantee to replace in the white any Crooks door that proves defective in material or workmanship.

Trade-mark is stamped on top and bottom rail of each door.

Policy

Limited Quantity—Unlimited Quality.

A limited output has been the policy of this organization since its beginning over forty years ago. The company's heads believe this the only possible means of maintaining its standard on custom-built doors to architects' details, which constitute 75% of its sales.

Construction

Crooks doors are veneered with any foreign or domestic wood specified. All veneer is shrunk in a re-drying machine. It is then mechanically tested to prove the absence of moisture.

Core is "built-up" of narrow chestnut or white pine, kiln dried strips, which are glued together and kept in retainers in hot rooms until perfect joints are assured. Core is then planed to even thickness and veneers applied under hydraulic pressure. Material is again held in retainers in hot rooms until all moisture is eliminated from the glue.

Succeeding operations are practically identical in all factories, the only difference being in the skill with which the work is performed.

Stock Doors

Over 10,000 stock doors in chestnut, birch, plain red oak, red gum and walnut are always on hand for immediate shipment. Twenty designs of red oak entrance doors are included. These are made with ¼-in. *sawed* veneers and waterproof glue.

Sample (Special) Doors

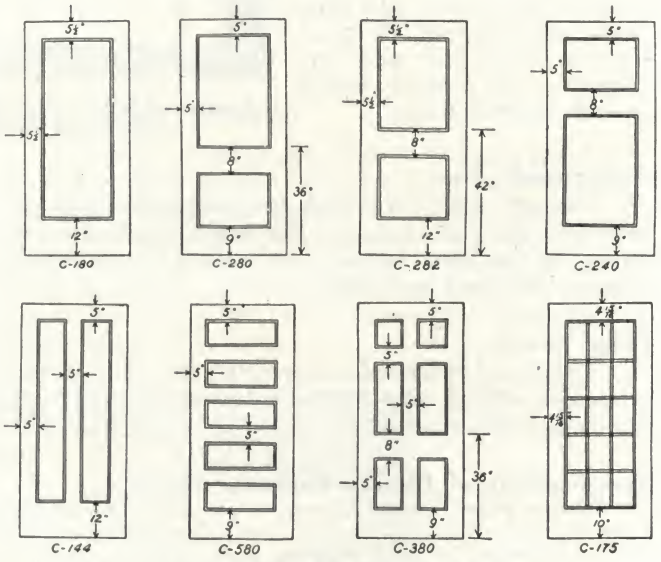
The company welcomes the opportunity to make and submit full size sample doors at actual cost. This suggestion has recently found favor with architects on a number of large buildings.

General Specifications and Details

A set of specification and detail sheets covering the best method of construction for all types and designs of veneered doors will be mailed upon request.

Standard Designs

There is always a saving in the cost of manufacture where a standard design can be used. The style of moulding on these designs is optional but should not exceed ½ in. in width.

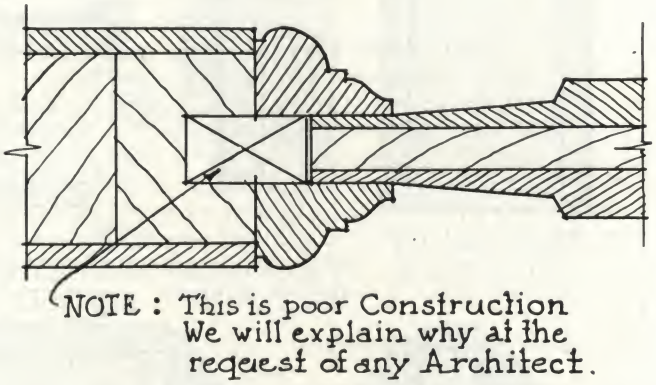


Crooks Standard Door Designs

Dimensions are overall including width of moulding

Good and Poor Construction

The construction shown in the sketch below is quite generally used even for the better class of door work. Why it is impractical and how W. D. CROOKS & SONS overcome the dangers of such constructions will be gladly explained on request.



Specifications for Crooks Non-Warping Sanitary Door

Sanitary (Flush) Doors to be Crooks Non-warping Construction as manufactured by W. D. CROOKS & SONS, of Williamsport, Pa.

Core—To be chestnut or white pine, to contain not more than 5% moisture. Stile core to be built up of strips not over 1¾ in. by thickness of core, rails and panels to be built up of pieces not over 3 in. wide, glued with waterproof glue under heavy pressure.

Core of stiles, rails and panels to be framed, mortised and tenoned (or doweled) to make the equivalent of five cross

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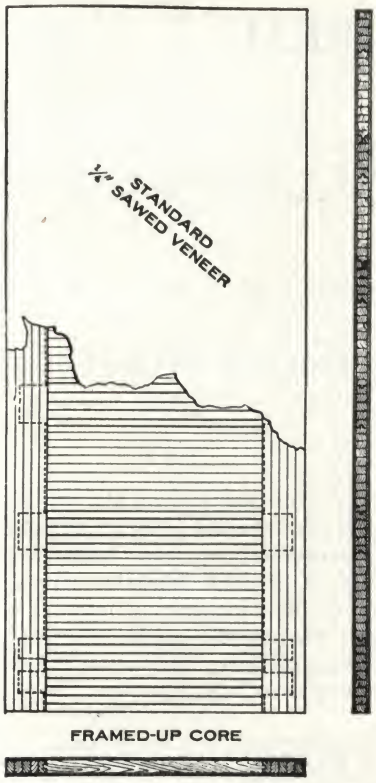


panels but with flush surfaces. All tenons or dowels well glued and door assembled under heavy pressure.

Core of door to be sanded smooth, ready for face veneer.

Face Veneer—Face veneer to be *sawed* (not rotary cut) and to be standard ¼ in. thick, not less than $\frac{3}{16}$ in. when sanded, and to be matched book-leaf. All joints in face veneer to be parallel with edges of door and well glued. Edges same wood as face veneer and at least ¾ in. thick.

Gluing—Face veneer to be glued to core with waterproof glue under heavy pressure and held in retainers until glue is set.

Redrying—Doors to be redried after veneering to remove all moisture contained in glue.

Sanding—Face of door to be sanded in such a manner that when varnish is applied, machine or sander marks will not show through finish.

Special Doors to Architects Design

W. D. Crooks & Sons for over forty years have co-operated with architects in all parts of the country in the construction of special doors to the design of the architect. This work has given us an experience and an insight into the problems of the architect which enables us to work with him in securing the most satisfactory results for all concerned. Some of our installations are listed here and it will be noted that they cover practically every type of structure and all parts of the country.

Construction Suggestions

The information given in the following suggestions for special doors is of a practical nature and should be of value to the specification writer.

Use *sawed* veneers on cores of kiln-dried, soft wood strips.

Exterior doors, as well as all heavy duty doors, such as schoolhouse and church doors, should be detailed mortise and tenon construction.

Doors with flush or raised moulding should be mortised and tenoned.

Detail one panel doors not less than 1¾ in. thick, with panel not less than ½ in. thick.

Doors veneered with two kinds of wood should be at least 1¾ in. thick.

Doors over 2 ft. 8 in. wide or 7 ft. high should be made 1¾ in. thick.

Sanitary (flush) doors should be detailed at least 1¾ in. thick.

Solid stuck mould should not be detailed wider than ¾ in.

Bars in sash doors should be at least ¼ in., not to exceed ½ in. between glass.

All panels, both flat and raised, should be laminated.

Specify waterproof glue and standard ¼-in. *sawed* veneers on all exterior doors.

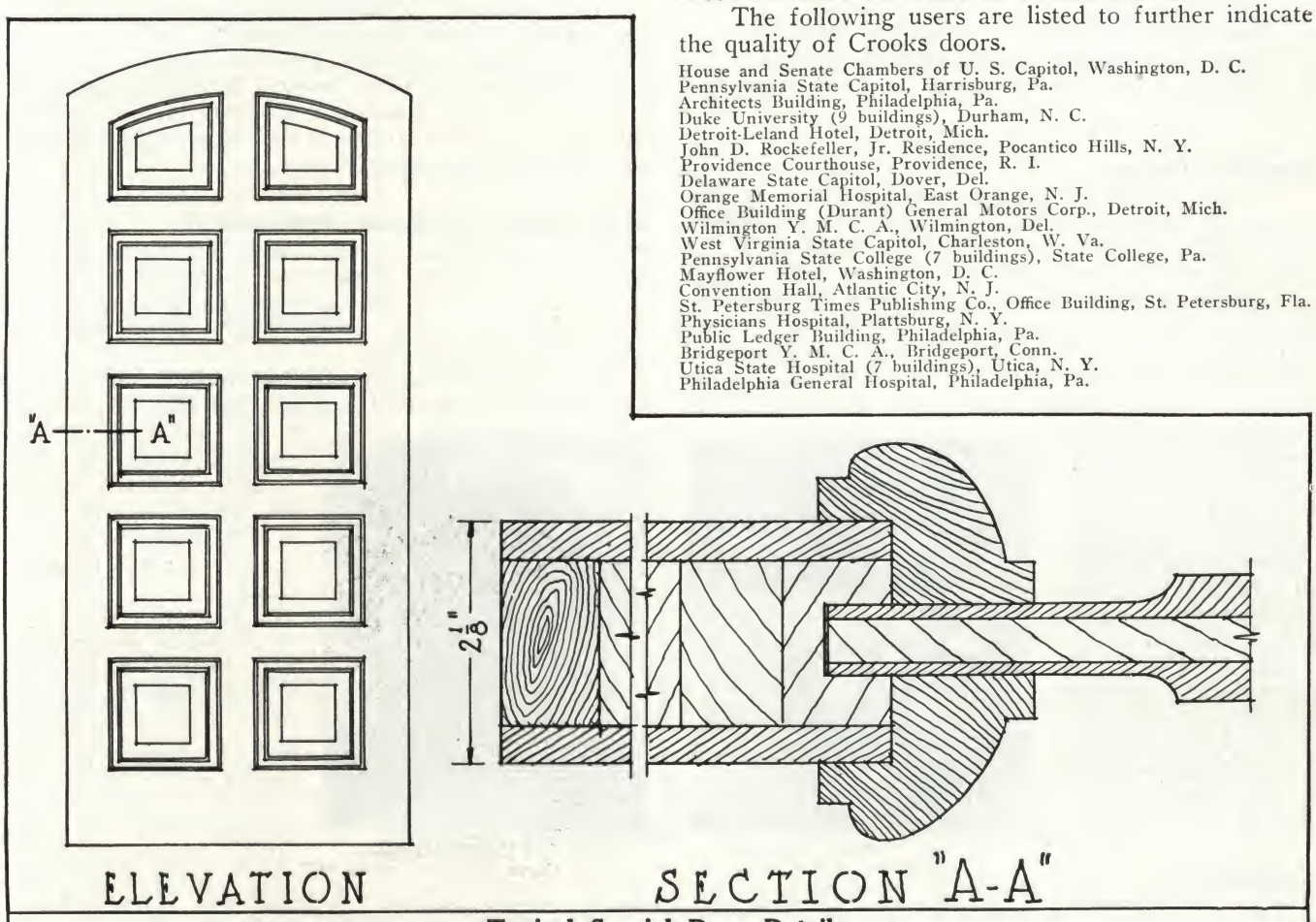
Always specify hand sanding when expensive foreign or domestic woods are used. The results far exceed the added cost.

Sanitary (flush) doors should be hand cleaned.

List of Prominent Users of Crooks Doors

The following users are listed to further indicate the quality of Crooks doors.

House and Senate Chambers of U. S. Capitol, Washington, D. C.
Pennsylvania State Capitol, Harrisburg, Pa.
Architects Building, Philadelphia, Pa.
Duke University (9 buildings), Durham, N. C.
Detroit-Leland Hotel, Detroit, Mich.
John D. Rockefeller, Jr. Residence, Pocantico Hills, N. Y.
Providence Courthouse, Providence, R. I.
Delaware State Capitol, Dover, Del.
Orange Memorial Hospital, East Orange, N. J.
Office Building (Durant) General Motors Corp., Detroit, Mich.
Wilmington Y. M. C. A., Wilmington, Del.
West Virginia State Capitol, Charleston, W. Va.
Pennsylvania State College (7 buildings), State College, Pa.
Mayflower Hotel, Washington, D. C.
Convention Hall, Atlantic City, N. J.
St. Petersburg Times Publishing Co., Office Building, St. Petersburg, Fla.
Physicians Hospital, Plattsburg, N. Y.
Public Ledger Building, Philadelphia, Pa.
Bridgeport Y. M. C. A., Bridgeport, Conn.
Utica State Hospital (7 buildings), Utica, N. Y.
Philadelphia General Hospital, Philadelphia, Pa.



Typical Special Door Detail

CURTIS COMPANIES SERVICE BUREAU

CLINTON, IOWA

Maintained and Operated in the Interest of the Following Curtis Companies:

CURTIS BROS. & CO., Clinton, Iowa
CURTIS & YALE CO., Wausau, Wis.
CURTIS SASH & DOOR CO., Sioux City, Iowa
CURTIS, TOWLE & PAINE CO., Lincoln, Neb.
CURTIS, TOWLE & PAINE CO., Topeka, Kan.
CURTIS-YALE-PURVIS CO., Minneapolis, Minn.
CURTIS DOOR & SASH CO., Chicago, Ill.

CURTIS COMPANIES, INC., CLINTON, IOWA

SALES OFFICES AND DISPLAY, Curtis Woodwork, Inc., Room 201, 9 East 41st Street, NEW YORK, N. Y.
CHICAGO DISPLAY ROOMS, Curtis Door & Sash Co., 1414 So. Western Ave., CHICAGO, ILL.

Manufacturers of Trade-marked Architectural Interior and Exterior Woodwork, Standardized

Products

Architectural Woodwork (Standardized):

Complete Entrances
Doors, Exterior and Interior; Solid and Veneered
Frames
Windows and Sash
Louvres and Blinds
Porch Work
Mantels
Panel Work
Dining Alcoves
Stairways
Stair Material
Inter-room Openings
Exterior Mouldings
Interior Trim
Built-in Woodwork:
Bookcases
Hanging Book Shelves
Wall Cases and Cupboard Doors
China Closets
Broom Closets
Ironing Boards
Dressing Tables and Cases
Linen Cases
Medicine Cabinets
Telephone Cabinets

For Curtis Kitchen Sectional Units, see Manufacturers' Index.

Authentic Design

Curtis Woodwork is an authentically designed line of standardized woodwork. To obtain this architectural design, Curtis, some years ago, retained F. L. Ackerman, well-known architect, of New York, N. Y., to collaborate with twenty-one leading architects in different sections of the country. The result of their work is apparent in the authentic design and beauty of each item in the Curtis line. Designs are available for houses in all the popular architectural styles—Colonial, English, Spanish, Normandy, Modern American.

In 1929 Curtis were first to introduce authentic reproductions of woodwork from some of the finest old homes in America. These historical designs include mantels, entrances, and stair work. Clark & Whitehead, architects of New York, collaborated in this work.

Curtis "Webb" Mantel
Typical of the historic woodwork reproductions introduced by Curtis in 1929 is this Colonial mantel C-6057. The design was taken from the old Joseph Webb house, which was built in 1752 and is still standing in Wethersfield, Conn.

Construction

It is impossible here to cover adequately the subject of the design and construction of the entire line of Curtis Woodwork; hence typical details are presented on the following page. Details of similar character covering the products listed above are available to architects. These make the use of Curtis standard designs easy, practical and profitable.

In general, Curtis manufacturing practice may be summed up as follows:

(1) Extreme care in selection of woods used.

(2) Rigid inspection maintained to insure quality of material, workmanship, packing and shipping.

(3) Approved methods of door, sash and cabinet work construction employed.

(4) Standard operations insure constant construction, excellence, and unvarying quality.

Each item is produced prior to receipt of orders to meet high standards of beauty, durability, and convenience. All this makes for economy in the finished building, for buying quality at the outset saves expense and dissatisfaction later.

Architectural Woodwork Standardized

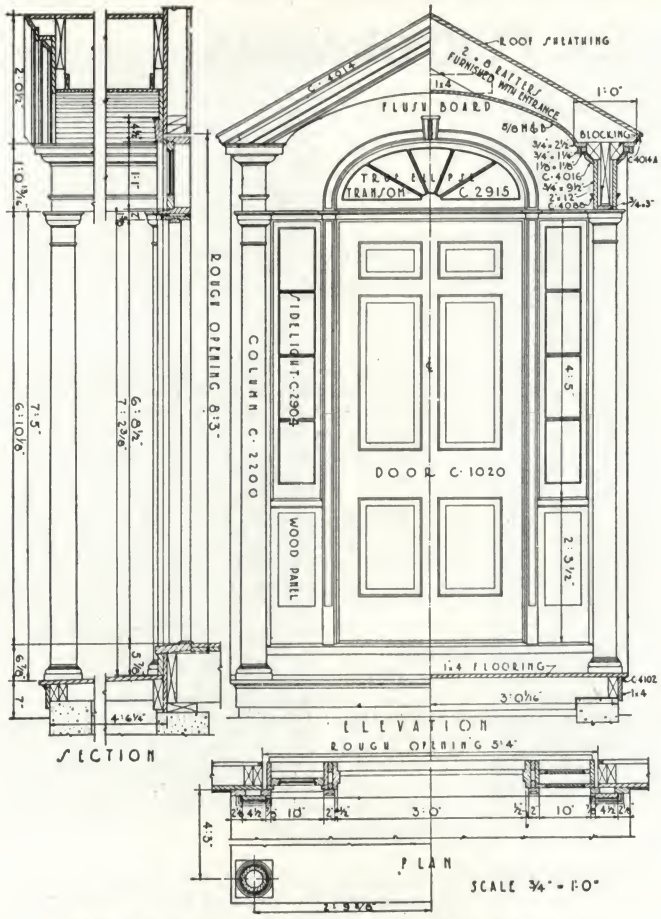
An examination of the Curtis Standards shown here will, we believe, satisfy you as to the value of Curtis designs. The use of these standards does not limit individuality, but rather permits an increase of opportunities for service.

Curtis Standards are produced in acceptable woods and sizes and are carried in stock. Whether your work is in the Colonial or English styles, in the Spanish, Italian or Modern American, you have a wide range of Curtis designs to adapt to your plans.

The price for Curtis authentic design and high quality is reasonable, because the higher costs of better materials and workmanship are largely offset by the advantage of standardized manufacturing in the large Curtis producing plants, which have many machines specially built and patented by Curtis engineers.

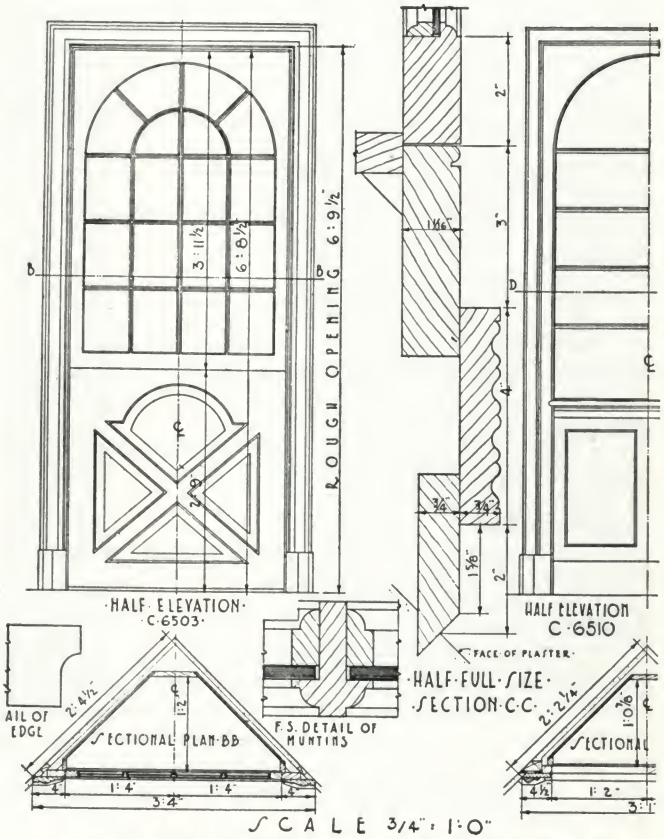
From Old English Doorway
This Curtis doorway, English in origin, is noticeably influenced by the Spanish. Entrance, including frame C-1783 and door C-1085, is available at reasonable cost. See this and other Curtis authentic reproductions at your Curtis dealers.

Continued on next page



Detail Curtis Entrance "Alden" (C-1700)

Curtis details will save drafting time in your office. All standard designs are completely detailed and dimensioned. Detail sheets furnished in convenient regulation size and may be easily filed or hung on office wall where all may use them



Details of Curtis China Cases C-6503 and C-6510

Details of all Curtis cabinetwork designs are available, as illustrated. These china closets, and all items in the Curtis line, are stocked by the Curtis dealer, usually the leading lumber and woodwork dealer in the community

Curtis Guarantee

"The makers of Curtis Woodwork guarantee complete satisfaction to its users." Curtis Woodwork is delivered ready for installation and finishing with a minimum of preparatory work, tending to economize labor and minimize construction delays.

Trade-marked Woodwork

Every piece of Curtis Woodwork is trade-marked. We cannot legally prevent other mills from copying Curtis patterns and designs. The law, however, does prevent others from using the Curtis trade-mark. When you specify Curtis Woodwork, be sure that it carries the Curtis trade-mark.

Deliveries

Quantity production based on standarization makes available a complete line of Curtis Woodwork of accepted architectural design.

In almost every locality the leading woodwork dealer handles the Curtis line. Many dealers carry a representative line in stock and maintain beautiful displays. The wide territory covered by the several Curtis institutions insures prompt and inexpensive delivery east of the Rocky Mountains.

Catalogue and Details

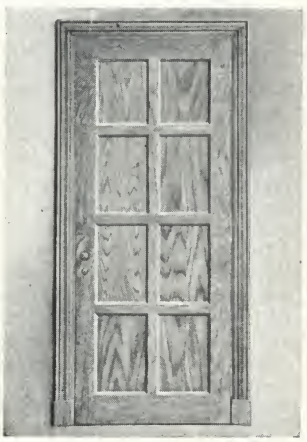
A copy of the Curtis catalogue "Architectural Interior and Exterior Woodwork Standardized" will be sent any established architect, upon written request, or upon request from the Curtis dealer of your community. Architects' Detail Sheets, similar to specimens above, are also available to established architects.

Window C-2512

A popular Curtis design. There are circle-top windows, too, and beautiful casements. Special construction features insure lasting satisfaction

China Case C-6503

The original of this design is now in the Metropolitan Museum of Art in New York. Curtis makes it in pine, plain oak, unselected birch



Interior Door C-3050

Frequently used in houses of English and Italian inspiration. Made in white pine and oak, in commonly used sizes

HARDWOOD PRODUCTS CORPORATION

Manufacturers of Doors

MAIN OFFICE AND FACTORY

NEENAH, WIS.

SALES OFFICES

NEW YORK, N. Y., Architects Building, 101 Park Avenue
Telephone, Ashland 7594

CHICAGO, ILL., 333 North Michigan Avenue
Telephone, State 6088

SAN FRANCISCO, CAL., 112 Market Street, L. J. Woodson, Rep.
Telephone, Humboldt 67

CLEVELAND, OHIO, 1633 Builders Exchange Building, C. D. Heideman, Rep.
Telephone, Main 1485

Products

Standard (Stock) Doors.

Flush Doors.

Semi-Special Doors—Standard stiles and rails of either standard or special design with special mouldings.

Special Doors—Made special to the architects' details and specifications.

Fire Resisting Wood Doors—Made to meet New York Building Code requirements.

Responsibility

Our rating in R. G. Dun's and Bradstreet's is over $1,000,000—first grade of credit.

Facilities

We operate one of the largest plants in the country devoted to the manufacture of hardwood-veneered and solid-softwood doors. Our plant is equipped with the most modern and efficient door machinery. During the last ten years we have manufactured over 2,500,000 doors for buildings in all sections of the United States and Canada.

Standard (Stock) Doors

We manufacture a complete line of standard hardwood-veneered and solid-softwood doors in a variety of standard designs.

Standard Stile Widths—4⅞ and 5½ in.

Standard Rail Widths—4⅞, 5½, 8¼, 9½ and 12 in.

Note: Standard stile and rail widths work to economical milled stock lumber sizes. Widths are full stile and rail widths and in the case of solid stuck mouldings include the moulding.

Flush Doors

The constant increasing demand for Hardwood Products Corporation flush doors is evidence in itself of the high quality of their construction. As a result of our drying and seasoning methods, using specially designed equipment, we have practically eliminated the common defects in the ordinary flush door, such as checks, ridges and waves in the face veneer. All face veneer and cross banding is thoroughly re-dried in veneer plate dryers before the material enters the manufacturing plant.

The fact that our production of flush doors during the past year has been more than double that of any previous year is sufficient proof that the workmanship and quality of these doors has merited the approval of the most discriminating architects.

Semi-Special Doors

These doors have all the characteristics of special doors with the advantages of certain standardization economies. By using our standard door thicknesses (1⅜ and 1¾ in.) and our standard widths of stile (4⅞ and 5½ in.) and rails (4⅞, 5½, 8¼, 9½ and 12 in.) a considerable saving in cost can be made with no apparent loss in individual design. Special assembly of stiles and rails to suit the designer's taste may be made. Mouldings may be of special design profiles.

Special Doors

Due to specialization and our unusual mill facilities we are able to produce special design doors to the architects' details of the highest standard of materials and workmanship at costs which are surprisingly reasonable.

Fire Resisting Wood Doors

We have a complete plant for fully fireproofing wood and are manufacturing doors made of this fireproof wood which will meet the rigid requirements of the building code of the City of New York.

References

Lists of notable buildings designed by well-known architects, equipped with Hardwood Products Corporation doors will be sent on request.

(A) CONSTRUCTION STANDARDS AND SPECIAL FEATURES

(A1) Kiln Drying and Seasoning of Material

Note: *As a result of our special drying and seasoning methods we have practically eliminated the common defects in the ordinary stock door such as checks, ridges and waves in the panel face veneers and core joints showing through the stile and rail face veneers. Our specially designed drying and seasoning equipment insures permanently smooth veneered surfaces in the finished doors.*

(A1a) Cores—All core blocks are kiln dried to from 3 to 4 per cent. moisture in a specially designed core kiln.

(A1b) Panels—All face veneer, center stock and cross-banding is thoroughly re-dried in veneer plate-driers and all moisture removed before the material enters the manufacturing plant. After gluing up, the finished panels are re-dried before sanding to remove the excess moisture contained in the glue, thus insuring smooth veneered surfaces.

(A1c) Stiles and Rails—Before stiles and rails are machined and clamped into the finished door, they are thoroughly seasoned and moisture from the glue removed so that the finished door will contain, as nearly as possible, the same percentage of moisture (on the average about 6 per cent.) as will obtain at the point where the finished door is to be delivered and installed.

(A2) Glue

All glue used is of selected high grade. Where specified, exterior doors are glued with special water-resisting glue.

(A3) Dowel Construction

Unless definitely otherwise specified all cross rails are doweled to stiles with our special doweled construction. Dowels are of clear birch or oak not less than ½ in. in diameter (⅝ in. for 2¼ in. doors and thicker) with four (4) grooves cut the length of the dowel to permit glue to pass freely up and around the entire length of the dowel. Dowels are 5 in. long accurately set 2¼ in. apart O. C. and one half their length in the stile and one half in the rail. Dowel holes are accurately bored to provide a perfectly tight fit for the entire length of the dowel.

Note: *Recent exhaustive tests conducted by the College of Engineering, Cornell University, on twelve (12) of the best obtainable mortise and tenon construction stock doors and twelve (12) of our own standard dowel construction doors picked at random from local warehouse stock, prove conclusively that the dowel construction is equal to or better than the mortise and tenon construction. The tests not only cover those for comparative strength, but for comparative reaction to varied humidity conditions. Complete results of these tests will be furnished on request.*

(A4) Panel Thicknesses

Our standard panels are 5/16 in. thick, three (3) ply. Where a thicker panel is desired we recommend 7/16 in. thick, five (5) ply.

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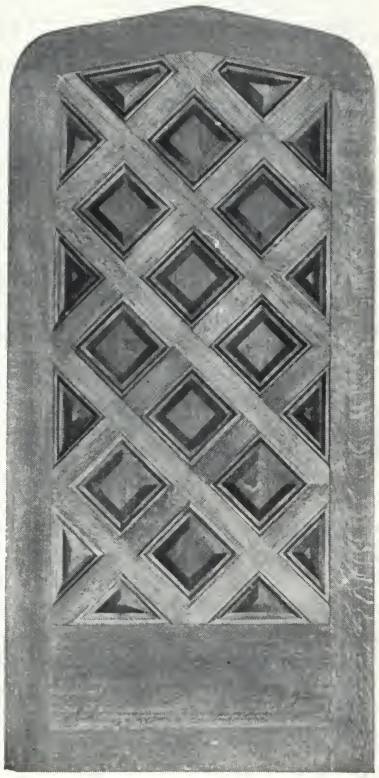

Typical Examples of Some of Our Most Recent Special Door Installations

A FEW RECENT HARDWOOD PRODUCTS CORPORATION DOOR INSTALLATIONS

BUILDINGS

Pierre Hotel, New York, N. Y.
Victoria Hotel and Addition, New York, N. Y.
New Weston Hotel, New York, N. Y.
No. 1 University Place, New York, N. Y.
Downtown Athletic Club, New York, N. Y.
New York Athletic Club, New York, N. Y.
Picadilly Hotel, New York, N. Y.
Madison Hospital, New York, N. Y.

Apartment at 730 Park Avenue, New York, N. Y.
Salvation Army Territorial Headquarters, New York, N. Y.
LaFollette Park Auditorium, Chicago, Ill.
Passavant Hospital, Chicago, Ill.
Holy Name Cathedral Rectory, Chicago, Ill.
Gary Courthouse, Gary, Ind.
Austin Senior High School, Chicago, Ill.
United State National Bank, Indiana Harbor, Ind.
Von Steuben High School, Chicago, Ill.
Powhatan Building, Chicago, Ill.
Alpha Epsilon Phi Sorority House, Evanston, Ill.
Jefferson Park Congregational Church, Chicago, Ill.
Health Center Building, Lake Bluff, Ill.
Giannini Hall, Berkeley, Cal.
Berkeley Infirmary, Berkeley, Cal.
Wm. Taylor Hotel, San Francisco, Cal.
Civil Court Building, St. Louis, Mo.
President Apartment, St. Louis, Mo.
Boody Building, Toledo, Ohio
Evangelical Lutheran Altenheim, St. Louis, Mo.
First National Bank, East St. Louis, Ill.
Hawthorne Apartments, St. Louis, Mo.
Lennox Hotel, St. Louis, Mo.
Montgomery Ward Memorial, Chicago, Ill.
Sheridan Plaza Hotel, Chicago, Ill.
United Masonic Temple, Chicago, Ill.
St. Mary's Hospital, East St. Louis, Ill.
Mark Hopkins Hotel, San Francisco, Cal.
Providence Hospital, Oakland, Cal.
Presbyterian Hospital, Denver, Colo.

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Schwartz & Gross, New York, N. Y.
Robert T. Lyons, New York, N. Y.
Emery Roth, New York, N. Y.
Starrett & Van Vleck, New York, N. Y.
York & Sawyer, New York, N. Y.
George & Edward Blum, New York, N. Y.
Arthur Loomis Harmon, c/o Shreve-Lamb & Harmon, New York, N. Y.
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Holabird & Root, Chicago, Ill.
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J. T. Hutton & Son, Hammond, Ind.
John Christiansen, Chicago, Ill.
Scheitler & Wenisch, Chicago, Ill.
Paul Gerhardt, Jr., Chicago, Ill.
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James Gamble Rogers, New York, N. Y.
Michaelsen & Rognstad, Chicago, Ill.
Edw. Schiewe, Chicago, Ill.
Wm. C. Hays, San Francisco, Cal.
Arthur Brown, Jr., San Francisco, Cal.
Louis P. Hobart, San Francisco, Cal.
Klipstein & Rathmann, St. Louis, Mo.
David R. Harrison, St. Louis, Mo.
Mills, Rhines, Bellman & Nordhoff, Toledo, Ohio
A. Meyer, St. Louis, Mo.
Russell & Crowell, St. Louis, Mo.
Pleitsch & Price, Inc., St. Louis, Mo.
Preston J. Bradshaw, St. Louis, Mo.
James Gamble Rogers, New York, N. Y.
Walter W. Ahlschlager, Chicago, Ill.
C. W. & Geo L. Rapp, Chicago, Ill.
Frank Kratzer, St. Louis, Mo.
Weeks & Day, San Francisco, Cal.
R. A. Herold Co., Sacramento, Cal.
W. E. & A. A. Fisher, Denver, Colo.

HYDE-MURPHY COMPANY

Manufacturers of Architectural Woodwork

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WASHINGTON, D. C., District National Bank Building
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"No-Warp" Veneered Doors.

Millwork, including Frames, Sash, Doors, Mouldings, Cabinet Work, Stair Work and other Builders' Woodwork.

Keystone "Lock-joint" Erected Trim.

Also "Takapart" Patented Portable Partitions.

Hyde-Murphy Facilities

Throughout our sixty-odd years of growth as manufacturers of fine millwork, we have put forth every effort to improve our product, and through persistent study of materials, methods and craftsmanship, believe that we have succeeded in keeping well in advance of the most exacting requirements of architects, owners and builders.

Our factory, equipped with the latest improved types of electrically driven machinery operated by specially trained workmen, enables us to produce the highest grade of millwork.

"No-Warp" Veneered Doors

If a plant such as ours, which manufactures all kinds of millwork, in any quantity, could be said to have a "Specialty," ours would be "No-Warp" Veneered Doors.

First and foremost amongst them we would place our "No-Warp" Flush Door, not a new thing, not a novelty, but as perfect a door as sixty years of experience and rigid standards of inspection can produce.

"No-Warp" Flush Doors are furnished in all woods. They are made in accordance with standard specifications, of the finest materials obtainable, prepared by expert workmen, using special equipment.

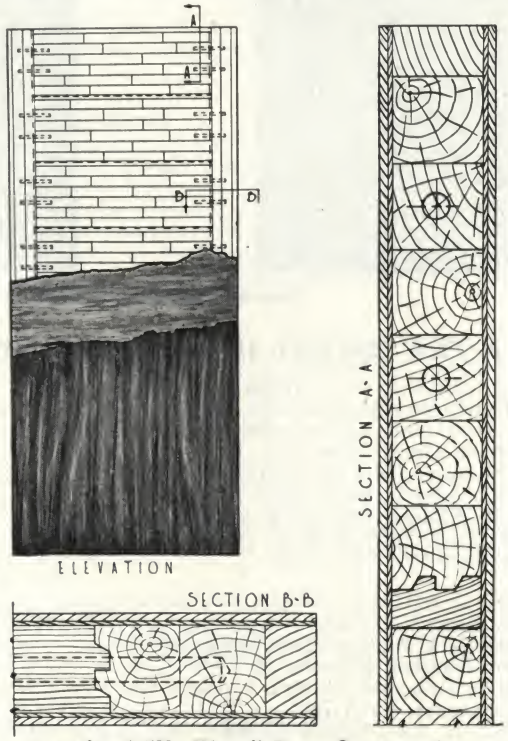
To insure lasting satisfaction and service, you should specify and insist on all flush doors being "No-Warp" design, manufactured by Hyde-Murphy Co.

Features of "No-Warp" Flush Door Construction

Five-ply with framed core, $\frac{1}{16}$ in. cross banding and $\frac{1}{8}$ in. face veneers.

Cores—White pine or chestnut, laminated. Grain reversed in stiles and rails which are framed together and keyed with hardwood dowels. Binder joint between cross rails and between stiles and rails. Sanded to uniform thickness.

Cross Banding—One-sixteenth inch thick, grain horizontal. Joints fastened with perforated cloth tape.



Details of "No-Warp" Door Construction

"No-Warp" Flush Door
Veneered Philippine Mahogany. Furnished in any wood

"No-Warp" One-panel
Veneered unselected gum

"No-Warp" Two-panel
Veneered oak
Furnished in all woods

"No-Warp" Six-panel Colonial
Veneered rotary cut oak
Also in eight-panel style

Continued on next page

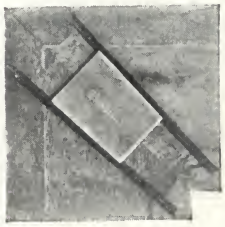
Veneers—Standard one-eighth inch thick before sanding. One piece when possible, otherwise well matched. When three-sixteenth inch veneers or thicker are specified, cross banding is not necessary and is therefore omitted. All veneers in accordance with published rules of Veneer Manufacturers' Associations.

Glue—Water-resistant glue throughout. All glueing under machine pressure. Veneers applied under 2500 lb. hydraulic pressure.

Drying—*Very important*—All work held under pressure until glue is fully set. After veneering, doors are laid flat in cauls under pressure and dried for two weeks before final sanding.

Keystone "Lock-joint" Erected Trim

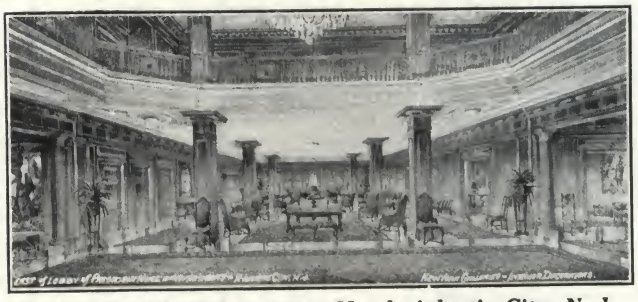
With patented "Keystone Lock-joint Clamp" obtainable only from this company but used without extra cost on all our erected trim.



The "Keystone Lock-joint Clamp"

A spring steel clip with slightly convex face and acute angle flanges, is fitted into corresponding convex grooves, the metal clip spanning the miter. Inside each corner is a tightly fitted hardwood spline which is glued to and holds the surfaces of the trim on the same plane.

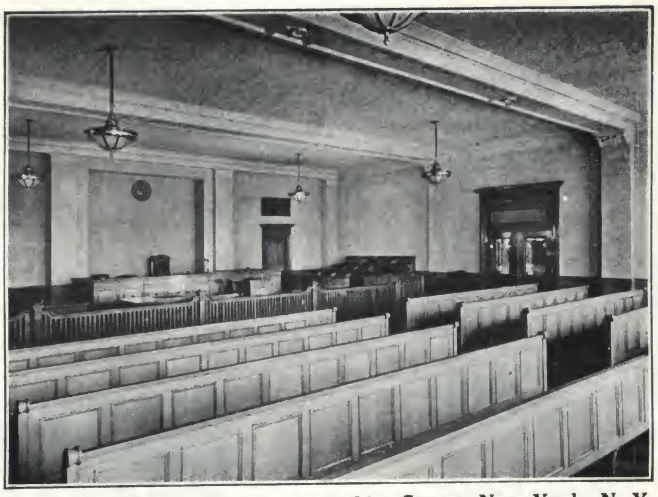
Being held by steel, "Keystone Lock-joint Erected Trim" is unaffected by climate, humidity or temperature and will never open up at the joints



Lobby, President Apartment Hotel, Atlantic City, N. J.

Louis I. Brooks, Architect

Paneling, pilasters, cornice, doors and trim of selected American black walnut, are of such quality and distinction as to reflect credit on us as the manufacturers. Doors, mouldings and erected trim for the typical floors were also furnished by us.



Courtroom, Bronx Courthouse, 161st Street, New York, N. Y.

Max Hausle, Architect

Benches, railing, judge's desk, jury box, etc., doors and cabinet head trim, in quartered white oak, are fair examples of the quality and diversity of our work.

Hyde-Murphy Millwork

As specialists in "custom-built" mill and cabinet work, catering to the class of Architects and Builders whose obligations to their clients include the giving of "something different," above the ordinary run of buildings, we do not emphasize stock designs, preferring to follow the requirements of the Architect and the building.

If it be the duplication of a rose window in a foreign cathedral, the panelwork and mantel from an old English castle, the stairway from a Colonial mansion or the entire mill and cabinet work for a modern higher class apartment, hotel, schoolhouse or public building, to standard or special details, we are equally able and equipped for the work.

A glance at our references, a short list compared to the buildings we have furnished, should assure you as to our capability, both as to quality and volume.

References

Langdell Hall, Harvard College, Cambridge, Mass., Coolidge, Shepley, Bullfinch & Abbott, Architects
Fordham Hospital, New York, N. Y., Starrett & Van Vleck, Architects
Geo. Vanderbilt Hotel, Asheville, N. C., W. L. Stoddart, Architect
H. H. Stambaugh Memorial Auditorium, Youngstown, Ohio, Helmle & Corbett, Architects
Army Medical School, Mess and Kitchen Bldgs., Ward Bldgs. 1 and 2, Connecting Corridors, etc., Walter Reed General Hospital, Washington, D. C.
Keystone Athletic Club, Pittsburgh, Pa., Janssen & Cocken, Architects
First Presbyterian Church, New Rochelle, N. Y., John Russell Pope, Architect
Investment Bldg., Washington, D. C., J. H. de Sibour, Architect
All Souls Church, Washington, D. C., Coolidge & Shattuck, Architects
Rockland State Hospital, Orangeburg, N. Y., Sullivan W. Jones, Architect
First National Bank Bldg., Miami, Fla., Mowbray & Uffinger, Architects
Masonic Temple and Scottish Rite Cathedral, Scranton, Pa., Raymond Hood, Godley & Fouilhoux, Architects
Elizabeth Manor Apt., Philadelphia, Pa., Clarence E. Wunder, Architect
United Bank Bldg., Cleveland, Ohio, Walker & Weeks, Architects
Boulevard Apt., Washington, D. C., Phillip M. Jullien, Architect
Fifteen High Schools and over Fifty Grade Schools in New York City alone with many more in the other large cities

Larger list of references mailed on request.

One of the Largest High Schools in the United States, McKinley Technical High School, Washington, D. C.

A. L. Harris, Architect

All mill and cabinet work by Hyde-Murphy Company. Our quantity and quality production are well shown here

RODDIS LUMBER AND VENEER CO.

Manufacturers of Flush, French, Panel and Custom Built Doors
Complete Line of Quality Plywood Products

MARSHFIELD, WIS.

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DALLAS, TEX., Roddis Lumber & Veneer Company, 2403 So. Harwood Street
SAN ANTONIO, TEX., Roddis Lumber & Veneer Company, 727 No. Cherry Street
OMAHA, NEB., Roddis Lumber & Veneer Company, 1144 No. 11th Street
ST. LOUIS, MO., Hafner Lumber Company, 110 Dock Street
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Roddis Standard 5-Ply Flush Doors with or without Inlays.

Roddis Special Flush Doors, such as: Full Length Mirror Doors, French Doors, Cut-out Doors, X-Ray Doors, V-Groove Doors, Weaver Ventilated Doors, Toilet Doors, Wardrobe Doors, Restaurant Fly Door.

Roddis Panel Doors, custom made to architects' design to harmonize with surroundings.

Roddis General Plywood Products, including: Stock Panels, Roddis General Plywood, Roddiswood, Wainscoting, Counterfronts, Roddis Writing Beds.

Hemlock, Pine and Northern Hardwood Lumber, Band Sawn, Air or Kiln Dried, from our own timber.

This Red-White-Blue Dowel Trade-Mark is on the edge of the Roddis Flush Door. It is the Roddis mark of identity and quality.

Facilities and Resources

We own extensive timber lands, operate 25 miles of railroad, two sawmills, and one of the largest plywood factories in the world, manufacturing our own timber into choice lumber and veneers for quality products. The great savings thus made possible, because we control our own sources of supply, are passed on to you in lower prices.

Our veneered panels are used by leading cabinet makers and manufacturers of finest furniture.

Roddis Doors are standard equipment in thousands of prominent buildings. They are made entirely by Roddis workmen, from timber to finished product. Thousands of doors are stocked for instant delivery. For more than a quarter-century, Roddis has been the largest maker of flush doors.

Bulletins and Architectural Data

A complete series of bulletins will be mailed upon request, covering full data and dimensions of all standard and special purpose Roddis Flush Doors and Roddis Custom Built Panel Doors. Current stock lists of doors on hand in warehouses are also included. All bulletins are designed for use in A.I.A. standard binders. Current bulletins showing complete installations are published from time to time and will be sent to those architects and mills whose names are listed.

Complete detailed specifications for all Roddis products will be gladly furnished to architects, either from Marshfield or our local distributors.

Plywood Product Description

Stock Panels—These panels are manufactured in the following thicknesses and woods:

¼-in., 3-ply, one or two sides good, in birch, red and white oak, quartered oak, mahogany and yellow pine.

⅜-in., 3-ply, one or two sides good, in birch, red or white oak and yellow pine.

⅜-in., 5-ply, one or two sides good, in birch, red or white oak, walnut, mahogany and quartered oak.

½-in., 5-ply, one or two sides good, in birch, red or white oak, quartered oak, walnut and mahogany.

Sizes are 72 in. long, 36 in. wide and under, reducing in length by 1-ft. intervals and in width by 6-in. intervals.

All stock panels are made according to Roddis standards of quality and excellence. Stocked at Marshfield and branch warehouses.

Roddis General Plywood—3 and 5-ply to manufacturers' requirements for furniture, radios, phonographs, refrigerators, musical instruments, etc.

Roddiswood—5 and 7-ply, waterproof marine plywood for bulkheads and public room interiors.

Wainscoting—Roddis Wainscoting is correctly designed and the inlaying expresses true craftsmanship. Workmanship is the finest in both the matching of veneer figures and inlaying. Choicest woods are used, chosen especially for their beauty of color and grain, and include fancy and special design veneers.

Counterfronts—These are built under the critical supervision of the Roddis staff and are fully up to Roddis high standard of quality and sturdy construction.

The standard dimensions are $\frac{13}{16}$ in. thick, 28 in. and 42 in. wide, and 144 in. (12 ft.) long, with either one or two good sides.

The standard woods are birch, red oak, quarter sawed oak, selected gum, walnut and mahogany.

Roddis Writing Beds—Made for desk and table tops, wood or linoleum surfaces.

Lasting Quality of Roddis Flush Doors

Roddis Flush Doors have many records to their credit for sturdiness, long life and dependability.

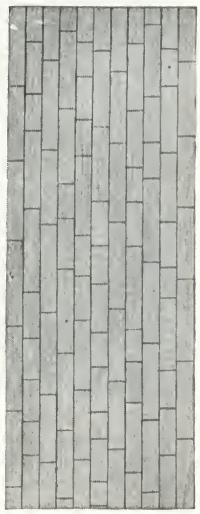
In the East Technical High School of Cleveland, Ohio, neither a repair nor replacement was necessary in 22 years.

After 16 years of experience with Roddis Flush Doors, the William Penn Hotel in Pittsburgh, Pa., reordered and installed more Roddis Doors in their addition.

Continued on next page

Roddis Flush Door Detail Construction

This page illustrates in whole and in part Roddis Flush Door construction, each section separately and relatively as in the door complete. From this, with the detail descriptions on following pages, the architect can readily gain an instant understanding of Roddis construction, and realize the *door permanency* such superior five-layer, cross-unit design accomplishes.

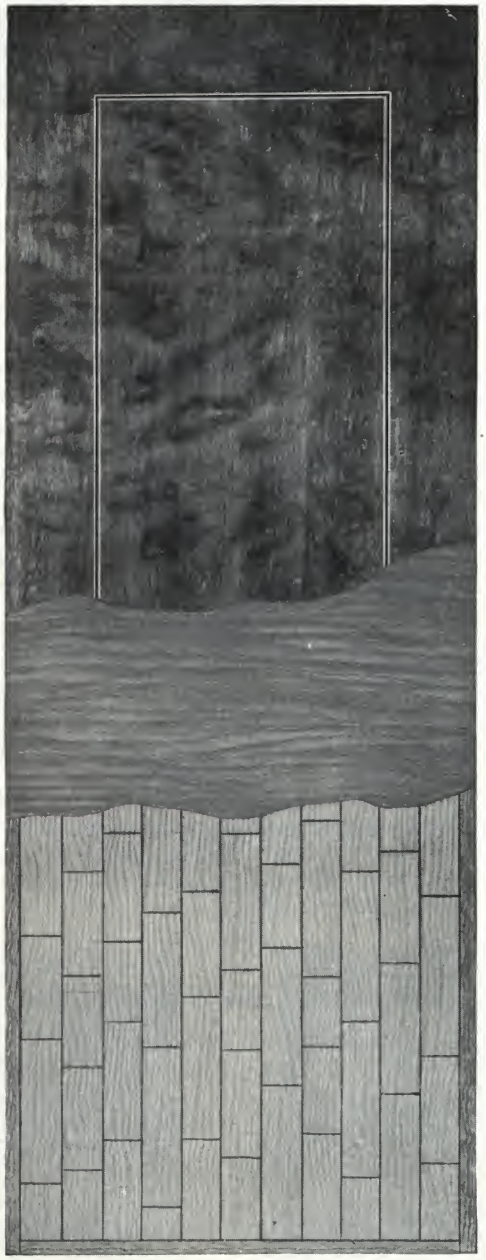


Core of Softwood Blocks

Uneven in lengths to equalize and absorb any tendency to shrink or swell; and cemented together into one integral unit by a special Roddis-compounded waterproof glue and thoroughly dried; providing a core of unchangeable shape and size, solid and strong yet not of heavy weight

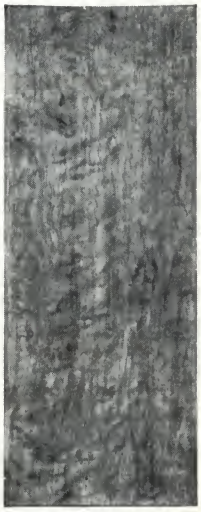
¾-in. Hardwood Edge Strips Completely Around the Core—Top, Bottom and Both Side Edges

Securely seal and protect the core from moisture. The only door made with hardwood edge strip on all four edges as standard construction, which is a noteworthy Roddis Flush Door distinction



1/16-in. Cross-band Veneer

On both faces of door, glued to the core and thoroughly dried—complete hardwood closure for the softwood core. The grain of this veneer runs crosswise, to prevent lateral warpage and further reinforce the door's stability



1/16-in. Hardwood Surface Veneer on Both Faces of Door, Over Crossband Veneer

Cemented with Roddis process waterproof glue and thoroughly dried. Surface veneer grain runs the long way, opposite to crossband grain, and reinforces tensile strength and rigidity of the door

Because of Roddis' reasonably low prices, Roddis Flush Doors can be afforded by the modest bungalow dwelling as well as the more pretentious residences, fine hotels, office buildings, schools, hospitals and other large structures.

Continued on next page

Modern Front Door Sawn Oak, V Grooves, Ornamental Studs, Cloverleaf Opening

Type "A"
Door in Unselected Birch, without Inlay

Special Number Crest, Figured Mahogany Door, Inlay "B"

Door with Special Inlay Design, Finished in Mahogany

African Mahogany Faces, Wood Louvres with Wood Grilles, Inlay "B"

Standard Roddis Flush Doors

Merits—Roddis Doors are sanitary, sound- and fire-resistant. Heat, cold, dampness, water or steam has little effect on them. They are furnished with surface veneer of any desired wood and inlaid as specified. The unbroken surface of natural wood provides great beauty which is of important decorative value.

Highly endorsed by leading architects for hotels, hospitals, schools, clubs, apartments, public and office buildings, and better class homes.

Materials—We control every step in the production of Roddis Flush Doors. Material for the cores comes from our own timber tracts, through our sawmills, and its proper seasoning and drying is under our scientific direction. Only this specially prepared wood enters the cores; no waste or odd scrap material is used.

Veneers are cut in our plant.

Waterproof glue of our own manufacture is used exclusively.

Veneers—Unless otherwise specified, $\frac{1}{16}$-in. veneer is used on all doors. Long experience proves the correctness of this specification.

Waterproof Glue—All Roddis Doors are glued with waterproof glue, exclusively. Moisture has no effect on it; heat does not blister it. The completed door can be likened to wood permanently set in cement.

Guarantee—Every Roddis Flush Door, made of standard construction, the manufacturer agrees to repair or replace without charge, any door that within 2 years should be found defective in workmanship or material.

Endorsement—Roddis Flush Doors are in service in thousands of prominent buildings in all sections of the country. Leading architects specify them regularly.

To any architect unfamiliar with Roddis Doors, a comprehensive list of such endorsements will gladly be submitted.

Specifications, Roddis Flush Doors

All doors shall be laminated 5-ply flush veneered doors without panel—as manufactured by Roddis Lumber and Veneer Co., Marshfield, Wis.

These doors shall be of thickness specified by the architect, and constructed as follows: cores built up of self-reinforcing varying length narrow strips of fully seasoned, dried softwood, glued together; core to be double veneered with two $\frac{1}{16}$-in. hardwood veneers on each side, glued on and thoroughly dried; the first veneer to have grain running crosswise and the second, or surface veneer, with grain running lengthwise. *The first (or crossbanding) veneer shall run full to the four edges of the door. Top and bottom of door,* as well as the two side edges, shall be banded with a hardwood edge-strip ¾ in. thick and *glued to the core.*

All glue used shall be waterproof and, following each step of construction, thoroughly dried.

Each door delivered shall be fully guaranteed by the manufacturer as to construction according to this specification and against defect in material or workmanship.

All inlaid doors shall be stained before inlaying with approved color, to prevent staining of inlay. Doors are to be given one coat of shellac after inlaying and before shipping, to protect same. All doors to be carefully crated or packed in car, and delivered subject to the approval of the architect.

Standard Sizes of Roddis Flush Doors are carried in stock at Marshfield and in our several warehouses

Continued on next page

Type "S"
Office Door Quarter-Sawed Oak

Type A-700
French Door, 15 Lights, Any Wood

Dor Vent—Weaver Ventilated Door, Any Veneer

No. R-502
Raised Mirror Door

No. R-302
Observation Opening Door

Roddis Flush Doors for Special Purposes

Inlays—Inlays are furnished in any design, in plain or fancy woods. Crests, numbers, names and special designs can be supplied. It is important that inlaid doors be stained at our plant before inlaying to protect the inlay.

Full Length Mirrors—Roddis has two different constructions. The raised mirror type consists of a special moulding firmly glued and fastened to the face of a flush door. The small bead is accurately fitted and ready to glaze.

The sunken mirror door is the second kind, having all the advantages of flush door construction without any protruding edges.

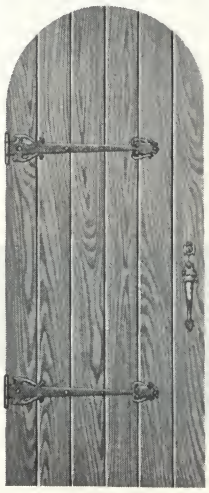
French Doors—Roddis French Doors are distinctive in that the top and bottom rails may be made with the grain of the face veneers running vertically, if desired and specified, both on stiles and rails. This adds greatly to the artistic appearance and strength of the door. These doors are encased with hardwood edge-strips.

Special Light Doors—Roddis Flush Doors can be cut out and attractively moulded for the insertion of sheet or plate glass of the size and shape required. Stock doors at Marshfield or at any warehouse can be quickly altered at moderate cost.

X-Ray Doors—The Roddis X-Ray Door has the same beauty of appearance and rigidity of construction as the standard Roddis Flush Door. But, in the center of the door is placed a thick, continuous sheet of lead, bolted in place securely with lead-covered bolts. This Roddis X-Ray Door was designed for us by an architect of long experience in hospital designing, who desired to get away from the ordinary heavy, awkward and unsightly lead door used for X-Ray rooms. Furnished in any desired size and finish, with lead armament sufficient to equal any situation.

V-Groove Doors—Among Roddis Flush Doors are the featured entrance doors, V-grooved to give a plank effect. They are furnished in red and white oak, white pine and birch: with or without lights; round top, square top or Gothic top: to suit individual taste.

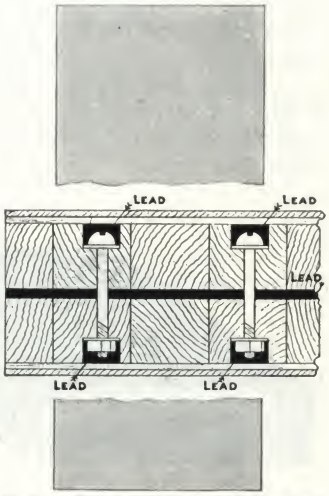
Weaver Ventilated Door—Roddis Flush and Panel Doors can be equipped with the improved Weaver Ventilator, or Dor Vent, a marked improvement over the louvre doors that circulate only limited quantities of air, due to obstruction. Complete privacy is maintained and the ventilation greatly improved. The cost of this type of door ventilator is less than that of the usual transom over the door. Structural details of the building are also simplified by its use.



No. R-810
Red Oak Entrance Door, Old English Type, V-Grooved for Plank Effect, Round Top

No. 636
Birch Door with Beveled Plate Glass

No. R-609
Quartered Oak Entrance Door, 6 Small Lights



X-Ray Door with Lead Center and Lead Bolts
Any size or finish

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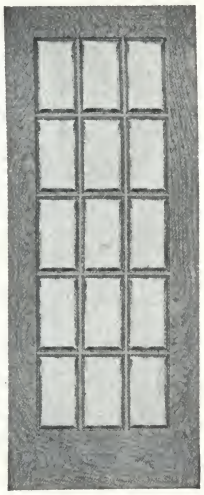
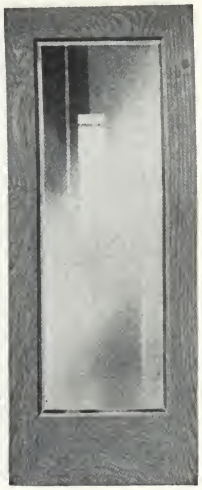
Design R413

Design R411


Design R450


Design R419M

Design R446

Roddis Custom-Built Panel Doors

It has always been the aim of the Roddis Lumber and Veneer Co. to assist and serve the architect in every way possible. This feature of Roddis policy has helped establish for Roddis the splendid reputation it now enjoys with recognized leaders in the architectural field.

Every Roddis manufacturing and designing facility is at the command of the architect to help him better serve and please his client. He is cordially invited to use these resources to his advantage.

The Custom-Built Door gives the architect exactly the door he wants at a reasonable price, delivered on short notice. Roddis has solved the problem of combining *individual* design with *standard production* and offers the Custom-Built Door as an outstanding achievement in door manufacture. The Custom-Built Door by Roddis is truly made to order. The architect has utmost freedom in design, faithfully executed by Roddis in a plant famed the world over for fine doors.

General Design—No limitations are imposed by Roddis in the design of the Custom-Built Door. It may be made in any size and finished in any veneers or combinations. One panel doors, one panel and one light, two panels and one light or one long light, are among the variations that may be employed. Like all doors built by Roddis, the Custom-Built employs those principles of construction that assure permanence. The Roddis guarantee is based on perfect materials and workmanship and complete satisfaction.

Stiles and Rails—Stiles and rails may be of any width. The cores for stiles and rails are built up of narrow strips of softwood, literally welded together with special glue. The softwoods so used are cut especially for this purpose and are thoroughly aged to assure complete drying.

Edge-Strips—Standard construction includes birch or gum edge-strips. Doors can be furnished with edge-strips made of same material as face veneer.

Moulding—Any flush or raised moulding, of any width or contour, may be used in Custom-Built Doors, either in standard or original designs. The moulding may also be had in any kind of wood.

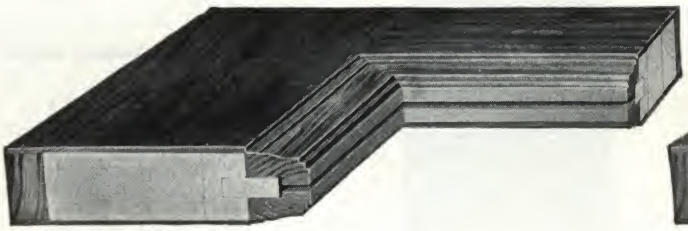
Spline—The spline may be glued or nailed in place or it may be furnished as an integral part of the core.

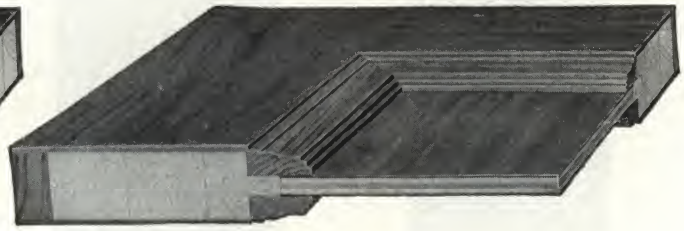
Panels—Panels may be wood or glass or any combination of the two. They may be made in any thickness, finished with any veneer or any combination of veneers. Panels are snugly fitted but not glued in place. As many panels may be used as desired.

Cores—The softwood used by Roddis is cut and seasoned especially for core construction. Consequently, in doors built by Roddis, there is less tendency for unequal strains to throw the door out of place. These core strips are "welded" together in hydraulic presses.

Veneers—Walnut, African mahogany, birch, plain red or white oak, quarter sawed white oak, or unselected gum, red gum or quarter figured red gum may be used singly or in combination in the Custom-Built Door. This variety, with freedom in selection of moulding, gives the architect absolute choice in his designs.

Delivery—Custom-Built Doors may be had with practically immediate delivery, as compared to the delays frequently encountered when special designs are ordered. This work is done by Roddis in a special department where every facility is available to make possible rapid completion of the work.





ESTABLISHED 1853

PAINE LUMBER COMPANY, LTD.

OSHKOSH, WIS.

BRANCH OFFICES AND DISPLAY ROOMS

CHICAGO, ILL., 2307 Tribune Tower
DETROIT, MICH., 11-221 General Motors Building
CLEVELAND, OHIO, 572 Rockefeller Building
NEW YORK, N. Y., 1 Madison Avenue
KANSAS CITY, MO., 606 New York Life Building
MIAMI BEACH, FLA., 1661 Lenox Avenue
WASHINGTON, D. C., 607-608 The Tower Building, 14th and K Streets, N. W.

Products

"Korelock," "Miracle," "Klimax" and "Maplewood" Doors.

We are one of the largest producers of Veneered Doors, both in stock and special design.

Our organization is equipped to handle doors in any quantity, any wood, any design.

"Korelock" Doors

These doors represent a construction that is used in the core of Veneered Doors that has proven satisfactory in all types of buildings in the United States, Canada, and foreign countries for thirty-five years.

"Miracle" Doors

These are a substile door introduced in 1921 and are made in all woods. They are endorsed by the entire building industry. Over three million "Miracle" Doors are in use today.

No door has been more widely imitated.

"Klimax" Doors

"Klimax" Doors are softwood stile and rail doors with hardwood panels, made in any combination of woods or designs.

"Maplewood" Doors

Flush Moulded Veneered Maple doors in a variety of designs at an extremely moderate price. These doors show the greatest variety of grain and figure of any of our commercial woods.

Specifications for Veneered Doors

All doors both exterior and interior, except metal and metal covered doors, shall be ..... (state kind of wood) Veneered Doors as manufactured by the Paine Lumber Company, Ltd., Oshkosh, Wisconsin.

Interior doors shall be .... in. thick with standard 1/8-in. veneer and of designs shown or noted.

Exterior doors shall be .... in. thick with .... in. veneer (not less than $\frac{3}{16}$ in.) and of designs as shown or noted. All doors shall be painted with a good grade of oil paint, top and bottom, to prevent absorption of moisture.

Guarantee

All doors furnished hereunder shall be guaranteed by the manufacturer who shall replace f.o.b. user's railroad station, any door which proves defective in material or workmanship. The manufacturer's trademark *shall be stamped on edge of door.*

The PAINE Miracle Door

KORELOCK
TRADE-MARK

PAINE LUMBER CO. LTD. MAPLEWOOD DOORS & PANELS TRADE MARK

KLIMAX
TRADE-MARK

THE WHEELER, OSGOOD COMPANY

Manufacturers of Doors and Plywood of Douglas Fir and Philippine Hardwood

TACOMA, WASHINGTON

BRANCH SALES OFFICES

NEW YORK, N. Y., 2712 Grand Central Terminal
CHICAGO, ILL., 35 East Wacker Drive
ATLANTA, GA., 310 Bona Allan Building
DALLAS, TEX., 6030 Mercedes Street
LOS ANGELES, CALIF., 1600 E. Washington Street
SAN FRANCISCO, CALIF., 112 Market Street
SPOKANE, WASH., S. 2627 Grand Boulevard

LAMINEX DOORS

Stock Products

DOUGLAS FIR—Laminex Interior Doors, Laminex Entrance Doors, Laminex Plywood; Woco (Solid) Interior Doors, Woco Entrance Doors, Woco Garage Doors; Trim; Lumber; Columns; Newels.

PHILIPPINE LAMINEX (Light and Dark Red)—Interior Doors, Entrance Doors; Trim; Plywood; Lumber.

PINE—Laminex Interior Doors.

Made to Details

DOORS and TRIM of Douglas Fir, Pine, and Philippine Laminex for commercial or public buildings and for fine homes.

PLYWOOD—Flat or Vertical Grain, of woods listed above.

Send plans and specifications for prices and time estimate to THE WHEELER, OSGOOD COMPANY, Tacoma, Washington.

Eliminate Door Complaints

Perhaps no other single item in the new home causes greater annoyance than doors that stick or fail to latch. The cause, of course, is the responsiveness of wood to the sudden changes of humidity and temperature in newly occupied dwellings.

It was to overcome this specific problem that the now well-known Laminex doors were perfected a decade ago. Tested at the Forest Products Laboratory of the University of Washington, they amazed judges by their resistance to the usual tendencies to shrink, swell, warp and come apart. Since that time public Laminex water tests have been held in scores of cities, wherein Laminex Fir doors, immersed for days, have invariably dried out straight and true.

Today over four million Laminex doors are in use. Known the world over as the "doors that will not shrink, swell, or warp," they are being specified by architects all over the world.

Laminex Construction

In Laminex doors, to reduce the tendency to warp, the stiles are built of short separate core blocks with the grain crossed.

Rails, too, are of this core construction. Panels are 3-ply. And to insure absolute rigidity, full length edge braces are used, dovetailed and wedged to the core blocks. Four wood dowels, instead of the usual three, connect the bottom rail to the stile. Of ⅝-in. diameter, these dowels give 50% more strength and 30% more holding surface than the commonly used ½-in. dowels.

The Laminex waterproof cement used, dried under tremendous hydraulic pressure, serves a double purpose: Welds the sections into virtually a solid unit; forms moisture-proof "bulkheads" around each core section. Thus, swelling and shrinking are reduced to a negligible degree.

Douglas Fir—A Preferable Softwood

The majority of Laminex doors are constructed of clear, selected, old-growth Douglas fir, a wood peculiarly suited for door construction. It is remarkably free from pitch. It is easily worked. And in durability the U. S. Department of Agriculture rates Douglas fir 60% higher than California sugar pine, 88% higher than western yellow pine.

These doors come in both the flat and the vertical grain. The flat grain of Douglas fir possesses a beautiful flower; takes stain with admirable effects. The vertical cut is especially adaptable to fine enamel work.

Standard Specifications (Douglas Fir)

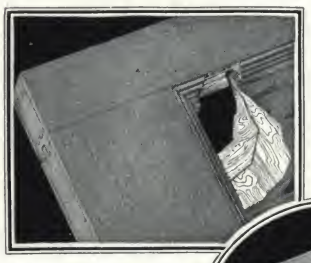
All doors, unless otherwise indicated, shall be Laminex Douglas Fir manufactured by THE WHEELER, OSGOOD COMPANY, Tacoma, Washington.

Stiles and rails shall be built up.

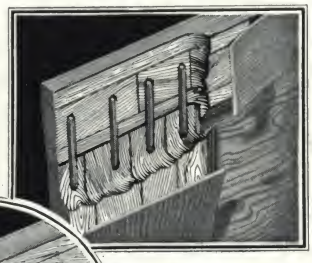
Face veneers shall be [flat] [vertical] grain cemented to cores with Laminex waterproof cement.

Panels to be rotary cut Douglas fir, 3-ply, made up with Laminex waterproof cement.

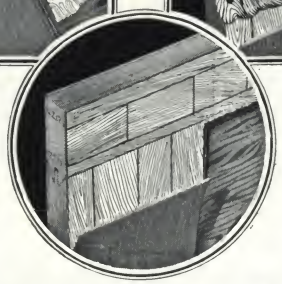
The doors, when delivered to the job, shall bear the Laminex guarantee label and trade-mark.



(Above) Clear 3-ply panels with grain crossed. They will not buckle or blister



(Above) Oversize (⅝-in.) dowels—and one more than is used in the average door



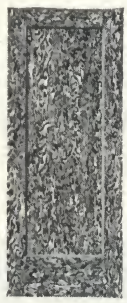
(Above) In the Laminex stile, separate blocks with grain crossed, counteract the tendency to warp. Each block is shielded from swell-producing moisture

(Left) Laminex No. 66. Either vertical or flat grain. Stiles and top rail: 4 9/16 in.; cross: 4½ in.; lock: 8 in.; bottom: 9⅜ in.; muntins: 4½ in.; sticking: bead and cove

(Above) Belle Porte Laminex. Either vertical or flat grain. Stiles and top rail: 4 9/16 in.; bottom: 9⅜ in.; insert frame: vertical grain solid fir

(Left) Laminex No. 829. Either vertical or flat grain. Stiles and top rail: 4 9/16 in.; lock: 4½ in.; bottom: 9⅜ in.; bars: ½ in. between glass; sticking: bead and cove

(Below) Laminex No. 82. Either vertical or flat grain. Stiles and top rail: 4 9/16 in.; lock: 8 in.; bottom: 9⅜ in.; sticking: bead and cove



(Below) Laminex No. 1536. Either vertical or flat grain. Stiles and top rail: 5⅜ in.; bottom: 11⅜ in.; bars: ½ in. between glass; glass beads tacked in; sticking: bead, cove

(Above) Laminex No. 22. Either vertical or flat grain. Stiles and top rail: 5⅜ in.; bottom: 11⅜ in.; sticking: bead and cove

Continued on next page

Philippine Laminex Doors

The slender ribbons that you associate with the grain of fine mahogany, you secure at modest cost in stock doors of Philippine Laminex. And rather inexpensively, too, in doors ordered to your specifications.

Close grained, with lovely vertical ribbons, and remarkably uniform in pattern, the Philippine Laminex hardwoods are all peculiarly fitted for use in doors and trim. No other woods offer greater possibilities for diamond matchings.

And few hardwoods, not excepting most mahogany, take a variety of finishes so beautifully. In dull antique, deep mahogany or lustrous walnut, and a dozen shades in between, Philippine Laminex doors are equally effective.

The cost of this lovely imported wood runs about the same as that of our finer domestic hardwoods, and considerably less than that of African or Central American mahogany. And that is for the very choicest stock, chosen for its evenly matched and well defined grain—the "refined" of so-called Philippine mahogany.

For Office and Hotel Buildings—The slender, close ribbons in the grain make trim and doors of Philippine Laminex particularly adapted to modern interiors. So widely are they being specified, Philippine Laminex has won the name: "The Wood of Tomorrow."

For a prompt estimate, send plans and specifications to THE WHEELER, OSGOOD COMPANY, Tacoma, Washington.

Stock Entrance Doors, Too—For the first time, mills throughout the United States are offering stock entrance doors of Philippine Laminex. Handsomely designed, and with that rich beauty of the picked Philippine wood, and the structural advantages of Laminex design, they meet a long felt need of architects.

Stock designs, they are hand finished, exemplifying the finest craftsmanship. For catalogue, write THE WHEELER, OSGOOD COMPANY, Tacoma, Washington.

Philippine Laminex Guarantee

The Laminex guarantee label attached to all Philippine Laminex doors is your assurance that they will give your clients trouble-free service for many years. If they fail, replacement without charge is pledged by the manufacturer.

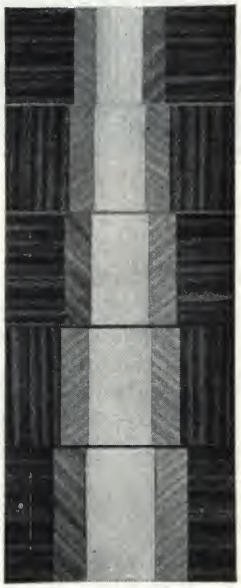
Standard Specifications (Philippine Laminex)

All doors, unless otherwise indicated, shall be Philippine Laminex, manufactured by THE WHEELER, OSGOOD COMPANY, Tacoma, Washington. Stiles and rails shall be built up. Face veneers shall be ribbon grain cemented to cores with Laminex waterproof cement. Panels to be ribbon grain Philippine Laminex, 3-ply, made up with Laminex waterproof cement. The doors when delivered to the job, shall bear the Laminex guarantee label and trade-mark.

(Below) A stock entrance door quite out of the ordinary run. Its striking Philippine Laminex grain boasts the same lovely ribbons of American mahogany—slender, close running, graceful. Ask any Laminex dealer for No. 507

To details by H. C. Baumann, Architect, for Bellevue-Staten Apartments, Oakland, we built the striking Philippine Laminex 3x panel shown above

"The Door of Tomorrow" — A prize-winning Philippine Laminex design by Richard Haviland Smythe, New York City. A 5-ply flush slab, with face veneers of light and dark red Philippine Laminex and figured maple. Made on order



(Right) No. 503, entrance. 5-ply; plain slab one side; ¼-in. face veneers; 4 raised moulds

(Right) No. 505, entrance. 5-ply; plain slab one side; ¼-in. face veneers 2 sides; 10 raised moulds

(Right) No. 509, entrance. 5-ply; plain slab one side; shaped raised mould

(Below) No. 1535. Philippine Laminex; stiles and rails, top: 4 9/16 in.; bottom: 9 3/8 in.; bars: ½ in. between glass; sunk ogee sticking

(Left) Belle Porte. Philippine Laminex; stiles and top rail: 4 9/16 in.; bottom: 9 5/8 in.; sunk ogee sticking

(Left) No. 100. 5-ply; solid framed lumber core; ⅛-in. cross-banding (not concealed), ⅛-in. face veneers

(Left) No. 66. Stiles and rails, top: 4 9/16 in.; bottom: 9 3/8 in.; muntins: 4½ in.; sung ogee sticking; flush or raised moulding

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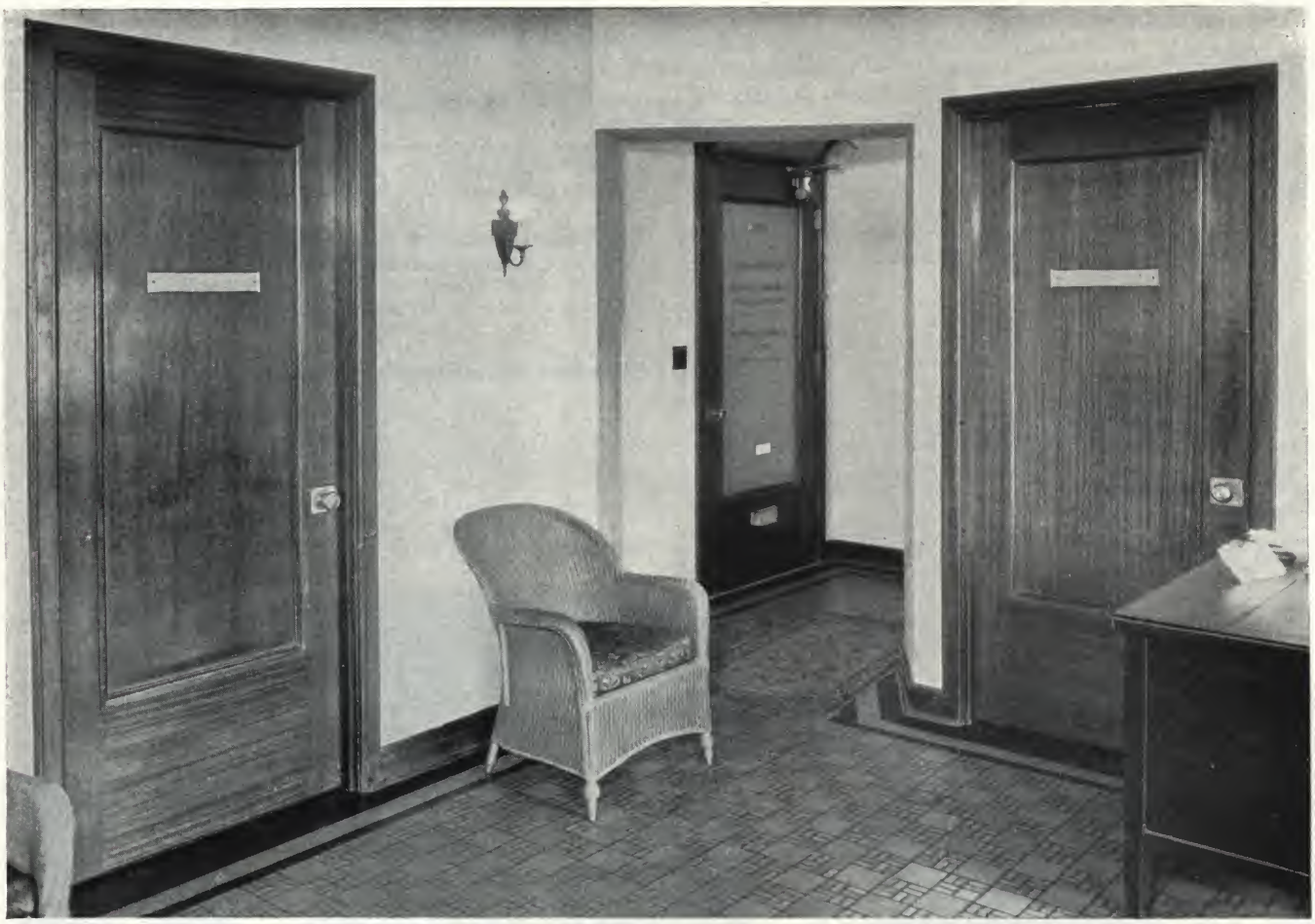


Philippine Laminex Doors in the Weatherly Building, Portland, Ore.
SUTTON & WHITNEY, Architects

Woco Doors of Durable Douglas Fir

This country's largest stand of timber is located in the Pacific Northwest. In these forests, at the door-yard of the mills of THE WHEELER, OSGOOD COMPANY, is found one-third of all the standing timber in the United States. It has been estimated that over 600 billion feet of virgin Douglas fir timber can still be cut in this section.

Modern forestry methods are being employed to perpetuate these vast timber tracts in order that future generations will continue to have this source of supply.

From this area, the finest quality, soft, old-growth Douglas fir logs are selected for the manufacture of Woco solid stile and rail doors. Woco standards for lumber are exceedingly high. Constant inspection from tree to trade-mark insures the maintenance of these standards.

The most modern machinery is used in the Wheeler, Osgood mills—the largest door manufacturing plants in the world.

(Right) Woco No. 64. Stiles and top rail: 4 9/16 in.; lock: 4½ in.; muntins: 3¼ in.; bottom: 9⅜ in.; sticking: bead and cove; 3-ply Laminex panels

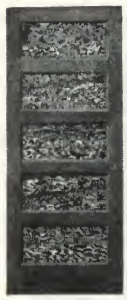
(Left) Woco Premier. Stiles and top rail: 4 9/16 in.; bottom: 9⅜ in.; insert frame (over all) 2½ in.; sticking: P G only; 3-ply Laminex panel

(Left) Woco No. 62. Stiles and top rail: 4 9/16 in.; lock rail and muntin: 4½ in.; bottom: 9⅜ in.; sticking: bead and cove; 3-ply Laminex panels

(Right) Woco No. 214. Stiles and top rail: 4 9/16 in.; lock and intermediate: 4½ in.; bottom: 9⅜ in.; sticking: bead and cove; glass beads tacked in; panels: 3-ply Laminex or solid raised

(Right) Woco 5x panel. Stiles and top rail: 4 9/16 in.; intermediate rails: 4½ in.; bottom: 9⅜ in.; sticking: bead and cove; panels: 3-ply Laminex or solid raised

(Left) Woco No. 154. Stiles: 4 9/16 in.; top and lock rails: 5⅜ in.; intermediate and muntins: 3¼ in.; bottom: 9⅜ in.; sticking: bead and cove; glass beads tacked in; panels: 3-ply Laminex or solid raised



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Bedroom by Jacques Schnier. His Door is Philippine Laminex

Woco Garage Doors

Staunchly built of old growth Douglas fir, Woco garage doors will withstand more than average abuse. For years they can be depended upon to remain straight and true, to swing easily in winter months, without need of tugging or lifting, and to lock consistently in hot summer weather.

Unlike so many garage doors, these are manufactured completely of clear lumber. They are durably constructed in every detail. And they take paint beautifully. Flat grain or solid raised panels are optional.

Woco garage doors come in pairs or sets of three, in a wide choice of designs, a few of which are illustrated on this page.

Mills throughout the country carry them in stock. Or these doors can be secured through the retailer by writing: THE WHEELER, OSGOOD COMPANY, Tacoma, Washington.

Woco House Doors

Woco doors are built of selected durable Douglas fir. They have solid stiles and rails. Panels are 3-ply Laminex. All members of the doors cemented together with Laminex waterproof cement.

Four wooden dowels are used in bottom rail joints; two in the top rail. 5/8-in. in diameter and 5 in. long, they give over 50% more strength and 30% greater cement surface than ordinary half-inch dowels.

Woco Douglas fir doors are furnished with vertical grain stiles and rails. All Woco doors are guaranteed "against failure due to misuse or neglect—or will be replaced without charge."

Standard Specifications (Woco Doors)

All doors throughout shall be Woco Douglas fir doors manufactured by THE WHEELER, OSGOOD COMPANY, Tacoma, Washington.

Stiles and rails shall be solid. Door panels shall be 3-ply cemented together with Laminex waterproof cement.

The doors when delivered to the job shall bear the Woco guarantee label and trade-mark.

Woco Aristocrat, vertical grain Douglas fir Flush "V" groove ceiling in two sizes only. Size of door: 2 ft. 8 in. x 7 ft. 6 in. x 1 3/4 in. (one light: 10 5/8 x 16 in.), 4 ft. x 7 ft. 6 in. x 1 3/4 in. (two lights, each: 10 5/8 x 16 in.); glass beads tacked in, furnished in pairs or in sets of three doors

Woco, No. 16. Stiles, top and lock rails: 5 3/8 in.; bottom: 9 3/8 in.; cross braces (screwed on): 5/8 x 4 3/8 in.; glass beads tacked in, sticking bead and cove one side, square sticking one side; panels: fir "V" ceiling 5/8 in. thick

(Right) Woco No. 44. Stiles and top rail: 4 9/16 in.; lock, 8 in.; bottom: 9 3/8 in.; to top of lock rail (all sizes) 36 3/8 in.; sticking: bead and cove; 3-ply Laminex panels

(Left) Woco No. 33. Stiles and top rail: 4 9/16 in.; intermediate rails: 4 1/2 in.; bottom: 9 3/8 in.; sticking: bead and cove; 3-ply Laminex panels

(Above) Woco garage doors, design 36. Stiles, top, and lock rails: 5 3/8 in.; mullions: 4 1/2 in.; bottom: 9 3/8 in.; sticking: bead and cove, glass beads tacked in; panels: 3-ply Laminex or solid raised vertical or flat grain

ESTABLISHED 1880

WILLIAMSPORT PLANING MILL COMPANY

Manufacturers of Exterior and Interior Wood Finish, Doors, Sash, Mouldings and Cabinet Work

MAIN OFFICE AND FACTORY
WILLIAMSPORT, PA.
BRANCH OFFICES: PHILADELPHIA, PA., and WASHINGTON, D. C.

Products

High Grade EXTERIOR and INTERIOR WOOD FINISH, EXTERIOR and INTERIOR DOORS—solid and veneered; WINDOW FRAMES, SASH, MOULDINGS, and CABINET WORK to architect's details and specifications.

TRADE WILLIAMSPORT PLANING MILL Co. QUALITY 1880 SERVICE WILLIAMSPORT-PENNA. MARK

Our Policy

Is to satisfy the customer by unquestioned quality, stability and service.

Service

We make the necessary shop drawings, developed from the architect's drawings and specifications, follow accurately the details as shown and submit them for approval. Take sizes and actual conditions at the job, and co-operate with other trades whose work comes in connection with the woodwork. Furnish a list of the material and mark the material in such a way that it can be placed in position with the least possible trouble, avoiding unnecessary delay, expense and shortages.

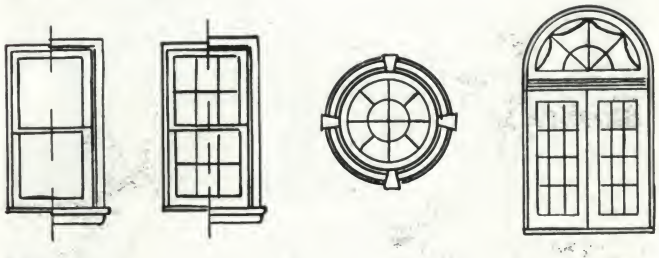
Personal supervision from the commencement of job to the finish.

Window Frames

Of all description, including frames of special patented hardware, nailed up, prepared for pulleys, all ready to set in walls, manufactured to any size and detail.

Window Sash

Made according to details, prepared for cord or chain.



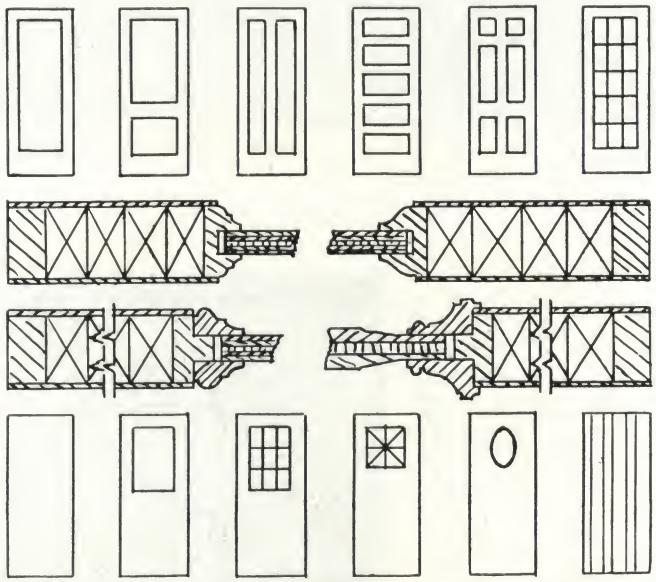
Doors

Solid or veneered of sanitary (flush) paneled or special construction.

We manufacture doors to architect's details and specifications, following the exact profiles of mouldings that are shown.

Best of materials, modern methods, highest quality of workmanship, along with fifty years of experience enters into the manufacture of our product.

The most important factor in the manufacture of doors and veneer work is the proper seasoning of the materials. All lumber and veneer is kiln dried scientifically to the proper moisture content before it is manufactured into veneered work. After the materials are glued, they again go through a seasoning process to reduce the moisture in the materials absorbed through gluing. Veneers are applied by hydraulic pressure according to thickness of veneer, texture of stock, etc.

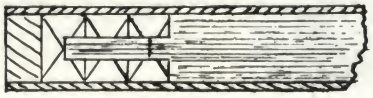


SANITARY (FLUSH) DOOR

Core of Stiles, Rails and Panels to be Framed, Doweled or Mortised and Tenoned to make the equivalent of five cross panels, with flush surface

Cores to be of White Pine or Chestnut

Veneers to be Standard ⅛" thick, or heavier if desired



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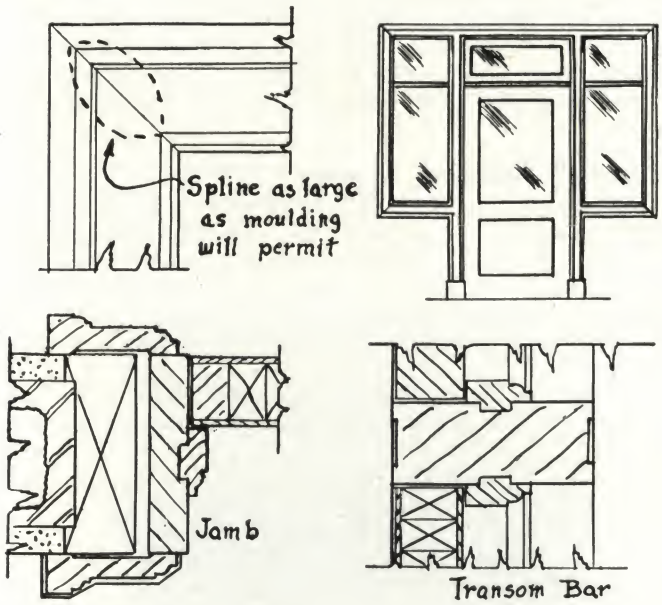
Glue—*All* glue used in the manufacture of doors is the best *waterproof glue* obtainable for this purpose.

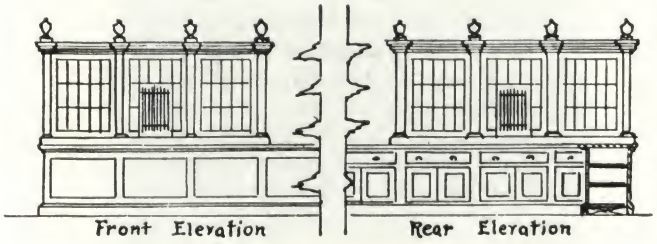
Door Jambs—As called for, either with stops let in or solid-dadoed—ready to assemble, or can be put together.

Architraves—We put all architraves together with a hardwood spline and which, we believe, is the most practical and serviceable method as years of experience have shown.



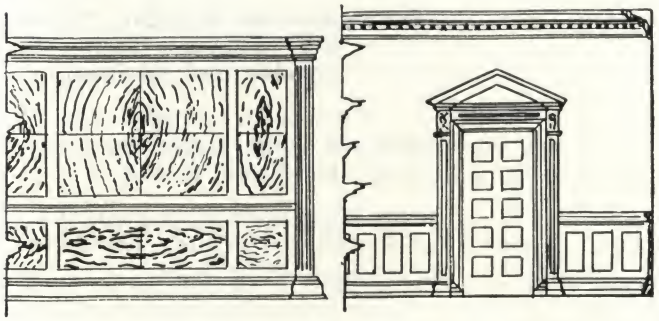
Case Work

When possible we put this work together as far as possible at the factory, so as to save unnecessary expense at the job.



Wainscoting and Cabinet Work

Great care is taken in obtaining sizes, and then made in as large sections as possible to suit conditions at the job.



General

All work is finished ready for painter's finish unless called for otherwise, and facilities are provided for to prime, backpaint, or stain as may be required.

Guarantee

All products of the Williamsport Planing Mill Company are fully guaranteed as to quality. Any item of our manufacture proving defective either in material or workmanship will be repaired or replaced "in the white" without charge.

We use extreme care in packing and loading goods for shipment, but we cannot assume responsibility to protect the purchaser against damage in transit or defects due to rough handling, improper finishing or unreasonable exposure after the goods have left our possession.

Trade Mark

Look for the "Trade Mark" on all material—without it, it is not Williamsport Planing Mill Company's product.

Experience

With more than 50 years' experience manufacturing doors, millwork and cabinet work, the Williamsport Planing Mill Company is prepared to cooperate with the architect in matters pertaining to construction, selection of woods, grades, etc., entering into our product.

Wood for staining or natural finish, although of the same name and species, varies in color and texture due to soil and growth. Our stock being large and manufacturing all wood work materials in our own plant, is an assurance of harmony in color which every architect desires.

Installations

Below are a few of the buildings in which our quality millwork has been used throughout.

Building	Location
Administration Building, Dept. Agriculture	Washington, D. C.
National Press Club Building	Washington, D. C.
Georgetown University Hospital	Washington, D. C.
New Southern Railway Office Building	Washington, D. C.
New Willard Hotel Addition	Washington, D. C.
D. A. R. Administration Building	Washington, D. C.
Sylvania Hotel	Philadelphia, Pa.
Pennsylvania Hotel	Philadelphia, Pa.
Packard Building, 15th and Chestnut Streets	Philadelphia, Pa.
Shriner's Hospital	Philadelphia, Pa.
Penn Athletic Club	Philadelphia, Pa.
Baptist Home	Philadelphia, Pa.
George Washington Hotel	Washington, Pa.
Princeton University Dormitories	Princeton, N. J.
Southern Hotel	Baltimore, Md.
Cambridge Apartments	Baltimore, Md.
Maryland Casualty Developments	Baltimore, Md.
Wyman Park Apartments	Baltimore, Md.
Roosevelt Hotel	Pittsburgh, Pa.
Clark Office Building	Pittsburgh, Pa.
Williamsport High School	Williamsport, Pa.
Roosevelt High School	Williamsport, Pa.
Andrew J. Curtin High School	Williamsport, Pa.
Lycoming Hotel	Williamsport, Pa.
Williamsport Hospital	Williamsport, Pa.
Industrial State Home	Muncy, Pa.
Francis Scott Key Hotel	Frederick, Md.
Jefferson Standard Life Building	Greensboro, N. C.
George Mason Hotel	Alexandria, Va.
Professional Building	Raleigh, N. C.
Penn Harris Hotel	Harrisburg, Pa.
E. Z. Wallower Residence	Harrisburg, Pa.
Bethlehem High School	Bethlehem, Pa.
Bethlehem Hotel	Bethlehem, Pa.
Americus Hotel	Allentown, Pa.
Glassboro State Normal School	Glassboro, Del.
Industrial Bank Building	Wilmington, Del.
Jewish Children Society Building	Baltimore, Md.
John K. Mullen Memorial Library	Washington, D. C.
Jewish Community Center	Washington, D. C.
Transportation Building	Washington, D. C.
Labor Publishing Company	Washington, D. C.
Racquet Club	Washington, D. C.
Harrington Hotel and Addition	Washington, D. C.

THE AIROLITE COMPANY

Manufacturers of Natural Air Ventilating Equipment

MARIETTA, OHIO

NEW YORK, N. Y., 280 Madison Avenue
Telephone, Caledonia 6841

CHICAGO, ILL., 1314 Builders Building, 228 No. La Salle Street
Telephone, Franklin 8259

AGENCIES IN ALL PRINCIPAL CITIES

Products

"AIROLITE" VENTILATING LOUVERS.
"AIROLITE" TRANSOMS.
Also Steel Sash Ventilators.
For "Airolite" Adjustable Window Ventilators, Ventilating Sash, and the Window-Wall Unit see Manufacturers' Index.

"Airolite"

"Airolite" is the original patented metal door panel, with adjustable or stationary steel louvers, for cross ventilation throughout hotels, apartments, schools, theaters, hospitals, dormitories and all such buildings. They can be placed in wood, Kalamein or steel doors or in any transom space or wall in new or old buildings.

Finish—"Airolite" Louvers are finished in high grade baked enamel, in any solid color to harmonize with doors and trim.

Sizes—"Airolite" Louvers are furnished in any size desired and are either 1 or 1⅜ in. thick. In 1¾-in. doors the 1-in. louvers are installed with ⅜-in. mould on each side without mould overlapping the face of door.

Hardware—All hardware is solid brass.

"Airolite" Type "A" Louvers

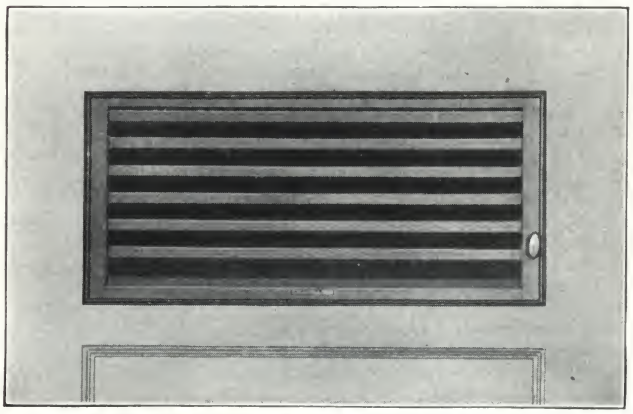
Type "A" Louvers are complete in one unit ready for installation when shipped. The louvers are easily adjusted by a brass knob and cam, positive in operation, locking them either open or closed. They cannot be opened or closed from the outside or by slamming the door.

"Airolite" Stationary Louvers

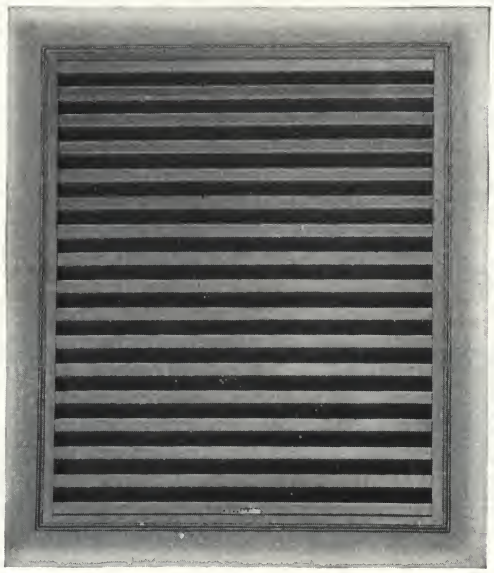
These are 1 in. thick and furnished in one unit ready for installation when shipped. They can be installed either right side up or upside down, depending on where placed.

They are particularly adapted for use in doors of office buildings for cross ventilation and for ventilating toilets, closets, attics, and pantries and "In-A-Wall" bed closets.

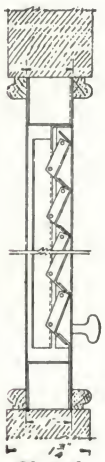
They are ideal for infirmaries, institutions for the feeble-minded, hospital wards, grills and air shafts.



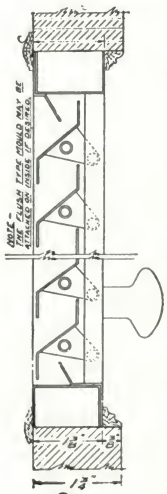
"Airolite" Type "A" Louver



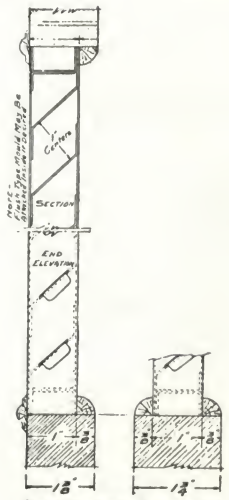
"Airolite" Stationary Louver



Closed
1-in. panel



Open
1⅜-in. panel



Stationary Louvers
Installed in 1⅜ or 1¾-in. doors

Instructions for Installing "Airolite" Louvers, Both Adjustable and Stationary

Outside or corridor side of door to have moulding permanently attached at the mill.

After louvers are inserted attach inside moulding at building.

Opening in door to be made ⅛ in. larger than louvers in both height and width.

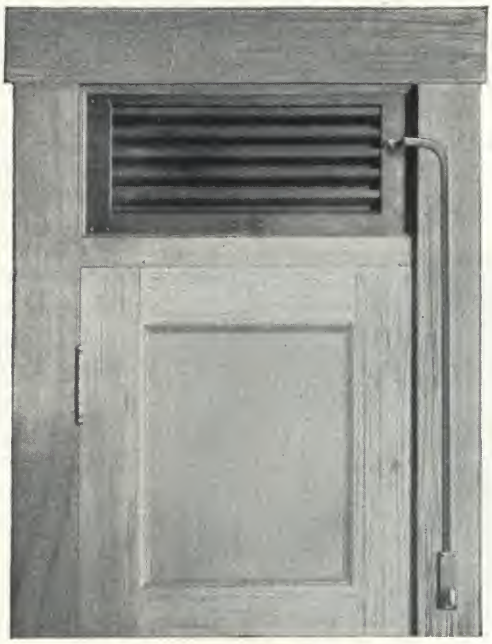
Continued on next page

Some of the Advantages of "Airolite" Ventilating Louvers

(1) Permit proper ventilation of rooms at all times.
(2) Shut out glare of corridor lights.
(3) Deflect air currents upward, eliminating direct drafts.
(4) Keep out intruders and prohibit view of interior of rooms from corridor.
(5) Louvers can be easily adjusted to control air currents.
(6) More easily operated and cost less than the old style transoms.
(7) Permit lower ceilings, effecting saving in building costs.
(8) Can be installed easily by carpenter or handy man.
(9) May be placed in old or new doors, upper or lower panels.
(10) Do not get out of order.
(11) Improve the appearance of doors, rooms and corridors.
(12) May be installed in doors of bathrooms, storage rooms and wherever ventilation is necessary or desired.

"Airolite" Transoms

"Airolite" Transoms are replacing the old style transoms in hotels, apartments, schools, theaters, hospitals, dormitories and all such buildings where ventilation is required and where privacy is essential.



"Airolite" Transom and Lift

Unlike the old style transoms they add to rather than detract from the appearance of the corridors. They are more easily operated and do not get out of order. There is no cost of upkeep from glass breakage. The horizontal louvers not only possess dignified lines of beauty and strength, but are easily and quickly adjusted to the desired angle by the cam adjustment on the lift rod which can be concealed behind the casing if desired. At all times the flanges on the louvers insure privacy and exclude hall lights, as well as intruders.

Sizes—Furnished in any size desired. All sizes are 1 in. thick.

Suggested Specifications for Architects' Use

Transoms are installed with moulding in the same manner as louvers.

(For insertion in Carpentry section.)

(1) The [Carpenter] [Contractor] shall furnish and install where indicated on the drawings, in each corridor and partition door an "Airolite" ..... as manufactured by THE AIROLITE COMPANY, Marietta, Ohio.

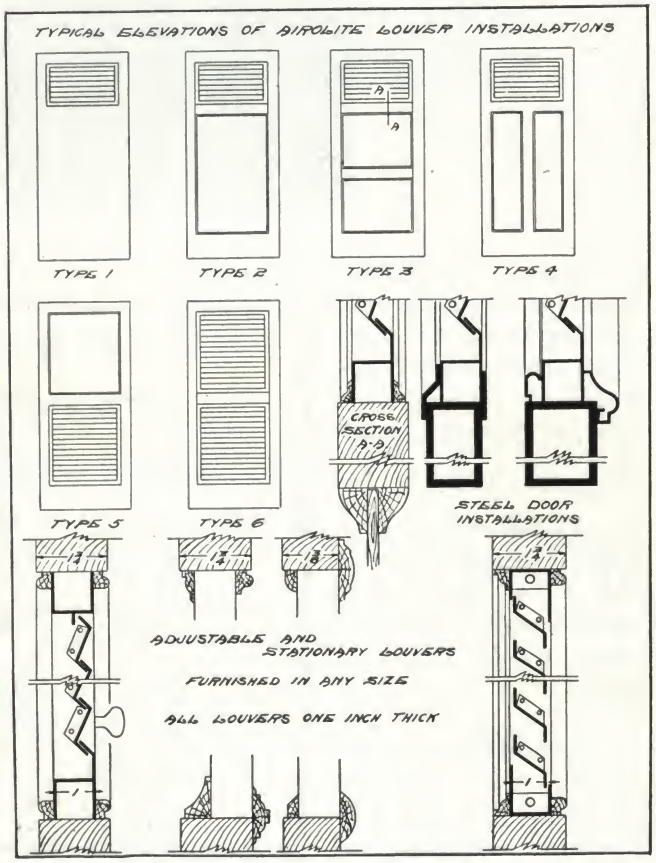
(2) "Airolite" ..... shall be furnished in high grade baked enamel ..... solid color, not grained; they shall be equipped with operating device in solid brass hardware.

(3) The [Carpenter] [Contractor] shall furnish all moulding and other work required for installation.

Installations of "Airolite" Louvers and Transoms

A partial list of recent installations showing number of units installed:

Pierre Hotel, New York, N. Y.	284
Hotel St. Paul, Los Angeles, Calif.	150
Webster Hall Hotel, Pittsburgh, Pa.	688
Shore Manor Apartments, Chicago, Ill.	113
St. Mary's Hospital, Minneapolis, Minn.	221
Keystone Athletic Club, Pittsburgh, Pa.	244
Purdue University, Lafayette, Ind.	152
St. Moritz Hotel, New York, N. Y.	734
Medical Arts Building, Austin, Tex.	709
Y. M. C. A., San Francisco, Calif.	439
Westward Ho Hotel, Phoenix, Ariz.	334
Saranac Apartments, 5541 Everett Avenue, Chicago, Ill.	146
Manoir Richelieu Hotel, Pointe-au-Pic, Murray Bay, Que.	394
Nurses' Home, Johns Hopkins Hospital, Baltimore, Md.	235
Coronado Apartments, Chicago, Ill.	121
Aurora-Leland Hotel, Aurora, Ill.	235
Lincoln-Belmont Y. W. C. A., Chicago, Ill.	237
Commodore-Perry Hotel, Toledo, Ohio	578
Salvation Army, Territorial Headquarters, New York, N. Y.	403
Clinton Square Hotel, Joliet, Ill.	185
Central Hotel, Ft. Lauderdale, Fla.	140
Hillman Hospital, Birmingham, Ala.	335
Tudor City Apartments, 304 E. 41st Street, New York, N. Y.	541
El Jardin Hotel, Brownsville, Tex.	169
Michigan Sanitarium and Benevolent Association, Battle Creek, Mich.	634
Fairgrounds Park Hotel, St. Louis, Mo.	231
Fairfax Apartments, Philadelphia, Pa.	251
Hilton Phillips Hotel, Shawnee, Okla.	156
Huntington Hall Hotel, Philadelphia, Pa.	251
Hotel Houston, Washington, D. C.	140
Dixie Hotel, New York, N. Y.	617
Karcher Hotel, Waukegan, Ill.	163
Lord Nelson Hotel, Halifax, N. S.	200
Plaza Hotel, Corpus Christi, Tex.	200
Pittsburgher Hotel, Pittsburgh, Pa.	484
Redmont Hotel, Birmingham, Ala.	229
Hotel Ritz Carlton, Boston, Mass.	120
Savarin Hotel, Detroit, Mich.	585
Sanger Apartment, Dallas, Tex.	168



THE AMERICAN TRANSOM COMPANY, INC.

Steel Door Transoms and Ventilators

2525 Ridge Avenue

PHILADELPHIA, PA.

Products

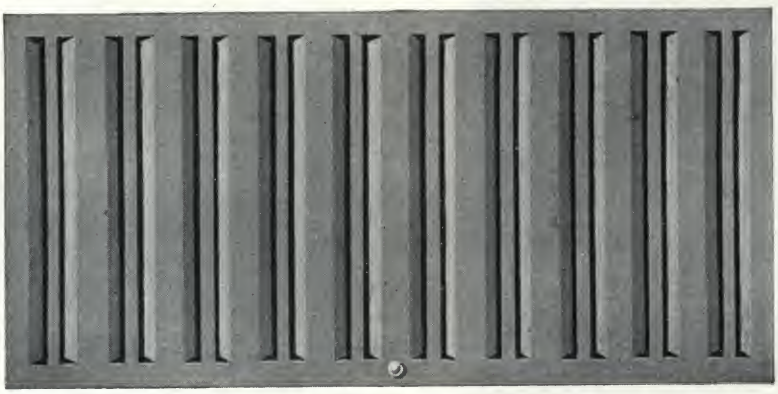
IN-A-PANEL TRANSOM.
IN-A-DOOR TRANSOM.
OV-A-DOOR TRANSOM.
FIXED LOUVRE VENTILATORS.

In-a-Panel Transom

The new In-a-Panel Transom provides cross ventilation without draft through the door panel. Either open or closed, it is not possible to see directly into the room or the corridor.

The knob is pushed in to close or pulled out to open the transom.

The In-a-Panel Transom is the result of years of experiment to produce a door ventilator that permitted free ventilation through the louvres without sacrificing privacy. This is accomplished by the ingenious arrangement of the leaves of the internal shutter which is simple and substantial in construction.

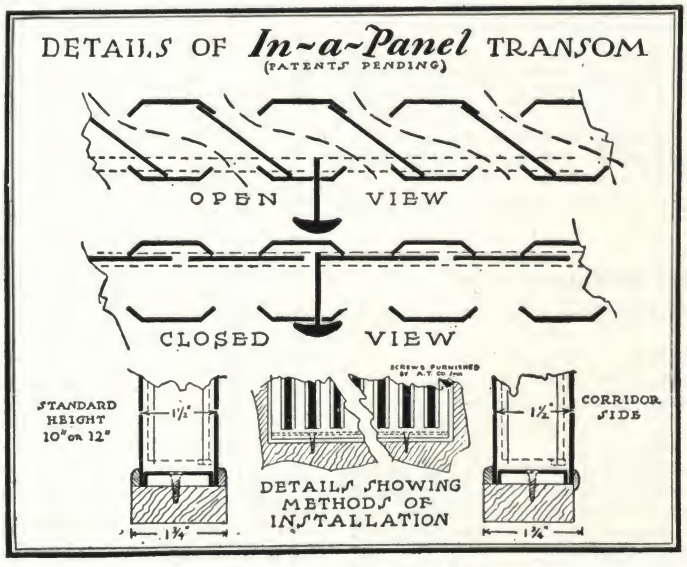


In-a-Panel Transom, Room Side

Size — In-a-Panel Transom is made for opening 10 in. or 12 in. high. The width is determined by the dimension between the stiles of the door.

Finish — The In-a-Panel Transom is furnished in plain baked enamel finish. The operating knob is solid brass.

Installation—Installation is easy because the In-a-Panel Transom is a complete self-contained unit.



Sectional Details of In-a-Panel Transom

In-a-Door Transom

This type, the In-a-Door Transom, has also been successfully installed in a large number of hotels, hospitals, etc. It consists of a metal ventilator with vertical fixed louvres in plain baked enamel finish. A hinged laminated wood panel to match the door is also furnished to shut off ventilation and sound. The necessary butts, screws, flush catch, etc., are included.

The standard height is 12 in., the width being determined by the dimension between the stiles of the door.

Ov-a-Door Transom

Can be furnished in any size to fit the usual transom opening over the door. Consists of a horizontal metal louvre in plain baked enamel finish with a hinged laminated wood closure panel to shut off ventilation and sound. This closure panel is also supplied with an ordinary transom operator for opening and closing.

The Ov-a-Door Transom excludes reflection of corridor lights into the room and assures absolute privacy.

Fixed Louvre Ventilators

For toilet doors and closet doors, Fixed Louvre Ventilators can be furnished in any width or height.

These louvres are the horizontal type as supplied with the Ov-a-Door Transom.

These metal louvres can be used in X-ray dark-doors, photographic dark-doors, etc., and can be made in any size to fit openings in walls, partitions, doors, etc.

ESTABLISHED 1911

ELLISON BRONZE COMPANY, INC.

VENTILATOR DIVISION

Manufacturing the Ellison Louvre Ventilator

JAMESTOWN, N. Y.

For Representatives, see our page on Ornamental Metal Work

For our pages on Cast and Hollow Bronze Products and Welded Bronze Doors, see Manufacturers' Index

Ellison Louvre Ventilators (Patent Pending)

The Ellison Louvre Ventilator is a ventilating panel which is the result of long experience and a great deal of study on the part of its makers. We claim it is, in every way, superior to any other similar device on the market—in design, appearance, simplicity, strength, effectiveness, ease of installation and operation.

Its frame is made of 18-gauge cold rolled steel, sturdily welded; louvres of the same material, 16 gauge. The public side, or outside, is rigid, reinforced and immovable; the private side is adjustable.

Ellison Louvre Ventilators find a wide use in the doors, transoms or windows of bedrooms, in apartments, clubs, dormitories, homes, hotels, hospitals and sanatoriums; in offices, theater dressing rooms, staterooms in ships, pullman car compartments, etc.

Appearance

The illustration shows a typical installation. You will immediately notice its simplicity and attractiveness.

Operation and Installation

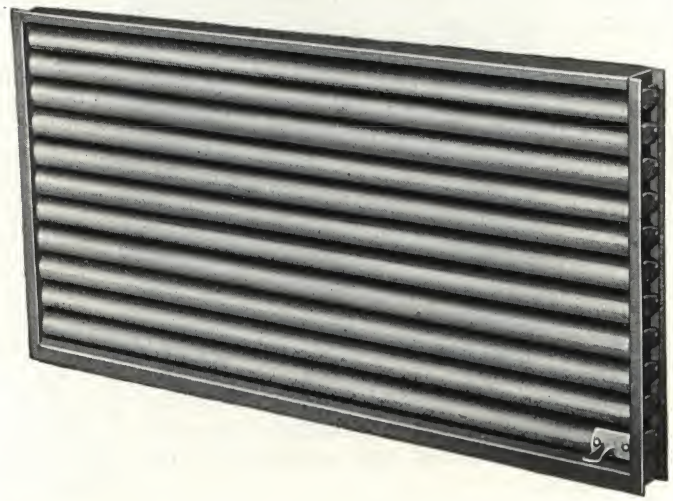
The Ellison Louvre Ventilator provides the maximum of ventilation without draft. It can be opened or closed fully or partly, and regulated to suit every requirement. It is absolutely sightproof, lightproof and thiefproof; it is perfectly quiet in operation and cannot rattle under any condition. It muffles sound, even when open.

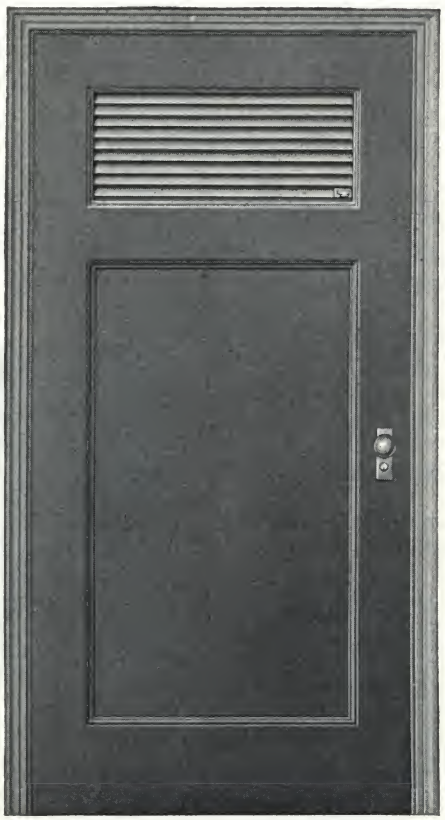
Its strength is such that heavy blows or strong pressure will not harm it; it cannot be distorted in handling or installing and repeated painting will not interfere with its operation. It has no pockets or crevices in which dust and dirt can collect and it is easily kept clean. None of its parts can be removed, preventing pilfering.

It can be equipped with a fly screen at small additional cost.

It can be made stationary, if desired.

It can be installed by any one familiar with the use of a screwdriver. Because of its great rigidity, it cannot be twisted or racked out of shape by the opening in which installed and will operate freely under all conditions.





Sizes

Ellison Louvre Ventilators are 1⅜ in. thick; standard size is 24 in. wide by 10¼ in. high. They are, however, made in various sizes to suit requirements. Heights must be in full inches plus ¼ in., viz.: 8¼ in., 9¼ in., 10¼ in., etc.

Specifications

(1) All doors, transoms, etc., where so indicated on plans, are to be equipped with Louvre Ventilators as shown, equal in appearance, construction and ventilating area to the Ellison Louvre Ventilator, as manufactured by the Ellison Bronze Company, Inc., Jamestown, N. Y.

(2) These Louvre Ventilators are to be made of cold rolled steel, frames of 18 gauge and louvres of 16 gauge; to be 1⅜ in. thick, height and width to be as called for on plans. Operating handle to be of polished cast bronze.

(3) Finish to consist of one coat of baked on primer, ready for painting and finishing.

(4) This contractor is to furnish the Louvre Ventilators complete, ready for painting and installation, including the necessary screws for attaching. Finish mouldings are to be furnished and installed by another contractor, specified under another heading, who will also install the louvre ventilators.

Samples

We will gladly loan samples to any responsible firm or individual for inspection and comparison. Literature and prices on request.

VAN ZILE VENTILATING CORPORATION

Manufacturers of Adjustable Ventilators for Use in Doors

155 East 42nd Street

NEW YORK, N. Y.

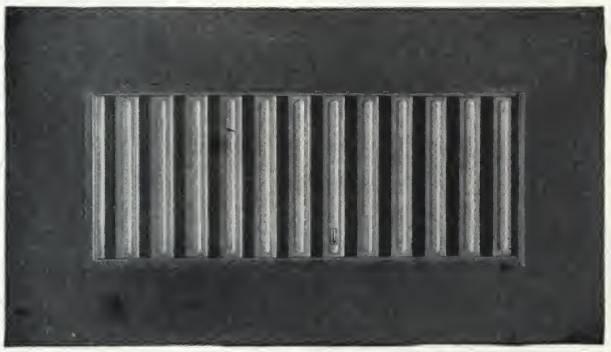
Product

The VENTADOOR—a Ventilating Panel for Doors.

Purpose of the Ventadoor

The Ventadoor is designed for installation in a door and provides a means for the circulation of air out of or into a room without the transmission of light or vision.

The unique bending and placing of the steel front and back sheets provide air passages so formed that they present slight resistance to air currents but neither light nor vision can pass through them.



The Ventadoor

Construction of the Ventadoor

The Ventadoor is made of medium weight steel plate, finished with a prime coat, baked on, or one-color coat of enamel, not grained, to correspond with color sample furnished by the purchaser. It can be painted on the job or repainted without interfering with the action of the shutter. With each Ventadoor there are furnished four screws of sufficient length to secure it in position.

Adjustment

The amount of air passing through is regulated by adjusting inside shutter to obtain required openings—a glance, only, is necessary to determine proper adjustment. This shutter, the only movable part of the apparatus, is so constructed that it will never develop a rattle. Owing to the double wall construction, the tendency to transmit noises from one side to the other is at a minimum.

Characteristics

The vertical lines enhance the height of the door.

The Ventadoor has no pockets where dust can accumulate and every surface can be reached with a dust cloth. It is so constructed that it will resist heavy blows or distorting pressure. There are no parts which can be broken or removed.

The Ventadoor is held in place by four screws which are inserted in the door rails from the inside of the room but which can not be reached by a person outside of the room, thus making it secure against the entrance of sneak thieves. Flames can not pass through the air openings, thus it is safer than a transom in case of fire.

Where Used

The many advantages of the Ventadoor should recommend its use in a door, rather than providing for a transom over the door. If desired, special applications can be made in walls or partitions.

There are many places where Ventadoors can be used to advantage, such as hotels, hospitals, apartment houses, dormitories, institutional and office buildings, compartment and stateroom doors in sleeping cars and stateroom doors on ships.

The valuable features of the Ventadoor and its artistic appearance have met with the approval of many prominent architects, who have specified it for use in some of their most important buildings.

The Pullman Company has equipped the "Presidential" series of 10-compartment sleeping cars with Ventadoors, installing one in each compartment and stateroom door.

Approved for Tenements

The use of the Ventadoor for bedroom doors instead of transoms is approved by the New York City Tenement House Department.

Cost

The cost of the Ventadoor installed is less than a transom with its hardware and necessary extra height of door frame.

Patents

The Ventadoor is covered by patents in the United States and foreign countries.

Specifications

(1) The doors located and described as follows shall be fitted with Ventadoors as manufactured by the VAN ZILE VENTILATING CORPORATION, 155 East 42nd Street, New York.....

(2) These Ventadoors are to be made of steel plate and are to be 10 in. high, $1\frac{5}{16}$ in. thick and of sufficient length to fill the openings left between the stiles of the doors.

(3) The Ventadoors are to have a prime coat or an enamel finish, one color, not grained, to correspond with color sample to be furnished by the architect, and are to be delivered by [freight] [express] [truck] at .....

(4) The door manufacturer, or the contractor erecting the doors, shall place the Ventadoors in the door openings and insert the screws, that are furnished by the Ventadoor manufacturer, and shall also furnish and place the mouldings required to make a finished and workmanlike installation.

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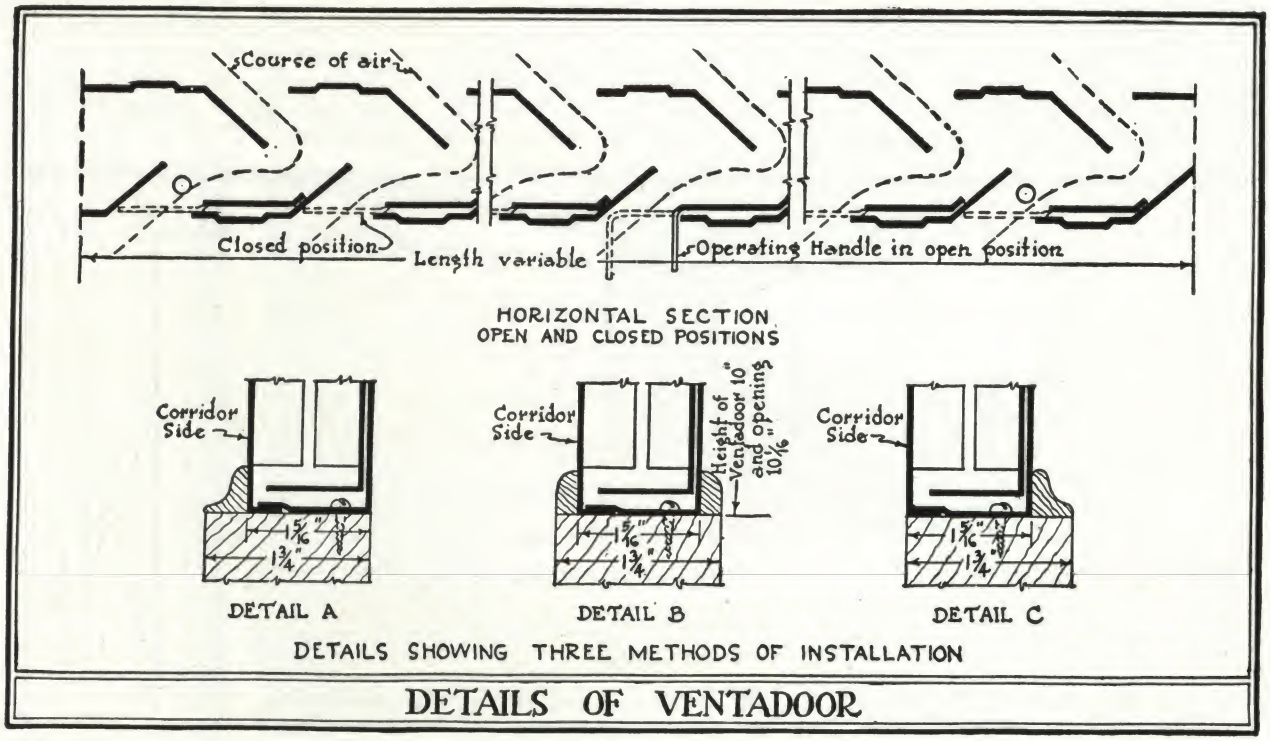


DETAILS OF VENTADOOR

Office Door

Bedroom Door

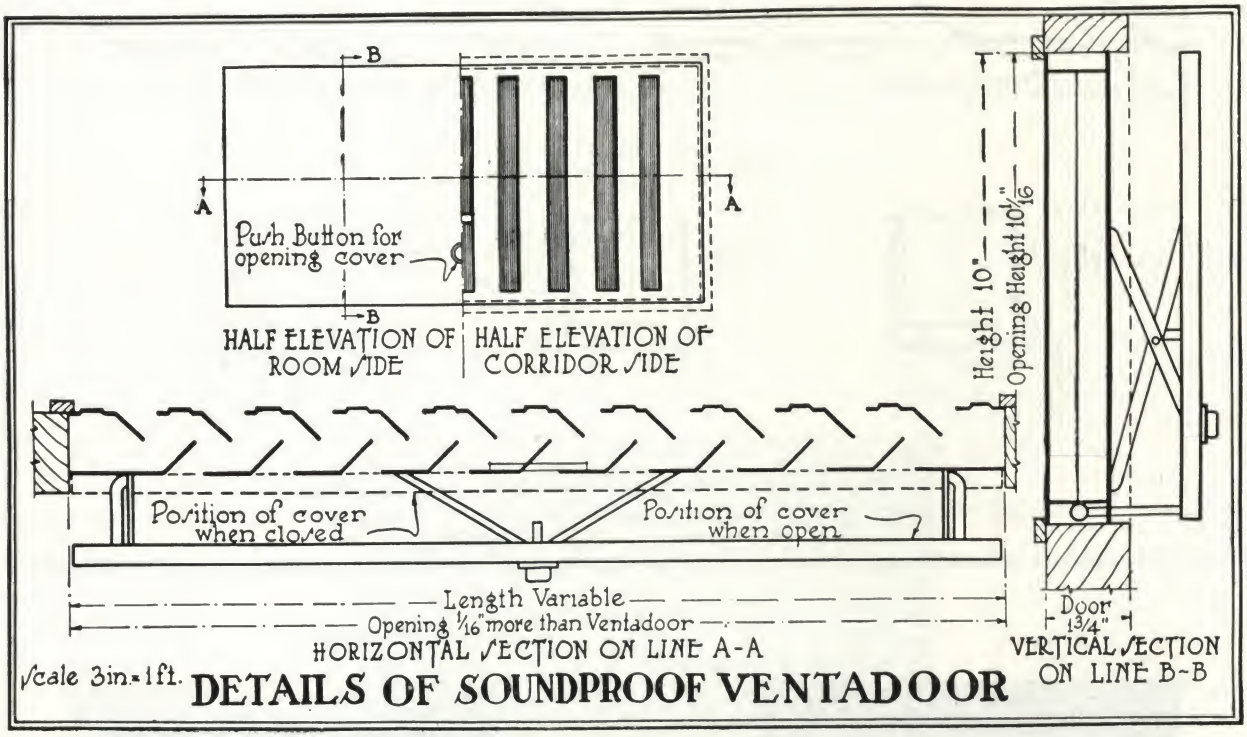
Typical Installations of the Ventadoor

Continued on next page

Soundproof Ventadoor

The Soundproof Ventadoor overcomes the objection of the purchaser of ordinary ventilators that transmit sound when open or closed. This soundproof feature is obtained by providing a cork-lined cover that opens and closes. This cover is released by a push button and is projected by a spring into the room 1¼ in., thus providing an air passage.

Specifications—To specify use specifications on second preceding page, prefixing "Soundproof" before Ventadoor. Change thickness to 1¾ in.



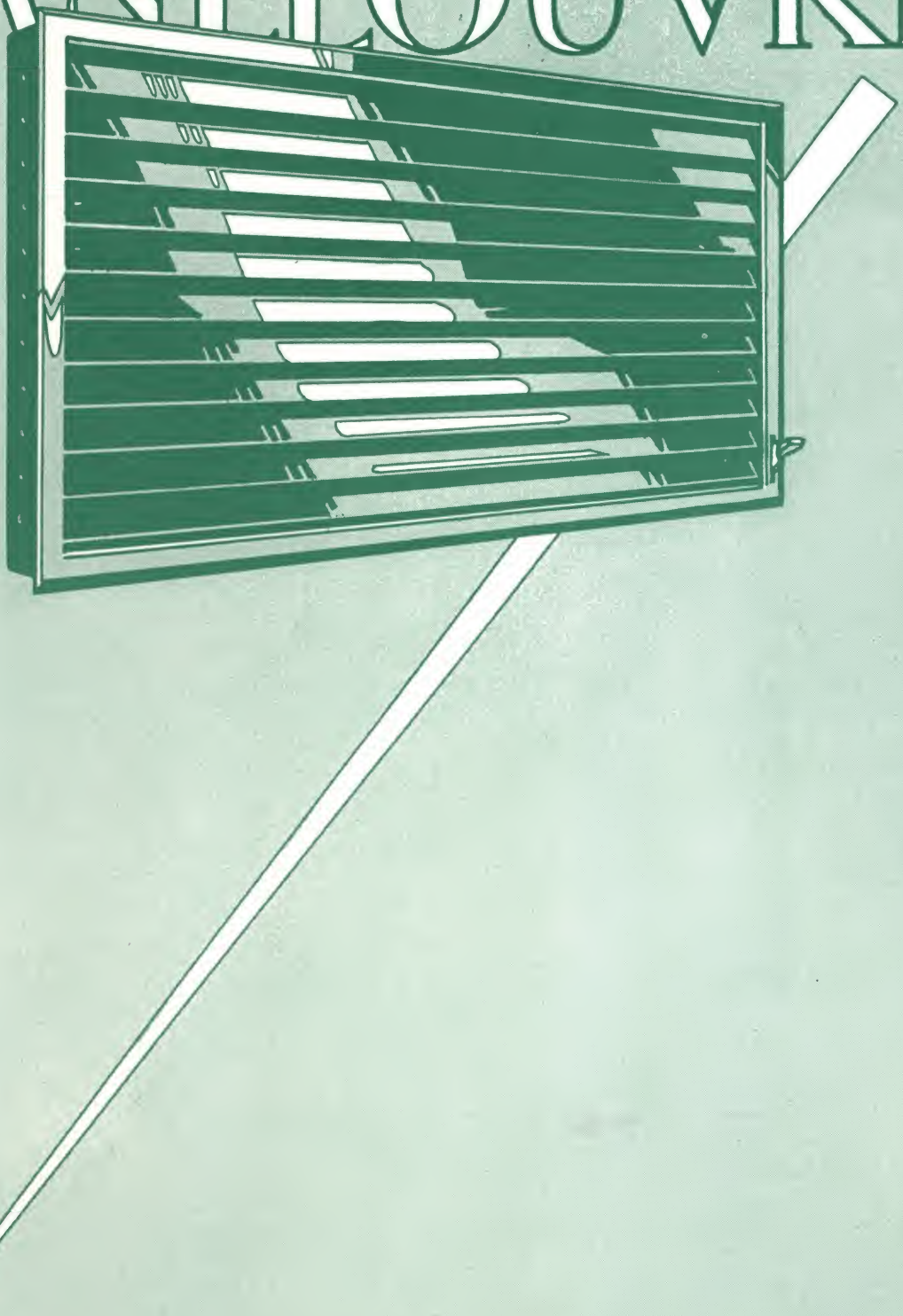
Room Side—Closed

Corridor Side

Room Side—Open

Soundproof Ventadoor

PANELOUVRE



VENTILOUVRE Co.

BRIDGEPORT · CONNECTICUT

Ventilating By Means of PANELOUVRE Thru-the-Door, Transom or Wall

Panelouvre (Trade Name) Successor to Ventilouvre

Panelouvre is the trade name for our patented metal louvred ventilating device for use in doors, transoms and walls.

What the Panelouvre Is

It consists of a heavy steel channel frame in which are assembled a series of inverted "V" shaped steel louvres. The Panelouvre may be obtained in several types of movable and fixed louvres for controlling ventilation and affording privacy from vision and light. The various types are described on the following pages.

It Accomplishes Increased Ventilation, Privacy from Vision and Prevention of Passage of Light

Ventilation—The use of the Panelouvre increases the amount of air circulation. Because of the simple "V" shape of the louvres the Panelouvre allows the passage of the maximum amount of air. Scientific tests by one of the best research laboratories in the country have proven this statement conclusively. The results of these tests will be sent to any architect on request.

Air moves through the Panelouvre freely on account of having only one angle of deflection. It is practical, economical and efficient, and will not wear out.

Panelouvre Is as Easy to Operate as an Electric Light

Privacy from Vision—Too much stress cannot be laid upon the importance of not admitting light and vision yet at the same time affording the greatest amount of ventilation possible to be obtained. It is impossible to see through the spaces between the louvres from either side or in any position whether open or shut. The section, as illustrated on the following page, shows how light rays as well as the line of vision are blocked. This assures the privacy so desired by guests of hotels, etc., while allowing ventilation from halls or corridors.

Prevention of the Passage of Light—The arrangement of the louvres absolutely prevents the passage of light between them from either side even when in the full open position. The accompanying section illustrates this very clearly.

A Real Necessity in Hotels, Clubs, Office Buildings, Apartment Houses, etc.

We make this statement because of our experience in having been called in so many times to install our Panelouvre after these types of buildings have been built. This is especially true in hotels. Managers have found that it is almost impossible to rent their rooms to guests unless the room ventilation is taken care of and have asked us to install our ventilators to correct this condition. We will be glad to refer any prospective client or architect to a number of hotels where this has happened.

Panelouvres Are Weatherproof

When used in exterior doors the Panelouvre is constructed with the longer side of the "V" louvre on the outside so that when closed it presents a flat surface to the weather. This is guaranteed weatherproof.

For such locations Panelouvres can be furnished with a metal cane grille to prevent papers or other matter being forced between the louvres, with an insect screen, or with both. They can also be furnished with removable, or sliding metal panel to be placed on the inside in extremely cold weather.

Continued on next page

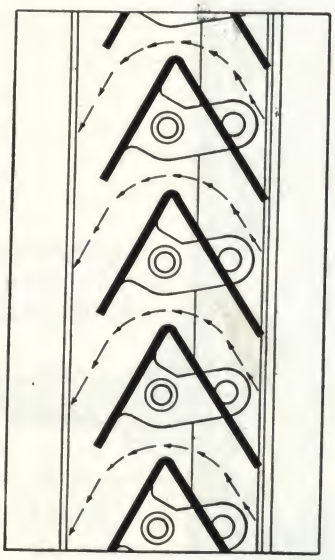
SPECIAL ADVANTAGES OF THE PANELOUVRE

A Quality Product Which Will Not Have to Be Replaced

Our ventilator is built on a quality basis. It is made of heavy gauge steel and is designed and assembled in such a way that it will last as long as the building. There are no parts to wear out and the material used is of the best. All the parts are rolled and straightened before assembling and thoroughly cleaned before the baked-on finish is applied.

A Saving Rather Than an Expense

By the elimination of transoms over hotel doors and using "Panelouvres" in doors, a saving of at least $125 per room can be affected. This is a conservative estimate—in most cases it runs considerably more, as it allows the use of lower story heights, reducing the cubage of the building.



Panelouvre Open Showing Passage of Air

The initial cost to the owner, covering the use of either the door or transom type of "Panelouvre," is often considerably less than would be if any other type of glass or solid wood panel transoms were substituted. The leading hotel architects repeatedly specify the "Panelouvre" on this account, as well as on its other advantages of giving maximum ventilation, privacy from sight and light as well as absolute freedom from upkeep.

Only Four Screws Required to Install a Unit

As the "Panelouvre" comes to the job, it is a complete and finished unit ready for installation. Four screws furnished by THE VENTILOUVRE COMPANY, two for the top and two for the bottom of the channel frame, fasten the "Panelouvre" to the door frame, wall, etc. These screws are easily placed and can only be removed from the room side. The transom type requires two additional screws, for the transom hardware, which we supply.

Panelouvres should not be installed until all overhead work is done, and plaster and other debris should not be allowed to fall on the louvres. When used in wood doors they should be installed after the doors are hung. When used in steel doors they should be installed by steel door manufacturers when the doors are being fabricated.

It Is Foolproof and Burglarproof

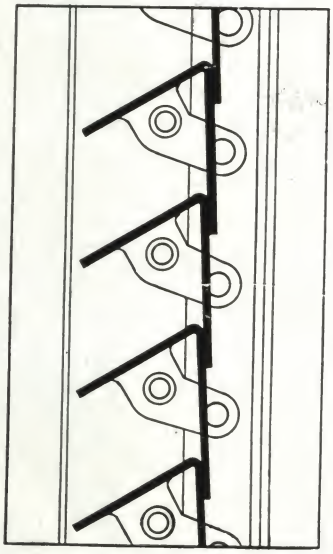
The operation is so simple that it is foolproof and there is nothing to get out of order. The drawing showing the detail construction illustrates how simply it is constructed and why it will last for years.

Any one trying to bend the inverted "V" louvres by inserting a tool between the louvres only closes the louvre on the opposite side. The "V" shape also gives them great strength and it is impossible to force them out of position. When used as panels for doors they will stand up under rough usage, as kicking, etc.

Finishes Obtainable

Panelouvres are regularly finished with two coats of enamel applied at the factory. The following colors are standard:

Mahogany Walnut
Oak Green
White



Panelouvre in Closed Position

Other colors, either plain or grained, to harmonize with the trim and matching color sample supplied to us will be furnished at slightly increased cost. Panelouvres can also be finished in one color on the room side and a different color on the outside. This also adds to the cost.

Operating Trigger—Standard finish is polished brass. Other finishes as desired can be furnished at an extra cost.

Mounting Screws—Screw heads are finished same color as the Panelouvre.

General—Because of the general lack of care on the part of painting contractors, we prefer to finish the Panelouvres at the factory. They will be furnished in prime coat only under protest. No reduction in price is allowed for eliminating final color.

Panelouvres may be refinished at any time, however, if ordinary care is used in applying the finishing coat. In refinishing they should be painted when fully open and left in that position until dry, in which case no difficulty will be experienced in their operation.

Our Guarantee

We guarantee all material and workmanship on the Panelouvre to be the best that can be obtained.

We also guarantee to replace at any time, without charge, any Panelouvre that refuses to function properly due to faulty construction. Any Panelouvre showing conclusive proof of abuse will be replaced only at regular list price.

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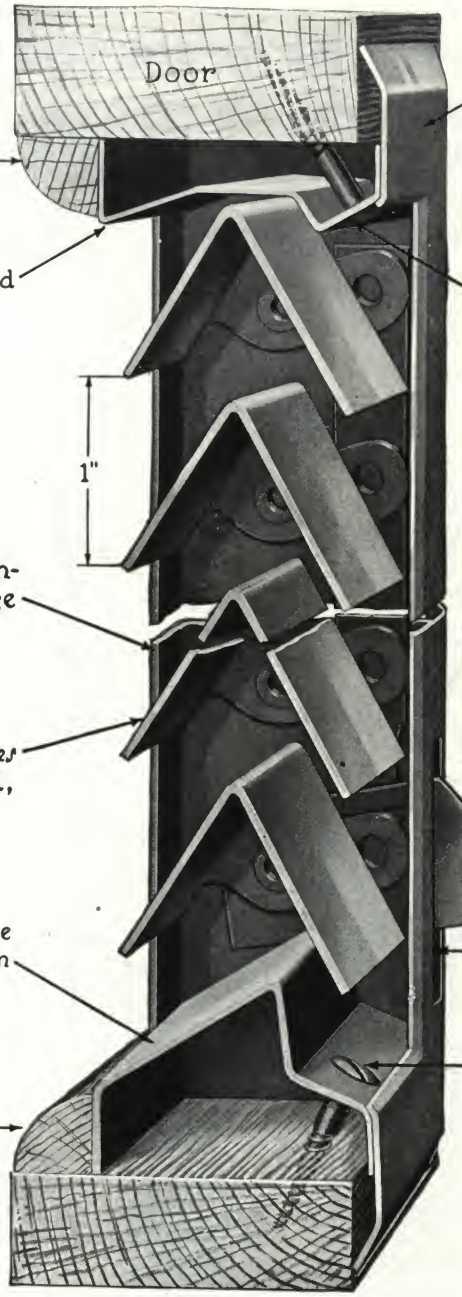
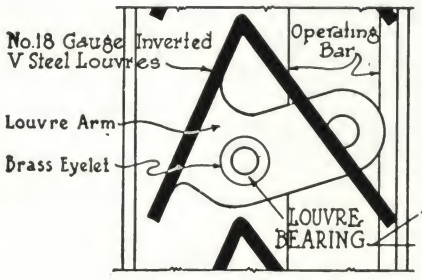
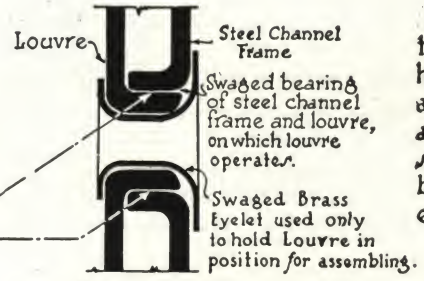


SECTION THRU TYPE "D1" PANELOUVRE (LOUVRES IN OPEN POSITION)

Our special method of securing the Louvres assures long life as well as preventing the Louvres from being forced out of position.





Detail enlarged twice to show how end channel and Louvre arm are punched and swaged to form bearing at each end of Louvre.

ELEVATION SECTION

DETAILS OF BEARING WHERE LOUVRE IS ATTACHED TO FRAME

GENERAL CONSTRUCTION OF THE PANELOUVRE

DRG 1

Continued on next page

CONSTRUCTION DETAILS

Frame

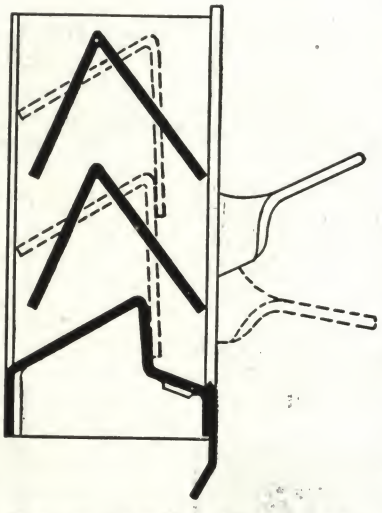
All frame members are made of No. 18 gauge cold rolled steel channel and are ½x1½x½ in. Top and bottom channel frame members are specially designed and inverted to prevent dust collecting, and are provided with countersunk screwholes. Corners are drawn and spot-welded, and both faces of frame are flush.

A steel cover mould for one or both sides with mitered corners is optional with the architect, as the Panelouvre can be furnished with or without it. If this cover mould is used, however, it laps ½ in. on each side of the rough openings also forming a stop in the frame.

Louvres

The louvres are of the inverted "V" shape, made of cold rolled .050 in. gauge steel. They are set on 1-in. centers, with ½-in. space between bottom edges. In this manner a suction or venturi effect is produced, which results in the greatest degree of ventilation. The longer side of the "V" louvre, when closed, overlaps the louvre just below by about ⅛ in.

Advantages of the "V" Shaped Louvres—(1) They effectively bar light and vision, sound waves are broken, and down-drafts prevented due to air currents being deflected in passing through. Louvres may be set vertically instead of horizontally if so desired and operate by the trigger in the same manner as the horizontal louvres.



Regular Type Operating Trigger

(2) Louvres form flush panel on room side when closed. They lock themselves and cannot be opened or closed from the outside. As they are always under tension they cannot rattle.

(3) Neither leg of the "V" shaped louvre can be raised by pressure for the purpose of looking through the unit without lowering the opposite leg.

(4) The tensile strength of the louvres, due to the "V" construction, is so great that it is impossible to force the louvres out of position. The louvres will also withstand foot blows and other hard usage to which ventilators of this type are sometimes subjected. This is also due to the method of assembling the louvres in the frame as shown in the illustration on the second page. The method of attaching the louvres to the operating rod and the sides of the frame is also illustrated.

Operating Mechanism

The method of operating the louvres in all types of adjustable "Panelouvres" is the simplest and the most practical that engineering skill can devise. The rotary motion produced by raising or lowering the operating trigger, assures positive opening or closing of the louvres with velvetlike smoothness. It is quiet, without loss of motion, and is foolproof. No maintenance is necessary other than a few drops of oil placed on the louvre lugs twice a year. Because of the location and design of the operating mechanism "Panelouvres" cannot gum or refuse to function.

Operating Bar

This is made of $\frac{3}{32}$x½-in. cold rolled steel. It is attached to each louvre and runs the full height of the unit. This assures continued equal spacing and operation of each louvre.

Operating Trigger

Three types of operating trigger are made.

Regular—Solid brass. Attached to operating bar, which operates louvres by a cam motion. The adjustment is easy and positive, permitting any degree of opening desired. Furnished on Types D1, D2, D3, D4, SD, DX and RW.

De Luxe—Bakelite, in form of an ovoid knob or handle cast as a part of the trigger. It gives a rich finish to the installation. The standard bakelite knob is black, but other colored enamel finishes over bakelite can be furnished to special order. Operates the same as the regular type.

Transom—A ¼-in. brass rod moving through a post secured to the trim with two screws. This rod is attached to a brass bar which in turn is attached to the operating bar. On the lower end of the rod is a small brass handle. Moving the handle up or down opens or closes the louvres by cam motion as in the regular type. The hardware is the simplest and most practical that can be had for adjustable transoms. It cannot get out of working order and there is no lost motion.

Sizes

Panelouvres are made in any size required with two exceptions:

(1) The width is limited to 40 in. but they can be furnished in any fraction of an inch up to and including 40 in. For openings exceeding 40 in. we furnish two Panelouvres welded together. (2) Heights, due to design, must be held to multiples of 1 in. plus ⅜—for example 6⅜, 7⅜, 8⅜, etc., and up as far as may be necessary.

SPECIFICATION

Where metal louvres are called for, the contractor shall furnish and install Panelouvres as manufactured by the VENTILOUVRE Co., Bridgeport, Conn.

Louvres shall be of the "V" type in sizes shown, to be located in (doors, transoms, wall space or windows) and shall be (adjustable or non-adjustable) as noted or hereinafter specified.

Panelouvres shall be finished at the factory in two coats of enamel (color as specified) harmonizing with the finish of the trim and matching color sample which the contractor will furnish the manufacturer.

Hardware (if adjustable Panelouvres are required) for opening and closing Panelouvres shall be of solid brass buffed and polished. (If special finish is required for hardware sample should be furnished by the contractor).

Screws necessary to install the Panelouvre itself shall be furnished by the manufacturer.

All samples of finish shall be approved by the architect.

The contractor shall install the Panelouvres and furnish necessary mouldings, unless Panelouvre with Metal Mouldings are ordered. (If used in steel doors Panelouvres should be installed by the steel door manufacturer when assembling doors.)

Continued on next page

MODELS AND TYPES OF PANELOUVRES

Panelouvres are made in several models and types for installation in every location where ventilation may be required. Each type is fully described and illustrated in the following pages.

While the types differ in price, each is a substantial, rigid unit made in a thoroughly first class manner of materials of the highest quality and well finished.

MODEL D PANELOUVRES WITH ADJUSTABLE LOUVRES FOR DOORS

See Detail Drawings, Page 6

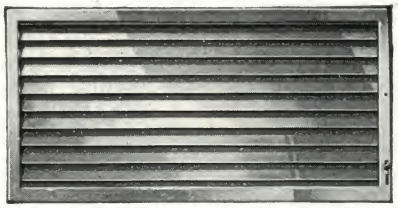
This is the standard type of Panelouvre in general use for ventilating rooms in hotels, apartments, dormitories, Y. M. C. A. and Y. W. C. A. buildings, clubs, office buildings, nurses' homes, hospitals, sanitariums, homes for the aged, private residences, etc. It is also extensively used in theater dressing rooms, as well as exit doors, ship staterooms, Pullman compartments, schools, etc.

Note: The Tenement House Department of the City of New York permits the use of Panelouvres in bedroom doors of apartments in lieu of transoms required by Chapter 63, "Windows in Rooms" of the Tenement House Law.

This model may be installed in the upper or lower panels of any door, whether of wood, steel, kalamein or hollow metal construction or in wall space. They are made in four types, namely, D1, D2, D3 and D4.

Type D1 Panelouvre with Moulding on Room Side

Thousands of these Panelouvres have been installed and are giving complete satisfaction. The method of installation under a few of the most common conditions is shown on page 9. As the Panelouvre can be adapted to any installation requirement you are invited to write us for suggestions to meet your particular requirements.



Type D1 Panelouvre
Operating trigger may be at right or left as desired

The room side of the Model D1 Panelouvre is finished with a cover mould of cold rolled steel. The inner edge of the mould is beveled to meet the bevel of the outer channel of Panelouvre. The outer edge of the mould is beveled to form a close joint with the surface of the door. The cover mould is securely welded to the outer channel and, at the corners, is mitered and welded to form a neat solid corner.

Type D1 in Hotel Corridor Doors

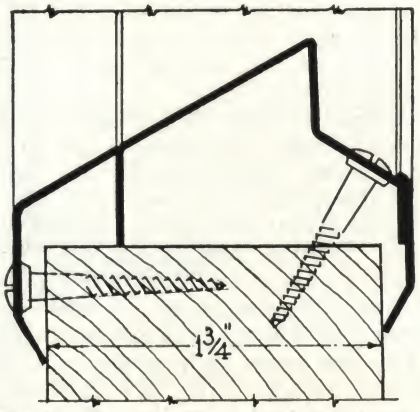
Type D2 Panelouvre without Moulding

This model is similar to the Type D1 but without any moulding. It is suitable for use in doors or walls where the trim on both sides is to be furnished and installed by others.

Type D3 Panelouvre with Moulding on Both Sides

This is the same as Models D1 and D2 except that metal mouldings are furnished for both sides of unit when installed in 1⅜, 1½ or 1¾-in. doors.

See illustration below for 1¾-in. door.



Section Showing Corridor Side Moulding Used with Type D3 Panelouvre

Type D4 Panelouvre, Designed Especially for Fastening to Panels of Doors

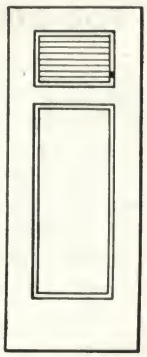
The new Type D4 Panelouvres, embodying all the good features of Types D1, D2 and D3, have the additional advantage of being specially designed for use on doors with single panels. This permits the use of single panel doors throughout a building, and as the Panelouvre is set in the panel itself the necessity of removing panel moulding or cutting into the stile of the door is eliminated.

To meet the requirements of individual conditions, we have designed a special steel moulding, for use with Type D4 Panelouvres, which we can adjust to any thickness of panel between $\frac{1}{16}$ and $\frac{7}{8}$ in. These mouldings are diagrammatically illustrated on Page 6. For installations on steel doors, a special brass bolt is furnished, which penetrates the panel and the mouldings on both sides of the door. These bolts have a slightly curved top, and a nut on the other end of exactly similar shape. Both the screw head and nut fit snugly into countersunk screw holes drilled in the mouldings, so that when the nut is tightened and the bolt trimmed flush, both mouldings present an identically neat and workmanlike appearance. See Page 6 for illustration of bolt.

Mouldings for Type D4 Panelouvres are furnished with all screw holes drilled, ready for quick and easy installation on wood, kalamein or steel doors.

Continued on next page

№1



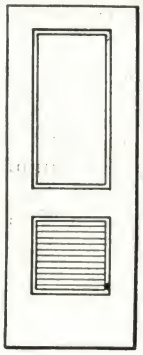
№2

NOTE

No. 1, 2, 3 & 4, a few of the ways in which Panelouvres can be used with the various styles of doors.

SIZES – Panelouvre can be furnished in any height in multiples of inches plus 3/8" i.e. 8 3/8" 9 3/8" etc., in any length in fractions of inches

GENERAL NOTE – Details on these drawings are intended to cover the more common conditions. Panelouvre can be adapted to any condition. Hollow Metal Doors differ so much in construction that it has been impossible to cover them on these drawings. Write us for suggestions on your particular problem.



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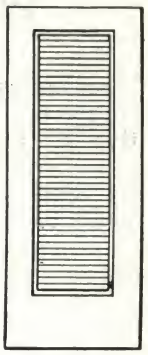

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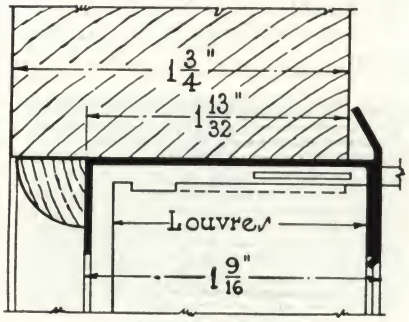
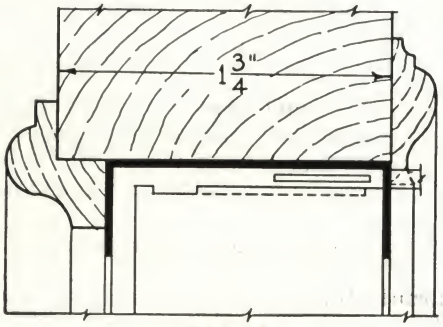
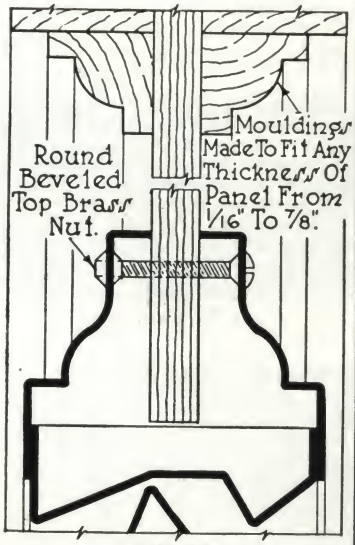


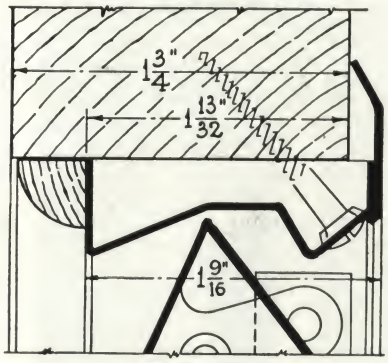
JAMB



JAMB



HEAD



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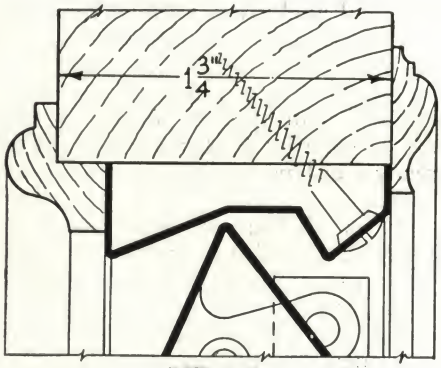

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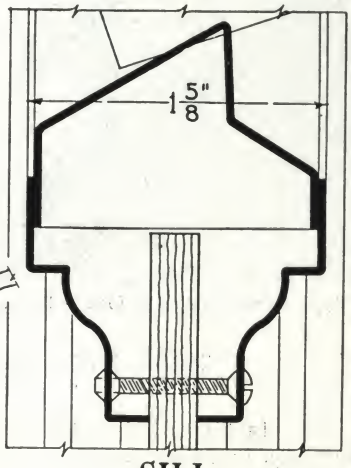
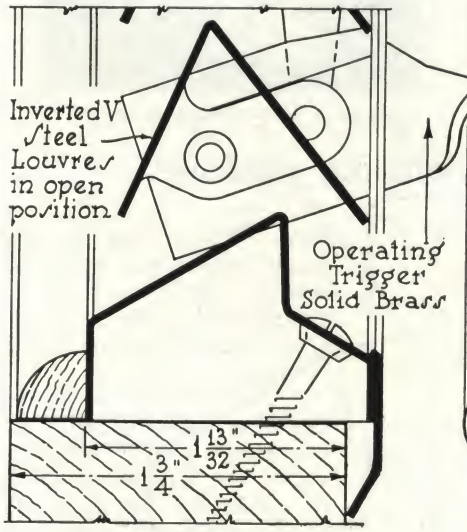
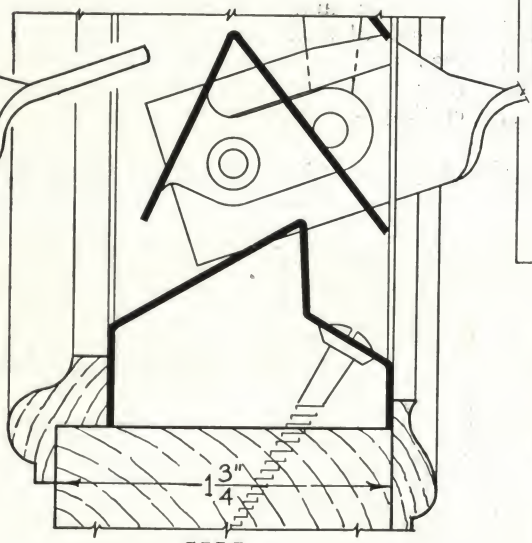


SILL



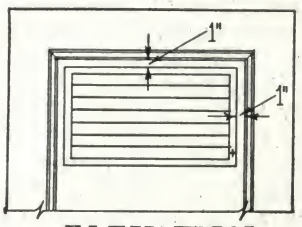
SILL

TYPE D1
IN A 1¾" DOOR



SILL

TYPE D2
IN A 1¾" DOOR



ELEVATION

TYPE D4 IN
SINGLE PANEL 1¾" DOOR

Continued on next page

MODEL S PANELOUVRES WITH STATIONARY LOUVRES FOR DOORS

See Detail Drawings, Page 7

Panelouvres of this type have stationary louvres fixed in the open position and are therefore less expensive than the Model D. However, as there is no provision for regulating the amount of ventilation they are not suitable for use in the same locations. They are rigidly built and designed to withstand hard usage. They are recommended for use in the lower panel of toilet room doors, in upper or lower panels of doors to storage closets, telephone booths, ticket offices, motion picture projection booths, slop sink closets, wire shafts, etc. They are also used in walls or partitions in powerhouses, public utility buildings, refrigerating closets, air shafts from toilets, etc. They may be used in the lower panels of corridor doors to offices if regulation of the ventilation is not required.

Type S1 Panelouvre with "V" Louvres and Moulding on Room Sides

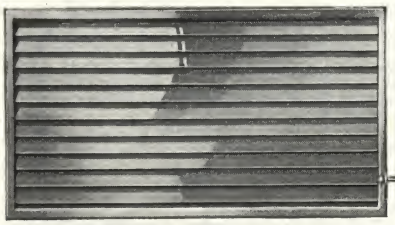
This type is of the same construction as Type D1 with the same style of louvres but they are welded solidly to the side members of the frame. The operating trigger and mechanism are omitted. A metal moulding, the same as used in Type D1, is welded to the room side of the unit.

Type S1 Panelouvre

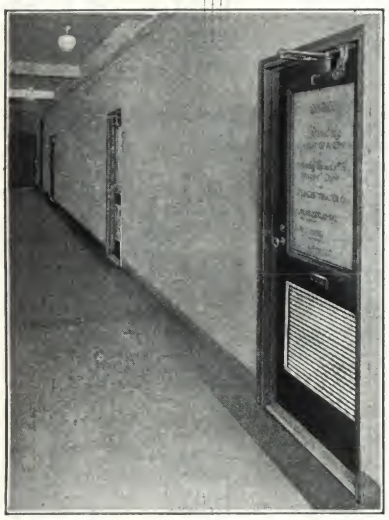
Type S2 Panelouvre with "V" Louvres and without Moulding

This model is the same as Type S1 in construction but has no moulding or trim.

When it is used, the trim on both sides must be furnished by the door manufacturer, carpenter contractor or others.



Type T Panelouvre



Type S1 in Corridor Office Doors

Type T Panelouvre with Adjustable Louvres for Transoms

For Detail Drawings, See Page 8

Where it is not desirable or practical to install the Panelouvre in the door or where a transom is desired or already constructed, this unit is recommended.

It is similar in construction to the Model D with the addition of transom hardware, as described on page 4, for opening and closing the louvres. It may be used with wood or steel bricks.

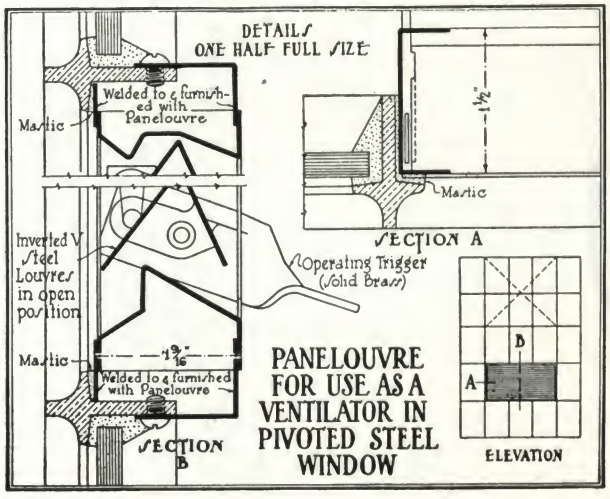
In new construction a saving of as much as 6 in. in height of ceiling may be made and still secure the same amount of ventilation. In existing buildings this unit gives more ventilation than the old style transoms and saves cutting the doors.

Type T Over Bedroom Door

TYPE PW PANELOUVRES FOR PIVOTED AND PROJECTED WINDOWS

In factories and other buildings in which projected and pivoted windows are used this type of Panelouvre has been employed to advantage. It is so constructed that it may be fastened directly to the muntin bars in place of the glass. Set in mastic cement it makes a watertight installation and, when closed, the ventilation is weatherproof. These Panelouvres may be installed in either the fixed or ventilation sections of the window. They provide adequate ventilation when the pivoted sections must be closed and give increased ventilation when this section is open.

As the cross section of the bars used by different window manufacturers varies, the Panelouvres must be made for the particular windows in which they are to be used. The accompanying drawing gives simply a suggestion of the possibilities.



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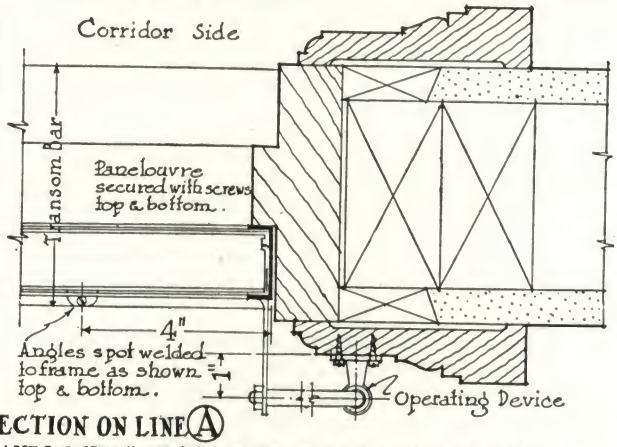
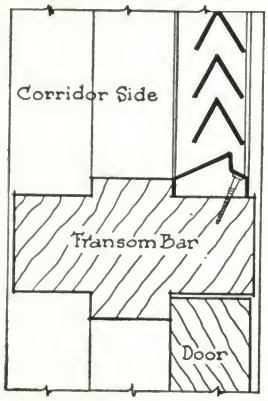
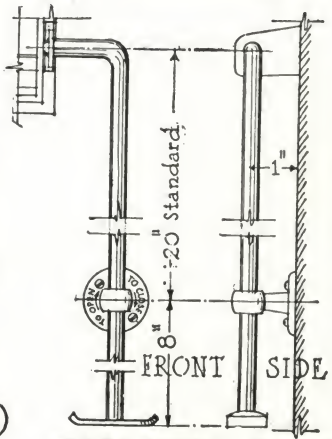


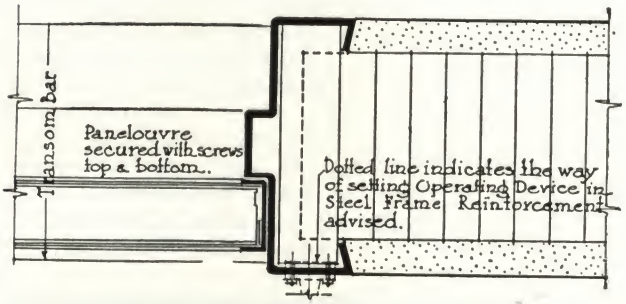
SECTION ON LINE (A)
PANELOUVRE IN WOOD OR KALAMEIN FRAME



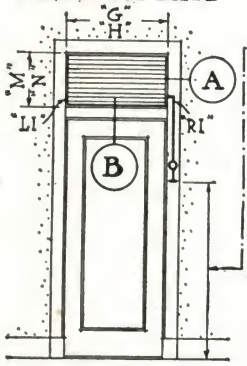
SECTION ON LINE (B)
TRANSOM BAR



OPERATING DEVICE



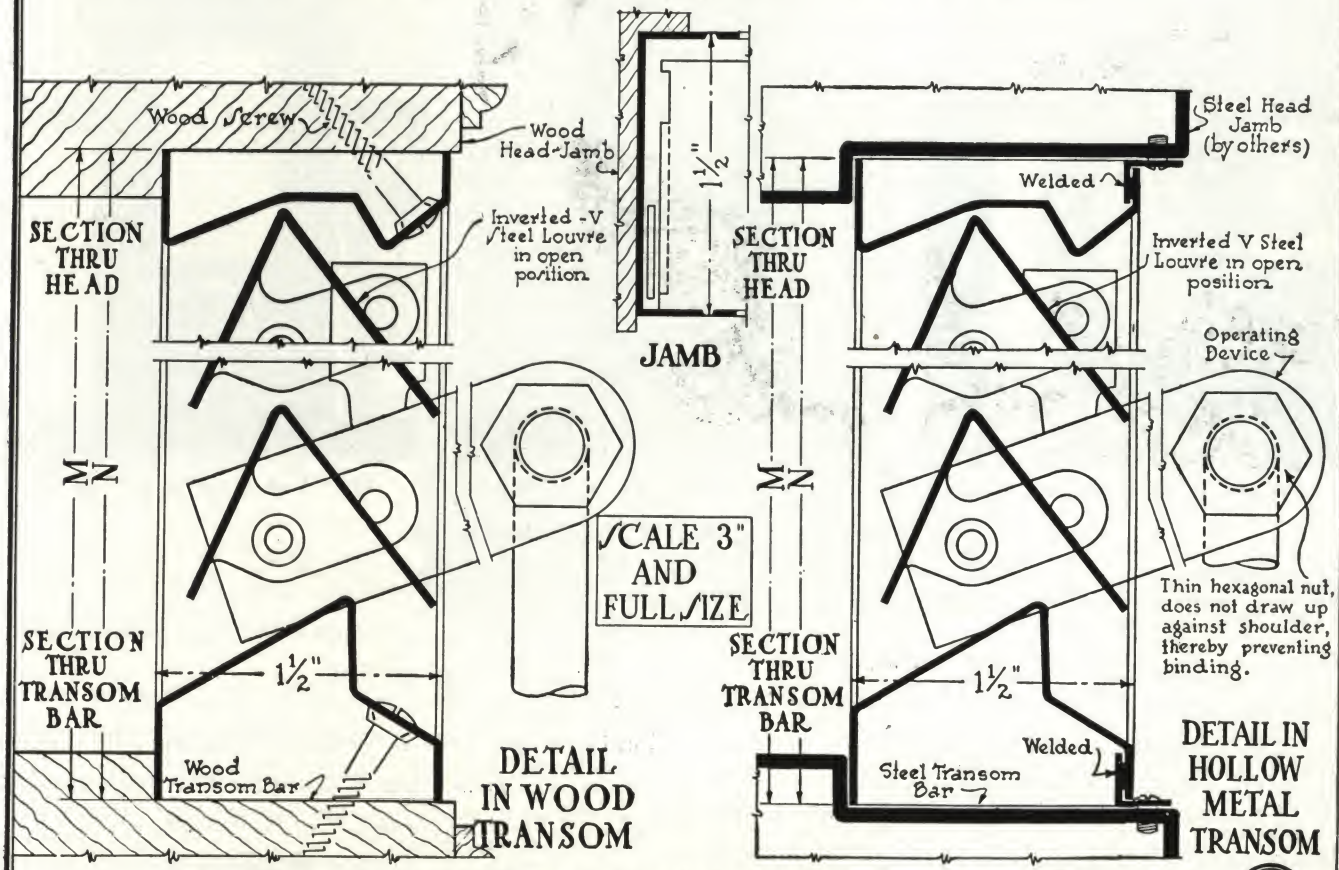
SECTION ON LINE (A)
PANELOUVRE IN COMBINATION STEEL BUCK



HEIGHT OF OPERATING HANDLE FROM FLOOR
6'-6" door 5'-0 3/4"
7'-0" door 5'-6 3/4"

G = Width between jambs.
H = Actual Width of Panelouvre - 1/8" less than G to allow for fitting.
M = Height between jambs - 1/8" more than N to allow for fitting.
N = Actual height of Panelouvre always in multiples of inches plus 3/4" i.e. 8 3/4" etc.
RI and LI = Optional positions of transom operating rod. Usually placed on hinged side.

KEY ELEVATION
SHOWING OPERATING DEVICE



DETAILS OF PANELOUVRES IN TRANSOMS

DRG 3

Continued on next page

PANELOUVRES FOR VENTILATING OFFICE BUILDINGS

The Panelouvre fulfills a long-felt want in office buildings, especially between the offices and corridors. It is being used successfully in a number of the largest office buildings in various parts of the country, as shown in the partial list of office buildings at the bottom of the page.

Solves Ventilation Problem

The use of transoms for ventilating offices is often a nuisance on account of drafts and for this reason they are often kept closed.

The use of the Panelouvres allows free ventilation and prevents drafts.

The opening of Panelouvres to corridors causes a constant circulation of air not only in the offices but in the corridors as well.

This helps to equalize the heat throughout the building.

Types of Installations

For Doors from Offices to Corridors—There are four methods of installing Panelouvres for ventilating offices as follows:

(1) Types D, D1, D2 and D3 Panelouvres as panels in the upper or lower part of the door with the glass panel below or above.

(a) Type D1 Panelouvre with moulding on room side. See page 5.

(b) Type D2 Panelouvre without moulding. See page 5.

(c) Type D3 Panelouvre with mouldings on both room and corridor sides. See page 5.

(2) Type D4 Panelouvre for fastening directly to panels, especially on single panel doors. See page 5.

(3) Type S Panelouvre with "V" louvres as a panel in the lower part of the door with a glass panel above.

(a) Type S1 Panelouvre with "V" louvres and mouldings on room side. See page 7.

(b) Type S2 Panelouvre with "V" louvres and without mouldings. See page 7.

(4) Type T Panelouvre as a transom above the door and operated from the room side. See page 7.

Each of these types of installations has been used with equal success in a number of office buildings.

TYPES OF PANELOUVRES FOR OFFICE BUILDINGS

Location	Model	Page
Corridor doors to offices....	D1, D2, D3	5
Transom over corridor doors to office.....	.....	7
Doors to toilet rooms.....	S1, S2	7
Slop sink closets.....	S1, S2	7
Vent shaft from toilet room.	S1, S2	7

Doors to Toilet Rooms, Janitor Closets, etc.—The Type S1, and S2 Panelouvres are useful under these conditions. These are of the fixed type and when used in either the bottom or top panel of door allow a constant circulation of air in the room or closet.

Type D1 in Upper Panel of Door

Type S1 in Lower Panel of Door

Type T in Transom Over Door

A Few Office Buildings Using Panelouvres

Milam Building, San Antonio, Tex., Geo. J. Williss, Architect
General Motors, New York, N. Y., Shreve & Lamb, Architects
Professional Building, New York, N. Y., K. Franzheim, Architect
Cleveland Union Terminal, Cleveland, Ohio, Graham, Anderson, Probst & White, Architects
Ukrainian National Building, Jersey City, N. J., John T. Rowland, Architect
National Press Building, Washington, D. C.
Jesberg Building, Los Angeles, Calif.
John L. Barr Office Building, Washington, D. C.
Broadway Barclay Building, New York, N. Y., York & Sawyer, Architects
Hearst Building, New York, N. Y., Chas. I. Birge, Architect
Women's Building, San Francisco, Calif., Bliss & Fairweather, Architects
American Druggists Building, Cincinnati, Ohio, Joseph Steinkamp, Architect
Federation Building, New York, N. Y.
Labor National Bank Building, Jersey City, N. J., John T. Rowland, Architect
N. W. Ayer Building, Philadelphia, Pa., Ralph Bencker, Architect
Carew Towers, Cincinnati, Ohio
Circle Towers Building, Indianapolis, Ind., Rubush & Hunter, Architects
Rhodes Medical Building, Tacoma, Washington, John Graham, Architect
Jewelry Trades Building, Philadelphia, Pa., Ralph Bencker, Architect
Office Building, 162 Second Ave., New York, N. Y., Emory Roth, Architect
Wisconsin Telephone Building, Milwaukee, Wis.
City Hall Annex Building, Newark, N. J.
Equitable Building, New York, N. Y., Trowbridge & Livingston, Architects

Continued on next page

PANELOUVRES FOR VENTILATING HOTEL ROOMS

Also Suitable for Clubs, Dormitories, Institutions, etc.

Notes on the Ventilation of Hotel Rooms

The ventilation of the guest rooms of hotels is one of the most serious problems a hotel manager has to face in warm weather. We have had many experiences within the last two years placing Panelouvres in hotel doors *after* new and up-to-date hotels have been completed for less than a year. The promoters of the hotels are probably responsible for omitting some means of ventilation between the bedroom and the corridor in order to cut down expense. They have found, to their sorrow, that they have been unable to rent a considerable number of rooms in hot weather on account of lack of ventilation in the bedrooms. This has caused considerable loss to the hotel. The addition of Panelouvres either in the doors or as transoms has solved their problem. This has only been accomplished at a much greater expense than if they had been included originally, in addition to loss of rent of rooms.

In the construction of new hotels a considerable saving can be effected by using Panelouvres in the doors instead of transoms above. This permits the ceilings to be lower, thereby reducing the total cubic content of the building and therefore the cost. At the same time the ventilation of the rooms is improved.

Panelouvres for Various Types of Hotels—For hotels in the South and for summer use exclusively we suggest the use of Type "SD" or Summer Door. This type affords the greatest amount of ventilation, yet assures privacy from vision and light as well as being burglarproof.

TYPES OF PANELOUVRES FOR HOTELS

Location	Model	Page
Transient Hotels		
Guest room door: Standard hotel.....	D1, D2, D3, D4	5
Southern and summer hotel.....	SD	6
Guest room with transom	S1, S2	8
Toilet rooms.....	S1, S2, S3	8
Guest bathroom door....	D1, D2, D3	5
Maid's or slop sink closets	S1, S2	8
Bed closets in sample rooms	S1, S2	8
Residential Hotels		
In doors and walls of closets in bedrooms.	S1, S2,	8
Apartment Houses		
*Doors off private corridors	D1, D2, D3	5

*Approved by Tenement House Department, City of New York.

SUMMER DOOR TYPE SD PANELOUVRE

Larger in Area, but Similar in Detail and Installation to Type D2, Page 6

For Use in Hotels, Clubs, Dormitories, etc.

Type SD Panelouvre is used in doors to bedrooms, where the greatest amount of ventilation with complete privacy, and regulation is desired.

It is particularly well adapted for ventilation in warm climates where it has been used with marked success in clubs, dormitories, hotels, sleeping porches, etc.

This is virtually an enlarged Type D Panelouvre designed to fill the entire panel of a single panel type door. It will give 50% greater ventilating capacity than the wood slat type door which is used in some hotels as an auxiliary door.

Economy of Its Use—A substantial saving can be effected, because only one door has to be provided, hung, finished and installed complete. A narrower jamb may be provided, and hardware for only one door is required which is a considerable saving in itself.

Type SD Panelouvre in a Summer Hotel

Privacy and Protection—Greater privacy is provided as the Panelouvre does not transmit light or vision and is burglarproof. The device locks itself so that it cannot be opened or closed from the outside. The operating triggers are so arranged that the room occupant may open the upper or lower halves of the unit independently of each other. This allows a most flexible control of air.

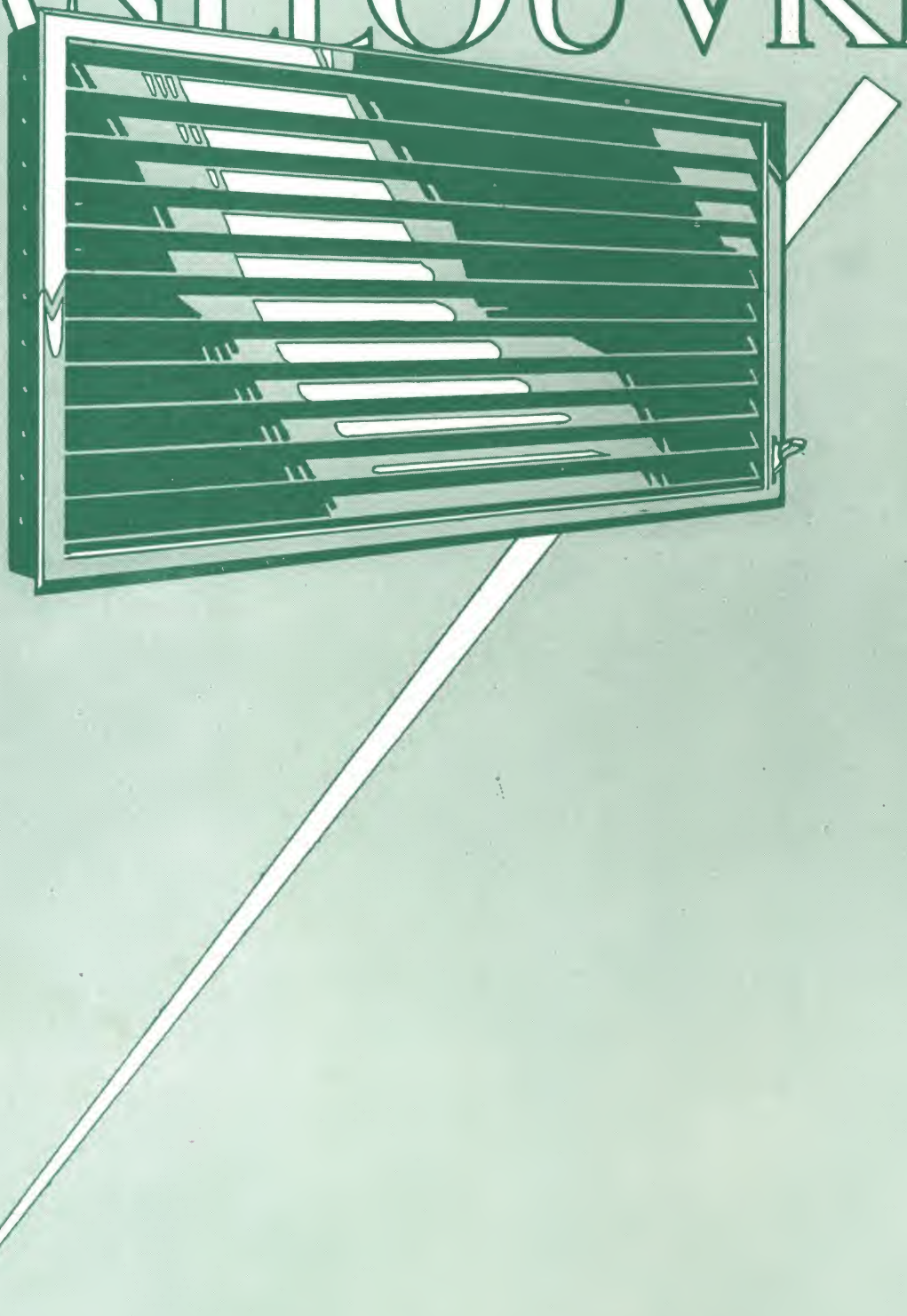
If desired, a solid wood or steel panel can be furnished as part of the Summer Door Unit so that no air can pass through the ventilator when the solid panel is in place. The entire unit is of very rigid construction and is capable of withstanding severe usage.

Sizes of Type SD—On Type SD, the minimum height is 36⅜ in. Other heights must also be held to multiples of inches plus ⅜—i. e., 37⅜, 38⅜ in., etc., up to and including 70⅜ in. In width it can be supplied in any fraction of an inch up to and including 40 in.

Some Hotels Using Panelouvres

Hotel Wellington, N. E. Corner 55th Street and 7th Avenue, New York, N. Y., Robert Lyons, Architect
New Weston Hotel, 50th Street and Madison Avenue, New York, N. Y., Robert Lyons, Architect
Mayflower Hotel, 15 Central Park West, New York, N. Y.
Hotel Holly, West Washington Square, New York, N. Y., Chas. F. Winhelm, Architect
Waldorf Astoria, 49th Street and Lexington Avenue, New York, N. Y., Schultze & Weaver, Architects
Hotel Washington, Newburg, N. Y.
Abraham Lincoln, Reading, Pa., W. L. Stoddart, Architect
Vista Del Arroya, Pasadena, Cal., Geo. Weymeier, Architect
Faulding Hotel, 15 Haly Street, Santa Barbara, Cal.
Wardman Hotel, Whittier, Cal., David Bushnell, Architect
Harrisburger Hotel, Harrisburg, Pa., Lawrie & Green, Architects
New Wooten Hotel, Abilene, Tex., David S. Castle, Architect
Hotel Dearborn, Indianapolis, Ind.
Lockerbie Hotel, Indianapolis, Ind.
Hotel St. George, Brooklyn, N. Y., Emery Roth, Architect
White Plains Hotel, White Plains, N. Y., Thomas Martin & Kirkpatrick, Architects
Winters Hotel, 6th Street and 1st Avenue S., St. Petersburg, Fla., Edgar Ferdon, Architect
San Carlos Hotel, Yuma, Ariz., Louis Dorr & Dwight Gibbs, Architects
Burkhaven Hotel, Sunapee Depot, N. H.

PANELOUVRE



VENTILOUVRE Co.

BRIDGEPORT · CONNECTICUT

THE SERVIDOR COMPANY

101 Park Avenue
NEW YORK, N. Y.

The Steel Servidor Cabinet for Hotels, Apartment Hotels and Clubs

A special cabinet, easily installed in new or existing entrance doors to private rooms in hotels, clubs, apartment hotels, etc. Its function is to provide service without contact and insure the privacy of guests.

The Servidor Unit consists of two doors with the necessary space between which forms the cabinet. One door opens into the guest room, the other into the corridor. Into the intervening cabinet space, through inside door, guest may deposit clothes to be pressed, shoes to be shined, laundry, etc. Inside door is then closed and locked. Telephoning to proper hotel department brings prompt service, but privacy is maintained because attendant merely unlocks outside door and removes articles. When returning articles no knocking is necessary. A special indicator on inside door shows when delivery is made. Guest removes articles at leisure.

A further advantage of the above arrangement is that service can be maintained whether guest is in or out. Safety against entrance or theft is assured because each Servidor cabinet is fitted with a patented interlock. One door must be locked before the other can be opened. Sight into the room or vice versa is impossible even when the cabinet is in use. Usual functions of an ordinary door are in no way restricted because of Servidor installation. Design of Servidor adds to attractiveness of any door.

Over 45,000 Servidors installed to date.

Construction of the Steel Servidor

Cabinet—Consists of two curved steel doors of patent leveled furniture steel with three hinges welded in place; two side jambs of steel with six hinge carriers in place; two strips of heavy wool felt anchored on lock side of cabinet; upper jamb for attaching clothes hanger and lower jamb, providing a shelf.

Cabinet Doors—Consist of an outer sheet of furniture steel and are reinforced with an inner sheet made rigid with three ribs and the space between lined with an effective sound deadener. Edges of door are doubled back, insuring maximum strength and rigidity and providing nicely rounded edges on all sides. All parts electrically welded.

Finish—Exposed surfaces of cabinet doors are finished with seven coats, viz., two primer, one ground, one graining, one color and two high grade steel furniture varnish. Each coat baked and sanded, final coat rubbed with pumicestone and oil. Finish to match color selected. Furnished in mahogany, walnut or oak, showing grain in natural wood effect; also solid color finishes without graining, such as French gray, ivory or white enamel.

Hardware—Consists of cabinet door locks, automatic interlocking and signal mechanism, and cast brass or bronze escutcheon plates. Finish to match main door hardware.

Ventilators—On the Standard Servidor the ventilators consist of an upper and lower opening fitted with steel damper operated in unison by a push button mechanism.

On the Louvered Servidor the ventilator consists of a louvered panel in each cabinet door, and a steel friction slide on the outer door inside of cabinet. Ventilation may be full, partial or shut off depending upon the position of this slide.

Note: Standard Servidors are furnished with or without ventilators.

Weight—Approximately 90 lb., depending on size door.

Specifications for Architects' Use

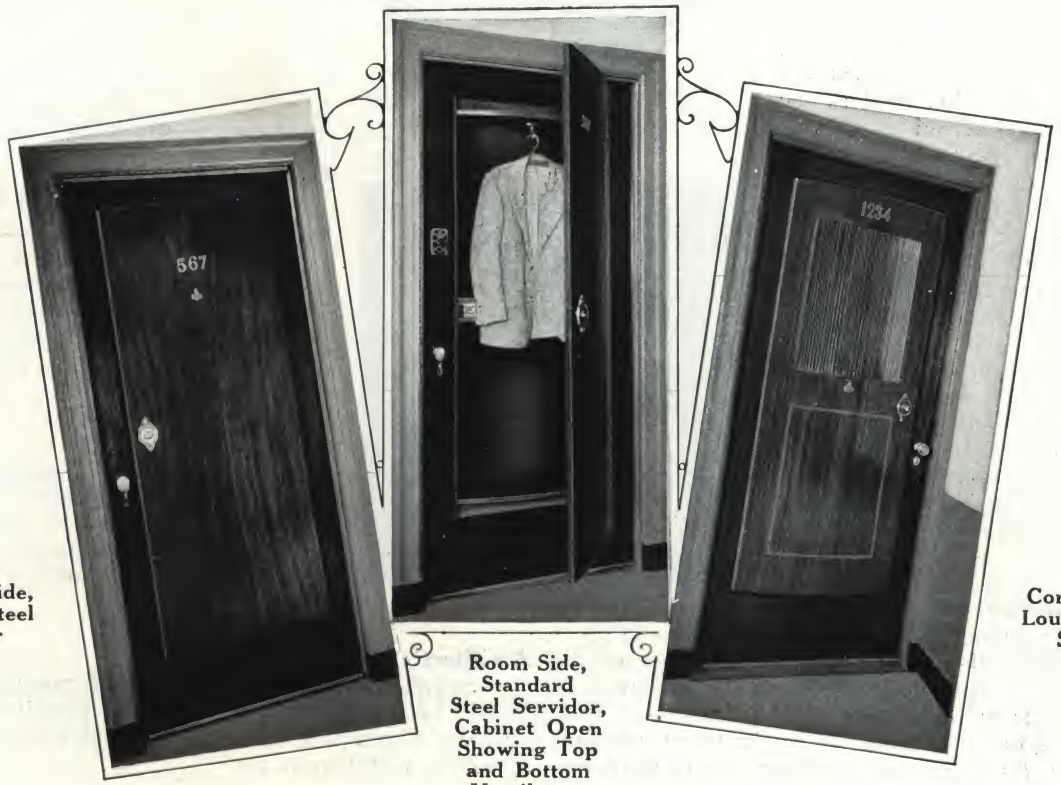
THE SERVIDOR COMPANY *furnishes the steel Servidor cabinet only, without stiles or rails. The latter must be furnished by other contractors.*

Note: Under the door contract make provision for the omission of panels and moulds in doors that are to be equipped with Servidor cabinets. The Servidor cabinet specification should read as follows:

Servidors—This contractor shall furnish and install in each entrance door to each guest-room one steel Servidor, as manufactured by THE SERVIDOR COMPANY, 101 Park Avenue, New York, N. Y., completely finished to match adjoining work, and equipped with all necessary hardware. Hardware shall match adjoining hardware. Workmanship and materials shall be fully guaranteed. The doors proper, consisting of stiles and rails only, with panels and moulds omitted, will be furnished fully equipped as to usual hardware, finished complete, and installed by other contractors.

Note: Stiles and rails for a Servidor installation should consist of 5-in. stiles, 5-in. top rail and 10 or 12-in. bottom rail, all 1¾ in. thick, with panels and beading omitted. Standard construction practice for door bucks, door butts and door hardware. The Servidor is never stocked. Each job is built to order to fit opening in stiles and rails specified.

For best results it is recommended that guest-room entrance doors be either 3 ft., 2 ft. 10 in., or 2 ft. 8 in. wide.



Corridor Side, Standard Steel Servidor

Room Side, Standard Steel Servidor, Cabinet Open Showing Top and Bottom Ventilators

Corridor Side, Louvered Steel Servidor

RECEIVADOR SALES CO.

GRAND RAPIDS, MICH.

CHICAGO OFFICE: 6302 Winthrop Avenue—Telephone, Sheldrake 2421

RECEIVADOR
"The Automatic Servant"
TRADE-MARK

The Receivador

The Receivador is an automatic self-locking delivery receptacle for wall or door installation in apartment buildings or private residences. It obviates the necessity of delivery men entering the home by providing an outside depository for packages, parcels, etc.

General Description

The entire Receivador cabinet is made of high grade, heavy gauge furniture steel. All joints are electrically welded. No screws or rivets are used. Each unit is equipped with two doors—one opening from the outside, the other from the inside. Doors are of double steel-wall construction with a substantial filler of insulating material between two sheets of steel. Each door has a substantial "dead bolt" lock operated by solid brass thumbpieces (no keys). All hardware exposed to wear is solid brass.

Methods of Locking

The Receivador interlock is a special device that prevents both doors being opened at the same time. It insures complete and secure closure at all times between outside and inside of the home.

The interlock consists of a solid steel bar which slides back and forth between the doors alternately engaging the locks. When the outer door is closed and the thumbpiece turned, the interlock is engaged thereby securely locking the outside door and releasing the inner door. Conversely, by the locking of the inner door after removal of the contents of the cabinet, the outer door is again released for the next delivery. This renders the Receivador thiefproof, and positively guards the home against intrusion, as the inner door cannot be opened while the outer door is unlocked. This locking device is simple in design, substantial in construction and is positive as well as permanent in operation.

Key-locked Receivadors—For apartment buildings where tradesmen are not permitted to deliver directly to tenants. These Receivadors are furnished with master-key locks. Service man then makes deliveries "en masse" at regular appointed times.

Locks are of high grade steel and protected against rust by cadmium plating.

Where Receivadors Are Installed

In private homes the Receivador may be installed either in the rear service door or in adjacent wall. In apartment buildings, the Receivador is installed in the service door of the apartment or into the wall leading to the kitchen. In single entrance apartments, where no space is available or convenient, Receivadors are installed in the main entrance doors.

The door installation is not objectionable, since the cabinet does not restrict the normal use of the door. Its depth does not extend beyond the knob of the door.

How Installed

Receivadors are provided with holes for fastening with screws. Rough openings with standard frames should be left when walls are erected and Receivadors installed when carpenters erect other trim. For door installation it is suggested that the mill making the doors should furnish and install the Receivadors. This assures a workmanlike job.

Various Types

Receivadors come in sizes of one or two compartments and also are built into multiples to meet any requirement and arrangement. The Standard Receivador consists of two compartments to accommodate two deliveries before being emptied. The "Junior" is designed especially for moderate priced homes and apartments for receiving milk, small packages, etc.

Standard Receivador

Junior Receivador

DIMENSIONS

Double compartment units, in.		Single compartment units, in.		Size door, ft. in.	
Width	Height	Width	Height		
Standard Receivadors					
20	32	20	16	2	6
22	32	22	16	2	8
24	32	24	16	2	10
26	32	26	16	3	0
Junior Receivadors					
14	32	14	16	2	0

All cabinets are 6¼ in. deep inside, and 7¼ in. over all. Sizes listed are standard and carried in stock. Special sizes and compartment arrangements can be furnished for the larger operations.

Colors

Standard cabinets are finished in olive green, non-rusting, baked enamel which will harmonize with practically any color scheme. Also supplied in any grained finish to match the natural wood at a nominal additional cost. Receivadors may be painted to match any decoration.

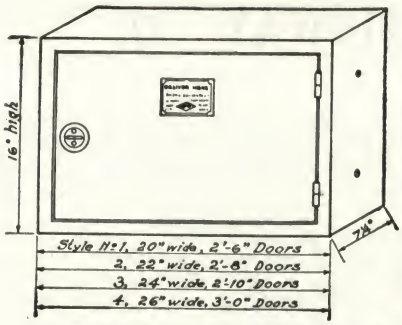
Guarantee

Receivadors are unconditionally guaranteed for one year from date of delivery. They are in country-wide use and have been specified by architects and used by builders for more than ten years.

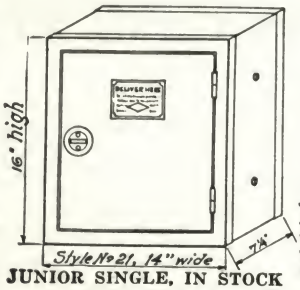
Architect's Portfolio

Supplies full details and list of prominent users. It will be sent promptly on request together with any desired information concerning Receivador types, construction, installation, etc.

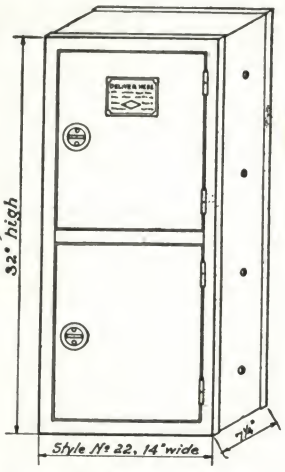
Continued on next page



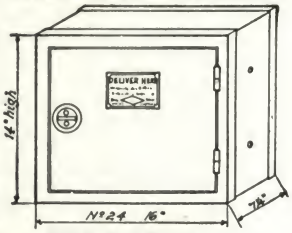
STANDARD SINGLE UNIT IN STOCK



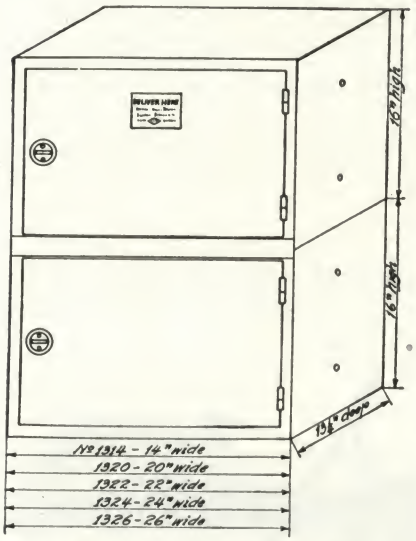
JUNIOR SINGLE, IN STOCK



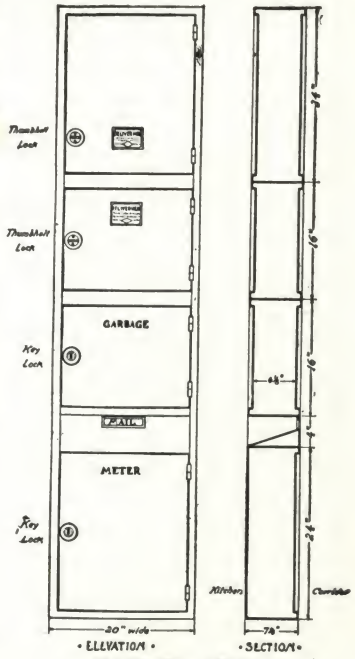
JUNIOR DOUBLE IN STOCK



JUNIOR SINGLE MADE TO ORDER



EXTRA DEEP—FOR SPECIAL REQUIREMENTS—MADE TO ORDER



MADE TO ORDER COMPLETE SERVICE UNIT IN WALL

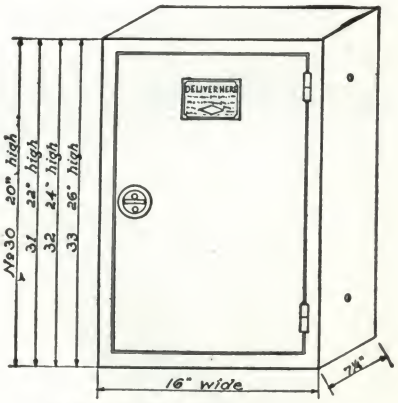
Flange Trim for Receivadors

Flange trim of furniture steel can be applied to all types and sizes of Receivadors. May be located near center for door installation or flush with face for wall installation. It saves its small additional cost by eliminating labor and materials necessary for ordinary wood casings.

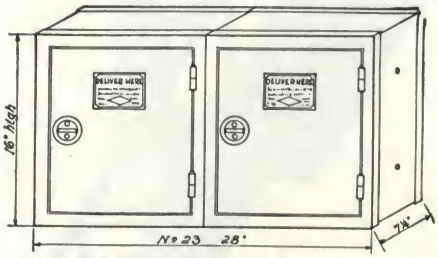
Sample Specification

Receivador—Furnish and install complete and finish according to architect's specifications—Double Steel Receivadors, manufactured by the Receivador Sales Co., Grand Rapids, Mich., as shown on the plans. Where Receivadors are to be installed in doors, the doors must be furnished by the contractor with the proper opening for the Receivador Cabinets. For door installations, stiles must be 5 in. wide.

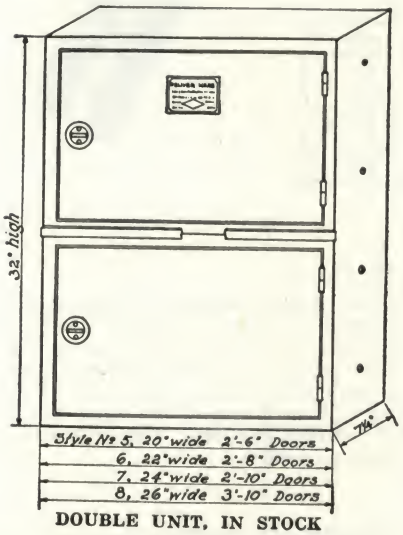
Where Receivadors are to be installed in walls, frames and trim must be furnished by the contractor. For all installations allow ¼ to ½-in. clearance in rough framed openings.



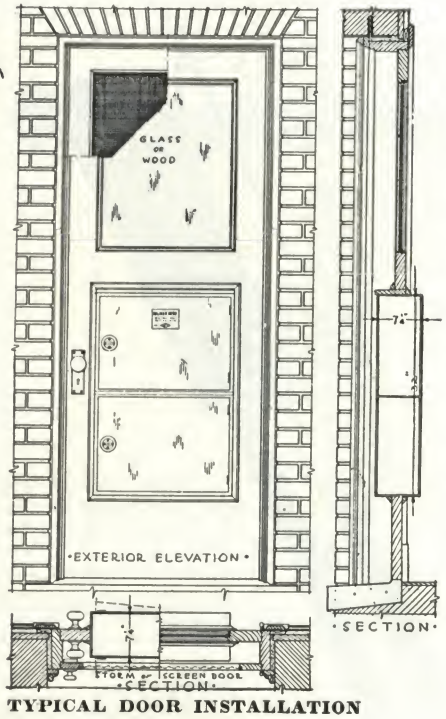
NARROW-HIGH UNIT MADE TO ORDER



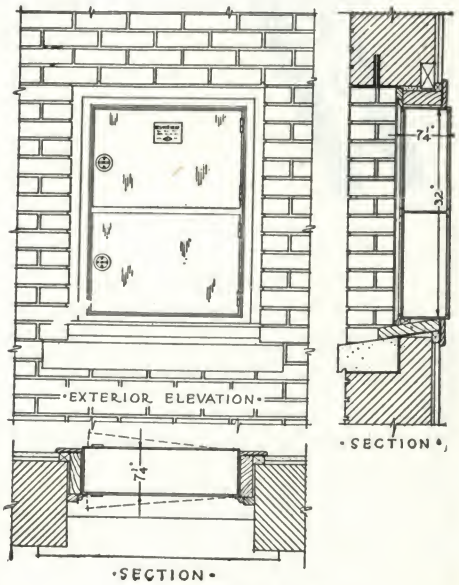
TANDEM JUNIOR—MADE TO ORDER



DOUBLE UNIT, IN STOCK



TYPICAL DOOR INSTALLATION



IN BRICK WALL

THE BESSLER DISAPPEARING STAIRWAY CO.

AKRON, OHIO

Product

The Bessler Disappearing Attic Stairway in wood.

For Bessler All-steel Stairway, see Manufacturers' Index.

Description

The Bessler disappearing attic stairway is a substantial, sightly and practical flight of stairs for one or two-story residences and other types of buildings, providing proper stair access to an upper floor when desired, and leaving clear the floor space ordinarily occupied by stairs when that is wanted. While not in use, the stair folds into the ceiling out of the way.

The treads are properly secured to heavy string pieces with open risers. The hand rail is strong, practical and attractive. At the top the stairs are attached to the end trimmer of an opening in the ceiling of the room or hall where the stairs are to be located.

The mechanism and operation are very simple. To use the stairway a slight pull on a chain brings it into position; the stair is then rolled down the panel to the floor. To fold it back to the ceiling, the stair is rolled up on the panel. Springs on each side do the work with very slight assistance from the operator. *Metal parts are all made of pressed steel.*

The panel attached to the stairs is the only part visible when the stairway is closed, and this is flush with the ceiling line. There is no possibility of it coming down unassisted.

Model 50—Where the stairway is less frequently used, we recommend the Model 50 as a more economical installation. It is as sturdily built as the Model 97, but is without the equalization bars and is operated by a single set of spring drums that perform the double function of retracting the stair and closing the panel.

Model 60—Is designed to be used in the homes where it is desired to have this convenience at low cost and yet offering the advantage of having a 2 ft. 6 in. wide finished opening. This makes a very desirable installation and is preferred in most cases to Model 50 on account of the wider opening. The mechanism and operation are practically the same as Model 50.

Model 97—In this model the cables on either side of panel are connected to the balancing spring barrel. The rod fastened to the inside of the panel is the equalization-bar. Its function is to equalize the pull, regardless of the position of the stairway. This is accomplished by pulleys fastened to cables which move forward as the stairway goes up. This causes panel to close tightly against ceiling without slamming.

Model 97 is designed to withstand the most severe usage, for example, in installations where the stairway leads to the upstairs sleeping quarters.

Guarantee

You can have the use of the Bessler for one month, and if it does not prove to be satisfactory, return it to us at our expense.

The Bessler disappearing stairway is guaranteed to last as long as the life of the building.

Specifications

Model 60

Stairway to be mounted on panel to slide in guides. Hinges to be suitable so panel can be installed with edge flush with bottom of plaster if desired. Hand rail for right or left side. Spring drum on each side of the stair panel at the hinged end. The weight of the stair-stringers to bear down on the guides which are fastened to the hinged end of the frame.

Note: This model is made for floor to floor heights up to and including 10 ft. 7 in. only, and for finished openings 2 ft. 6 in. wide.

Model 50

Stairway to be mounted on panel to slide in guides. Hinges to be suitable so panel can be installed with edge flush with bottom of plaster if desired. Hand rail for right or left side. Spring drum on each side of the stair panel at the hinged end. The weight of the stair-stringers to bear down on the guides which are fastened to the hinged end of the frame.

Note: This model is made for floor to floor heights up to and including 10 ft. 1 in. only, and for finished openings 2 ft. wide.

Panel furnished in pine, birch, oak or gum for all models.

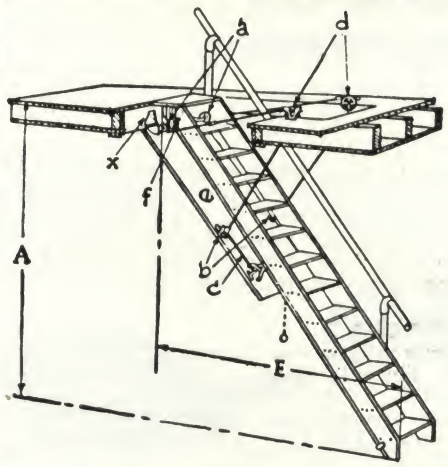
Model 97

Stairway to be mounted on panel to slide on rollers. Panel to have adjustable hinges permitting edge to come to bottom of plaster. Hand rail for right or left side. One equalizing bar is to be on each side of the stairway. Double-acting spring barrel and spring drum on each side of the stair panel. The weight of the stair-stringers to bear down on the shaft which is fastened to end trimmer. Adjustable cable clamps bearing against brackets to be fastened to jambs.

Estimates

Prices and literature furnished on request.

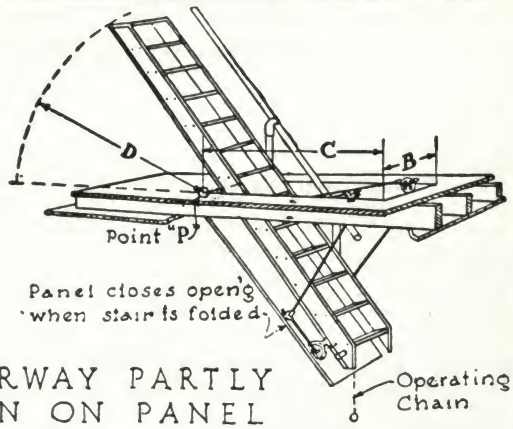
Continued on next page



STAIRWAY IN POSITION FOR USE

KEY FOR MODEL 97

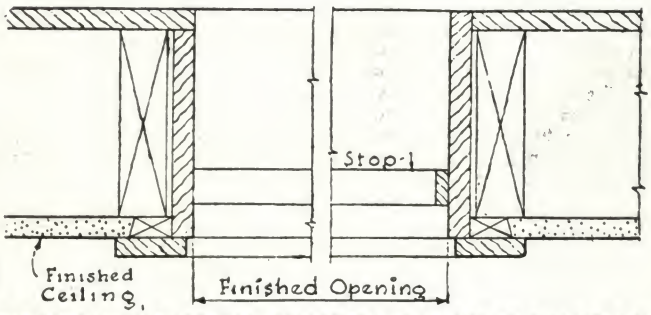
a - Spring Barrels
b - Cable Holders
c - Equalizing Bars
d - Pulley Brackets
e - Stair Panel
f - Lugs
x - Trimmer



STAIRWAY PARTLY DOWN ON PANEL

Width of the finished opening should be exactly as given in the table, 3/16" clearance for panel has been allowed

NOTE:- Jambs to extend full depth of opening as shown



1½" SCALE SECTION THRU STAIR OPENING

TABLE OF DIMENSIONS FOR VARIOUS FLOOR TO FLOOR HEIGHTS

A HEIGHT FROM FLOOR TO FLOOR	B WIDTH OF FINISHED OPENING BETWEEN JAMBS	C LENGTH OF FINISHED OPENING BETWEEN JAMBS	D DIMENSION FROM UPPER END OF STAIR STRINGER TO POINT "P"	E DISTANCE FROM FRONT EDGE OF STAIR STRINGER TO FINISHED JAMB
MODEL 50				
7' - 7"	2' - 0"	5' - 6"	3' - 8"	4' - 9"
8' - 1"	2' - 0"	5' - 6"	4' - 3"	5' - 0"
8' - 7"	2' - 0"	5' - 6"	4' - 9"	5' - 3"
9' - 1"	2' - 0"	5' - 6"	5' - 4"	5' - 7"
9' - 7"	2' - 0"	6' - 0"	5' - 11"	5' - 10"
10' - 1"	2' - 0"	6' - 0"	6' - 5"	6' - 1"
MODEL 60				
7' - 7"	2' - 6"	5' - 6"	3' - 8"	4' - 9"
8' - 1"	2' - 6"	5' - 6"	4' - 3"	5' - 0"
8' - 7"	2' - 6"	5' - 6"	4' - 9"	5' - 3"
9' - 1"	2' - 6"	5' - 6"	5' - 4"	5' - 7"
9' - 7"	2' - 6"	6' - 0"	5' - 11"	5' - 10"
10' - 1"	2' - 6"	6' - 0"	6' - 5"	6' - 1"
10' - 7"	2' - 6"	6' - 0"	7' - 0"	6' - 5"
MODEL 97				
7' - 7"	2' - 6"	5' - 10"	4' - 2"	6' - 5"
8' - 1"	2' - 6"	5' - 10"	4' - 10"	6' - 9"
8' - 7"	2' - 6"	5' - 10"	5' - 5"	7' - 2"
9' - 1"	2' - 6"	6' - 0"	5' - 11"	7' - 7"
9' - 7"	2' - 6"	6' - 4"	6' - 3"	8' - 0"
10' - 1"	2' - 6"	6' - 8"	6' - 6"	8' - 5"
10' - 7"	2' - 6"	6' - 11"	6' - 11"	8' - 9"
11' - 1"	2' - 6"	7' - 3"	7' - 3"	9' - 2"
11' - 7"	2' - 6"	7' - 6"	7' - 7"	9' - 6"
12' - 1"	2' - 6"	7' - 9"	8' - 0"	9' - 11"
12' - 7"	2' - 6"	8' - 1"	8' - 3"	10' - 4"
13' - 1"	2' - 6"	8' - 4"	8' - 7"	10' - 5"
13' - 7"	2' - 6"	8' - 8"	8 - 11"	10' - 8"
14' - 1"	2' - 6"	9' - 0"	9' - 2"	11' - 0"
14' - 7"	2' - 6"	9' - 3"	9' - 6"	11' - 2"
15' - 1"	2' - 6"	9' - 6"	9' - 9"	11' - 6"
15' - 7"	2' - 6"	9' - 9"	10' - 1"	11' - 9"
16' - 1"	2' - 6"	10' - 1"	10' - 5"	12' - 0"
16' - 7"	2' - 6"	10' - 5"	10' - 9"	12' - 4"

FARLEY & LOETSCHER MFG. CO.

Ceiling Suspended Disappearing Sliding Stairways

DUBUQUE, IOWA

Products

The "Presto" and "Victor" Disappearing Sliding Stairways.

Also Sash, Doors, Blinds, Frames, Mouldings, Interior Finish, Stair and Cabinet Work; Qualitybilt "In-the-Door" Ironing Boards.

For "Weatherseal" Over-head Garage Doors, see Manufacturers' Index.

presto REGISTERED TRADE MARK SLIDING STAIRS

"Works like Magic"

Presto and Victor Disappearing Stairs

"Presto" and "Victor" sliding disappearing stairways are strong, rigid and non-collapsible. They are pleasing in appearance and made for installation in any type of building where access to an upper floor is desired without the loss of floor space required for a stationary stairway. These sliding stairways, when not in use, roll up through an opening in the ceiling entirely out of view, leaving the space below clear for any desired use. The space thus saved is often sufficient for a bathroom or generous closet. Treads are housed into stringers and rigid hand rail is firmly attached to either string. One end of ceiling door is fastened to well hole and overbalancing of stairway when up keeps this door tightly closed.

Operation—

Both stairways operate the same as they slide up and down on roller brackets attached to the ceiling door. The weight of the stairs and ceiling door are counterbalanced by springs. The "Presto" being much heavier is equipped with powerful springs, which wind steel cables on twin drums. The "Victor" is counterbalanced with two long coil springs only, as it is lighter in weight. There is no possibility of either stairs coming down unassisted. When closed, nothing but the ceiling door is visible from below.

Shipping and Weights

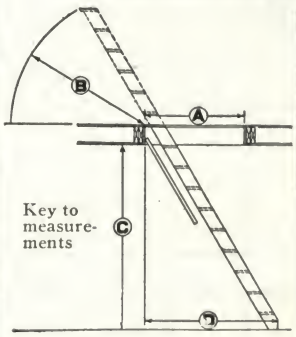
Shipped in dustproof cartons. Complete instructions for installing included. Shipping weight of the "Presto" approximately 175 lbs.; of the "Victor" approximately 110 lbs.

PRESTO AND VICTOR STAIRS FOR VARIOUS CEILING HEIGHTS
See diagram below for key to measurements

C Ceiling heights	D Projection into room when stair is down	B Projection into attic when stair is up	A Size of finished opening
The "Presto"			
7′ 6″ to 7′ 11″	7′ 2″	4′ 11″	2′ 6″ x 6′ 3″
8′ 0″ to 9′ 0″	7′ 6″	5′ 8″	2′ 6″ x 6′ 3″
9′ 1″ to 10′ 0″	8′ 1″	6′ 3″	2′ 6″ x 6′ 11″
10′ 1″ to 10′ 11″	8′ 10″	6′ 11″	2′ 6″ x 7′ 3″
11′ 0″	9′ 1″	7′ 5″	2′ 6″ x 7′ 6″
The "Victor"			
7′ 4″	5′ 0″	4′ 6″	2′ 4″ x 4′ 6″
7′ 6″	5′ 3″	5′ 3″	2′ 4″ x 4′ 6″
8′ 0″	5′ 7″	5′ 9″	2′ 4″ x 4′ 6″
8′ 6″	5′ 10″	6′ 6″	2′ 4″ x 4′ 6″
9′ 0″	5′ 10″	6′ 6″	2′ 4″ x 4′ 6″

Literature

Illustrated folders and complete prices furnished on request. Address Department S-31.



Guarantee

The "Presto" and "Victor" sliding stairways are guaranteed to be mechanically perfect and to last as long as the building. If either stairway does not prove satisfactory within 60 days, it may be returned to us at our expense and the full purchase price will be refunded.

The Presto (Patented)

The "Presto" is of high grade construction throughout with wide treads and stringers. Very rigid and substantial, built for the most severe usage. The large ceiling panel permits of taking bulky objects through opening. The operation is controlled by heavy steel cables, winding on powerful spring drums which counterbalance the weight of the stair and ceiling door and assist in the rolling of stairs up through the opening.

Specifications—The stairs complete include one ceiling panel door, one flight of stairs with rigid hand rail and supports, all necessary *pressed steel* hardware with black japanned finish, two heavy spring drums and galvanized wire rope. Stringers are ¾x7¼ in. housed to receive 7-in. treads. Three reinforcing cross rods under treads. Stair stained serviceable brown, ceiling door not stained. No jambs or trim included. These furnished only as extras to match other room trim.

The Victor (Patented)

A serviceable, moderately priced stairway with simple but efficient hardware and especially adapted to limited spaces, as the ceiling door is smaller and stairs do not project so far into the room or hall as does the Presto. Well built and gives good service. Rolls into attic on brackets attached to ceiling door. Does not require spring drums or cable. Sliding operation is controlled by an ingenious arrangement of friction brake on a control cord which prevents the stair from sliding down without a gentle pull, but does not interfere with raising it.

Specifications—Stairs complete include one ceiling panel door, one flight of stairs, rigid hand rail with supports and complete hardware, black japanned. Stringers are ¾x4 in., housed to receive ¾x5-in. treads. Stairs stained dark brown. No jambs or room trim included, furnished only as extras to match other room trim.

FRAZIER STAIR COMPANY, INC.

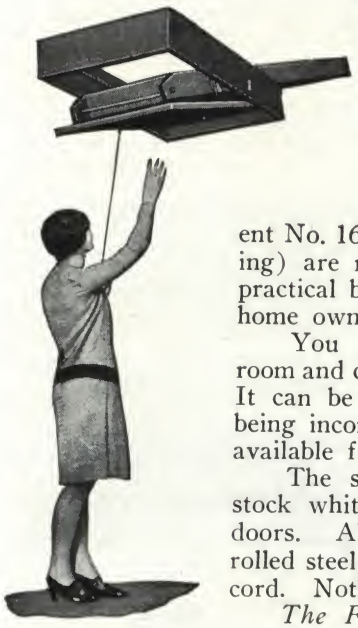
Manufacturers of Self-Balanced Disappearing Stairs*

1817-1819 Banksville Avenue, PITTSBURGH, PA. CABLE ADDRESS "FRASTAIRCO"

SOLD BY DEALERS EVERYWHERE

FRAZIER

TRADE-MARK Reg. U. S. Pat. Off.



Frazier Self-balanced Disappearing Stairs*

Frazier Self-balanced Disappearing Stairs (patent No. 1633321, other patents pending) are recognized as popular and practical by architects, builders and home owners everywhere.

You can save valuable floor, room and closet space with a Frazier. It can be installed in the hallway, being inconspicuous and yet readily available for access to the attic.

The stairs are made of clear stock white pine with fir panel in doors. All hardware is of cold-rolled steel, japanned finish. Silk pull cord. Nothing to get out of order.

The Frazier Stair is Self-balanced—Its overhanging weight balances and closes door—an exclusive Frazier feature. It can be installed in half an hour. "The only complete stair made—jamb included."

Operation

By pulling cord slightly the door is brought down, a stay hinge stops the door at desired operating position. Releasing the device which holds the stair in position brings the stairs down.

To return stair back in place slide up until locked in position. The overhanging weight of stairs balances and closes door.

The stair slides up and down through rollers mounted on the door and is easily operated.

Construction

Door Rails are 1 in. western white pine. Jambs $\frac{13}{16}$ in. western white pine. Stair strings $\frac{13}{16}$x4 in. western white pine. Treads $\frac{13}{16}$x5 in. western white pine.

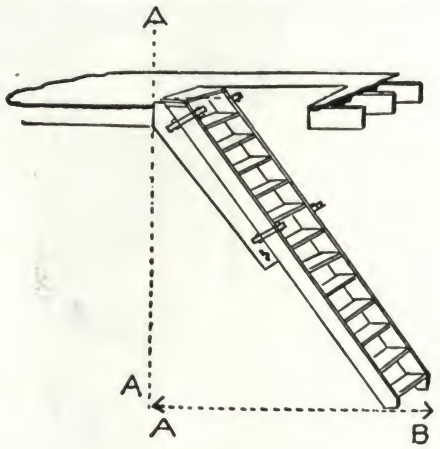
To Install

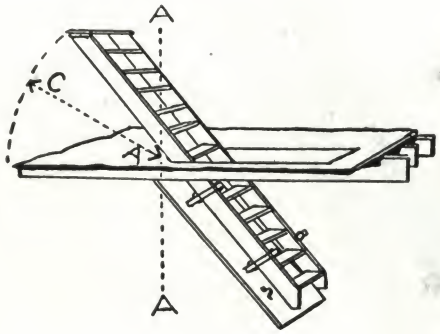
Nail jamb in opening.

Care should be exercised to permit free movement of the door.

Slide stair into guide rollers from attic.

Stair is now ready to operate.





DIMENSIONS

Model No.	Rough opening space, in.	Floor to floor height	Run downstairs dimensions A to B, in.	Operating radius dimensions A to C, in.
0	26½x48½	7 ft. 10 in. to 8 ft. 2 in.	53	62
1	26½x50½	8 ft. 2 in. to 8 ft. 7 in.	55	64
2	26½x50½	8 ft. 7 in. to 8 ft. 11 in.	62	67
3	26½x52½	8 ft. 11 in. to 9 ft. 2 in.	60	70
4	26½x52½	9 ft. 2 in. to 9 ft. 7 in.	60	72
5	26½x57½	9 ft. 7 in. to 10 ft.	66	78

Note: In ordering stairs specify exact floor to floor height, and also size of ceiling joist. Be sure to state floor to floor height and joist size (not floor to ceiling). In framing opening two dimensions must be considered to provide sufficient operating space. 1—Run on floor below. 2—Operating radius under roof. Reference to table of measurements shows exact dimensions required by various models.

*Copyrighted.

THE MARSCHKE COMPANY

Manufacturers of Marco Folding Stairs

ST. PAUL, MINN.

Products

MARCO FOLDING STAIRS.
TELEFOLD STAIRWAYS.
Also manufacturers of Marco Windows and K. D. Horses.

Marco Folding Stairs

Marco Folding Stairs have, among other advantages, one important characteristic: they do not obstruct the attic floor and require no rafter clearance for operation. Marco Folding Stairs, when closed, fold entirely within the size of the opening in the ceiling.

Springs of high carbon spring steel properly counterbalance the stairs—the Folding Stairs need not be lifted into the ceiling when it is to be closed. Ease of operation is an essential requirement of disappearing stairways—and Marco Folding Stairs provide it.

There is no danger of a slip or fall with a Marco Folding Stairs. The stair is hinged to the header with extra heavy "T" hinges. Marco Folding Stairs are light in weight, very strong and, when in position for use, more rigid than solid one-piece side stringer construction. This is because of the center support by round steel hanger rods, one on each side.

Models—Marco Folding Stairs are made in three models. Each model is made in several sizes for varying heights of ceiling. All sizes are carried in stock for immediate shipment from the factory or from New York City. Complete detailed information is given in our free Catalog No. 7-W.

The Junior Model Folding Stairs may be used where there is room only for small stairs or where a small opening in the ceiling is sufficient to meet the requirements for the installation. Jambs and casings are not furnished with this model. Panel is of flat grained fir but may be had in hardwoods. Rise of 9 in., run of 5 in. Packed in dustproof carton.

The Standard Model Folding Stairs is the most widely used of our several models. Furnished complete with jambs and casings, fitted at factory. Clean woodwork stained a medium dark. Panel and casings are not stained and are to be finished to match woodwork. Panel and casings are of fir and may be had in hardwoods. Shipped complete in dustproof carton, ready for installation—which is easily accomplished. Rise is 8 in. to run of 5 in.

The Special Model Folding Stairs is similar to the Standard Model but is more elaborate in finish and materials. Woodwork is sanded finish and is finished in golden oak, varnished. May be had in the "white," sanded finish, not stained, painted or varnished. Panel and casings are of fir but may be had in any other wood, optional. All hardware fittings are aluminized. Packed complete in dustproof carton, ready for installation.

On the left is shown the Standard Model Folding Stairs lowered to the floor and in position for use. Note the handrail on the right side. The Folding Stairs may be opened or closed from above or below. From above it is controlled by the handrail, as shown by the little center cut above.

Telefold Stairway

The Model 24 Marco Telefold Stairway is shown at the right. The Telefold Stairway is made in two sections instead of in three, as are the Folding Stairs. The lower section of the Telefold Stairway slides over the upper (panel) section, and the stairway then folds into the ceiling. When closed, it is entirely concealed by the neat ceiling panel.

The Telefold Stairway is for those places where space is exceptionally limited. The Marco Telefold Stairway will operate in a closet where there is room for the opening in the ceiling. The Telefold Stairway is light, very strong, exceedingly easy to operate and simplicity itself for installation. Furnished completely assembled in the jambs, ready to install. Nothing to get out of order or to require further adjustments after once installed.

The Marco Telefold Stairway is considered by us to be the most economical, real, complete disappearing stairway made.

SIZES AND OPENING DIMENSIONS MARCO FOLDING STAIRS

No.	Model	Ceiling height, ft.—in.		Rough opening, in.		Finished opening, in.		Shipping weight, lb.
		Minimum	Maximum	Width	Length	Width	Length	
24	Telefold	7—10	9—4	22½	52	21	50	60
35	Junior	6—8	9—8	24	51	22½	49½	70
50	Standard	7—0	10—0	30	60	28	58	115
65	Standard	10—0	12—0	30	70	28	68	140
75	Special	7—0	10—0	30	60	28	58	125
90	Special	10—0	12—0	30	70	28	68	150

KLISE MANUFACTURING COMPANY

Manufacturers of Wood Carvings and Carved Wood Mouldings, Twist Work, Rosettes and Ornaments

MAIN OFFICE AND FACTORY
GRAND RAPIDS, MICH.

BRANCH OFFICES AND SALESROOMS

LOS ANGELES, CALIF., 800 North Spring Street—Telephone, Madison 1101
SAN FRANCISCO, CALIF., 401 Fourth Street—Telephone, Kearny 1711
HIGH POINT, N. C., 311 Commercial National Bank Building—Telephone 4996
NEW YORK, N. Y., 192-96 Lexington Avenue—Telephone, Caledonia 9244

Carved Wood Mouldings

For wall paneling, shelf edging, cornices, interior and exterior trim.

The Klise mouldings are especially recognized for their distinctive, clean-cut patterns. The patterns are cut (not pressed or embossed) into the raw, dried wood. They closely resemble hand carving and can be obtained at a fractional cost.

Illustrations show one-half reduction

Klise mouldings can be combined with standard shape plain mouldings and can be worked into interesting details for cornices and other work requiring heavy shapes. There are designs for the various periods or styles of architecture—authentic in every detail. They are made in various sizes and widths. Some may be obtained from stock while others are made especially to order.

Samples of Mouldings

We will gladly furnish samples to fit specifications at any time, and if you wish a representative set, we will furnish them mounted for reference.

Ropes and Beads

Klise rope mouldings are cut both rights and lefts. Both the rope and bead mouldings can be furnished round, half-round, quarter-round or three quarter-round as desired, and in various diameters.

Illustrations show one-half reduction

Wood Turnings

Drops, ballusters, finials, etc., are made to your details and specifications. Photographs of designs already made can be furnished. Prices on receipt of details.

Rosettes and Ornaments

We have a line of stock designs which can be obtained quickly—many suitable patterns. Leaflet on request. Other designs are made special to your specifications—plain turned or turned and carved.

Twist Work

For ballusters, newels, columns, etc. Can be furnished in period styles—stranded, hollow, roped, or open—as desired. This work is all special to your details. We can furnish photographs of designs for which we already have knives. Knives for other styles are made in our own machine shops without delay. Prices furnished on receipt of details.

Wood Carvings

Klise maintains a complete service in the manufacture of wood carvings of every type. Carvings are produced by hand, spindle, multiple machine as required by the designs or the job. All wood carvings are made special to details. We carry none in stock. Quotations will be given on receipt of details and blue prints.

We can furnish photographs of work completed and installed to give you an idea of what is done.

Being located in the furniture center we have the pick of the skilled workmen. We maintain our own dry kilns. Carved pieces of built-up materials for either inside or outside decoration are put together with waterproof glue so they are permanently solid.

The closest co-operation will be given to meet building demands and dates. There is no work too difficult for our men to do and you will receive work as perfect as modern machinery and men can make it.

Illustration shows one-twelfth reduction

EDWIN JACKSON, INC.

Manufacturers of Fireplaces, Wood Mantels, Importers of Marble Mantels

50 Beekman Street; also Lexington Avenue and 65th Street

NEW YORK, N. Y.

Products

MANTELS in Wood and MARBLE.

Also Iron Linings, Cove Facings, Electricoal Grates and Ash Traps.

For Franklin Stoves, Jaxon Fireplace Dampers and Garbage Receivers, Iron Firebacks, Ventilating Grates, Period Andirons, Garbage Receivers, see Manufacturers' Index.

Marble Mantels

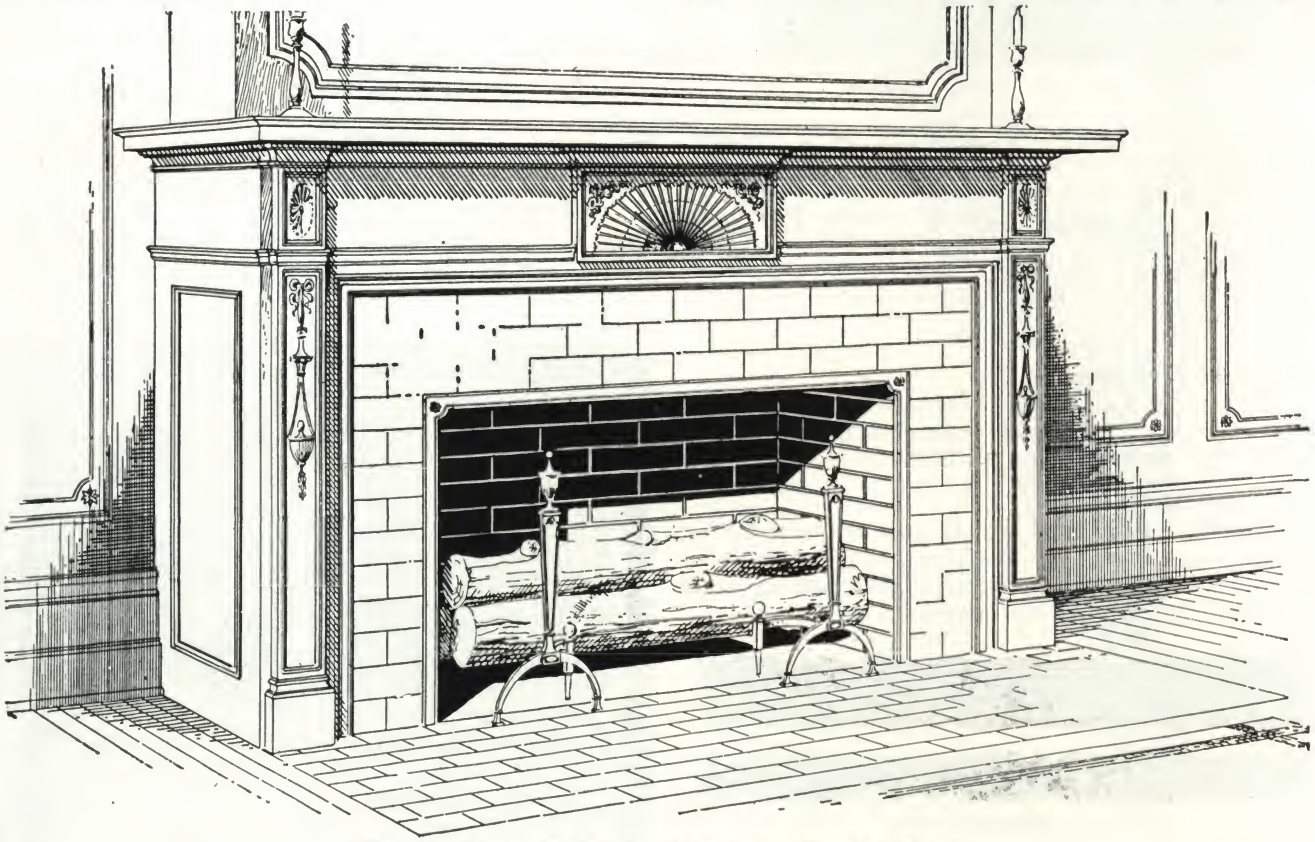
We import English, French and Italian marble mantels; and also usually have several good designs, with especially fine coloring, that we have taken from various old American homes.

Wood Mantels

We import small (original) painted pine Georgian mantels; also unfinished reproductions made from old woods. We make in this country special designs true to detail, and have for prompt shipment many good designs of our own.

Catalogues and Estimates

Catalogues of our various products will be sent on request. Estimates on special designs given promptly.



Typical Jackson Design for Mantel with Paneled Sides

The above drawing illustrates a specially built mantel No. 629 with paneled returns or sides to fit around a chimney breast. This permits the use of a design having a body width larger than the chimney breast, and is very effective. Again, where a larger wood opening is required for an increased size fireplace than that regularly shown, it is often necessary to build mantels in this way to obtain the desired sizes.

ESTABLISHED 1827

WM. H. JACKSON COMPANY

Mantels in Cretan Stone

2 West 47th Street
NEW YORK, N. Y.
TELEPHONE, BRYANT 8430

318 North Michigan Avenue
CHICAGO, ILL.
TELEPHONE, DEARBORN 8450

FOUNDRY AND SHOPS, 335 Carroll Street, Brooklyn, N. Y.—Telephone, Cumberland 4252

For Ornamental Bronze and Iron Work; Bronze Windows; Tile and Swimming Pools, see Manufacturers' Index

Mantels in Cretan Stone

The Illustration

The illustration is an example of the artistic and decorative possibilities in mantels in Cretan Stone.

We have reproduced many antiques selected from importations and authentic models, as well as from designs of prominent American architects.

Hearths, also facings, plain or with false joints, can be furnished where required for all Cretan Stone mantels.

Features and Advantages of Cretan Stone

Cretan Stone is a synthetic material which, in its durability, texture, beauty and finish, is in every way the equal of the natural quarried stones. Its base is crushed marble, assembled after a special formula into a solid mass by a durable chemical binder. It is free from portland cement and plaster of paris and the preponderance of marble insures utmost endurance and permanence.

The manufacturing process permits the reproduction of the most intricate ornamentation of design, while its homogeneous structure allows chiseling and tooling of the finest character. At the same time, the quality of the binder renders it as hard as natural stone. The texture lends itself readily to antique and other finishes.

Cretan Stone is about equal in specific gravity to marble or limestone, but as the average thickness of the finished product is only one and one-half inches, reinforced, it is much lighter in weight than either of them. This is an important advantage in handling, shipping and installation.

For special designs Cretan Stone can be produced in comparatively short time, obviating delay incident to the selection and quarrying of natural stone.

Cretan Stone Mantel, Yale Fraternity House

This is a replica of Jacobean Period mantel made in 1620. Original removed from an old mansion known as Fort Hill House, Tisbury, near Salisbury, England.
Height 8 ft. 11½ in. x 6 ft. 8¼ in.

LOUIS GEIB ARTHUR P. WINDOLPH

JACOBSON MANTEL & ORNAMENT CO., INC.

Manufacturers of Art Stone Mantels and Compo Ornaments

322-324 East 44th Street, NEW YORK, N. Y.

Products

ART STONE MANTELPIECES in all periods.
COMPO ORNAMENTS for application to woodwork.

Art Stone Mantelpieces

Our mantels are made of a special composition cast stone to simulate any of the natural stones, domestic or imported. In color, texture and grain they are practically undistinguishable from the natural stone. Perfect reproductions of old world mantels retain the beauty of line and carved detail. Mantels may also be selected from stock designs or built to individual specification. The cost is decidedly modest.

Installations can be made by any practical plasterer or tile setter.

Compo Ornaments

Lignoid-Compo is a composition which represents the maximum achievement of a quarter of a century of study and experience. Models are carved in wood and then cast in lignoid compo and applied to woodwork, reproducing the minutest detail and texture of the original. It may be used for painted wood as well as natural. Ornamental lighting fixtures are also made of the same material.

Catalogue

Our catalogue, showing many interesting designs of our Art Stone Mantels, will prove extremely helpful to Architects, Builders, and Decorators, who seek beauty and authenticity with wise economy. It will be sent on request.

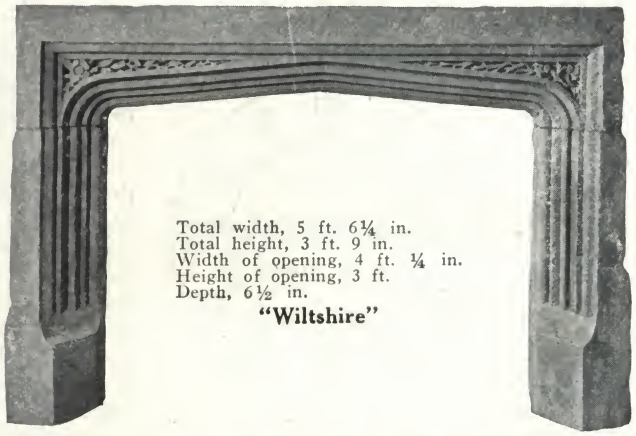
THE VIBREX COMPANY

Mantels of Vibrex

GENERAL OFFICES
101 Park Avenue, NEW YORK, N. Y.
FACTORY: NEW HAVEN, CONN.
AGENTS IN PRINCIPAL CITIES OF UNITED STATES AND CANADA
For Walls and Floors of Vibrex, see Manufacturers' Index

VIBREX MANTELS

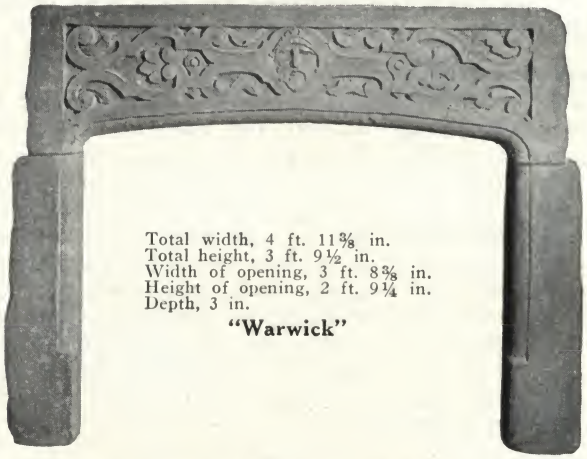
Vibrex Mantels are processed in their manufacture to give them the antique appearance, interesting texture, and variation of shade typical of stone which has mellowed with age. These mantels have all the architectural dignity and massive lines of stone, but only about one-third its weight. They are economical to ship and install. They are priced to make possible a considerable saving in building costs.



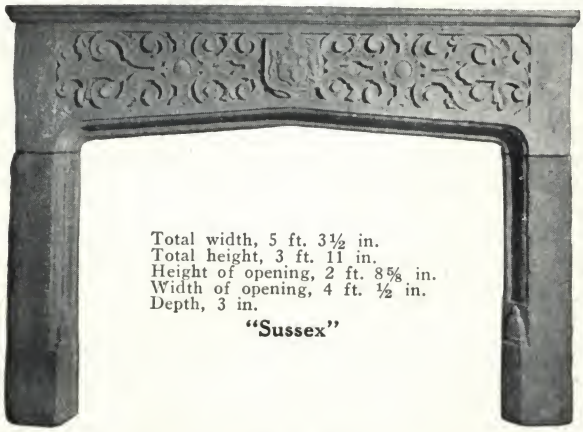
Total width, 5 ft. 6¼ in.
Total height, 3 ft. 9 in.
Width of opening, 4 ft. ¼ in.
Height of opening, 3 ft.
Depth, 6½ in.
"Wiltshire"

For your convenience each mantel pictured here has been reproduced on an enlarged plate, complete with detailed dimensions. We shall be pleased to send these plates to you free of charge, together with prices and catalogue.

We can also quote on special mantels or fireplaces built in accordance with your own details. Vibrex Flooring — see Manufacturers' Index for page— can be used in stone colorings and sizes for hearths.



Total width, 4 ft. 11⅜ in.
Total height, 3 ft. 9½ in.
Width of opening, 3 ft. 8⅜ in.
Height of opening, 2 ft. 9¼ in.
Depth, 3 in.
"Warwick"



Total width, 5 ft. 3½ in.
Total height, 3 ft. 11 in.
Height of opening, 2 ft. 8⅝ in.
Width of opening, 4 ft. ½ in.
Depth, 3 in.
"Sussex"

Total width, 5 ft. 1 in.
Total height, 4 ft. 2¼ in.
Width of opening, 3 ft. 9 in.
Height of opening, 2 ft. 11 in.
Depth, 4 in.
"Lancaster"

Total width, 4 ft. 5⅝ in.
Total height, 3 ft. 9½ in.
Width of opening, 3 ft. 6⅛ in.
Height of opening, 2 ft. 6¼ in.
Depth, 3 in.
"Devonshire"

Vibrex Mantels have all the beauty and dignity of old stone; but are light in weight, easy to ship and install, and reasonable in price. Their designs are selected from museum examples of early English craftsmanship and authentically represent the periods.

Vibrex Mantels will not crack, chip, dust or warp. Their ornamental details are sharp and clear both in the undercuttings and the surface decoration.

Vibrex Mantels can be supplied in a variety of colorings characteristic of stone. We refer you to the Vibrex color chart in our other section.

"NEVER GIVE" LOCK JOINT WOOD COLUMNS

MANUFACTURED BY SOMERSET DOOR AND COLUMN CO., SOMERSET, PA.

AMERICAN WOOD COLUMN CO.

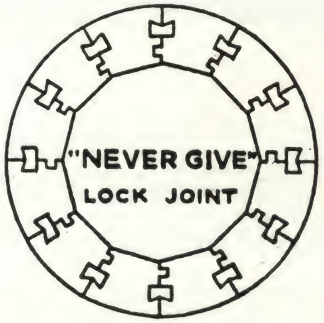
907 Grand Street
BROOKLYN, N. Y.

Products

"Never Give" Patented Lock Joint Wood Stave Columns for exterior and interior use.

Cast Iron Plinths for columns.

Also, Pilasters and Balusters to match "Never Give" Columns or of special design, and Special Millwork of all classes to order.



TRADE-MARK

Architectural Service

Somerset specializes in building wood columns to the architect's details and can supply any size or design wanted, or, if no specific design is indicated, will prepare one in accordance with the best architectural practice and for any period, and submit full sized detail for approval.

Selected stock designs conform to the standards of Vignola and include lock joint turned columns, plain or fluted, and square columns, plain, fluted, or paneled. Somerset is particularly well equipped to supply fluted columns.

Deliveries—Exceptional facilities and trained personnel are such that large or small contracts can be executed with reasonable promptness.

"Never Give" Patented Lock Joint Columns

Construction—"Never Give" Patented Lock Joint Column staves are held tightly together by a counter-beveled spline of hardwood machine-driven through the length of the column, using a sufficient quantity of waterproof glue to secure it completely. No metal bands are required to hold the staves together with such construction, and an unconditional guarantee is given that "Never Give" Columns will not fail by opening at the joints.

Proportions—"Never Give" Columns are architecturally correct, having proper entasis, stopped flutes and other characteristics of the columns of ancient classical orders.

Unless otherwise specified, the staves are worked to the correct entasis (convex curve) in the rough before being placed in the columns (one-third straight and upper two-thirds swell tapered). This method not only gives proper entasis when columns are turned and finished, but also insures maximum thickness of stock throughout the entire length.

Materials—"Never Give" Columns are regularly made of poplar, cypress and white pine, only best grade material being used, but columns will be made of any wood desired. All lumber is kiln dried and tested for moisture content before use in manufacture. The wood should be specified from which columns are to be made.

Samples—A sample of the "Never Give" Patented Lock Joint may be had on application.

Information Required for Estimates

In asking for estimates, indicate the number of columns and design wanted, the kind of wood, the largest and smallest diameters of round columns or widths of square columns, the over-all lengths, whether the shafts are to be plain, fluted, or paneled, and whether the columns are for exterior or interior use. State the nature of the surface on which the column is to rest, whether priming of the wood before shipment is required, and whether the cove of the columns is to be a part of the shaft or may be planted on. Also give the thickness of shaft, if to be greater than standard thickness given in table "Shaft Thickness for 'Never Give' Columns."

Specifications

In specifying, it should be clearly stated that all columns are to be "Never Give" Lock Joint construction, using hardwood spline and waterproof glue, as sold by the American Wood Column Co., 907 Grand Street, Brooklyn, N. Y., and manufactured by the Somerset Door and Column Co., Somerset, Pa. The information required for estimates as set down above should also be supplied.

Cast Iron Plinths for Columns

The use of cast iron ventilated plinths is recommended for exterior columns that rest on stone, cement, or brick floors. This will prevent decay of the wood plinth and provide circulation of air through the column shaft. They can be furnished from stock in sizes 8 to 36 in. square.

Style 50 Style 51 Turnout on 51

Method of Finishing Columns at Base

SHAFT THICKNESS FOR "NEVER GIVE" COLUMNS

Thickness of shaft, in inches for given diameters	Shaft diameter, inches				
	With cove on shaft similar to Style 50			With cove planted on (Style 51), or made a base number (Style 52)	
	Plain shaft	Doric, or Ionic fluted shaft	Doric fluted shaft	Plain shaft	Ionic fluted shaft
2	Up to 18	Up to 16	Up to 22	Up to 22	Up to 22
2½	19 to 22	17 to 19	21 to 28	23 to 30	23 to 28
3	23 to 30	20 to 27	29 to 39	31 to 40	29 to 38
4	31 and up	28 and up	40 and up	41 and up	39 and up

Cast Iron Plinth

Continued on next page

Cross Section
Showing "Never Give"
Lock Joint Construction

A LIST OF PROMINENT INSTALLATIONS

Alabama—
Troy, Bibb Graves Hall, State Normal
Warren, Knight & Davis, Birmingham, Ala., Architects

Connecticut—
New London, Connecticut College
E. R. Loud, New York, N. Y., Architect

Iowa—
Ames, Iowa State College Women's Dormitory
Proudfoot, Pawson, Souers & Thomas, Des Moines, Iowa, Architects
Woodward, Hospital Building State School for Epileptic
State Architect, Des Moines, Iowa

Kentucky—
Lexington, Memorial Hall, University of Kentucky
Warner, McCormick & Mitchell, Cleveland, Ohio, Architects
U. S. Veterans Hospital
U. S. Veterans Bureau's Architect

Maryland—
Sykesville, Springfield State Hospital
Henry Hopkins, Baltimore, Md., Architect

Massachusetts—
Holyoke, Holyoke Savings Bank
Hutchins & French, Boston, Mass., Architects

New Jersey—
Belmar, Belmar Pavilions
Clinton B. Cook, Asbury Park, N. J., Architect
Boonton, Knoll Golf Club
Walker & Gillette, New York, N. Y., Architects
Highlands, Highlands School
Lawrence V. Pohlman, Elizabeth, N. J., Architect
Hoboken, Waldheim Memorial Forum
Bloch & Hesse, New York, N. Y., Architects
Somerset, U. S. Veterans Hospital
U. S. Veterans Bureau's Architect
Spring Lake, Hotel Spring Lake
Warren Conover, New York, N. Y., Architect

New York—
Bronxville, Brooklands Apartments
Penrose V. Stout, New York, N. Y., Architect
Great Neck, L. I., Glen Oaks Golf & Country Club
Buchman & Kahn, New York, N. Y., Architects
Great River, L. I., Timber Point Golf Club
Charles M. Hart, New York, N Y., Architect
Hudson, Firman's Home, State Hospital
William H. Quinby, New York, N. Y., Architect
Manhasset, L. I., Manhasset Grade School
Tooker & Marsh, New York, N. Y., Architects
Patchogue, Elks Club
Louis E. Jallade, New York, N. Y., Architect
Peekskill, Field Home
Crow, Lewis & Wick, New York, N. Y., Architects
Syracuse, Boys and Girls Building, State Fair Ground
William E. Haugaard, State Architect
Walton, First Congregational Church
F. H. Bartoo, Binghamton, N. Y., Architect

North Carolina—
Raleigh, Dr. L. B. Capehart, Residence
James A. Salter, Architect

Oregon—
Portland, U. S. Veterans Bureau Hospital
Government Architect, Washington, D. C.

Pennsylvania—
Carlisle, County Home
F. G. Fahnestock, Jr., Harrisburg, Pa., Architect
Coatesville, U. S. Veterans Hospital
U. S. Veterans Bureau's Architect
Stafford, G. W. Whitehead Residence
Boyd, Abel & Gubert, Philadelphia, Pa., Architects
Waynesburg, Tower Columns, Green County Courthouse
William H. King, Jr., Architect

South Carolina—
Myrtle Beach, Ocean Forest Hotel
Johnson & Brannan, Lynchburg, Va., Architect

Virginia—
Alexandria, Dormitory, Virginia Episcopal Theological Seminary
Frederick H. Brooke, Washington, D. C., Architect
Harrisonburg, State Teachers College
Charles M. Robinson, Richmond, Va., Architect
Lynchburg, Smith Memorial Students Building, Randolph Macon Women's College
Johnston & Brannan, Architect

Washington, D. C.—
Building for Food Administration & Council of National Defense
Waddy B. Wood, Architect

West Virginia—
Fairmont, Physical Education and Science Building for Board of Education
L. D. Schmidt, Architect

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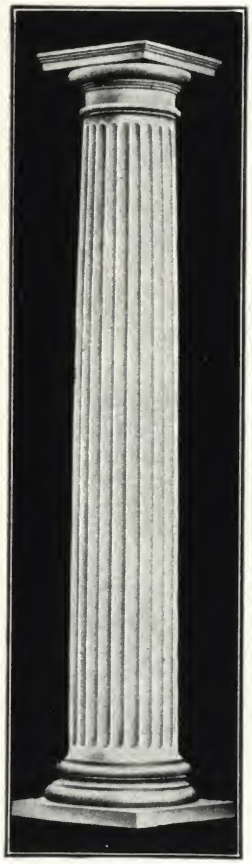
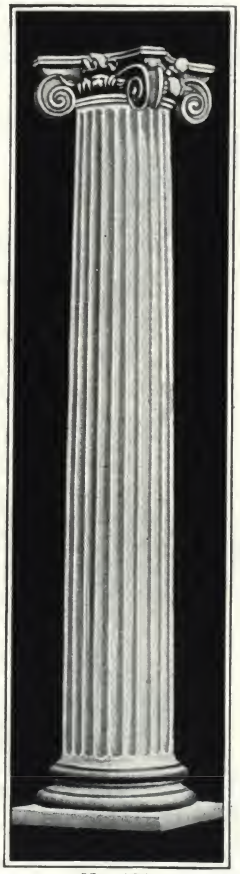
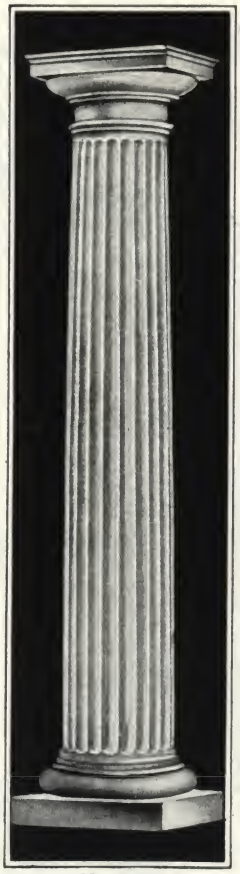


No. 105
Fluted Column Doric Cap Attic Base

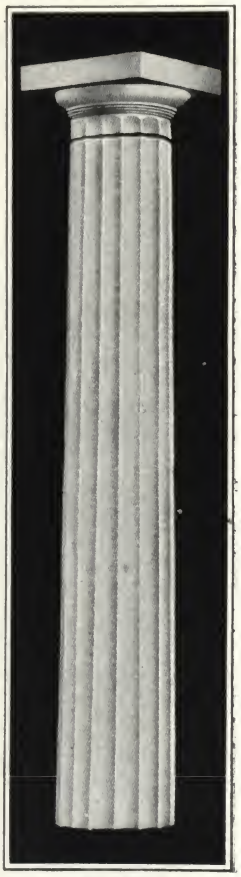


No. 135
Plain Column Angular Ionic Cap Attic Base

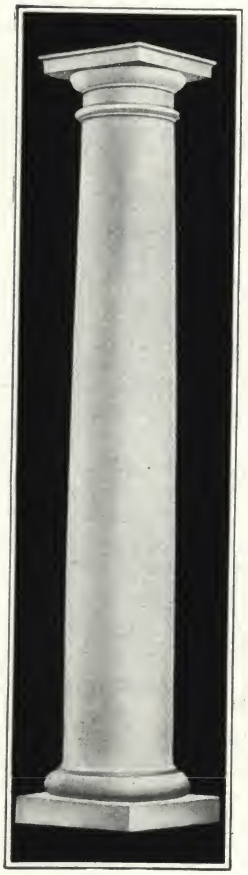
No. 115
Plain Column Doric Cap Attic Base



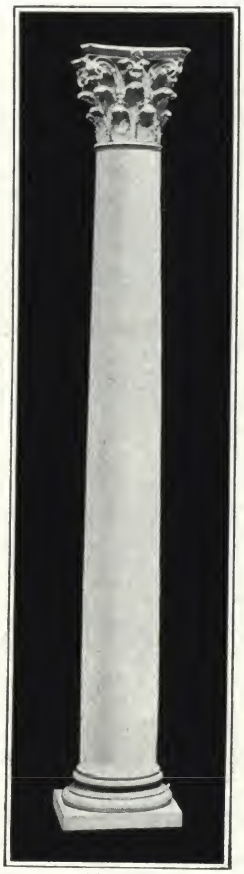
No. 120
Roman Doric Column Fluted



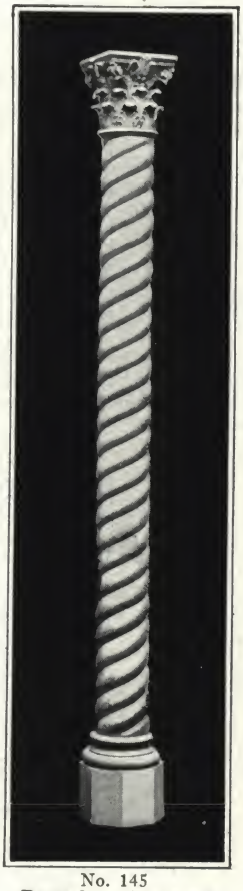
No. 130
Greek Doric Column Fluted



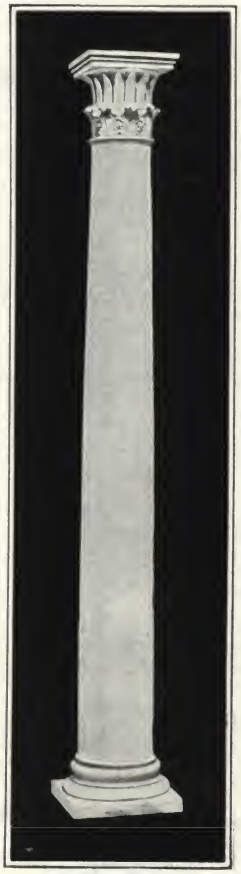
No. 110
Tuscan Column



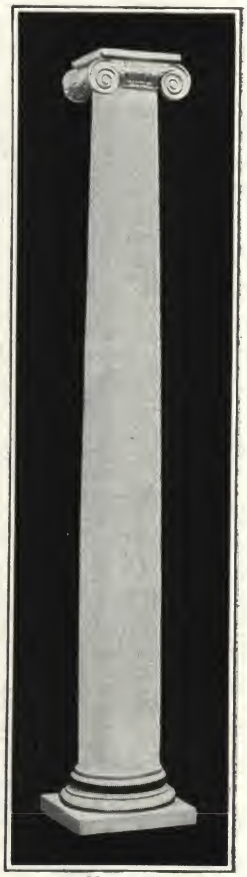
No. 140
Plain Column Corinthian Cap Attic Base



No. 145
Roped or Twisted Column



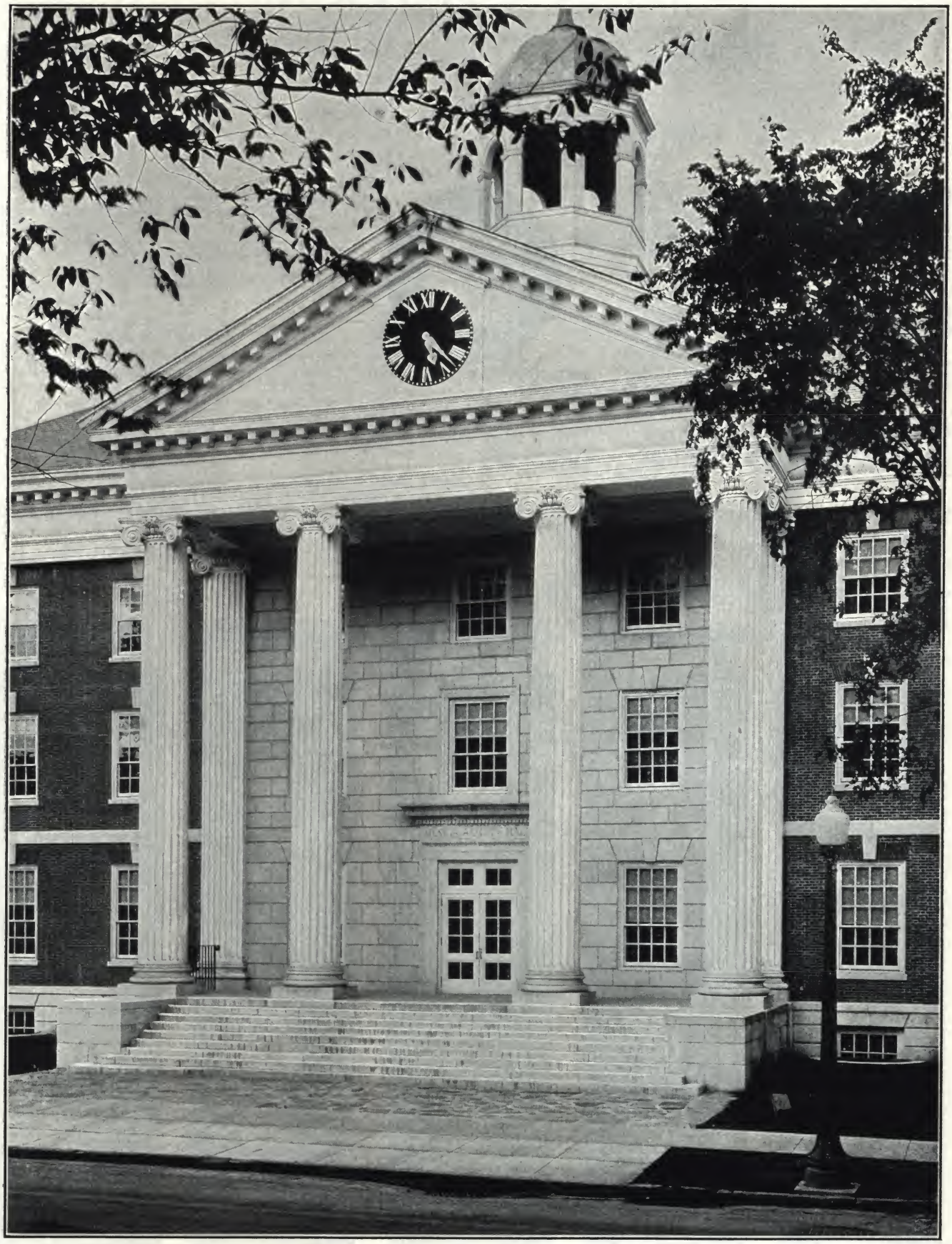
No. 150
Plain Column Tower of Winds Cap Attic Base



No. 160
Plain Column Roman Ionic Cap Attic Base

We make columns up to 54-in. diameter and proportionate length.

Continued on next page



Auburn City Hall, Auburn, N. Y.

COOLIDGE, SHEPLEY, BULFINCH & ABBOTT, Architects

Probably the largest fluted columns ever manufactured. The "Never-Give" columns used in the construction illustrated above measure 42 in. in diameter and 35 ft. in height. The flutes are 5 in. wide and 2½ in. deep. 6 in. clear white pine was used throughout in building these columns

HARTMANN-SANDERS CO.

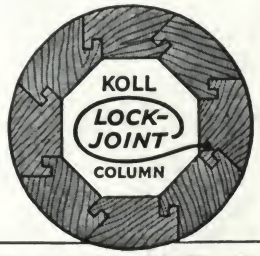
Exclusive Manufacturers of Koll's Patent Lock-joint Wood Staved and Turned Columns

MAIN OFFICE AND FACTORY
2155-2187 Elston Avenue, CHICAGO, ILL.
EASTERN OFFICE, 6 East 39th Street, NEW YORK, N. Y.

Products

KOLL'S PATENT LOCK-JOINT WOOD STAVE COLUMNS for exterior and interior; columns made in all woods. ROPED COLUMNS with pilasters and square columns. EXTERIOR AND INTERIOR COLONIAL WOODWORK. COMPOSITION ORNAMENTAL CAPITALS.

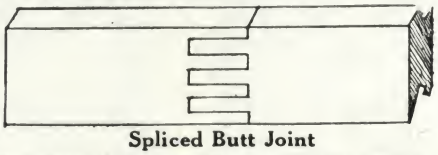
Also manufacturers of Pergolas, Lattice Work and all architectural work for the garden.



THEY CANNOT COME APART

Spliced Butt Joint

In addition to the perfect lock joint of the staves, a joint has been devised to splice



Spliced Butt Joint

the butts of the staves should the length of column call for material longer than can be secured in one piece. In this process joints are put together with screw pressure and cold water waterproof glue, another feature which adds to make these columns mechanically perfect.

Architect's Details

Columns conform accurately to any detail, are of the best materials and at as reasonable rates as are consistent with good work.

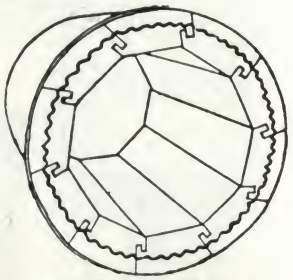
Our Patent Correct Entasis

Correct entasis secured in forming stave itself—The staves in all columns manufactured under Koll's patent are, in order to secure the proper entasis, straight one-third and swell-tapered upper two-thirds, so that when shaft is formed the correct entasis is obtained, securing sufficient stock at top and bottom of shaft to permit turning to detail without cutting too close to joint.

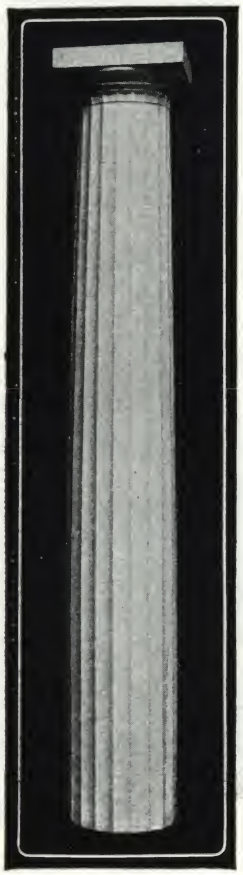
Columns furnished with any style of fluting or reeding desired.

Steel Reinforcement

A corrugated steel band or ferrule reinforcement is applied to the bottom end of all Doric columns. The steel band, while adding considerable strength to the shaft, permits some flexibility so that no injury can be done by moisture that may be absorbed. This reinforcement is also added to both ends of all large column shafts.



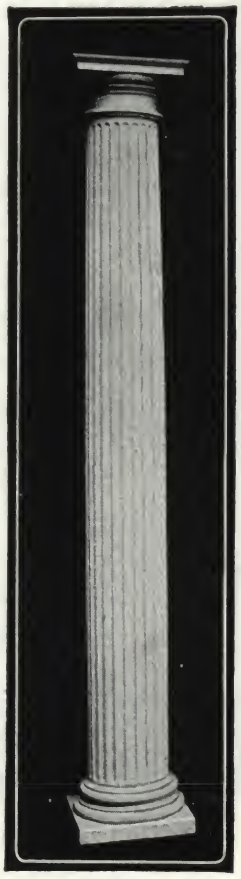
Steel Reinforcement



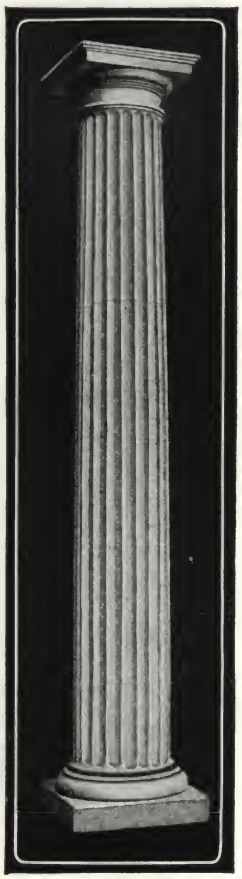
No. 195
Greek Doric Column Fluted

No. 200
Tuscan Column

No. 220
Plain Column Doric Cap Attic Base

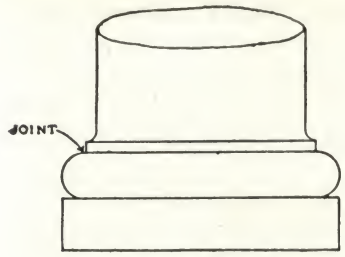


No. 225
Fluted Column Doric Cap Attic Base

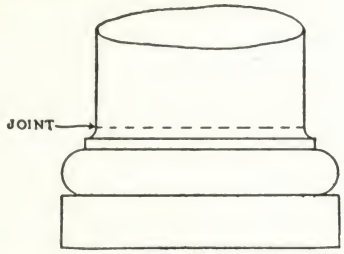


No. 215
Roman Doric Column Fluted

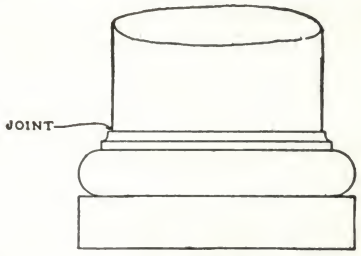
Continued on next page



Style A Cove



Style B Cove



Style C Cove

KOLL'S PATENT WOOD COLUMNS

	2-in. stock	2½-in. stock	3-in. stock	4-in. stock
With Cove on Shaft Like Style A				
Plain shaft .....in.	up to 18	19 to 22	23 to 30	31 and up
Doric and Ionic fluted .in.	up to 16	17 to 19	20 to 27	28 and up
Doric fluted, No. 195...in.	up to 22	21 to 28	29 to 39	40 and up
Cove Planted on Like B, or Made a Base Member Like C				
Plain shaft .....in.	up to 22	23 to 30	31 to 40	41 and up
Ionic fluted .....in.	up to 22	23 to 28	29 to 38	39 and up

Note: Before ordering columns, it would be well to examine detail closely and note whether the cove is to be part of the shaft, or whether this can be planted on. This company can make the column either way, but of course must be guided by what specifications and details call for.

Waterproof Glue

All columns are glued with cold water, waterproof, casein glue.

The staves of all columns and all exterior work produced by us are put together with waterproof glue. The inside of all columns and pilasters above 14 in. is waterproofed with a special waterproof compound.

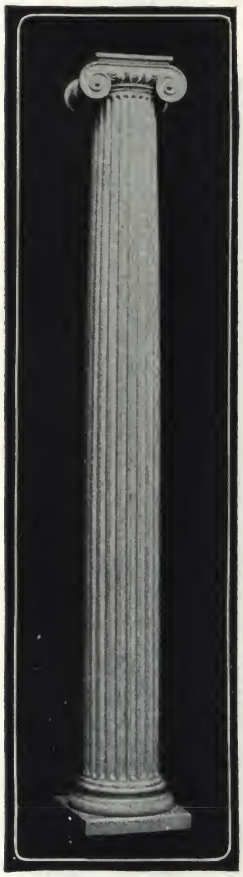
Thickness of Stock

As the price of the column is regulated by the amount and kind of lumber that enters into its construction, it is very important to state in the specifications the thickness of stock of which columns are to be made.

Our experience as specialists in column construction has demonstrated that the thickness of stock for the various sizes, as called for in the table on the following page, provides enough material to carry out properly the architectural detail and to afford the required strength. Should an unusual load be placed on the columns, they can be reinforced by inserting a timber or iron column. When necessary to incase a structural timber or iron column already in place, columns can be made in halves and doweled or rail bolted as desired.

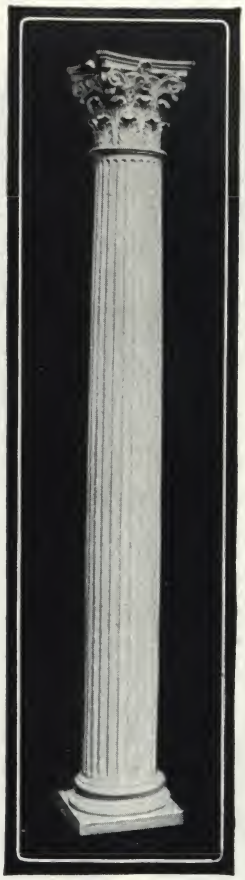
Flashings

The entire top of all wood and ornamental caps should be flashed with either galvanized iron, copper or sheet lead to protect the same from the weather. These flashings will be furnished when the specifications call for them.

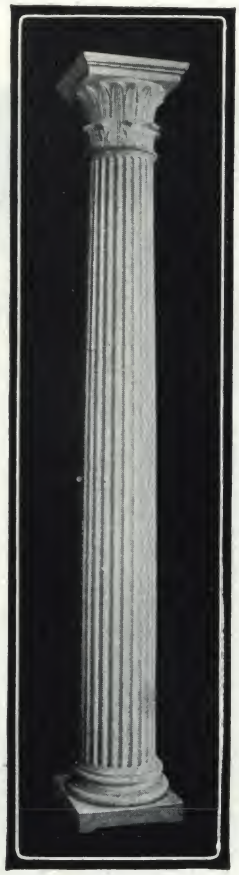


No. 235
Fluted Column
Roman Ionic Cap
Attic Base

No. 240
Plain Column
Angular Ionic Cap
Attic Base



No. 255
Fluted Column
Corinthian Cap
Attic Base



No. 335
Fluted Column
Tower of Winds Cap
Attic Base

No. 155
Roped or Twisted Column

We make columns up to 54-in. diameter and proportionate length.

Continued on next page

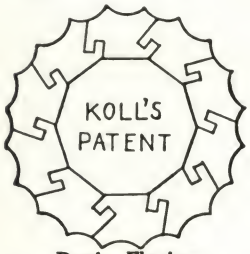
Roped Columns

We have facilities for making roped columns and Colonial roped balusters, both for exterior and interior work. The roped column shown is our stock design, but we can furnish the same according to the architect's detail if desired.

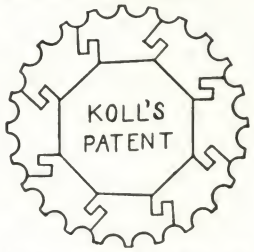
Cast Iron Metal Plinths

When columns rest on cement or brick floor, the use of cast iron metal ventilated plinths is recommended. We furnish these in all sizes.

Cast Iron Metal Plinth



Doric Fluting Columns, 195, 195⅔, 215 and 215⅔



Ionic Fluting Used on All Other Fluted Columns Shown in Catalogue

Specifications

As a guide to the architect, we offer the following paragraph for properly specifying our columns in his specifications:

Columns to be the Koll's Patent Lock-joint Staved Wood Column, manufactured by the HARTMANN-SANDERS Co., Chicago and New York, to be made according to their design No. .... (here specify the number in catalogue and if design is to be made according to the architect's drawing say: To be made according to details furnished). Staves to be made out of .... in. stock (here specify the thickness wanted). See schedule for thickness of staves necessary for the various sizes of columns. Shafts, bases and gaps to be glued with waterproof cold water glue; for staves longer than ordinary lumber length, the staves are to be lengthened with a splice joint. The top of all column caps is to be flashed with galvanized iron (sheet lead or copper). The flashing to extend half-inch over the edge of caps. The square plinths of column to be cast iron ventilated plinths (or proper ventilation to be provided for the columns if stone, concrete, or wood plinths are to be used).

Columns to be primed at the factory with a coat of white lead and oil on the outside, and all columns above 14 in. to receive a coat of waterproof asphaltum paint on the inside of shaft.

Should the columns arrive at the building before they are ready to install, they must be stored in the building, or properly protected with waterproof coverings in a thorough manner, including both ends, and top of the column shafts. Do not lay columns directly on the ground.

Colonial Entrance—Tucker-Rice Porch in Essex Institute Gardens

Colonial Entrance—Old Bristol House, New Haven, Conn.

Continued on next page

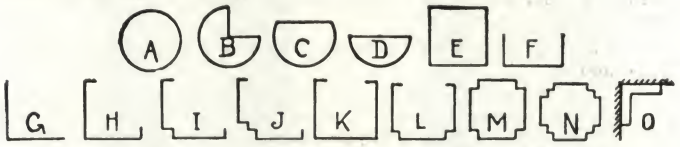
Instructions for Ordering

When ordering columns from our catalogue refer always to our catalogue numbers—give quantity wanted and size at largest and smallest diameter of shaft, and length over all. State if for *interior* or *exterior* use.

Note: All our details are carefully planned from the dimensions given by the approved authorities but we make no extra charge for following your detail, if similar to any of the designs shown in our catalogue.

We will promptly furnish estimates on any special column or pilaster work according to architect's drawing and full size details.

When ordering pilasters to match columns, give dimensions at top as well as bottom of shaft, or state whether width is to be equal to the largest or smallest diameter of the column, or if they are to have the mean diameter of column shaft or if they are to have the same taper as the column. This, you will note, makes four ways of making square columns and pilasters. Give also depth of return. Refer to line drawing of sections of columns and pilasters when ordering.



Diagrams Showing Section of Columns and Pilasters

We prime all exterior and interior columns (unless made of hardwoods) one coat of lead and oil unless otherwise notified. We make no extra charge for priming.

When composition caps are to be used, we furnish without extra cost suitable wood dowels with columns to carry the weight of the overhead work.

Details

Unless specified to the contrary when ordering, all columns are made according to the proportions of the styles of architecture shown by the various cuts in the catalogue, but we can, if desired, make them according to the architect's detail.

Colonial Entrances and Millwork

Our extended efforts in the field of Colonial Architecture has enabled us to develop our organization to such a degree that we are in position to furnish in addition to our columns and pilasters, also Colonial entrances and millwork generally, either to the architect's detail or our own design.

Catalogues

We publish the following catalogues, which we would be glad to send on request:

Catalogue No. 48-8, Wood Columns and Pilasters.
Catalogue No. 53-8, Colonial Entrances.
Catalogue No. 39-8, Pergolas, Architectural Woodwork for the Garden and Garden Accessories.

John M. Olin Residence, East Alton, Ill.
CHESTER H. WALCOTT, Architect

Church at Pinehurst, N. C.
HOBART UPJOHN, Architect, New York, N. Y.
Columns are 27 in. diameter, 22 ft. long

A. F. SCHWERD MANUFACTURING CO.

Manufacturers of Wood Stave Columns

PITTSBURGH, PA.

EASTERN SALES OFFICE: F. W. HOLD, MT. VERNON, N. Y.

Schwerd's Quality Columns

The A. F. SCHWERD MANUFACTURING Co. has for many years been contributing to the architecture of this country wooden columns that are not only correct artistically, but scientifically as well. Many of these columns, installed in buildings a quarter of a century ago, are in as good condition as when they left our factory.

Our painstaking attention to detail in the manufacture of these columns has made the name "Schwerd's Quality Columns" known throughout the building industry.

Service to Architects

For the convenience of architects, contractors and builders in ordering columns, the information set forth in the following pages has been compiled by an architect of prominence. The designs and proportions have been worked out in accordance with the best practice and are suitable for use with the very highest class of work.

The dimensions given in the tables on the following pages are authoritative and render further research unnecessary. Architects are urged to place their column problems with us because of our facilities for production and service.

THE MANUFACTURING OF "SCHWERD'S QUALITY COLUMNS"

Seasoning of the White Pine Lumber—*White Pine Lumber is used exclusively in "Schwerd's Quality Columns."* To serve properly its purpose as a support and to withstand successfully the action of the elements, a column must be made of thoroughly seasoned stock. We maintain at all times a year's supply of lumber at the source of supply, where it is seasoned by nature's slow but sure process—the open air.

Making the Staves—The stave machines were built specially to the order of the Schwerd Company. These machines shape and taper and tongue and groove the staves in one operation. By this method, when the staves are glued together, the shaft has the proper entasis, and the turning removes only the roughness of the lumber without weakening the shaft, and leaves shaft equal in thickness of material at any point in its length—an important detail in the life of a support.

Assembling and Gluing—After forming, the staves are spread with a special waterproof glue (by means of rotary brushes so that an even and properly distributed coat is maintained) and assembled. Heavy screw clamps, having a pulling power of 5000 lb., are then applied and drawn tight.

Caps and Bases—These members are made of mitered pieces and held together with corrugated steel fasteners and waterproof glue. This process seals the joints against moisture and prevents opening and consequent decay.

Column Troubles Eliminated—See that columns are in good condition before taken from the railroad station—or have notation made by your agent on your freight receipt of the damage.

See that columns are kept stored in a dry place.

Do not allow columns to lie in damp cellars or newly plastered houses. Do not set up column until the porch roof is finished. Set base and bottom end of shaft in heavy layer of white lead.

Paint Columns as Soon as Placed—We prime to protect the surface.

We are convinced that by observance of the above rules you will eliminate column troubles, as our long experience and close investigation show that a big percentage of trouble arises from causes beyond the control of the manufacturer.

REASONS FOR THE DURABILITY OF "SCHWERD'S QUALITY COLUMNS"

If a column were made of steel, it would be possible to so fashion the joints of the staves that they would rigidly interlock without any other attachment. In the past, attempts have been made to apply this same principle to wooden columns but it has not been successful, because the strength of wood is not sufficient to withstand the necessary tension on the interlocking members.

In every test, whether for demonstration purposes or in actual service, the strength of a wood column will be found to be that of the glue in the joints.

Realizing this, the gluing of the Schwerd Column is made a matter of utmost importance. The glue used is the strongest, most permanent glue obtainable. Schwerd millwork is done with such accuracy that the gluing surfaces meet absolutely flush at every joint. Tremendous pressure is applied to the freshly-glued column so that every particle of glue is either forced into the wood or from the joint.

The result of Schwerd gluing is a joint that is actually stronger than the solid wood, a column that will endure until the building of which it is a part is ready to be demolished.

Wooden Columns for Doorways

George Baker Foundation Building, Harvard University
McKIM, MEAD & WHITE, Architects
"Schwerd's Quality Columns," 40 ft. high

Typical Colonial Interior

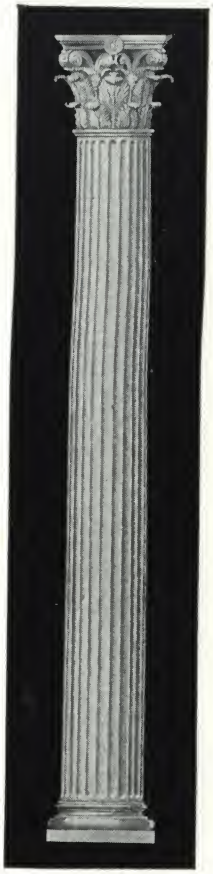
Continued on next page

COMPOSITION CAPS

Plain Column No. 140
Scamozzi Cap
Attic Base

Fluted Column No. 145
Scamozzi Cap
Attic Base

Plain Column No. 150
Corinthian Cap
Attic Base



Fluted Column No. 155
Corinthian Cap
Attic Base

Roman Ionic
No. 141

Greek Ionic
No. 142

Composite
No. 151

Temple of the Winds
No. 152

Roman Doric
No. 143

Modern Ionic
No. 144

Modern Ionic with Necking
No. 153

Greek Erechtheum
No. 154

Choice of any of these Composition Caps on either Column No. 140 or No. 145

Choice of any of these Composition Caps on either Column No. 150 or No. 155

Section of Column and Pilasters

Continued on next page

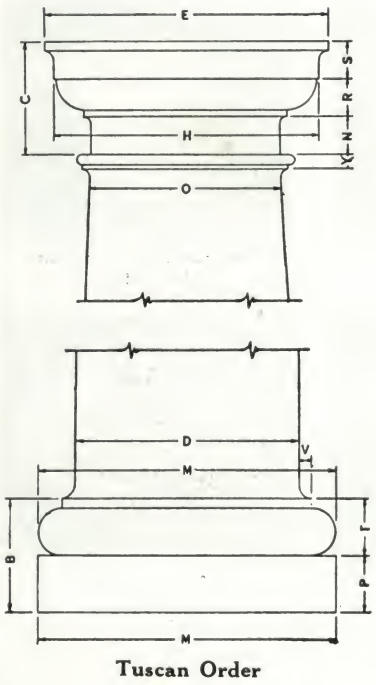
TUSCAN ORDER

Plain
Tuscan Column
No. 100

Plain
Tuscan Pilaster
No. 100-F

Fluted
Tuscan Column
No. 105

Fluted
Tuscan Pilaster
No. 105-F

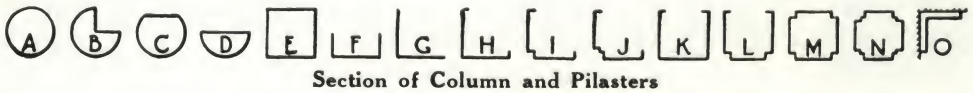


Tuscan Order

TUSCAN ORDER COLUMNS—No. 100, PLAIN; PILASTERS No. 100-F, PLAIN; COLUMNS No. 105, FLUTED; PILASTERS No. 105-F, FLUTED

Dimensions in inches

Diameter at		Total height of			Cap						Base			
					Height				Breadth		Height		Breadth	
Base	Neck	Cap and base	Cap	Base	Square	Round			Square		Square	Round	Round and Square	Cove
D	O	C+B	C	B	S	R	N	Y	E	H	P	T	M	V
6	5	6	3	3	1	1	1	3/8	7 1/2	7	1 1/2	1 1/2	8	3/8
7	5 13/16	7	3 1/2	3 1/2	1 3/16	1 3/16	1 1/8	7/16	8 3/4	8 3/16	1 3/4	1 3/4	9 3/8	7/16
8	6 11/16	8	4	4	1 5/16	1 5/16	1 3/8	1/2	10	9 5/16	2	2	10 5/8	1/2
9	7 1/2	9	4 1/2	4 1/2	1 1/2	1 1/2	1 1/2	9/16	11 1/4	10 1/2	2 1/4	2 1/4	12	9/16
10	8 5/16	10	5	5	1 11/16	1 11/16	1 5/8	5/8	12 1/2	11 11/16	2 1/2	2 1/2	13 3/8	5/8
11	9 3/16	11	5 1/2	5 1/2	1 13/16	1 13/16	1 7/8	11/16	13 3/4	12 13/16	2 3/4	2 3/4	14 5/8	11/16
12	10	12	6	6	2	2	2	3/4	15	14	3	3	16	3/4
13	10 13/16	13	6 1/2	6 1/2	2 3/16	2 3/16	2 1/8	13/16	16 1/4	15	3 1/4	3 1/4	17 3/8	13/16
14	11 5/8	14	7	7	2 5/16	2 5/16	2 3/8	7/8	17 1/2	16 5/16	3 1/2	3 1/2	18 5/8	7/8
15	12 1/2	15	7 1/2	7 1/2	2 1/2	2 1/2	2 1/2	15/16	18 3/4	17 1/2	3 3/4	3 3/4	20	15/16
16	13 5/16	16	8	8	2 11/16	2 11/16	2 5/8	1	20	18 11/16	4	4	21 3/16	1
18	15	18	9	9	3	3	3	1 1/8	22 1/2	21	4 1/2	4 1/2	24	1 1/8
20	16 5/8	20	10	10	3 5/16	3 5/16	3 3/8	1 1/4	25	23 5/16	5	5	26 11/16	1 1/4
22	18 3/8	22	11	11	3 5/8	3 5/8	3 3/4	1 3/8	27 1/2	25 11/16	5 1/2	5 1/2	29 1/4	1 3/8
24	20	24	12	12	4	4	4	1 1/2	30	28	6	6	32	1 1/2
26	21 5/8	26	13	13	4 5/16	4 5/16	4 3/8	1 5/8	32 1/2	30 5/16	6 1/2	6 1/2	34 3/4	1 5/8
28	23 1/4	28	14	14	4 5/8	4 5/8	4 3/4	1 3/4	35	32 11/16	7	7	37 5/16	1 3/4
30	25	30	15	15	5	5	5	1 7/8	37 1/2	35	7 1/2	7 1/2	40	1 7/8
32	26 5/8	32	16	16	5 5/16	5 5/16	5 3/8	2	40	37 5/16	8	8	42 3/4	2
34	28 5/16	34	17	17	5 5/8	5 5/8	5 3/4	2 1/8	42 1/2	39 11/16	8 1/2	8 1/2	45 5/16	2 1/8
36	30	36	18	18	6	6	6	2 1/4	45	42	9	9	48	2 1/4



Section of Column and Pilasters

Continued on next page

ROMAN DORIC ORDER

Plain
Roman Doric
Column
No. 110

Plain
Roman Doric
Pilaster
No. 110-F

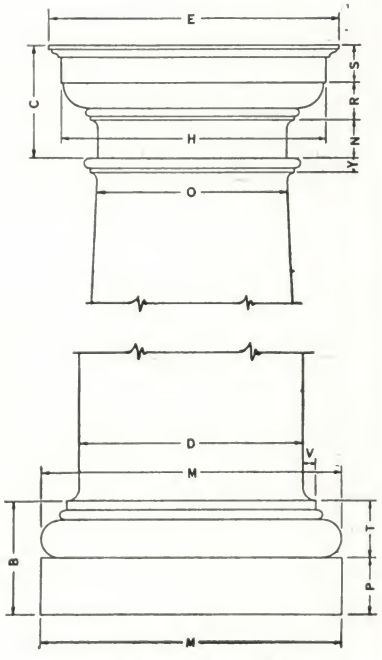
Fluted
Roman Doric
Column
No. 115

Fluted
Roman Doric
Pilaster
No. 115-F

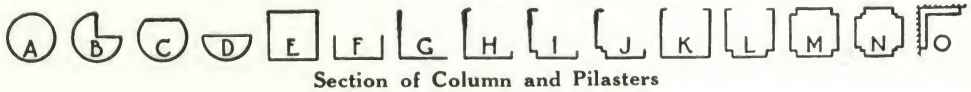
ROMAN DORIC ORDER COLUMNS No. 110, PLAIN; PILASTERS No. 110-F, PLAIN; COLUMNS No. 115, FLUTED; PILASTERS No. 115-F, FLUTED

Dimensions in inches

Diameter at		Total height of			Cap						Base			
					Height				Breadth		Height		Breadth	
Base	Neck	Cap and base	Cap	Base	Square	Round			Square		Square	Round	Round and Square	Cove
D	O	C+B	C	B	S	R	N	Y	E	H	P	T	M	V
6	5	6	3	3	1	1	1	3/8	7 11/16	7	1 1/2	1 1/2	8	3/8
7	5 13/16	7	3 1/2	3 1/2	1 1/8	1 1/8	1 1/4	7/16	8 7/8	8 1/16	1 3/4	1 3/4	9 3/8	7/16
8	6 11/16	8	4	4	1 5/16	1 5/16	1 3/8	1/2	10 3/16	9 5/16	2	2	10 5/8	1/2
9	7 1/2	9	4 1/2	4 1/2	1 1/2	1 1/2	1 1/2	9/16	11 1/2	10 1/2	2 1/4	2 1/4	12	9/16
10	8 5/16	10	5	5	1 5/8	1 5/8	1 3/4	5/8	12 3/4	11 9/16	2 1/2	2 1/2	13 3/8	5/8
11	9 3/16	11	5 1/2	5 1/2	1 13/16	1 13/16	1 7/8	11/16	14 1/16	12 13/16	2 3/4	2 3/4	14 5/8	11/16
12	10	12	6	6	2	2	2	3/4	15 5/16	14	3	3	16	3/4
13	10 13/16	13	6 1/2	6 1/2	2 1/8	2 1/8	2 1/4	13/16	16 9/16	15 1/16	3 1/4	3 1/4	17 3/8	13/16
14	11 5/8	14	7	7	2 5/16	2 5/16	2 3/8	7/8	17 3/4	16 1/4	3 1/2	3 1/2	18 5/8	7/8
15	12 1/2	15	7 1/2	7 1/2	2 1/2	2 1/2	2 1/2	15/16	19 1/8	17 1/2	3 3/4	3 3/4	20	15/16
16	13 3/16	16	8	8	2 5/8	2 5/8	2 3/4	1	20 3/8	18 9/16	4	4	21 1/4	1
18	15	18	9	9	3	3	3	1 1/8	23	21	4 1/2	4 1/2	24	1 1/8
20	16 5/8	20	10	10	3 5/16	3 5/16	3 3/8	1 1/4	25 1/2	23 1/4	5	5	26 3/4	1 1/4
22	18 3/8	22	11	11	3 5/8	3 5/8	3 3/4	1 3/8	28 1/8	25 5/8	5 1/2	5 1/2	29 1/4	1 3/8
24	20	24	12	12	4	4	4	1 1/2	30 5/8	28	6	6	32	1 1/2
26	21 5/8	26	13	13	4 5/16	4 5/16	4 3/8	1 5/8	33 1/8	30 1/4	6 1/2	6 1/2	34 3/4	1 5/8
28	23 1/4	28	14	14	4 5/8	4 5/8	4 3/4	1 3/4	35 1/2	32 1/2	7	7	37 1/4	1 3/4
30	25	30	15	15	5	5	5	1 7/8	38 1/4	35	7 1/2	7 1/2	40	1 7/8
32	26 5/8	32	16	16	5 5/16	5 5/16	5 3/8	2	40 3/4	37 1/4	8	8	42 1/2	2
34	28 5/16	34	17	17	5 5/8	5 5/8	5 3/4	2 1/8	43 7/16	39 9/16	8 1/2	8 1/2	45 1/4	2 1/8
36	30	36	18	18	6	6	6	2 1/4	46	42	9	9	48	2 1/4



Roman Doric Order



Section of Column and Pilasters

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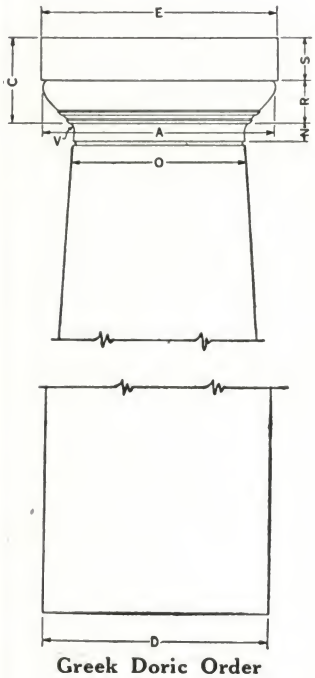
GREEK DORIC ORDER

Plain
Greek Doric
Column
No. 120

Plain
Greek Doric
Pilaster
No. 120-F

Fluted
Greek Doric
Column
No. 125

Fluted 2/3
Greek Doric
Column
No. 125 2/3



Greek Doric Order

GREEK DORIC ORDER COLUMNS—NO. 120, PLAIN; PILASTERS NO. 120-F; PLAIN; COLUMNS NO. 125, FLUTED; PILASTERS NO. 125-F, FLUTED

Dimensions in inches

Diameter at		Cap						
		Height				Breadth		
Base D	Neck O	Total C	Square S	Round R	Round N	Square E	Round A	Cove V
6	4 1/2	2 1/4	1 1/8	1 1/8	1/2	6 3/8	6 1/4	3/16
7	5 1/4	2 5/8	1 5/16	1 5/16	5/8	7 3/8	7 1/4	1/4
8	6	3	1 1/2	1 1/2	3/4	8 3/8	8 1/4	5/16
9	6 3/4	3 3/8	1 11/16	1 11/16	13/16	9 3/8	9 1/4	3/8
10	7 1/2	3 3/4	1 7/8	1 7/8	7/8	10 1/2	10 3/8	3/8
11	8 1/4	4 1/8	2 1/16	2 1/16	15/16	11 1/2	11 3/8	7/16
12	9	4 1/2	2 1/4	2 1/4	1	12 1/2	12 3/8	7/16
13	9 3/4	4 7/8	2 7/16	2 7/16	1 1/8	13 1/2	13 3/8	1/2
14	10 1/2	5 1/4	2 5/8	2 5/8	1 1/4	14 5/8	14 3/8	1/2
15	11 1/4	5 5/8	2 13/16	2 13/16	1 3/8	15 5/8	15 3/8	1/2
16	12	6	3	3	1 1/2	17	16 1/2	9/16
18	13 1/2	6 3/4	3 3/8	3 3/8	1 5/8	18 7/8	18 5/8	5/8
20	15	7 1/2	3 3/4	3 3/4	1 3/4	20 7/8	20 5/8	11/16
22	16 1/2	8 1/4	4 1/8	4 1/8	1 7/8	23	22 3/4	3/4
24	18	9	4 1/2	4 1/2	2	25	24 3/4	13/16
26	19 1/2	9 3/4	4 7/8	4 7/8	2 1/4	27	26 3/4	7/8
28	21	10 1/2	5 1/4	5 1/4	2 1/2	29 1/4	28 7/8	15/16
30	22 1/2	11 1/4	5 5/8	5 5/8	2 3/4	31 1/4	30 3/4	1
32	24	12	6	6	3	34	33	1 1/8
34	25 1/2	12 3/4	6 3/8	6 3/8	3 1/8	35 5/8	34 1/8	1 1/4
36	27	13 1/2	6 3/4	6 3/4	3 1/4	37 3/4	37 1/8	1 3/8

Section of Column and Pilasters

Continued on next page

DORIC CAP AND ATTIC BASE

Plain Doric Cap Attic Base Column No. 130

Plain Doric Cap Attic Base Pilaster No. 130-F

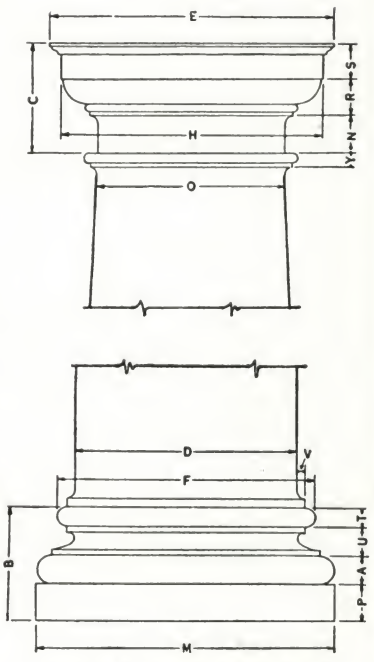
Fluted Doric Cap Attic Base Column No. 135

Fluted Doric Cap Attic Base Pilaster No. 135-F

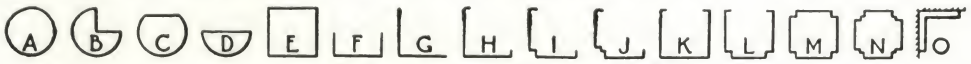
DORIC CAP ATTIC BASE COLUMNS—NO. 130, PLAIN; PILASTERS NO. 130-F; PLAIN; COLUMNS NO. 135; FLUTED; PILASTERS NO. 135-F, FLUTED

Dimensions in inches

Diameter at		Total height of			Cap						Base						
					Height				Breadth		Height				Breadth		
Base	Neck	Cap+base	Cap	Base	Square	Round			Square		Square base	Bottom round	Middle round	Top round	Top round	Bottom round and square	Cove
D	O	C+B	C	B	S	R	N	Y	E	H	P	A	U	T	F	M	V
6	5	6	3	3	1	1	1	3/8	7 11/16	7	15/16	3/4	13/16	1/2	7	8	3/16
7	5 13/16	7	3 1/2	3 1/2	1 1/8	1 1/8	1 1/4	7/16	8 7/8	8 1/16	1 1/16	7/8	15/16	9/16	8 1/4	9 3/8	1/4
8	6 11/16	8	4	4	1 5/16	1 5/16	1 3/8	1/2	10 5/16	9 5/16	1 1/4	1	1 1/8	5/8	9 3/8	10 5/8	1/4
9	7 1/2	9	4 1/2	4 1/2	1 1/2	1 1/2	1 1/2	9/16	11 1/2	10 1/2	1 3/8	1 1/8	1 1/4	3/4	10 9/16	12	1/4
10	8 5/16	10	5	5	1 5/8	1 5/8	1 3/4	5/8	12 3/4	11 9/16	1 5/8	1 1/4	1 3/8	3/4	11 3/4	13 3/8	3/8
11	9 3/16	11	5 1/2	5 1/2	1 13/16	1 13/16	1 7/8	11/16	14 1/16	12 13/16	1 3/4	1 3/8	1 3/8	1	13 1/2	14 5/8	3/8
12	10	12	6	6	2	2	2	3/4	15 5/16	14	1 7/8	1 1/2	1 5/8	1	14	16	3/8
13	10 13/16	13	6 1/2	6 1/2	2 1/8	2 1/8	2 1/4	13/16	16 9/16	15 1/16	2	1 5/8	1 13/16	1 1/16	15 1/4	17 3/8	1/2
14	11 5/8	14	7	7	2 5/16	2 5/16	2 3/8	7/8	17 3/4	16 1/4	2 1/8	1 3/4	2	1 1/8	16 1/2	18 5/8	1/2
15	12 1/2	15	7 1/2	7 1/2	2 1/2	2 1/2	2 1/2	13/16	19 1/8	17 1/2	2 1/4	1 7/8	2 1/8	1 1/4	17 5/8	20	5/8
16	13 5/16	16	8	8	2 5/8	2 5/8	2 3/4	1	20 3/8	18 9/16	2 1/2	2	2 1/4	1 1/4	18 3/4	21 1/4	5/8
18	15	18	9	9	3	3	3	1 1/8	23	21	2 3/4	2 1/4	2 1/2	1 1/2	21 1/8	24	3/4
20	16 5/8	20	10	10	3 5/16	3 5/16	3 3/8	1 1/4	25 1/2	23 1/4	3 1/4	2 1/2	2 3/4	1 1/2	23 1/2	26 3/4	3/4
22	18 3/8	22	11	11	3 5/8	3 5/8	3 3/4	1 3/8	28 1/8	25 5/8	3 1/2	2 3/4	2 7/8	1 7/8	27	29 1/4	7/8
24	20	24	12	12	4	4	4	1 1/2	30 5/8	28	3 3/4	3	3 1/4	2	28	32	7/8
26	21 5/8	26	13	13	4 5/16	4 5/16	4 3/8	1 5/8	33 1/8	30 1/4	4	3 1/4	3 5/8	2 1/8	30 1/2	34 3/4	1
28	23 1/4	28	14	14	4 5/8	4 5/8	4 3/4	1 3/4	35 1/2	32 1/2	4 1/4	3 1/2	4	2 1/4	33	37 1/4	1
30	25	30	15	15	5	5	5	1 7/8	38 1/4	35	4 1/2	3 3/4	4 1/4	2 1/2	35 1/4	40	1 1/8
32	26 5/8	32	16	16	5 5/16	5 5/16	5 3/8	2	40 3/4	37 1/4	5	4	4 3/8	2 5/8	37 1/2	42 1/2	1 1/4
34	28 5/16	34	17	17	5 5/8	5 5/8	5 3/4	2 1/8	43 7/16	39 9/16	5 1/4	4 1/4	4 5/8	2 7/8	40	45 1/8	1 3/8
36	30	36	18	18	6	6	6	2 1/4	46	42	5 1/2	4 1/2	5	3	42	48	1 1/2



Doric Cap and Attic Base



Section of Column and Pilasters

TRIUMPH COLUMN COMPANY, INC.

Manufacturers of Patented Lock-joint Wood Stave Columns

4200 Boston Post Road, NEW YORK, N. Y.
FACTORY LOCATED IN NEW YORK CITY

Products

TURNED COLUMNS, SQUARE COLUMNS and PILASTERS for Exterior and Interior Work.

Also Pergola Work; Twisted Columns; Composition Capitals; Wood Carving; Cast Iron Column Plinths; Balusters; Small Turnings.

TRADE-MARK

Executing Work to Details

We specialize in building columns to architect's details and especially solicit this class of business.

Unless details are furnished standard designs are made to conform to the Architectural Standards of Vignola. Columns are made turned, either plain or fluted; and square, either plain, fluted or paneled. Pilasters can be supplied to match any column.

Requirements for twisted turnings can be met without delay. Special machinery has been installed to do this type of work.

Triumph Lock Joint

Particular attention is called to the patented lock joint used to lock the staves of our columns securely together. The design of this joint is such that it also gives an unusually large area of contact between glued surfaces, thus giving increased security against opening up of the joints.

Waterproof Glue

Waterproof, cold water glue is used in putting together all columns, pilasters, caps and bases to prevent the destructive effect of moisture on joints.

Stock and Thickness

Unless otherwise specified, all Triumph columns are made of white pine expressly selected for our use. We can, however, furnish any wood desired. It is important that the desired thickness of stock be specified, as this determines the price to a large degree. Stock 1½ to 4 in. thick is used, depending on size of column and load to be carried. In general, the following proportions are used:

*Diameter of column	Up to 20 in.	20 to 26 in.	26 in. up
Thickness of stock	2 in.	2½ in.	3 in.

*For unusual heights or loading, consult us for specifications.

Entasis

All staves are formed to correct entasis in the rough, thus securing maximum amount of stock. Staves are made one-third straight, upper two-thirds tapered, unless otherwise specified.

Caps and Bases

Columns can be furnished with wood caps and bases, or with composition caps of any style desired. Special detail capitals of either composition or carved wood can also be furnished.

When desired, we are prepared to furnish cast iron plinths in all sizes.

Flashing

When erecting, cap must be entirely covered with flashing of sheet lead or copper. Architects should not overlook this in their specifications.

Reinforcing

The bottom of all columns without bases and the bottom and top of all large columns are reinforced with a heavy corrugated steel band. See detail below.

Waterproofing

The insides of all columns 16-in. diameter and over are painted with a special waterproofing paint.

Priming

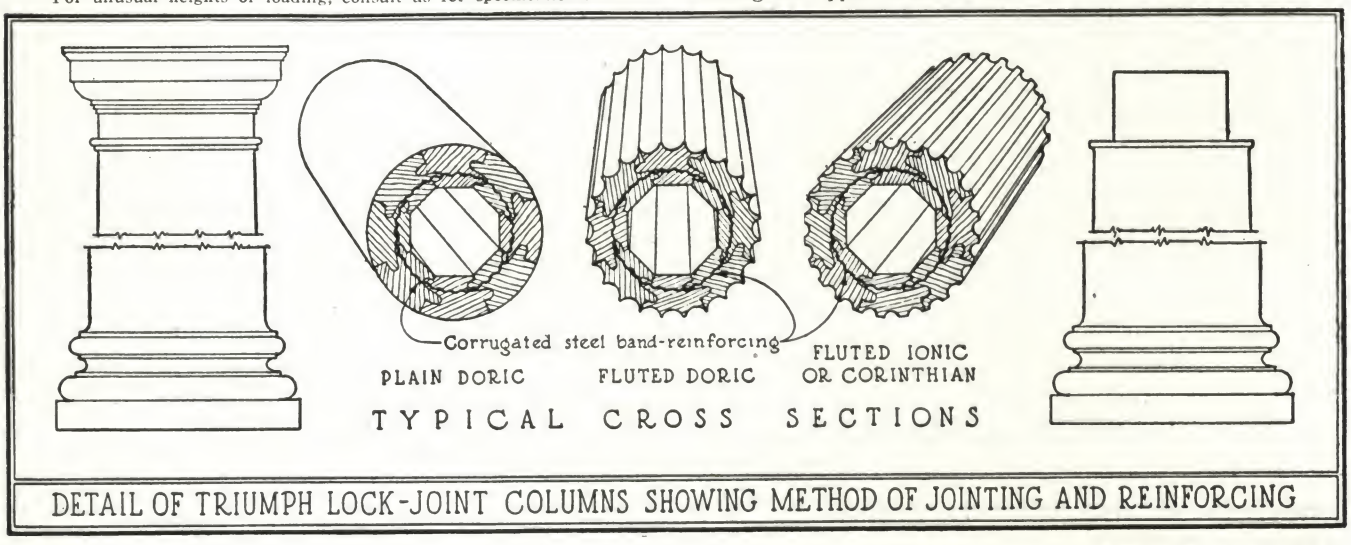
Unless otherwise specified, all columns and pilasters are given two priming coats of paint specially designed to give protection but easily covered by a finish coat which should be applied immediately on receipt of columns.

Guarantee

All columns are absolutely guaranteed as to material, workmanship and durability. Defects due to inferior materials or workmanship will be rectified without question.

Architect's Specification

All exterior columns shall be built up of selected white pine staves, other woods, such as cypress, may be used when desired, which shall be joined by a lock joint with waterproof cold water glue. Stock to be used shall be (*) in. thick. The inside of all columns 16 in. in diameter and over shall be coated with a waterproofing paint and all columns shall be primed at the plant of the manufacturer with a protective paint. In erecting, care must be taken to cover entire caps of all columns with flashing of copper or sheet lead.

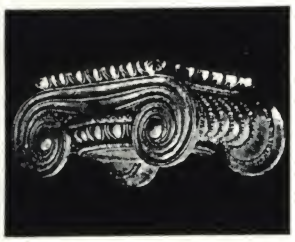


DETAIL OF TRIUMPH LOCK-JOINT COLUMNS SHOWING METHOD OF JOINTING AND REINFORCING

Continued on next page

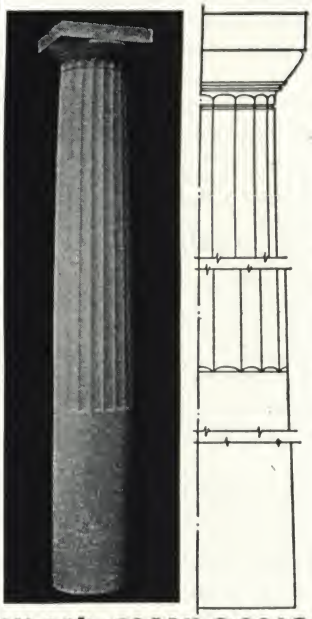
A-SCAMOZZI CAPITAL

B-ROMAN IONIC CAPITAL

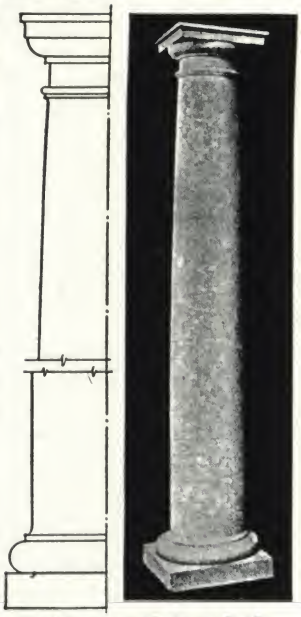


C-GREEK IONIC CAPITAL

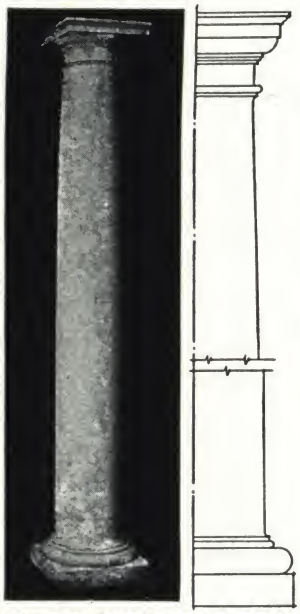
G-GREEK ERECHTHEUM CAPITAL WITH NECKING



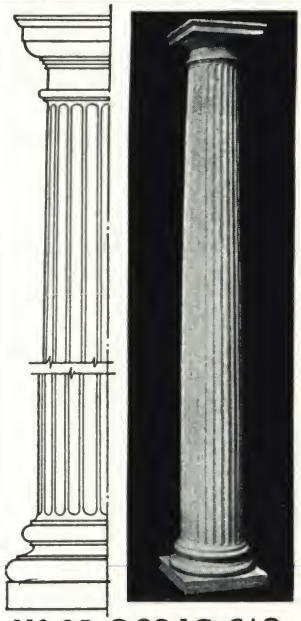
Nº 65⅔-GREEK DORIC
Fluted ⅔
Nº 60 Similar but without flutes.



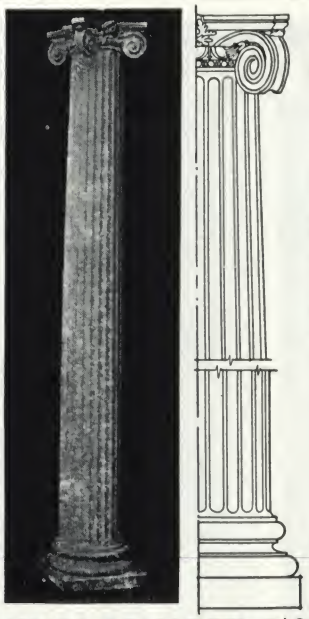
Nº 70-TUSCAN
Plain
Nº 75 Similar but with flutes.



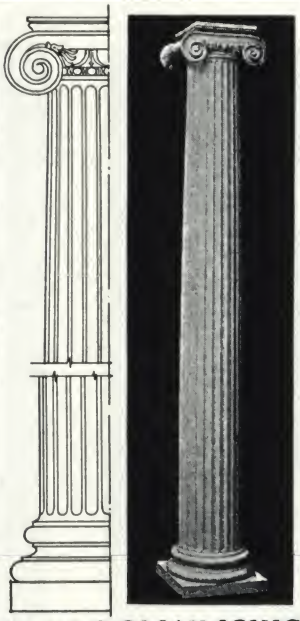
Nº 80-ROMAN DORIC
Plain
Nº 85 Similar but with flutes.



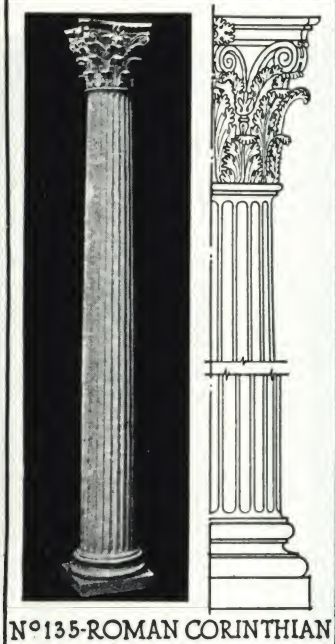
Nº 95-DORIC CAP
ATTIC BASE Fluted
Nº 90 Similar but without flutes



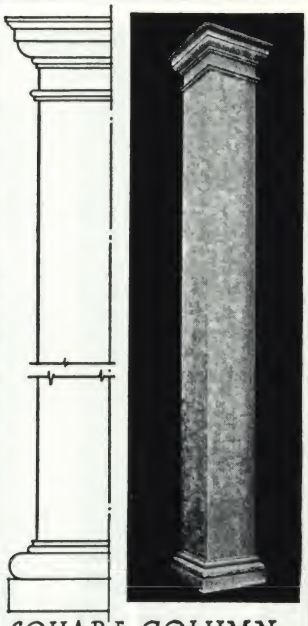
Nº 105-SCAMOZZI CAP
ATTIC BASE Fluted
Nº 100 Similar but without flutes



Nº 115-ROMAN IONIC
Fluted
Nº 110 Similar but without flutes



Nº 135-ROMAN CORINTHIAN
Fluted
Nº 130 Similar but without flutes.



SQUARE COLUMN
Fluted, Plain or Paneled

DRAWN BY SWEET'S CATALOGUE SERVICE, INC.	TRIUMPH LOCK-JOINT COLUMNS	NOT DRAWN TO SCALE DATE: FEB.-29	DRWG 1

THE UNION METAL MANUFACTURING CO.

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CANTON, OHIO

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UNION METAL COLUMNS and PILASTERS.

UNION METAL
FLUTED STEEL PRODUCTS

Stock and Special Designs

Ten classical designs are shown herewith.

Our portfolio of designs and installations shows many buildings where our columns have been used and a large number of attractive Colonial entrances. Also an attractive line of garden pergolas.

Write for combined column and pergola Catalog No. 50-D.

Advantages of Union Metal Columns

(1) Architecturally correct.
(2) Clean cut, highly ornamental and stately.
(3) Will not rot, check or open at joints.
(4) Fireproof and weatherproof.
(5) Have entasis and stopped flutes.
(6) Not experimental, but used on thousands of representative buildings in the United States and abroad.
(7) Indestructible and will outlast the buildings; suitable for all climates and temperatures.
(8) Easily handled, transported and erected.

Load-bearing Formulae

(Result of tests made by Robert W. Hunt & Co.).

Applies to designs, Numbers 240, 246, 212, 213, 219, 224, 230, 237 and 222.

For 1-ply, 22 gauge shaft:
460 by top diameter in inches equals .... pounds dead load.
For 2-ply, 22 gauge shaft:
860 by top diameter in inches equals .... pounds dead load.

Example: 12-inch diameter column tapering to 10-inch diameter—

1-ply shaft: $460 \times 10 = 4600$ pounds dead load.
2-ply shaft: $860 \times 10 = 8600$ pounds dead load.

Note: When designs using composition capitals are ordered and are expected to carry an unusually heavy weight, this should be explained to us so that a heavier core band than ordinarily furnished will be supplied for inside the capital.

Load-bearing Formula for Design Number 700—

For 1-ply, 22 gauge shaft:
1250 by top diameter in inches equals .... pounds dead load.
For 2-ply, 22 gauge shaft:
2000 by top diameter in inches equals .... pounds dead load.

Example: Number 700 column, 12-inch tapering to 9-inch top diameter—

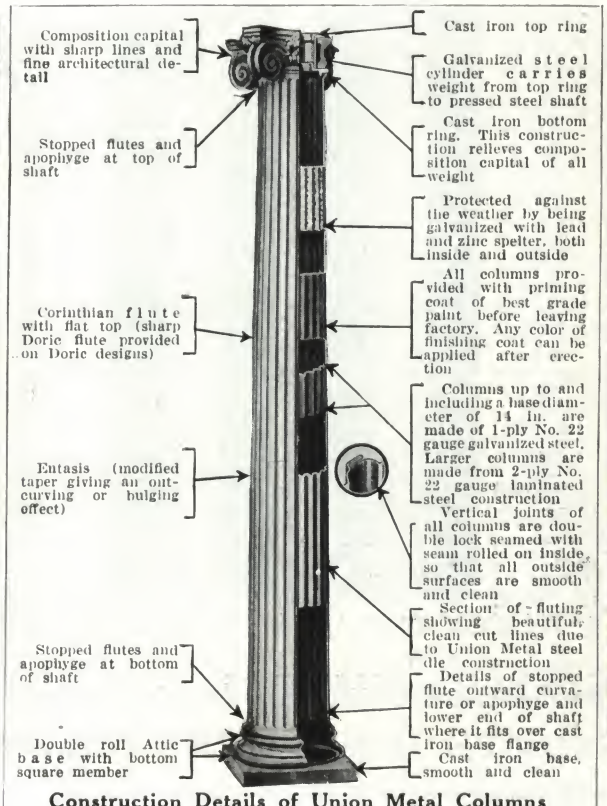
1-ply shaft: $1250 \times 9 = 11{,}250$ pounds dead load.
2-ply shaft: $2000 \times 9 = 18{,}000$ pounds dead load.

A safety factor of 2 is recommended.

Standard practice is to furnish columns up to and including 14-inch diameter with 1-ply shaft, but when desired, 2-ply can be furnished at an increase in price. All columns larger than 14-inch diameter are furnished 2-ply, 22-gauge shaft.

Design 212 Roman Corinthian

Design 230 Greek Ionic



Construction Details of Union Metal Columns

Design 237 Modern Ionic

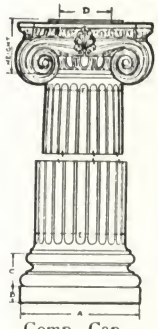
Design 222 Italian Ionic (Scamozzi)

Continued on next page

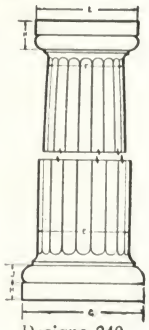
Architects' Specification

The fluted columns used shall be Union Metal Pressed Steel Columns with entasis and stopped flutes, manufactured by THE UNION METAL MANUFACTURING CO., Canton, Ohio. The design number, style and size of columns to be used are indicated on drawings. The manufacturer shall apply a priming coat of high grade metallastic paint to all columns before shipment from his plant.

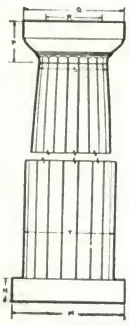
Dimension Chart of Union Metal Columns



Comp. Cap. Designs 212, 230, 237, 222, 213, 219, 224



Designs 240 and 246

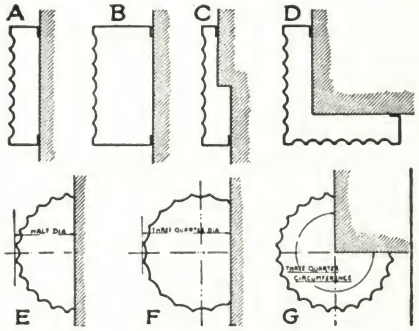


Design 700

Pilasters and Odd Shaped Columns

We can furnish flat and corner metal pilasters and half-round and three-quarter round metal columns in all sizes to match stock or special designs of Union Metal Columns.

A—Quarter return pilaster
B—Half return pilaster
C—Unequal return pilaster
D—Quarter return corner pilaster
E—Half column
F—Three-quarter column
G—Three-quarter corner column



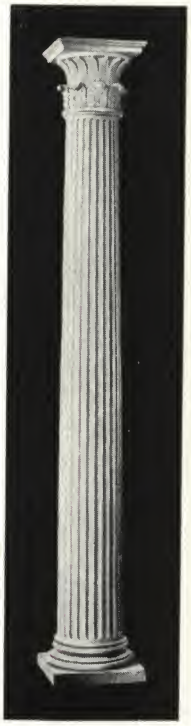
Union Metal Pilasters and Odd Shaped Columns

When ordering pilasters, specify whether face shall be tapered to match columns or whether face shall be straight from top to bottom. Unless otherwise ordered, bottom and top faces of pilasters will be furnished same as bottom and top diameters of columns, in which case pilaster bases and caps will match those of columns in height. All Union Metal pilasters are fluted on front face to match columns but are not fluted on return faces without extra cost. Pilasters are not provided with entasis

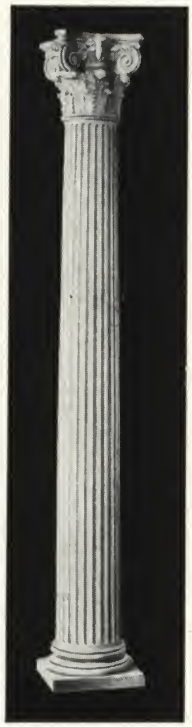
DIMENSIONS OF UNION METAL COLUMNS

Bott. dia. shaft	Designs No. 212, 230, 237, 222, 213, 219 and 224													Design No. 240					Design No. 246						Design No. 700						
	A	B	C	D	E	F	Height of Capital							G	H	J	K	L	G	H	J	K	L	R	M	N	P	Q	R	S	T
							212	230	237	222	213	219	224																		
8	10 5/8	1 5/16	3	5 1/8	8	6 1/2	9 7/8	6 1/8	4 1/8	4 1/8	8 7/8	11 1/8	4 1/8	11	1 9/16	1 1/2	2 1/2	8 5/8	10 9/16	1 15/16	1 15/16	4 3/8	9 3/4	5								
10	13 15/16	1 11/16	3 3/8	6 1/4	9 3/4	8	13 1/16	9 1/16	6 7/16	5 5/16	12 15/16	13 1/16	6 1/16	13 1/4	1 15/16	1 7/8	3 3/16	11	13 1/4	2 7/16	2 7/16	5 7/16	12	6 1/4	12 1/4	2 1/2	4 5/8	10 7/8	5 1/4	7 1/2	10
12	16	1 15/16	4 5/16	7 7/8	12	10	15 1/8	11 1/8	6 7/8	5 5/8	15 5/8	15 5/8	7 5/8	16	2 5/16	2 1/4	3 13/16	13 1/4	15 7/8	2 7/8	2 15/16	6 11/16	14 7/8	8	14 3/8	3	5 5/16	13	6 1/2	9	12
14	18 5/8	2 5/16	4 3/4	9 3/8	14	12	16 3/4	13 1/4	7 3/4	6 3/4	16 1/4	19 1/4	8 3/4	18 5/8	2 3/4	2 3/4	4 9/16	16	18 1/2	3 3/8	3 3/8	8	18	9 1/2	16 5/8	3 3/8	6 1/2	15 1/2	7 1/4	11	14
16	20 5/8	2 9/16	5 5/16	9 3/8	15 3/4	12	16 3/4	13 1/4	7 3/4	6 3/4	16 1/4	19 1/4	8 3/4	.....	.....	.....	.....	.....	20 13/16	3 3/4	3 3/4	8	18	9 1/2	18 7/8	3 7/8	7 1/16	16 3/4	7 7/8	12	16
16	20 5/8	2 9/16	5 5/16	10	15 3/4	14	18 1/2	15 3/4	10	8	21 1/4	22 1/2	11 3/4	.....	.....	.....	.....	.....	20 13/16	3 3/4	3 3/4	9 3/4	21	10	.....	.....	.....	.....	.....	.....	.....
18	22 15/16	2 3/16	5 13/16	10	17 3/8	14	18 1/2	15 3/4	10	8	21 1/4	22 1/2	11 3/4	.....	.....	.....	.....	.....	22 7/8	4 3/16	4 1/8	9 3/8	21	10	20 1/8	4 1/4	8 1/16	19 1/4	8 3/4	14	18
20	25 7/8	3 3/16	6 9/16	12 1/2	19 1/2	15 3/4	24 15/16	17 7/16	11 3/16	9 15/16	20 1/16	24 3/16	11 15/16	.....	.....	.....	.....	.....	25 3/4	4 11/16	4 11/16	10 3/8	23 5/8	12 1/2	23 3/8	4 3/4	8 9/16	20 1/2	9 1/4	15	20
20	25 7/8	3 3/16	6 9/16	14	19 1/2	17 3/8	26 1/16	17 7/16	12 3/16	9 15/16	26 9/16	27 7/16	13 7/16	.....	.....	.....	.....	.....	25 3/4	4 11/16	4 11/16	11 1/4	26	14	.....	.....	.....	.....	.....	.....	.....
22	28 3/4	3 3/4	5 7/8	14	22	17 3/8	26 1/16	17 7/16	12 3/16	9 15/16	26 9/16	27 7/16	13 7/16	.....	.....	.....	.....	.....	29	5 1/4	5 5/16	11 1/4	26	14	25 7/16	5	9 1/4	24	9 3/4	17 3/8	22
24	32	4	6 3/4	15 1/2	23 1/2	19 1/2	29 1/16	20 1/16	12 7/16	10 15/16	25 15/16	29 1/16	15 3/16	.....	.....	.....	.....	.....	31	5 5/8	5 11/16	12 3/4	29 1/4	15	27 1/2	5 1/2	10 3/16	24 3/8	10	18	24
26	34 1/2	4 5/8	7 7/16	15 1/2	25	19 1/2	29 1/16	20 1/16	12 7/16	10 15/16	25 15/16	29 1/16	15 3/16	.....	.....	.....	.....	.....	33	6	6	12 3/4	29 1/4	15	30	6	12	28 5/8	13 1/2	20	26
26	34 1/2	4 5/8	7 7/16	17	25	22	32 9/16	21 13/16	12 9/16	12 1/16	32 13/16	32 9/16	16 13/16	.....	.....	.....	.....	.....	33	6	6	14 9/16	33	15 13/16	.....	.....	.....	.....	.....	.....	.....
28	37	5 1/8	8 7/16	17	26 7/8	22	32 9/16	21 13/16	12 9/16	12 1/16	32 13/16	32 9/16	16 13/16	.....	.....	.....	.....	.....	35 1/2	6 7/16	6 1/2	14 9/16	33	15 13/16	32	6 3/8	13 1/4	31 3/4	15	22	28
30	39	5 1/2	9 7/16	18 3/4	29 1/4	23 1/2	35 7/16	23 7/16	12 11/16	13 3/16	35 7/16	35 7/16	17 15/16	.....	.....	.....	.....	.....	38 1/2	7	7	15 3/8	35 1/4	18	34 1/2	6 7/8	14 1/2	34 3/4	16	24	30
32	41 1/2	6	10 7/8	20 1/4	31 7/8	25	39 11/16	24 15/16	13 3/16	14 3/16	34 7/16	36 11/16	18 7/16	.....	.....	.....	.....	.....	42 1/2	7 11/16	7 11/16	16 1/4	37 1/2	19 1/2	36 3/4	7 3/8	14 1/2	34 3/4	16	24	32
34	43	6 1/8	10 1/4	22	34	26 7/8	42	26	16	15	36	40	.....	.....	.....	.....	.....	.....	44 1/2	8 3/16	8 1/8	17 1/2	40 3/4	22	39	7 3/4	16 1/2	43	18	28	34
36	45 1/2	6 1/2	11 1/4	23 1/4	36	29 1/4	42 1/8	28 3/8	18 1/8	16 1/8	40 3/16	42 1/8	.....	.....	.....	.....	.....	.....	47 1/2	8 5/8	8 11/16	19 1/16	43 3/4	23	41 1/2	8 1/4	16 1/2	43	18	28	36
42	56	7	14	27	42	34	.....	.....	19 1/4	.....	44 7/16	.....	.....	.....	.....	.....	.....	.....	55 3/8	10	10 1/16	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

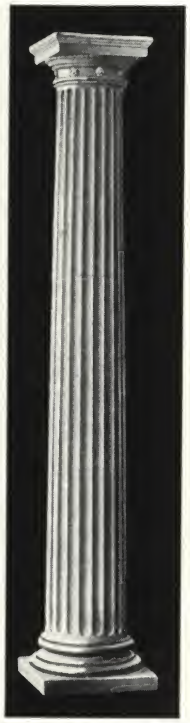
D and R dimensions represent opening through capital.



Design 213 Temple of the Winds



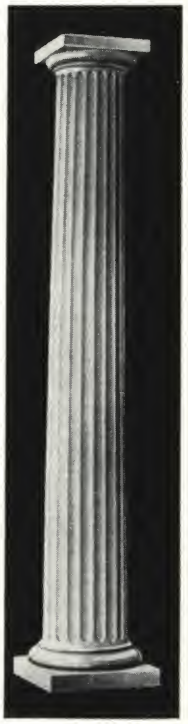
Design 219 Italian Composite



Design 224 Roman Doric (Diocletian)

Design 246 True Roman Doric

Design 700 Greek Doric



Design 240 Modern All-steel Doric

FURRING
LATHING
PLASTERING

American Clip-On Corp. B2382–2383
American Steel & Wire Co. B2381
Artstone Products, Inc.—
Colored Plaster B2480–2481
Stucco B2482–2483
Associated Metal Lath Mfrs., Inc. B2376–2380
Atlantic Gypsum Products Co. B2426–2431
Berger Mfg. Co. B2384–2385
Best Bros. Keene's Cement Co. B2432–2433
California Stucco Products Corp. B2484–2487
Certain-teed Products Corp.—
Gypsum Lath B2422–2423
Plaster B2436–2442
Conver Steel & Wire Co., Inc. B2386
Finishing Lime Assn. of Ohio B2469–2474
General Building Products Corp. B2424
Goldsmith Metal Lath Co. B2387
Kalman Steel Co. B2388
Ke-Bond Co. B2389
Kelley Island Lime & Transport Co. B2475
Knapp Bros. Mfg. Co. B2390–2399
Louisville Cement Co. B2488
Milcor Steel Co. B2400–2401
National Lime and Stone Co. B2476
National Mortar & Supply Co. B2477
National Steel Fabric Co., Div. of Pittsburgh Steel Co. B2402–2409
Ohio Hydrate & Supply Co. B2478
Penn Metal Co. B2410
Richsto Metal Trim Co. B2411–2413
Ryber Mfg. Co. B2421
Simplex Steel Products Co. B2416–2418
Structural Gypsum Corp. B2434–2435
Truscon Steel Co. B2414–2415
United States Gypsum Co. B2443–2468
Wheeling Corrugating Co. B2419
Wickwire Spencer Steel Co. B2420
Wood Lath Bureau, Inc. B2425
Woodville Lime Products Co. B2479

ASSOCIATED METAL LATH MANUFACTURERS, INC.

TELEPHONES
STATE 2357, 2358

1821 Engineering Building, CHICAGO, ILL.

CONTRIBUTORS

BERGER MANUFACTURING CO., Canton, Ohio (see Manufacturers' Index)
CONSOLIDATED EXPANDED METAL COS., Wheeling, W. Va. (see Manufacturers' Index)
GENFIRE STEEL CO., Youngstown, Ohio (see Manufacturers' Index)
KALMAN STEEL CO., Chicago, Ill. (see Manufacturers' Index)
MILCOR STEEL CO., Milwaukee, Wis. (see Manufacturers' Index)
PENN METAL CO., Parkersburg, W. Va. (see Manufacturers' Index)
TRUSCON STEEL CO., Youngstown, Ohio (see Manufacturers' Index)
WHEELING CORRUGATING COMPANY, Wheeling, W. Va. (see Manufacturers' Index)

Services

(a) RESEARCH WORK, TO DETERMINE BEST METHODS OF METAL LATH APPLICATION AND THEIR FORMULATION INTO PRACTICAL SPECIFICATIONS AND FIELD SERVICE for architects, engineers, builders, and the lathing and plastering industries, and others in the building trades.

(b) DEVELOPMENT OF METAL LATH as a fire resistive building material of high efficiency.

(c) PREPARATION OF BUILDING CODE ORDINANCES IN CO-OPERATION WITH BUILDING CODE COMMITTEES, particularly in reference to plastering, and fire protection for fireproof and non-fireproof building.

(d) ENGINEERING DEPARTMENT giving full information on all subjects relating to Metal Lath, also to Fireproofing, Stuccoing and general Construction Work, without charge.

(e) RESEARCH WORK, TO DEVELOP METAL LATH for every desirable purpose and to determine the type best suited for different classes of construction.

(f) PUBLICATION OF METAL LATH LITERATURE.

Slogan

"Metal Lath for Better Plastering."

Kinds of Metal Lath

Individual types and forms of metal lath and the particular qualifications of each will be found in the catalogues of the various companies listed above. Each type and form has its distinctive qualities and uses which are described in the catalogues listed.

Metal lath is furnished either painted or cut from galvanized steel sheets. Other types are made from pure iron, copper bearing steel and other special analysis metals. No unprotected lath is manufactured for plastering use. Painted lath is suitable for all practical purposes; gypsum plaster should not be used in wet position, such as shower stalls, basement partitions or for exterior stucco—portland cement should be used. Small mesh lath is not recommended for stucco, unless self-furring lath is used or back-plastered or well furred out.

Expanded metal is also used for reinforcing concrete, etc., and is illustrated by the companies listed above.

Function of Metal Lath

Expanded metal lath acts as a base and reinforcement for plaster, and under fire holds the plaster in position after it has disintegrated and would otherwise have fallen off and become useless. It does not expand, contract, nor warp, nor does it permit lath streaks to appear on the ceiling, as with ordinary lath.

Uses of Metal Lath

In fireproof construction, metal lath is a most convenient form of fire protection. It is the most economical form of structural steel protection. Ordinary construction can be made practically crack-proof and measurably firesafe by its more general use.

For the finest plastering, ¾-in. grounds are recommended. However, for places where ½-in. or less plaster has heretofore been used on wood lath, plasterboard or similar bases, the new types of metal lath now on the market produce a decidedly superior plaster construction with only ½-in. plaster grounds.

Literature Available

"Metal Lath Construction for Better Plastering and Stucco" (including complete specifications); Partition Handbook; Thermal Conductivity; Sound Resistance; One-Hour Underwriters' Rating; "Better Plastering for Modern Homes"; "Safety from Fire," containing valuable building code data, etc.

Checking List for Metal Lath

For Fire Protection (Ordinary Construction)—In ordinary construction, metal lath should be used on as many of the following points as possible:

(1) All stud bearing partitions and stud exterior walls.
(2) Ceilings, especially over heating plants and coal bins.
(3) At chimney breasts, around flues and back of kitchen ranges; in partitions housing heat ducts.
(4) Stair-wells and under stairs.
(5) Base and reinforcement for exterior stucco.

For Fire Protection (Fire Resistive Construction)—

(1) Steel column and beam covering.
(2) Concrete column surface reinforcement.
(3) Elevator enclosures.
(4) Stairway enclosures.
(5) Contact, furred or suspended ceilings.
(6) Fireproofing steel or wood trusses, for garages, etc.
(7) Steel joist construction.

For Economy in Floor Space—

(1) Solid partitions (office buildings, hotels, apartments, schools, institutions).
(2) Hollow partitions enclosing piping between bathrooms.
(3) Stair and elevator enclosures.

For Insulation Against Temperature Changes—

(1) Furring for walls and refrigerators.

Continued on next page

For Appearance and to Prevent Cracking—

(1) Suspended or furred nailed ceilings.
(2) Bathroom and kitchen wainscots.
(3) Corners over wood lath and plaster board.
(4) Reinforcement for cement setting base for bathroom.
(5) Moulded and ornamental work, coves, cornices, girders, beams and ceilings.

For Minimum Weight and Economy—

(1) Solid and hollow partitions.
(2) Over chases in masonry partitions.

For Sound Insulation—

(1) Solid partitions in hotel, apartment, hospital, public buildings, etc.
(2) Soundproof double partitions.
(3) Suspended ceilings hung from sound-insulated hangers.

For Stucco—

(1) Over wood sheathing.
(2) Backplastered construction.
(3) Over soft burned clay products.
(4) Over insulating lumber.
(5) Overcoating old buildings of all kinds.

General—

(1) Tourists' camp buildings.
(2) Walls and fences.
(3) Factory and penthouse construction.
(4) Toilet and shower stalls.

Alternate Bids for Better Plastering

Conforming with the recommendations of the National Council for Better Plastering, the Associated Metal Lath Manufacturers, Inc., urge that all residences be finished with plaster on a base of metal lath.

When bids are called for it is suggested that architects secure estimates from plastering contractors on the following alternates:

Alternate I—We propose to furnish plaster reinforced with.....lb. metal lath plastered in a first class manner, throughout the plastered parts of the building, for the total sum of $.....

Alternate II—We propose to furnish plaster reinforced with.....lb. metal lath, plastered in a first class manner, on the ceilings and the corners of the entry hall, living room and dining room, bathroom wainscots, and for fire protection over the heating plant and on the underside of the main stairway, and furnish ordinary plastering for the remainder of the building, for the total sum of $.....

Alternate III—We propose to furnish plaster reinforced with.....lb. metal lath, plastered in a first class manner on all ceilings only, the remainder of the plastered parts to be finished with ordinary plastering for the total sum of $.....

Weights and Attachments for Metal Lath—

Note: Minimum weights of expanded metal lath specified in the preceding shall be as follows:

For walls and partitions, 2.5 lb. per sq. yd.

For ceilings, 3 lb. per sq. yd.

Metal lath to be attached to wood studs and wood joists by not less than 4d and 6d nails, respectively, or by equivalent staples. Spacing of nails or staples not to exceed 6 in. on centers.

General Specifications for Metal Lath Construction

Note: *Complete specifications and construction details sent on request.*

Special attention is called to the fact that these specifications are written upon the basis of weight only, which alone will insure equality of competition and facilities for accurate inspection in the field.

General—*Wherever metal lath construction is required the weights per square yard of metal lath and weights of supporting member and methods of attachment of metal lath thereto shall be specified not less than the following:*

(A) Minimum Weight of Metal Lath—

(a) Expanded Metal Lath for Interior Work—

For vertical position, partitions, etc., attached to metal supports 12 and 13½ in. on center, lath shall weigh a minimum of 2.5, and 3.0 lb., respectively, except for solid partitions where 2.2 lath may be used on 12-in. spacings; and 3.4 lath on 16-in. spacing. *For nailed-on partitions,* maximum spacing shall be 16 in. for all flat laths, minimum weight to be..... 2.5 lb.

For tied-on ceilings attached to metal supports maximum spacing shall be 12 and 13½ in. for 3.0 and 3.4-lb. flat lath; *for nailed-on ceilings* maximum spacing shall be 16 in. for these laths.

(b) Flat Rib Lath—

For nailed or tied-on partitions and furring:

For supports spaced not to exceed 16 in. on centers.....2.75 lb.

For supports spaced not to exceed 19 in. on centers..... 3.0 lb.

For nailed or tied-on ceilings:

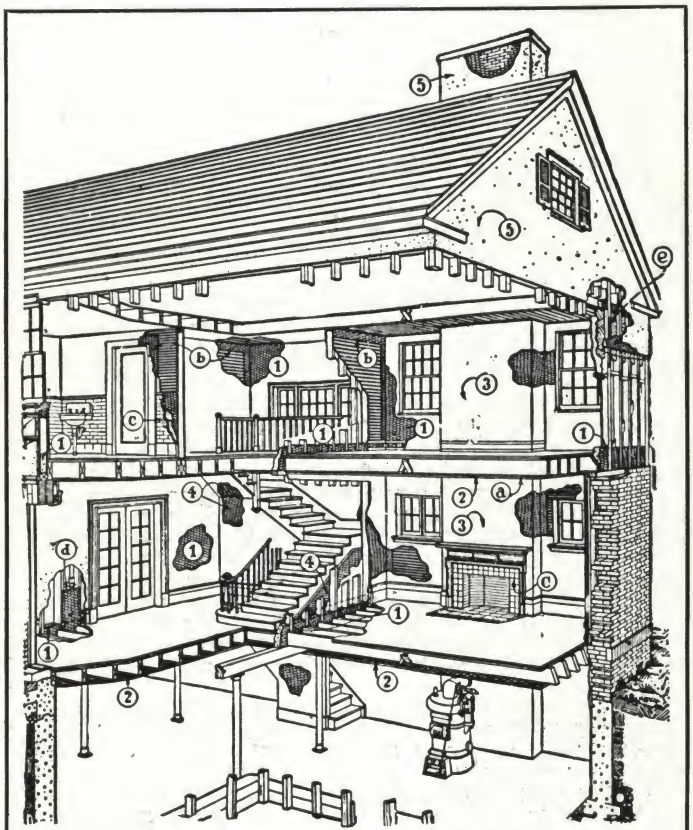
For supports spaced not to exceed 12 in. on centers....*2.75 lb.
For supports spaced not to exceed 16 in. on centers..... 3.0 lb.
For supports spaced not to exceed 19 in. on centers..... 3.4 lb.

*For nailed-on ceilings this lath may be used 16 in. on centers.

(c) ⅜-in. Rib Lath—

For nailed or tied-on partitions and furring:

For supports spaced not to exceed 19 in. on centers.. 2.5 lb.
For supports spaced not to exceed 24 in. on centers..2.75 lb.
For supports spaced not to exceed 31½ in. on centers.. 3.4 lb.



Most Advantageous Positions for Metal Lath for Fire Stops and Crack Prevention

For Fire Stops—

(1) On all stud bearing partitions and walls and fire stops between studs. (Fire stops to be metal lath basket-shaped to fit between studs, coated with plaster or cement and filled with incombustible materials.)
(2) On ceilings under inhabited floors, especially over heating plants and coal bins.
(3) At chimney breasts, around flues and back of kitchen ranges.
(4) For stair-wells and under stairs.
(5) As a base and reinforcement for exterior stucco.

For Crack Prevention—

(a) On ceilings of prominent rooms.
(b) Lap 4 in. on either side of wall and partition angles, and around door bucks.
(c) Back of wainscots and tile mantels.
(d) Across plumbing pipes and heat ducts.
(e) Proper construction of exterior stud walls for successful stucco.

Continued on next page

For nailed or tied-on ceilings:
For supports spaced not to exceed 19 in. on centers..2.75 lb.
For supports spaced not to exceed 24 in. on centers.. 3.0 lb.
For supports spaced not to exceed 31½ in. on centers.. 3.4 lb.*

*For wood joists maximum spacing any nailed-on rib lath 23¾ in. Maximum of 33½ in. permitted for concrete joists.

(d) Sheet Lath—
For nailed or tied-on partitions maximum spacing 24 in. 4.5 lb.
For tied-on ceilings not to exceed 19 in. on centers..... 4.5 lb.
For nailed-on ceilings not to exceed 24 in. on centers... 4.5 lb.

Note: Spacings exceeding 16 in. for tied-on ceiling laths are based on rigid furring channels or supports and are permissible for ¾-in. cold rolled furring channels supported at not to exceed 30-in. intervals, or 1-in. channels supported at not to exceed 42-in. intervals. When carried 36 in. on centers maximum spacing of ¾-in. cold rolled channels is 23¾ in.; for 42-in. on centers maximum spacing is 19 in., and for 48-in. spacing, 16 in. for all laths.

Where either hangers or carrying channels directly supporting 1-in. cold rolled furring channels are 48 in. apart, the spacing of such furring channels shall not exceed 23¾ in. for all laths.

Provided further, that in no case shall the spacings of furring channels be greater than those permitted by the stiffness of the lath as indicated in paragraphs (a) to (d) inclusive.

(e) For Stucco Exteriors—
Minimum weight of flat or self-furring expanded metal lath attached to wood, metal or masonry, etc..... 3.4 lb.
Minimum weight of expanded metal reinforcing used as in foregoing (with minimum opening of 1½ in.).... 1.8 lb.

(B) Minimum Size and Spacing of Attachments for Metal Lath—

(a) Attachments to Wood Supports—
Metal lath shall be attached to wood studs and joists by not less than 4d and 6d nails, respectively, driven to a penetration of not less than ⅞ in. and 1 in. respectively and spaced not to exceed 6 in. on centers, or by clips or devices with equivalent penetration and holding power. There shall be one tie on side laps, half way between supports.

(b) Attachments to Metal Supports—
Metal lath shall be wired to metal supports at intervals not exceeding 6 in., with not less than No. 18 gauge galvanized soft annealed wire and a tie shall always occur where sides of sheets lap at channels. There shall be one tie on side laps half way between channels.

(1) Erection of Metal Lath in Wood Stud and Joist Construction—

(a) Metal lath shall be erected with the long dimensions of sheet across the supports; rib lath with the ribs against the supports.

(b) Lath shall be first applied to the ceilings and the sheets carried down 6 in. onto the walls and partitions. If metal lath is not used on the ceilings, the lathing shall start at the top of the wall and be bent and carried up 6 in. onto the ceiling joists so that no joints occur at juncture of ceiling and walls; and on walls, all lath shall be started one stud away from corner and be bent into the corner and carried onto the abutting wall so as to avoid a joint at juncture of walls; provided, however, that where ⅜-in. ribbed lath is used on ceilings or walls it shall be butted into all joints, and strips of flat lath shall be bent into the shape of an "L" (Cornerite), 4 in. on each side, and be securely wired along each edge in all corners. Cornerite shall not be fastened at the corner, but only along each edge of the sheet.

(c) Lath shall be placed so that the lower sheet laps over the upper (not vice versa) and shall be securely attached to the supports. Nails or staples shall be so placed that a nail or staple occurs where sides of sheets lap at supports.

(d) Expanded metal lath shall be lapped at sides not less than ½ in., and at ends not less than 1 in. End laps shall occur only over supports.

(e) Rib lath shall be lapped at sides by nesting outside ribs, and at ends, 1 in.; sheet lath by nesting selvage and loops.

Note: Corner reinforcement (Cornerite). Wherever wood lath (or plaster board) is used, Cornerite (see (b) preceding) shall be applied in all vertical corners and into corners between ceilings and partitions and lightly attached (at edges, not in corner) over the wood lath or plaster board, to reinforce the plaster and prevent corner cracks.

(f) Wherever metal lath is used for overcoating or sheathed construction the metal lath shall be furred out from the sheathing at least ⅜ in. (or self-furring lath shall be used) to insure complete embedment of the back side of the lath in the stucco. (Special furring devices now available eliminate wood furring and prevent stucco cracks.)

(2) Solid Partitions—*(See Partition Handbook.)*

(a) Metal studs for solid partitions shall be not less than ¾-in. cold or hot rolled channels weighing not less than 276 lb. per thousand lineal feet, and spacing of studs shall conform with weight of lath as in paragraph **(A)** of these specifications.

(b) Studs shall be secured in position by inserting ends in holes punched ¾ in. in top of concrete or other masonry floors or in soffits of masonry ceilings, or by attaching to stud shoes, or by placing ends in holes drilled in wood floor bucks anchored to masonry floors at 4-ft. intervals; on wood floors by wire tying to nails driven 1 in. into floors and projecting at least 1 in. above. Where metal lath ceilings are used a small hole shall be made in the ceiling lath and the end of the channel allowed to project through it and be wired to a channel attached to the ceiling lath.

(c) Splicing of studs shall be made by lapping channels not less than 8 in. with the flanges interlocked and tied.

(d) Erection of metal lath for solid lath and metal stud partitions shall be the same as that given in Paragraph **(1)**, excepting that metal lath is applied only on one side of channel studs, and tied instead of nailed or stapled.

(e) *Note:* Solid partitions over 6 ft. high shall be temporarily braced horizontally on the channel side at intervals not exceeding 6 ft. vertically before applying plaster. Such bracing shall not be removed until scratch coat on the lath side of the partition has set.

(f) In every case one channel shall be set next to wood buck at each side of openings and double wired securely to 8d nails driven on each side of channel in pairs into buck at 2-ft. intervals. Bottom of door buck shall be securely spiked to wood plug in floor, or attached by metal anchors.

(3) Hollow Metal Lath Partitions—

Use specification **(2)** but call for wide single channel, or a double row of ¾-in. channels with separators every 2 ft. vertically, and metal lath on both faces of partition.

(4) Soundproof Double Partitions—

Same as No. 3 but use double row of ¾-in. channel studs without separators or spacers connecting opposite channels and with permanent horizontal channel reinforcement for each half every 4½ ft. in height. No part of construction shall touch any portion of opposite side of partition and shall clear all piping, ducts, etc. Complete specifications on request.

(5) Suspended Ceilings—

(a) Hangers—Shall be placed not to exceed 4 ft. center to center in either direction. The minimum size for hangers shall be No. 8 galvanized wire, 1x$\frac{3}{16}$-in. flats or $\frac{7}{32}$-in. round mild steel rods.

Upper ends of hangers of wire, rods, or flats, shall be of sufficient length to wrap around beams or provide a suitable anchorage in the concrete or tile. Where steel beams or purlins are not more than 4 ft. center to center, hangers may be attached directly to them. When hangers are hung from concrete beams or arches, the hangers shall be placed before concrete is poured. When ceilings are hung from terra cotta floors, hangers may be installed at tile joints during erection, or may be installed after tile is in place, holes bored clear through tile and secured on upper side by steel rod or toggle bolt.

(b) Runner Channels—Shall be placed not to exceed 4 ft. on centers, and shall be not less than 1½-in. cold or hot rolled channels weighing not less than 442 lb. per thousand lineal feet. Lower end of wire hangers shall be secured to runner channels by three twists around same; lower end of rod hangers shall be secured to runner channels by two twists, or by wiring; lower end of flat steel hangers shall have holes punched at the proper distance to which the runner channels shall be bolted with not less than ⅜-in. diameter bolts.

Runner channels shall conform to the contour of the ceiling.

(c) Furring Channels—Shall be not less than ¾-in. channels with a minimum weight of 276 lb. per thousand lineal ft.; they shall be erected at right angles to the runner channels and be securely saddle tied to same by at least three strands of No. 16 galvanized annealed wire at each crossing, or by No. 9 wire hairpin clips.

Furring channels shall be spaced to correspond with the spacing of horizontal metal supports as specified in Paragraph **(A)** of these specifications for various types and weights of metal lath.

(d) Metal Lath—Shall weigh not less than 2.75 lb. per sq. yd., provided, however, that minimum weight shall be governed by spacing of furring channels as specified in the preceding paragraph.

The metal lath shall be wired to the furring channels (the long dimension of the sheet being across the channels) by No. 18 gauge galvanized annealed wire every 6 in. along the furring channels; there shall be one tie on side laps half way between channels. Lapping of sheets at sides and edges shall be as given in Paragraph **(1)**.

Continued on next page

(6) Furred and Contact Ceilings—
Specifications for furred and contact ceilings on request.

(7) Stucco Construction—
Complete specifications for stucco construction sent on application.

Fire Tests

Metal lath and plaster constitute a most economical fire-resistive protection for any material over which they are applied. The remarkable grip or key which the many small openings in the lath mesh afford the plaster or stucco is an essential part of its fire-resistive qualities. Exposed to fire, metal lath holds the plaster in place long after it would have fallen off of other plaster bases and exposed them, and in turn the whole structure, to the flames.

In order to rate the fire-resistance afforded by metal lath and plaster protection for wood joisted floors and wood stud bearing partitions and exterior walls, exhaustive fire tests were made at the Underwriters' Laboratories, Inc., with the result that they have accorded metal lath protected lumber the full one-hour rating.

This protection is equal to or greater than afforded by any other combination of interior finish for frame construction and gives to architects positive assurance of the actual value of metal lath and plaster; it offsets the slight extra expense.

Column Incasement

Results from Bureau of Standards fire tests of 20-in. columns disclosed that, without the use of expanded metal, the columns, after 4 hours fire test, failed at an average of 1145 lb. per sq. in. With the mesh incasement, they failed at 5615 lb. per sq. in.

Surface reinforcement of concrete columns by expanded metal is the only safe way to handle siliceous gravel concrete. *See Underwriters' column tests, and "Safety from Fire"* sent on request.

Metal Lath Partitions

A nation-wide investigation of partition construction has shown conclusively that space saving and costs are the two factors of greatest importance in choosing types of partitions. Sound transmission, fire retardance, and adaptability for various purposes in the given occupancy, also carry considerable weight. In the preparation of the *Partition Handbook* the subject of space saving has been developed in very careful detail; floor layouts have been redesigned so as to make space saving cumulative. This study of space saving covers buildings ranging from office buildings down to bungalows and demonstrates that the space saving value of 2-in. partitions is of fundamental importance in all.

Research work carried on by the Associated Metal Lath Manufacturers, Inc., has shown that solid metal lath partitions are superior to all others of equal thickness and on at least an equal footing with other types of commercial partitions finishing up to 5½ in. in thickness in resisting the passage of sounds of conversational intensity. To the density of plaster can be attributed much of the sound insulating properties of this type of partition. *(See Partition Handbook.)*

Tests by Dr. Paul E. Sabine at the Riverbank Laboratories show that 4-in. double metal lath partitions built with two rows of channels without cross ties between, and which weighs only 18 lb. per sq. ft. (including both sides), offer resistance to the passage of sound equivalent to double masonry block partitions 9 in. thick and having a 2-in. air space. Complete details of these soundproof double metal lath partitions are available.

Partition Handbook

For complete information on metal lath partitions write for the new *Partition Handbook* covering all details of design and construction and a comparison with other partitions. A charge of one dollar is made except to architects and engineers, to whom a copy will be sent gratis.

Contact, Furred and Suspended Ceilings

Metal lath ceilings constitute the most economical, permanent and fire resistive type of finish to conceal variations in the level of the underside of the structural members of the floor. From the standpoint of ventilation and lighting, and economy in decoration and upkeep, flat ceilings are far superior to those with beams and girders exposed.

Interiors of residences, theaters, schools and public buildings can be greatly improved architecturally by the use of plain or curved metal lath and plaster suspended ceilings. A few dollars thus spent will add hundreds in permanent value.

Many building codes now recognize suspended ceilings as primary fire protection under concrete and steel construction, and thus afford architects the opportunity of combining the architectural advantage of such a ceiling with economies of fire protection of structural members.

Stucco Exteriors

Types—Two types of construction are in general use, sheathed and backplastered; either is satisfactory and economical.

Various tests on backplastered construction by authorities show it to be entirely satisfactory and weather resistant. Sheathing is eliminated at considerable saving and the metal lath is fully embedded in the center of a 1½-in. stucco concrete slab. This type of construction is now authorized by many building codes.

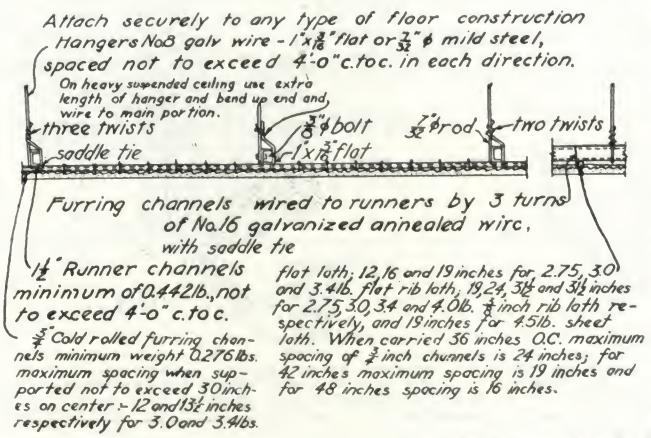
With the development of large mesh expanded metal reinforcing, of furring devices and self-furring lath, many million square yards of stucco over sheathing are being built every year. The large mesh reinforcing insures complete embedment in the stucco. The furring devices now available completely eliminate shrinking, crack-producing, wood furring strips, and assure permanent stucco on ordinary flat metal lath, at a considerable saving in cost, with complete embedment of the lath.

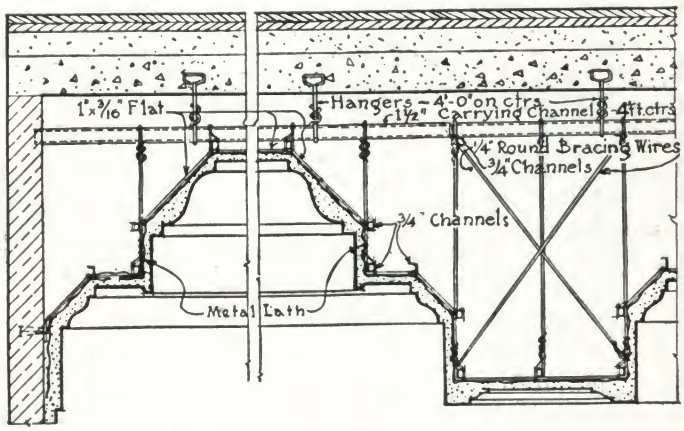
Self-furring types of lath are also used extensively; ⅜-in. rib lath should not be used for outside stucco.

Heat Insulation—Insulating quilt and similar fabrics provide very effective barriers to passage of heat and air currents so that stucco exteriors are better heat insulators than many common masonry walls. *(Full report of tests made at Armour Institute of Technology may be had upon application.)*

Six Cardinal Points of Good Stucco Design—(1) Stucco should not be run down to the ground except when applied over a solid impervious base course. Wood frame should rest on a masonry foundation at least 12 in. above the finished grade.

(2) Window sills and other horizontal woodwork should be given the proper overhang and drip beyond the face of the stucco. To avoid concentration and scouring action of water at ends of sills they should be provided with stops.





Minimum Details for Suspended Ceilings

Continued on next page

(3) The design should be chosen to permit of a generous overhang of eaves and cornices.

(4) There should be no horizontal surfaces of stucco on which water can collect. Liberal and discriminating use of flashings should be made wherever water might get behind stucco—such as at roof and wall intersections, under joints of masonry trim, etc.

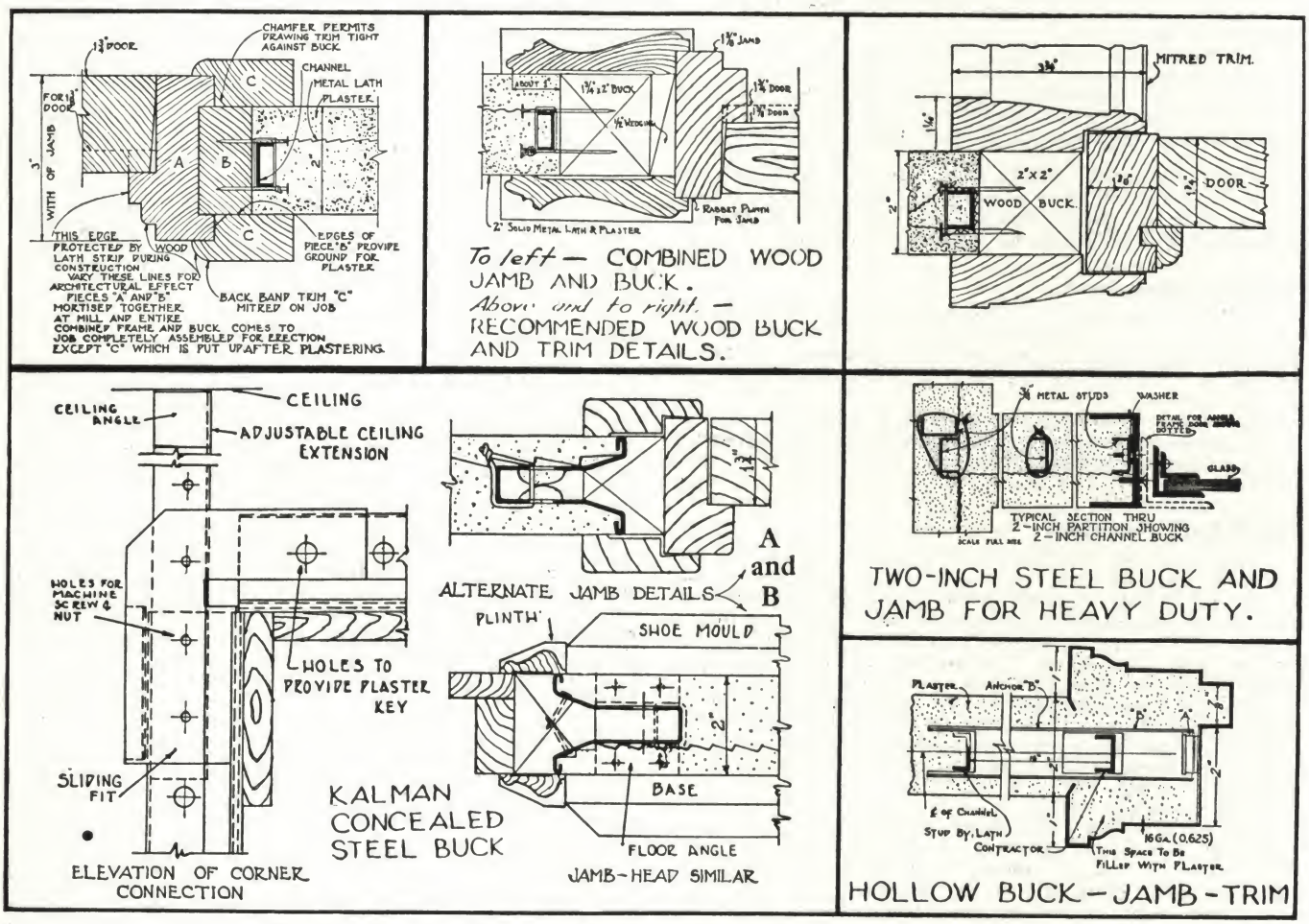
(5) Chimneys should be topped with projecting impervious caps having drip cut into underside to shed water beyond face of stucco. Chimneys should be wrapped with metal lath before stuccoing.

(6) Metal lath should be self-furring or furred out with nails or metal strips, wood strips not recommended.

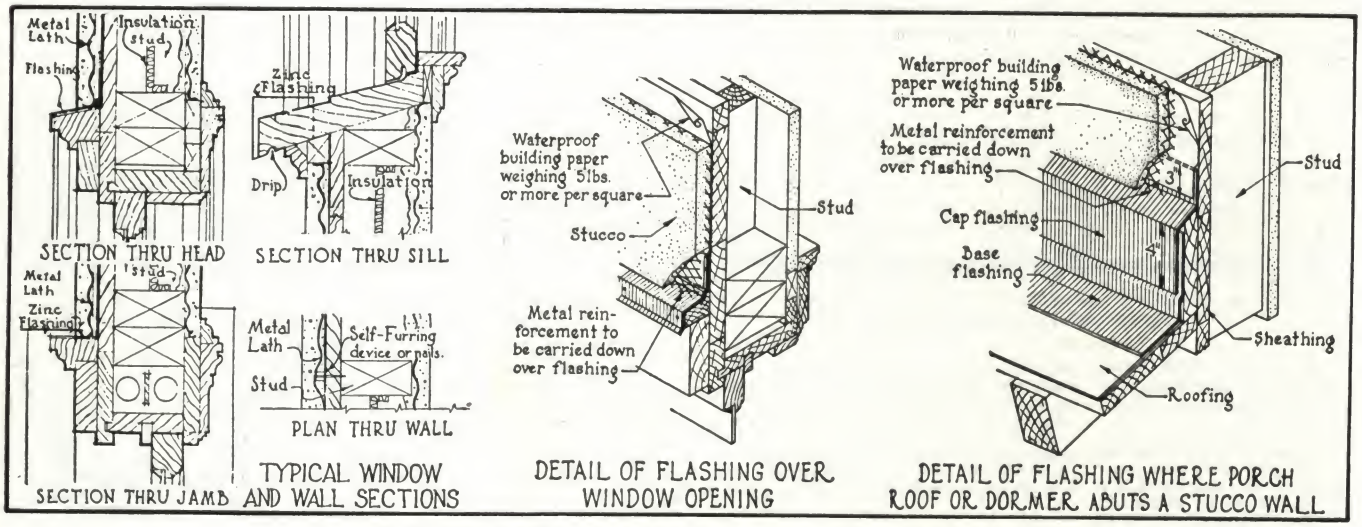
Overcoating

Extensively used in modernizing old frame or masonry houses. Stops depreciation, effects a substantial saving on the fuel bill, and doubles resale value.

Where necessary, extend old windows and door frames for increased thickness of wall. Apply waterproof building paper or insulation followed directly by metal lath secured to the siding by furring devices, or use self-furring lath—avoid wood furring. If weatherboarding is in poor condition remove and proceed as in sheathed construction. On old masonry use special masonry nails into joints, fur with channels, apply lath and stucco.



Details Showing Use of Metal in Single and Double Partitions



Details Showing Use of Metal Lath in Stucco Construction

AMERICAN STEEL & WIRE COMPANY

Subsidiary of United States Steel Corporation

Triangle Mesh Woven Wire Fabric for Stucco Houses

SALES OFFICES

CHICAGO, 208 So. La Salle Street
CLEVELAND, Rockefeller Building
DETROIT, Foot of First Street
CINCINNATI, Union Trust Building
MINNEAPOLIS—ST. PAUL, Merchants National Bank Building, St. Paul
MILWAUKEE, 850 Bankers Building
ST. LOUIS, 506 Olive Street
KANSAS CITY, 417 Grand Avenue
OKLAHOMA CITY, Hales Building
BIRMINGHAM, Brown-Marx Building
MEMPHIS, Sterick Building
DALLAS, Praetorian Building
DENVER, First National Bank Building
SALT LAKE CITY, Walker Bank Building
NEW YORK, 30 Church Street
BOSTON, Statler Building
PITTSBURGH, Frick Building
PHILADELPHIA, Widener Building
ATLANTA, 101 Marietta Street
WORCESTER, 94 Grove Street
BALTIMORE, 32 So. Charles Street
BUFFALO, 670 Ellicott Street
WILKES-BARRE, Miners Bank Building

PACIFIC COAST DISTRIBUTORS, COLUMBIA STEEL COMPANY

SAN FRANCISCO, Russ Building
LOS ANGELES, 2087 E. Slauson Avenue
PORTLAND, 777 Nicolai Street
SEATTLE, 4th Avenue So. and Connecticut Street
HONOLULU, Castle & Cooke Building

EXPORT DISTRIBUTORS, UNITED STATES STEEL PRODUCTS COMPANY, 30 Church Street, NEW YORK, N. Y.

Product

TRIANGLE MESH, STYLE U-14, and ELECTRIC WELD GALVANIZED WIRE FABRIC for Stucco Work.

For our catalogues on Concrete Reinforcement, Wire Rope, Electrical Wires and Cables, see List of Manufacturers.

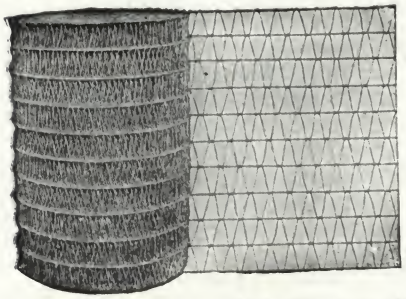
Description and Uses

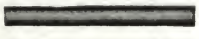
Triangle Mesh—A woven fabric made of galvanized cold drawn steel wire. The longitudinal wires are No. 12 gauge spaced 4 in. on centers, and the cross wires are No. 14 gauge spaced either 2 or 4 in. on centers.

Style U-14—A woven fabric made of galvanized cold drawn steel wire. The longitudinal wires are No. 14 gauge spaced 1⅜ in. on centers, and the cross wires are No. 17 gauge spaced 2 in. on centers.

Electric Welded Mesh—An electrically welded fabric made of galvanized cold drawn steel wire. Both the longitudinal and cross wires are No. 14 or No. 16 gauge spaced 2 in. on centers.

Uses—All the above fabrics are used extensively for reinforcing cement, magnesite or gypsum stucco on new buildings or for overcoating old wood, brick or stone structures.





Exact Size of Main or Longitudinal Wire

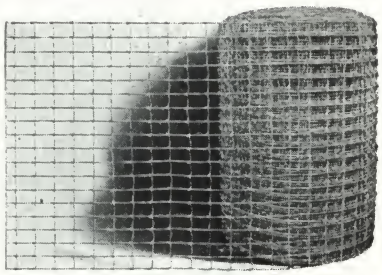
Exact Size of Diagonal Cross Wires

Style 2L, 2-in. Mesh

GALVANIZED TRIANGLE MESH WOVEN WIRE REINFORCEMENT FOR STUCCO

Style No.	Longitudinal wires		Cross wires		Approx. weight, lb., per sq. yd.
	Gauge No.	Spacing, in.	Gauge No.	Spacing, in.	
2L	12	4	14	2	2.84
2M	12	4	14	4	1.94

Made regularly in rolls 150 ft. long and 36 or 48 in. wide. Rolls 150 ft. long, 36 in. wide contain 50 sq. yd. Rolls 150 ft. long, 48 in. wide contain 66⅔ sq. yd.



STYLE NO. U-14 MESH

Style No.	Longitudinal wires		Cross wires		Width of rolls, in.	Length of rolls, ft.
	Gauge No.	Spacing, in.	Gauge No.	Spacing, in.		
U-14	14	1⅜	17	2	24¾	219

Advantages

Positive reinforcement of the stucco; openings of sufficient size to allow the stucco to be pushed through and completely around the wires; galvanized coating insures a lasting construction; low first and installation costs.

Economy

The economy of galvanized wire fabric lies in its efficiency, low first cost, low installation cost and long life.

Application

Apply over a suitable backing consisting of the usual board sheathing with a covering of light weight tarred building paper, a manufactured felt, paper, or gypsum board, or any of the other so-called sheathing or plaster boards.

No furring strips or special furring nails are needed with Triangle Mesh or Style U-14 reinforcement because its general construction is such as to insure that the wires are held away from the sheathing.

When applying electric weld fabric galvanized furring nails or pencil rods should be used to insure proper embedment of the fabric in the stucco.

For fastening to wood sheathing use 1-in. or larger galvanized wire poultry netting or metal lath staples, using at least one staple in every square foot of fabric. Special care should be taken to staple the mesh securely at all corners and all openings. Galvanized staples or nails are preferred for all types of stucco and are absolutely necessary when used with any of the magnesite stuccos.

The wire fabric should extend around the corners, no laps being closer than 8 in. from the corner. The laps along the sides of the sheets should be at least 2 in. The cutting of the fabric can be easily done by means of heavy snips.

AMERICAN CLIP-ON CORPORATION

Manufacturers of "Clip-On" Systems of Plastering

MAIN OFFICES
2236 North 27th Street, PHILADELPHIA, PA.

Products

"Clip-On" Fireproofing Block; "Clip-On" Ceilings; "Clip-On" Boards; "Clip-On" Furred Wall; 3½-in. Finished "Clip-On" Hollow Partition; "Clip-On" Hollow Partition of any thickness; 2 and 3-in. "Clip-On" Solid Partition; 2 or 2½-in. "Clip-On" Fireproof Suspended Ceiling.

Advantages of "Clip-On" System

The only known system of plastering with a 20-year guarantee.

Prevents plaster falling off walls or ceilings.

Provides all necessary requisites of satisfactory plastering at a minimum cost.

Reduces the dead load in suspended ceilings approximately 50 lbs. per sq. yd.

Drying time reduced—only minimum amount of water used.

Corrosion and deterioration prevented—all metal parts heavily galvanized copper bearing steel.

Fire resistant properties higher than other systems of equal thickness.

Straighter finished work made possible by its practicable method of construction.

Speeds up time of construction and reduces waste and rubbish.

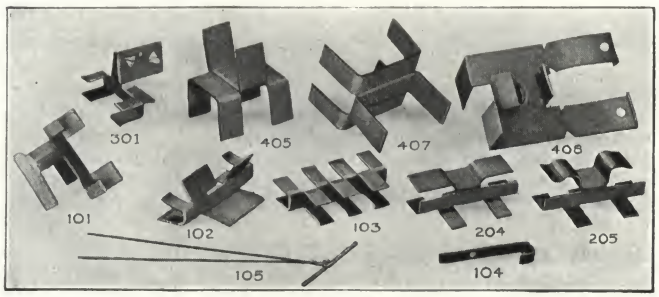
No nails necessary for "Clip-On" board on wood joists or studding.

The "Clip-On" System of Plastering is erected only under the supervision of the American Clip-On Corporation or their authorized representatives and is guaranteed by them. Licensed dealers and licensed plastering contractors assures architect and owner of the best of material and workmanship going into the operation.

"Clip-On" brands of plastering material are sold by reputable dealers everywhere at market prices of other brands.

Strength Test

The illustration shows the strength test given a "Clip-On" board before the 12th Annual Convention of the Contracting Plastering International Association, October 4, 1929, at Oakland, California. Nine plastering representatives (Frank Clausen, Oakland; Oscar A. Reum, Chicago; W. J. Fritsch, Detroit; Paul Johnson, Chicago; J. L. Grady, Boston; E. R. Urbanek, Milwaukee; James Hamilton, Philadelphia; Charles Bonnell, Cleveland, and M. P. Engel, Chicago) are enjoying the novelty of their combined weight of 1600 pounds being supported by a "Clip-On" board ceiling suspended in a 4x4-ft. angle frame.



The purpose and use of the different clips shown above are illustrated in our Descriptive Information Booklet, mailed free upon request.

TABLE FOR QUANTITY OF MATERIALS BASED ON 100 SQ. YD. WHITE SMOOTH FINISH

Character of work to be covered	Spacing of channels ¾ in.	1 in.	1½ in.	2 in.	No. of Clip-On boards required	No. and quantity of clips required: Quantity	No.	Quantity	No.	Bond coat, lb.	Sand, lb.	"Clip-On" finishing lime, lb.	"Clip-On" gauging or molding plaster, lb.
Suspended ceilings	16		48		170	510 510	101 103	255	105	1,000	1,700	330	165
Furred ceilings on Jr. beam or bar joist 24 in. on centers.					170	340 510	204 103	675	105	1,000	1,700	330	165
Furred ceiling on Jr. beam, bar joist or concrete joist, 36 in. on centers	24				170	340 510	101 103	675	105	1,000	1,700	330	165
Ceilings against wood joists 16 in. on centers					170	510 510	301 103	255	105	1,000	1,700	330	165
Furred walls (steel channels 16 in. on centers)	16	48			170	510 340	101 103	255	105	1,000	1,700	330	165
Furred walls (wood studs 16 in. on centers)					170	510 340	301 103	255	105	1,000	1,700	330	165
3½ in. hollow partition finished two sides (single 2 in. cold formed channel)				18	340	900 680	102 103	510	105	2,000	3,400	660	330
4 in. or more hollow partition, finished two sides (staggered 2 in. cold formed channel)				18	340	900 680	102 103	510	105	2,000	3,400	660	330
4 in. more hollow partition, finished two sides.	16	48			340	1020 680	101 103	510	105	2,000	3,400	660	330
2 in. solid partition, finished two sides (single board)	16				170	510 340	101 103			2,500	6,000	660	330
3 in. solid partition, finished two sides (2 in. partition block)		30½				50 750	407 408			2,000	6,000	660	330
1½ or 2 in. fireproofing ceiling block making a 2 or 2½ in. thick monolithic ceiling slab		36	36		{ on 1½ in. block use clips No. 405 if needed on 2 in. block use clips No. 407 if needed					1,000	2,500	330	165

Note:

All channel furring erected as usual for metal lath construction except spacing.

⅜-in. "Clip-On" board used on all furred walls, ceilings and partitions, except for fireproof ceiling and 3-in. solid partition.

2x12x30-in. partition block is used for 3-in. solid partitions only, with ½-in. plaster each side.

"Clip-On" material, such as bond coat, lime, gauging and moulding plaster, are used same as any other corresponding plastering material.

Lath cushion or cornerite must be used at all internal angles. Use 1-in. blue staples preferably to fasten lath cushion to boards. Use 4d nails for fastening to blocks.

Use strip of metal lath at all places where "Clip-On" boards or blocks adjoin other materials.

On fireproof ceilings use a continuous strip of metal lath about 6 in. wide over end joints of blocks after holes have been grouted if ceiling will have a tendency to vibrate due to light construction or to heavy machinery pounding. Fasten metal lath to blocks with 4d nails.

No. 101 Clips must be drawn tight over channels in order to draw boards rigidly against channel.

For all ceilings use three No. 103 junction clips at ends of boards but it is only necessary to use two for walls and partitions.

No. 104 Clips are used where thickness of wet plastering materials to be applied will exceed ⅜-in. thickness or where fastening of boards to channel is required closer than 16-in. centers.

No. 205 Clips are used for bar joist construction instead of No. 204 Clips which are used for Macmar, Junior Beam or similar construction.

No. 301 Clips are nailed to wood studding or wood joists but nails must not be used in the "Clip-On" boards.

No. 405 Clips are used to piece out 1½-in. ceiling fireproofing blocks where it is required to cut down the size.

No. 407 Clips are used to piece out 2-in. ceiling fireproofing blocks or to piece out 2-in. partition blocks where it is required to cut down the size.

Clips cannot be figured accurately on account of location and spacing of channel for cut-outs, cut-ins, openings, etc., or extra joints in the boards or blocks necessitated by fitting.

Continued on next page

"CLIP-ON" SYSTEM SPECIFICATIONS FOR LATHING AND PLASTERING

Ceilings

This contractor shall erect the "Clip-On" System of Plastering as follows:

Suspended ceilings shall be furred with ¾-in. channels, 16 in. on centers clipped rigidly to 1½-in. channels spaced not over 4-ft. centers, and same attached to hangers which are placed in the floor slab on centers not exceeding 4 ft. each way.

After furring channel have been properly placed, erect the "Clip-On" Board 16x48 in., securing them to furring channel by means of galvanized copper bearing metal clips with joints broken at every course and held fast by junction clips. Insert special toggle wires in the holes provided not over 96 in. from center to center in large ceiling areas.

Provide cushion consisting of strips of light gauge metal lath bent "L" shape at all ceiling angles.

Clips to fasten board to channel must be spaced not over 16 in. from center to center.

Junction clips must be used at top, bottom and center of every vertical joint and intermediate clips in center of boards wherever necessary to make a complete and satisfactory job.

Scratch and Brown Coat—Mix 100 lb. "Clip-On" Bond Coat with 150 lb. clean sharp sand (dry mixed) in a clean mortar box before adding sufficient water to make it a workable consistency. Then apply one tight coat directly to the "Clip-On" Board, pressed firmly to board and follow up to full thickness of ¼ in. Use darby to straighten up and level off work ready for finish coat.

Caution: *Do not oversand the "Clip-On" bond coat as it will not only cut down the yardage, but it will not bind to boards thoroughly. Care must be taken that plaster does not dry out too fast as too quick drying is harmful to all plastering material.*

White Coat—To 100 lb. "Clip-On" finishing lime, add 50 lb. of No. 1 "Clip-On" Moulding Plaster or Gauging Plaster. Trowel to a smooth burnished surface.

Sand Finish—Add two parts clean sharp white sand to one part "Clip-On" finishing lime—apply with a steel trowel and rub surface to the desired texture with a cork float.

Furred Walls

Erect ¾-in. or 1-in. channel, securely fastened to wall, horizontally, starting at floor or ceiling, and space same not over 4-ft. centers. Wire ¾-in. channel vertically 16 in. on centers to the horizontal channels, then proceed with the "Clip-On" System.

2-in. Solid Partitions

Erect ¾-in. channels vertically 16 in. on centers in an approved manner. Clip the "Clip-On" Board to same as above—on one side of channel only. Proceed with plastering on both sides to required thickness of 2 in. with "Clip-On" materials.

3½ to 5½-in. Hollow Partitions

Erect 2 to 4-in. cold rolled channels vertically 18 in. on centers or two rows ¾-in. hot rolled channels to the required width, in an approved manner and fasten rigidly to floor, ceiling and door bucks. Allow carpenter to fasten nailing blocks to channels where necessary for nailing grounds, picture moulding, chair rail, etc. Proceed with "Clip-On" Board on both sides of partition and plaster as above.

Wood Construction

All wood construction erected in the usual manner. Clip board to ceiling joist, wall or partition studding and nail clips securely to same. *Caution:* Do not nail board to studding or joist at any point.

For Portland Cement Plastering

When portland cement mortar is to be used for backing of tile or other purpose apply 2-in. mesh poultry wire over entire surface of board and draw very tightly, fastening same rigidly against boards by wiring to clips, and proceed with cement plastering.

Note: *If suspended ceilings have to withstand unusual abuse they can be made practically indestructible by applying 2-in. mesh poultry wire over the entire surface of board and tying tautly to clips before plastering.*

3-in Solid Partitions

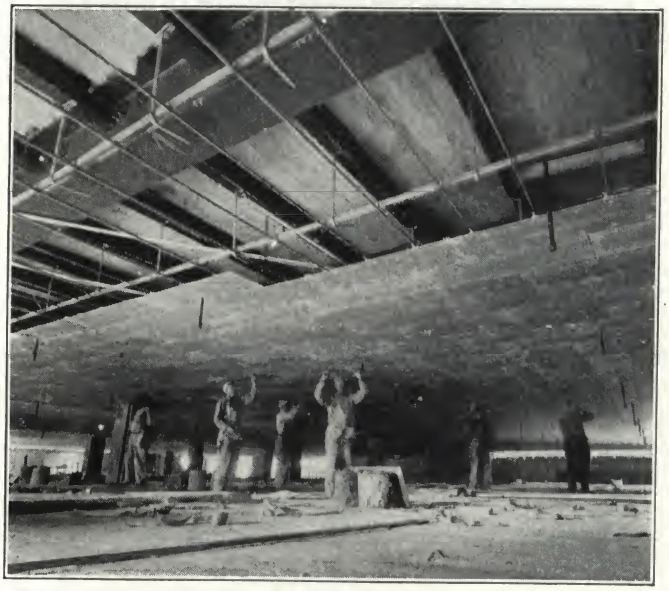
Apply "Clip-On" Partition Block between 1-in. channels spaced vertically on 30½-in. centers and plaster ½ in. on each side, same as above, with "Clip-On" materials. Standard size of "Clip-On" Partition Blocks are 2x12x30 in.

Fireproof Ceilings

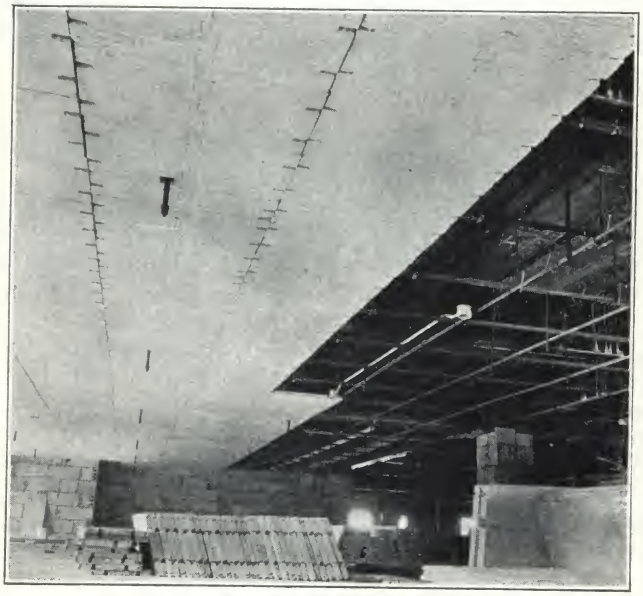
(For application under exposed steel floors, Bar Joist, Junior Beam, Macmar and other constructions.)

Apply 1½ or 2-in. "Clip-On" Fireproofing Block, clipping same to 1-in. channels spaced horizontally 3 ft. centers to centers. These channels are clipped to 1½-in. channel spaced crosswise on 3-ft. centers or are clipped or wired directly to the Bar Joist or Junior Beam. Apply "Clip-On" Bond Coat and after thoroughly set apply finish coat in usual manner. Standard sizes of "Clip-On" Fireproofing Blocks are 1½x18x36 in. and 2x18x36 in.

Note: *When portland cement mortar is specified, apply 2-in. mesh poultry wire well stretched and fastened to the "Clip-On" Block by wiring at clip openings. Apply over the entire surface of the blocks a coat of approved waterproofing cement mortar not less than ½ in. thick at any point and finish with Best Bros. Keene's Cement troweled smooth and even, or, if float finish is required, add two parts clean, sharp white sand to one-half part hydrated lime and one-half part Best Bros. Keene's Cement—apply with a steel trowel and rub surface to the desired texture with a cork float.*



"Clip-On" Plaster Board



"Clip-On" Fireproof Block

THE BERGER MANUFACTURING CO.

Metal Building Materials

CANTON, OHIO

For Branch Offices, see our page on Steel Lockers and Shelving

Products

DIAMOND MESH METAL LATH; TRI-PLEX LATH; SHEET LATH; 3/8-INCH RIBPLEX METAL LATH; 3/4-INCH RIBPLEX REINFORCEMENT.

Also Channels; Corner Bead; Base Bead; Concealed Picture Mould; Studs; Bar Joists; Nailer Joists; Metal Ceilings.

Berloy Metal Lath conforms to Simplified Practice Recommendation R-3-28 of U. S. Department of Commerce Bureau of Standards.

For our page on Lockers and Shelving, see Manufacturers' Index.

BERLOY

TRADE-MARK

Berloy Diamond Mesh Metal Lath

Standard and small mesh diamond mesh lath offers a small, firm mesh with excellent bonding qualities. It is excellent for all lath work when used according to standard specifications, and its superior forming qualities make it ideal for ornamental stucco and all work where bending or forming is required.

Berloy Diamond Mesh Metal Lath

BERLOY DIAMOND MESH METAL LATH

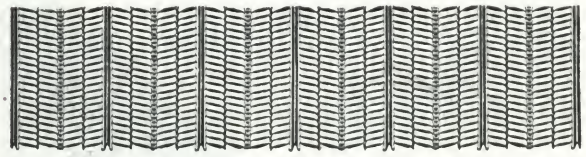
Weight per sq. yd., lb.	Size of sheets, in.	Sq. yd. per sheet	Sq. yd. per bundle
2.2	24x96	1.78	16
2.5	24x96	1.78	16
3.0	24x96	1.78	16
3.4	24x96	1.78	16

The above applies to steel lath, copper bearing steel lath and toncan iron lath in all weights painted black. Lath cut from galvanized sheets is made in the 2.5-lb. and 3.4-lb. weights.

Specifications—Berloy Diamond mesh metal lath conforms in every way to requirements of specifications of the Associated Metal Lath Manufacturers.

Berloy 3/8-in. Ribplex Metal Lath

An expanded metal lath with ribs, used principally for partition and ceiling plaster work, for exterior stucco, overcoating old buildings, and for top slab lath in steel joist construction.



Section Across 3/8-in. Ribplex Sheet

The V-shaped ribs (3/8 in. high) spaced 4 in. apart take the place of separate furring strips and permit wider spacing of support. Ribs nest together at sides and ends to make a rigid splice and a uniform plastering surface. Effective covering width, 24 in. No waste of material in side laps.

BERLOY 3/8-IN. RIBPLEX METAL LATH

Weight per sq. yd., lb.	Size of sheets, in.	Sq. yd. per sheet	Sheets per bundle	Sq. yd. per bundle
3.0	24x102	1.89	9	17
3.4	24x102	1.89	9	17
4.0	24x102	1.89	9	17

The above weights apply to painted steel and painted copper bearing steel 3/8-in. Ribplex. Toncan iron 3/8-in. Ribplex is made in only the 3.4-lb. and 4.0-lb. weights.

Finished work is strong, firm, uniform, permanent and satisfactory in every way.

Erection Specifications—The following is supplementary and conforms to the specifications of the Associated Metal Lath Manufacturers:

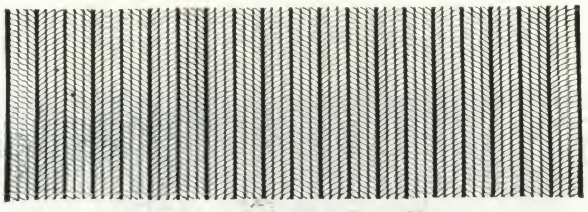
For plastering place ribs against, and mesh away from, supports. Place ribs at right angles to supports. All adjoining sheets are to be interlocked at sides and ends.

Sheets shall be securely wired together with 18 gauge wire once between supports and not over 24 in. apart along ribs at sides and every 4 in. at ends. 3/8-in. Ribplex lath shall be securely wired to channels with 18 gauge wire or stapled to studs with 1 1/4-in. 14 gauge galvanized wire staples at least every 8 in.

When splices are necessary between supports, they shall be at least 2 ft. apart in adjacent rows. Allow 1-in. end lap when splices are at supports. If splices are between supports, allow 8 in. Spacing of supports for 3/8-in. Ribplex shall be according to the Associated Metal Lath Manufacturers' specifications. When used as form reinforcing for concrete slab over steel joists, place the ribs up and mesh down.

Berloy Tri-Plex Lath

Berloy Tri-Plex is the latest development in a flat rib lath. It has been designed especially to provide a sheet stiff and rigid enough for wide joist spacing without waste for lap. It will lie flat without bulging. The most important feature, however, is the fine mesh which practically eliminates all droppage of plaster. This means maximum economy. Especially recommended for walls and ceilings where the spacing of supports does not require Ribplex.



Section Across Tri-Plex Sheet

TRI-PLEX TABLE OF WEIGHTS AND SIZES

Weight per sq. yd., lb.	Size of sheets, in.	Sq. yd. per sheet	Sheets per bundle	Sq. yd. per bundle
2.75	24x96	1.78	9	16
3.0	24x96	1.78	9	16
3.4	24x96	1.78	9	16

The above weights apply to painted steel and painted copper bearing steel. Painted toncan iron lath and galvanized steel lath are furnished in 3.4 lb. only.

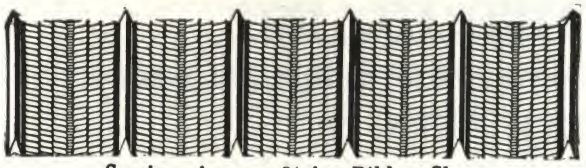
Berloy 3/4-in. Ribplex Reinforcement

Berloy 3/4-in. Ribplex is an effective centering and reinforcement for concrete roofs and floors, and for concrete or plaster partitions and ceilings. It also has a wide range of usefulness in general concrete work.

It is a stiff metal mesh with 3/4-in. ribs spaced 4.8 in. apart, all formed cold from the same sheet of metal.

In addition to the uses described on the following pages, 3/4-in. Ribplex can be used to good advantage in many forms of special work such as column and beam protection, balconies, galleries, bathhouses and other small buildings; fences and walls, ducts, tanks, etc.

Continued on next page



Section Across ¾-in. Riblex Sheet
Ribs are ¾ in. high spaced 4.8 on centers

PAINTED STEEL ¾-IN. RIBPLEX

Gauge No.	Weight per sq. ft., lb.	Total sect. area per ft., sq. ft.	Width of sheets, in.	Length of sheets for all gauges, ft.
28	.50	.1406	24	4, 5, 6, 7, 8, 9,
26	.60	.1688	24	10, 11, and 12
24	.75	.2250	24	

Roofs of ¾-in. Ribplex—As forms and reinforcement, ¾-in. Ribplex extends the field of concrete to steep pitched roofs, sawtooth roofs, etc. For these types as well as for flat roofs the Ribplex is applied with ribs up. The concrete is applied directly to the Berloy ¾-in. Ribplex and just enough goes through the mesh to embed the metal. The under surface is usually backplastered and in many types of buildings no further ceiling is required. As the table below shows, 2 in. of concrete usually gives ample strength for any concrete roof of Ribplex construction.

Floors of ¾-in. Ribplex— For floors, ¾-in. Ribplex is used in the same way and offers the same advantages as for flat roofs. Slabs, of course, should be thicker, but here, too, the safe load table below shows that a substantial saving can be made in dead weight, materials and supporting structure.

SAFE TOTAL LOADS IN POUNDS PER SQUARE FOOT FOR ¾-IN. RIBPLEX

Thickness of concrete	Gauge No.	Resisting moment per ft. of width	Span in feet							
			3	4	5	6	7	8	9	10
2 in.	28	3140	291	164	104	73	....	....	....	....
Wt. = 24 lb.	26	3720	346	194	124	85	63	....	....	....
per sq. ft.	24	4370	405	228	146	101	74	....	....	....
2½ in.	28	4070	376	211	135	94	69	53	....	....
Wt. = 30 lb.	26	4850	449	253	162	112	82	62	....	....
per sq. ft.	24	6360	588	331	211	147	108	81	....	....
3 in.	28	5030	465	261	168	116	85	65	....	....
Wt. = 36 lb.	26	5930	550	309	198	137	101	77	61	....
per sq. ft.	24	7820	722	406	260	180	133	101	84	....
3½ in.	28	5950	550	310	198	137	101	77	64	....
Wt. = 42 lb.	26	7060	654	368	237	163	120	92	72	....
per sq. ft.	24	9300	861	484	310	214	158	121	96	....
4 in.	28	6910	640	360	230	160	117	90	71	....
Wt. = 48 lb.	26	8160	756	425	272	188	139	106	84	68
per sq. ft.	24	10760	997	561	359	249	183	140	110	90

For safe live loads deduct weight of slab.
Stress in steel 16,000 lb. per sq. in.
Stress in concrete 650 lb. per sq. in.
Ratio on moduli of elasticity = 15.
Distance of center of gravity above bottom of plate = .21 in.
Bending moment $\frac{WL^2}{10}$ for $\frac{WL^2}{12}$ add, 20%; for $\frac{WL^2}{8}$ deduct 20% from above loads.

MAXIMUM SPANS WITH WET CONCRETE

Slab thickness..... in.	2			2½			3			3½			4		
Gauge of ¾-in. Ribplex	28	26	24	28	26	24	28	26	24	28	26	24	28	26	24
Maximum span... ft.	3¼	3½	4	3	3¼	3⅜	2¾	3	3⅛	2½	2¾	3	2¼	2½	2¾

Note: In using ¾-in. Ribplex as centering in concrete roofs and floors no supports are necessary except for long spans or extra thickness. The table above shows limits above which supports should be used until the concrete sets.

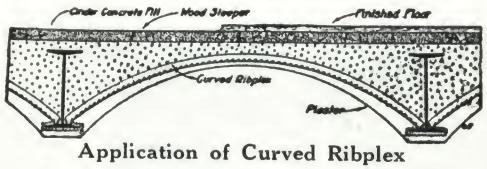
Solid Partitions and Walls of ¾-in. Ribplex—Berloy ¾-in. Ribplex placed with ribs vertical, forms an excellent base for a 2-in. solid wall or partition. Temporary bracing is used until the first coat of plaster, applied on the side opposite the ribs, has set. The bracing is then removed and the Ribplex backplastered; a second coat over the first and the partition is ready for the finish coats. Berloy standard ceiling and floor track or metal lath bent at right angles is used for the attachment of the Ribplex at ceiling and floor.

Hollow Partitions and Walls of ¾-in. Ribplex—Berloy ¾-in. Ribplex is also used extensively for hollow partitions and exterior walls, usually with ribs horizontal and next to supports to act as furring. This use permits spacing of supports from 4 to 6 ft. apart.

Ceiling of ¾-in. Ribplex—In many cases Ribplex roofs or floors are backplastered beneath to form very effective ceilings. ¾-in. Ribplex as a base makes ceilings firm and even and supports may be spaced 4 to 6 ft. apart. ¾-in. Ribplex can also be used to good advantage in suspended ceiling construction with light channel supports. In all cases the ribs remain on the upper side in order to realize their full strength and give a smooth, even plastering surface beneath.

Curved Ribplex

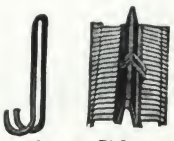
Berloy ¾-in. Ribplex can be supplied curved to any desired radius with ribs on the outside of the curve. For



Application of Curved Ribplex

roof and floor construction it is supplied as part of a circle evenly curved or with middle portion flat and ends curved to the desired radius. Curved Ribplex was used to splendid advantage between deep girders in the addition to the R. H. Macy Store, New York City, to save concrete and reduce dead load.

¾-in. Ribplex Clips

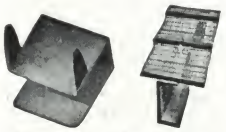


No. 1 Side Clip

No. 1—Side Clip—Used as shown for fastening side laps together. Not needed for spans up to 3 ft. For longer spans these clips should be used spaced 3 ft. apart or less. Necessary side clips are supplied without extra charge.

The illustration also shows how ribs nest together to form a firm, even joint.

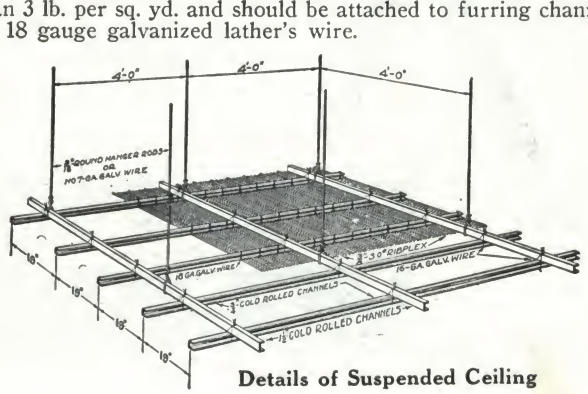
No. 2—Purlin Clip—For fastening ¾-in. Ribplex to I-beams or channels in floor or roof construction as shown. The clip has a spring grip on the flange of beam which insures a very rigid connections. Clips should be placed at every other rib along the structural member which means one for every 9⅗ in. of length.



No. 2 Purlin Clip

Suspended Ceilings

The hangers recommended are No. 8 galvanized wire, 1x$\frac{3}{16}$-in. flats, or $\frac{5}{32}$-in. round, mild steel rods. Runner channels should be not less than 1½ in.; minimum weight of .442 lb. per lin. ft. Furring channels not less than ¾ in. with a minimum weight of .276 lb. per lin. ft. Metal lath should weigh not less than 3 lb. per sq. yd. and should be attached to furring channels by 18 gauge galvanized lather's wire.



Details of Suspended Ceiling

CONVER STEEL & WIRE CO., INC.

Manufacturers of Wire and Flat Steel Products for Building Construction

TELEPHONE
MOTT HAVEN 1600

621-631 East 132nd Street, NEW YORK, N. Y.

Products

LADDER STUD; CORNER BEAD; BASE BEAD; HANGERS and HAIRPINS for suspended Ceilings.

Also Reinforcing Bar Cutters and Benders, Steel and Galvanized Mortar Boxes, Special Tools, Bridle Irons, Wall Ties and Ashlar Anchors.

For our page on Wire Clip Reinforcement and Form Spacers, see Manufacturers' Index.

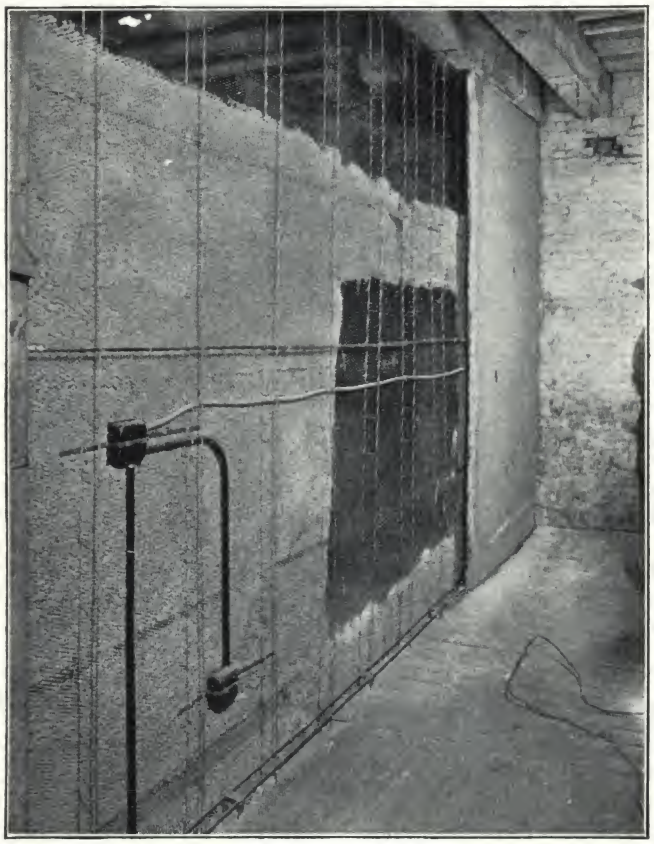
Ladder Stud

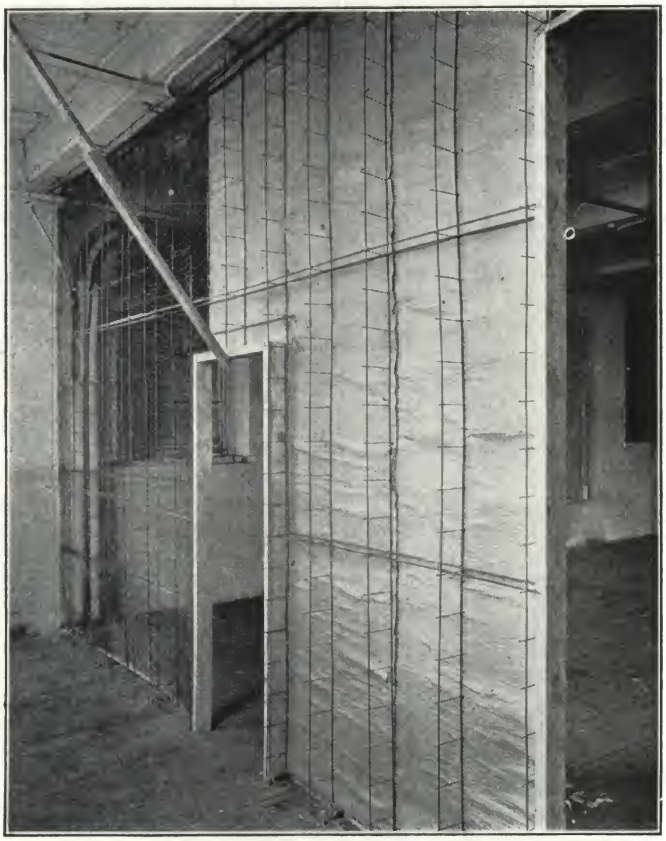
The demand and need for a light fireproof partition has been very great. In addition, a hollow partition permitting telephone wires, electric conduits and pipes is very desirable. All these features are combined in Ladder Stud.

Constructed of heavy longitudinal wires that run from floor to ceiling, welded together at very close intervals with cross wires. These cross wires add stiffness to the partition and act as shelves for wires and pipes. Made in any length or width.

Quick Delivery—Can be supplied inside of 48 hours after receipt of order.

Any Type Metal Lath Can Be Supplied—Even paper back lath can be applied to these studs. The large air space in the center deadens sound. The accompanying illustrations only begin to show some of the possibilities of this stud. For further details, telephone or write us.





Packed 25 pieces per bundle. Weight: 150 lb. per 1000 ft.

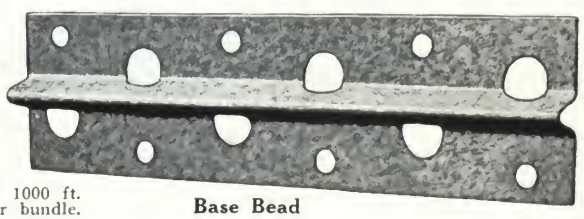
Corner Bead

Conver Corner Bead—Rail Type

Made from 22 gauge tight coat galvanized sheets (non-rusting) Clips for nailing furnished—one per foot plus.

Conver Straight Point Base Bead

Made from 22 gauge tight coat galvanized sheets (non-rusting).



Stock length: 10 ft.
Weight: 190 lb. per 1000 ft.
Packed 12 pieces per bundle.

Base Bead

Hung Ceilings

Hung ceiling construction usually calls for ¾ or 1-in. cross furring channels, depending on type of metal lath used. These are fastened to main furring channels or angles by means of hairpins which we manufacture in shapes shown by Figs. 3 and 4. The top bends in Figs. 3 and 4 reduce erection time on the job. Hairpins securely and quickly tie main furring and cross furring together more rigidly than loose wire.

Hangers shown (Figs. 1 and 2—usually called toggle hangers) are the standard type used for suspended ceilings in concrete construction. We manufacture other various type hangers for various types of construction.

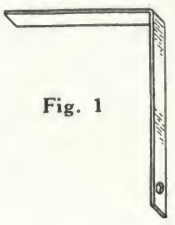


Fig. 1

Fig. 2

Fig 3 **Fig. 4**

THE GOLDSMITH METAL LATH CO.

Manufacturers of Metal Lath, Concrete Reinforcing Specialties

GENERAL OFFICE AND FACTORY
CINCINNATI, OHIO

Products

SHUREBOND METAL LATH; PHOENIX METAL LATH; CLINCHER METAL LATH; FOUR-RIB SHUREBOND METAL LATH; GOLDSMITH "X-L" DIAMOND MESH EXPANDED METAL LATH; SHUREBOND HANGER INSERTS; SHUREBOND FURRING INSERTS and SPACERS; SHUREBOND COLD FORMED CHANNELS, etc.

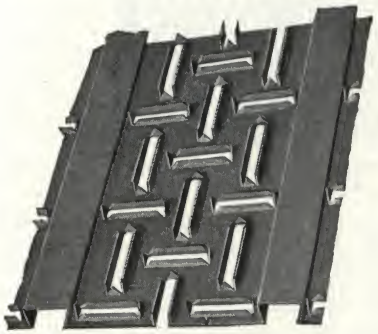
For Shurebond Unit System of Concrete Joist Construction, see Manufacturers' Index.

Services

Catalogue with complete details, specifications, instructions for placing and installing, and other information mailed on request.

Shurebond Metal Lath (Patented)

A patented metal reinforcement and self-furring lath for fireproof, composite, or wood structures; particularly suitable for solid plaster partitions, suspended and furred ceilings, fireproofing of beams, columns, short span floor and roof construction, outside walls, etc.; can be arched or formed into cylinders to any radius not less than 3 in.



Shurebond Metal Lath

Shurebond Metal Lath is the only metal lath having dovetailed ribs; it is furnished painted or black in ½-ft. lengths to 6 ft., and even-foot lengths to 12 ft., and in widths of 2 ft. covering surface—allowance for laps unnecessary. Shurebond Metal Lath is furnished in four weights, namely, .625, .80, .95 and 1.25 lb. per sq. ft.; the .80-lb. lath can be used for suspended ceilings on 4-ft. spans without cross furring.

Advantages of Shurebond Metal Lath—

The dovetailed ribs 4 in. on centers provide maximum bond and stiffness when combined with plastic materials.

Process of manufacture creates maximum strength.

No sharp edges or small areas of metal subject to corrosive attack or disintegration—insuring long life.

Webs or perforations in truss form overlap in both directions and stiffen the lath vertically and laterally.

No metal is sheared away.

No straight lines, therefore plaster cannot slip or shear.

No cracks at laps.

Ribs do not act in compression in thin concrete slabs.

No sharp edges to cut mortar.

Easier to plaster than wood lath.

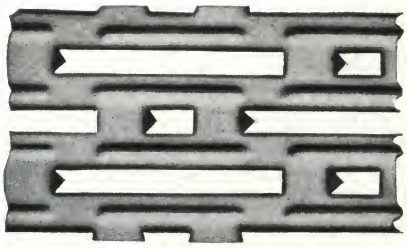
Phoenix Metal Lath—Self-furring (Patented)

Phoenix Metal Lath

For nailing on wood studs or joists on spans approximately 2 ft.; as a form and reinforcement for concrete slabs on top of metal lumber or bar joists; also for attached ceilings with removable forms. Painted sheets 8 ft. long, 24½ in. wide, weighing 4.85 lb. per sq. yd.; 9 sheets (16.34 yd.) per bundle; ribs 8 in. on centers. Long life assured. Easier to plaster than wood lath. No bagging or sagging.

Clincher Metal Lath

For nailing on wood studs or joists, and for stucco work and in connection with light iron furring. Painted sheets 8 ft. long, 27 in. wide (2 sq. yd.); 10 sheets to the bundle. Easier to plaster than wood lath.



Clincher Metal Lath

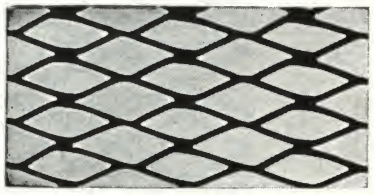
Four-Rib Shurebond Metal Lath (Patented)

The same as Shurebond, except ribs are channel shaped and 8 in. on centers. Made in weights of 5, 6.3 and 7.56 lb. per sq. yd.; sheets 8 ft. long by 2 ft. wide covering surface, painted.

Used for suspended ceilings on spans approximately 2 ft. 8 in.; for attached ceilings; for solid plaster partitions; as a form and reinforcement for concrete slabs on top of metal lumber or bar joists; and for the lath bottom units for the Shurebond Unit System of Concrete Joist Construction. (See Manufacturers' Index.)

Goldsmith "X-L" Diamond Mesh Expanded Metal Lath

For all kinds of interior and exterior plastering and for fireproofing structural members. Made from the best grade of sheet steel on the latest type of high speed metal lath machine, insuring uniform quality and flat sheets with square ends. Easy to handle, quickly installed, and provides a uniform surface to work on. Can also be furnished of copper bearing steel or pure iron copper alloy. Sheets 8 ft. long, 27 in. wide (2 sq. yds.)—8 sheets to the bundle. Furnished in the following weights:



Goldsmith "X-L" Metal Lath

2.2 lb. per yd.—painted	3.0 lb. per yd.—painted
2.5 lb. per yd.—painted	3.4 lb. per yd.—painted
2.5 lb. per yd.—galvanized	3.4 lb. per yd.—galvanized

Shurebond Hanger Inserts (Patented)

Simplest and most economical device for suspending ceilings from concrete slabs, suspending pipes, etc. Nailed to forms—no holes to drill. Wires form permanent bond with concrete. When forms are stripped, wire loop of hanger insert is easily wedged down. Inconspicuous in slabs, and when placed for future contingencies, a big time and money saver.

Shurebond Hanger Insert

Shurebond Furring Inserts (Patented)

Simplest and most economical device to provide for furred ceiling under concrete slabs; also for attachment of metal lath to concrete, for furring walls or columns. Nailed to forms—no drilling of holes or hooking over reinforcing steel.

Shurebond Spacers

Used with furring inserts to establish the exact distance from concrete surfaces to furring members where space is desired between concrete and plastered surfaces. Spacers furnished for 1, 2, 3, 4, or 5 in.

Shurebond Cold Formed Channels

Stock sizes furnished of No. 16 gauge in ¾, 1, 1½ and 2 in., in 20-ft. lengths, 20 pieces to the bundle. Other sizes, lengths, or gauges made on special order.

KALMAN STEEL COMPANY

Manufacturers of Building Products

CHICAGO, ILL.

ALBANY, N. Y. ATLANTA, GA. BALTIMORE, MD. BOSTON, MASS. BUFFALO, N. Y. CLEVELAND, OHIO DALLAS, TEX. DAYTON, OHIO DETROIT, MICH. HOUSTON, TEX. MILWAUKEE, WIS. MINNEAPOLIS, MINN. NEW HAVEN, CONN. NEW YORK, N. Y. NILES, OHIO PHILADELPHIA, PA. PITTSBURGH, PA. ST. LOUIS, MO. ST. PAUL, MINN. SYRACUSE, N. Y. WASHINGTON, D. C. YOUNGSTOWN, OHIO

EXPORT OFFICE: NEW YORK, N. Y.

Products

METAL LATH, and LATH ACCESSORIES, all types and weights, Steel Channels, Corner Beads, Base Screeds, Metal Trim, Stucco Reinforcement.

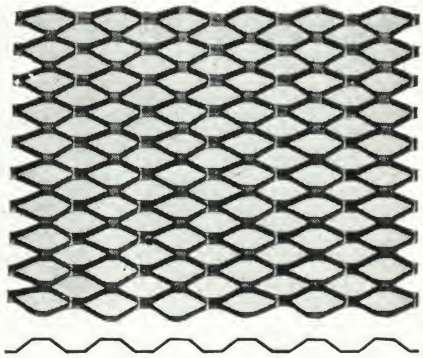
Also Dome Dampers, Coal Chute Doors, Ash Dumps, Flue Cleanout Doors, Steel Basement Windows, Package Receivers, Wall Plugs, Wall Ties.

For Kalman Concrete Reinforcement, Steel Joists and Accessories, Steel Door Frames, see Manufacturers' Index.

Write for fully illustrated, file size catalogue giving detailed information on Kalman Metal Lath and Allied Products.

Cup Kalmanlath

Because of the distinctive "cup" design of the mesh, Cup Kalmanlath is self-furring—no furring strips are necessary.

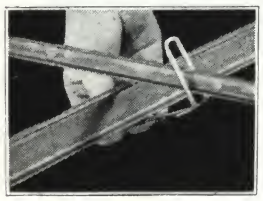


Because furring strips are eliminated, and Cup Kalmanlath can be applied directly to the sheathing or studding, the lather can erect it faster—material and time are saved.

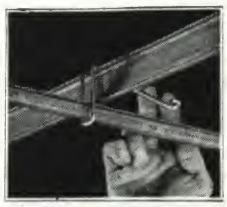
Because there is less mortar back of the faces of the studs when Cup Kalmanlath is used, a saving of mortar amounting to as much as 7 cents per square yard can be averaged. The broad, flat strands permit less mortar to pass through the mesh. The corrugated surface tends to give a perfect key to the mortar without the usual pressure. The key on Cup Kalmanlath is formed in a natural cup, so that no mortar will be cut off and allowed to fall down back of the wall. It insures a stronger, more rigid wall.

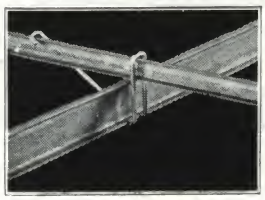
Cup Kalmanlath, in steel painted black, comes in sheets measuring 18x96 in. and weighing 2.5 lb. per sq. yd. or 3.4 lb. per sq. yd. Cup Kalmanlath, galvanized, is available in sheets measuring 18x96 in., weighing 3.0 lb. per sq. yd., and 3.4 lb. per sq. yd.

Kalman Channel Clips



Approved by Union Labor

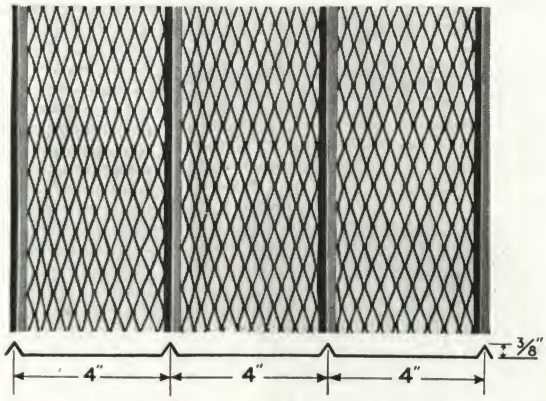




Kalman Clips cut time and costs on fastening furring channels or rods to runner channels or other suspension members. With Kalman Clips, one man can attach furring channels or rods without a helper—in one-half to one-quarter the time required for tying by wire. When movement of the furring members to the right or left along the runner channel is desired, it is but necessary to tap the furring member at the point of clipping. Kalman Clips can carry a ceiling load five or six times their actual load. There is nothing to twist or weaken. Kalman Clips can be supplied for attaching ¾ or 1-in. furring channels to 1½ or 2-in. runner channels. For attaching ¾ or 1-in. channels or ¼-in. rods to bottom chords of Kalmantruss Joists—and ¾ or 1-in. furring channels to 1½ or 2-in. runner angles. Kalman Clips are approved by Union Labor.

⅜-in. Rib Kalmanlath

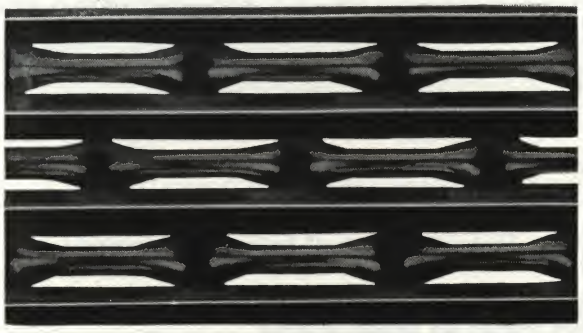
⅜-in. Rib Kalmanlath is the only *flat strand* lath on the market. The ribs are V-shaped—are full ⅜-in. deep—and give



exceptional rigidity. Mesh is large enough to give a perfect key to plaster and it is small enough to prevent plaster waste. Strands are wide and flat, providing a smooth face that makes plastering easier and faster. The erection of this new ⅜-in. Rib Kalmanlath is very simple. There are no ragged projections to snag the hands and clothes. This new sectional area for reinforcement comes in sheets measuring 24x96 in.—with ⅜-in. ribs, spaced 4.8 in. center to center—and weighing 3 lb. per sq. yd., 3.4 lb. per sq. yd., and 4 lb. per sq. yd.

Troff Kalmanlath

Troff Kalmanlath provides a high quality wall at a lower cost than ordinary metal lath. It is so designed that just the



right amount of plaster passes through the openings to form a splendid key. No plaster falls down between the partitions—there is no waste. In addition, the Troff formation of the ribs creates a suction, thereby providing greater assurance of a bond between the Kalmanlath and the plaster. It is ideal for ceiling use. Troff Kalmanlath is an extremely rigid type of metal lath. As a result, it gives the wall those qualities that make for greater permanence at a low cost. Any plasterer can easily turn out a good job with it in hurry-up time. It is easy to plaster. The rigidity of Troff Kalmanlath makes it a commonly used base for setting tile. It comes in steel painted black, in sheets measuring 13½x96 in., and 24x96 in., weighing 4.5 lb. per sq. yd.; also in galvanized sheets measuring 13½x96 in., and 24x96 in. and weighing 5.5 lb. per sq. yd.

KE-BOND COMPANY

Manufacturers of Ke-Bond Sheets for Bonding Plaster to Concrete

HOME OFFICE
6 Beacon Street, BOSTON, MASS.
SEE TELEPHONE BOOK FOR LOCAL REPRESENTATIVE

Description

KE-BOND is a sheet of metal with dovetailed corrugations. It is placed in the form for concrete where the surface is to be plastered. When concrete is cast and the form removed there will be a dovetailed surface for keying the plaster.

Qualities

KE-BOND is not an ordinary corrugated sheet of metal but is formed with sharp angles that insure a positive dovetailed key.

Advantages

KE-BOND costs less than hung ceiling, requires less plaster and saves headroom required for same, or it eliminates cost and time for asphalt or plaster, bonding coat. When the form is removed the surface is ready for plaster.

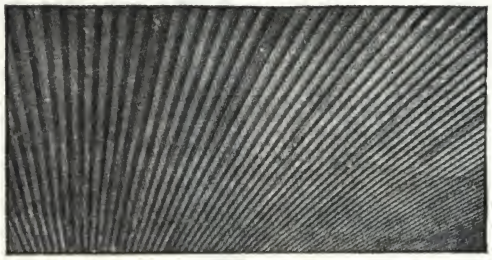
KEY-BOND makes practical use of cheap lumber and skeleton form construction, thereby reducing cost.

KE-BOND can be used to advantage with any form of floor construction where the underside is to be plastered. KE-BOND will support practically any weight of decorative plaster and insures a ceiling of uniform color as it eliminates dust streaks.

Ceilings plastered to concrete without KE-BOND frequently fall, causing serious trouble and expense for owner and jeopardizing the reputation of the architect. Plaster on KE-BOND will not work loose, sag or fall, because *the plaster is dovetailed into the concrete.*

KE-BOND protects the form boards, by covering the surface, cracks and knotholes, thereby insuring a smooth cast when the boards are used more than once.

Results are equal to that obtained with metal forms and there are no forms to remove.



Ke-Bond Ceiling Ready for Plaster
Dovetailed surface on bottom of concrete floor slab. A finish coat of plaster is all that is neecssary

Sizes

KE-BOND standard sheets are 2½x6 ft., 1.67 sq. yd., but can be furnished in any desired width and length or cut with tin shears to fit any area. The sheets are treated to make them rustproof but bond will not weaken if metal becomes disintegrated by rusting.

Other Uses

KE-BOND for waterproofing subway and basement walls insures a positive keyed surface for the waterproof cement. It eliminates cost and uncertainty of "hacked" surface, particularly the overhead or ceiling surface in train subways.

KE-BOND is as strong as the concrete, also just as durable and practical.

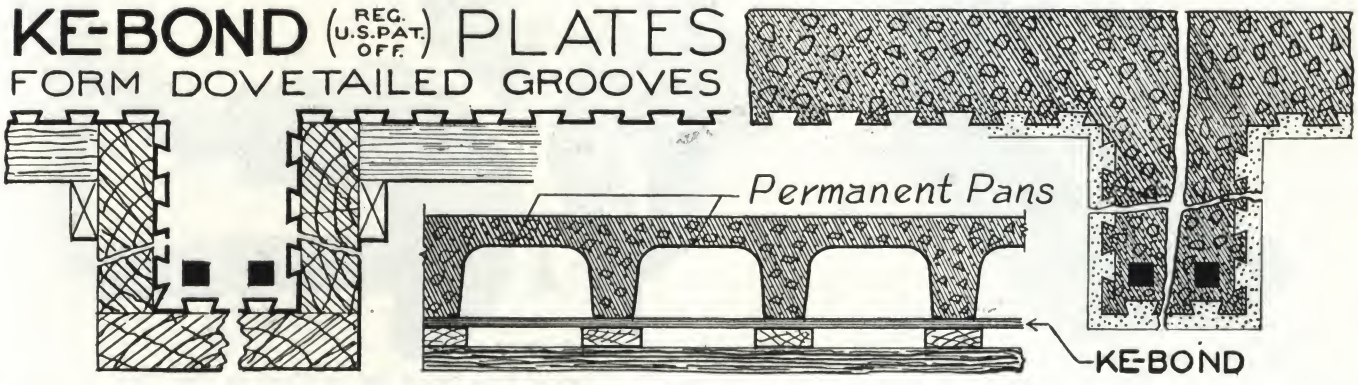
KE-BOND can be used to advantage on the inside surface of swimming pool and basement walls that are to have waterproof cement finish. Soldered joint copper KE-BOND sheets will resist any water pressure and eliminate risk from shrinkage.

KE-BOND is stocked only in steel but can be furnished in any metal desired and may be secured from local dealers in masons' supplies, or through our representative who will assist architect or builder in the proper application of KE-BOND.

KE-BOND when placed in the form has sufficient strength to support the workmen when they are placing the reinforcing rods but can be cut with tin shears or chisel for the passage of pipes or for inserting boxes.

Ke-Bond Specification

Line the inside surface of all concrete forms where same is to be plastered with KE-BOND, as directed by the KE-BOND COMPANY of Boston or their representative. (Please insert name, address and telephone of nearest representative.)



KNAPP BROTHERS MANUFACTURING COMPANY

Manufacturers of Metal Building Specialties and Sanitary Metal Trim

TELEPHONES
HAYMARKET 4994, 4995

605 West Washington Boulevard
CHICAGO, ILL.

SALES REPRESENTATIVES IN ALL PRINCIPAL CITIES

Products

METAL WINDOW TRIM; METAL COVE BASES; METAL WINDOW and DOOR CASINGS; METAL MITRE CASING BRACE; METAL CASING CLIP; METAL BLACKBOARD and BULLETIN BOARD MOULDINGS; METAL MAP and PICTURE MOULD; METAL CHAIR RAIL; METAL BASE GROUND; METAL HUMP CLIP; METAL CORNER BEADS; METAL BULL NOSE BEADS; METAL COVE; METAL BASE SCREEDS; COMBINATION METAL WINDOW TRIM and RADIATOR RECESS UNIT; METAL WYR-WAY BASE and JUNCTION BOXES.

Co-operative Service

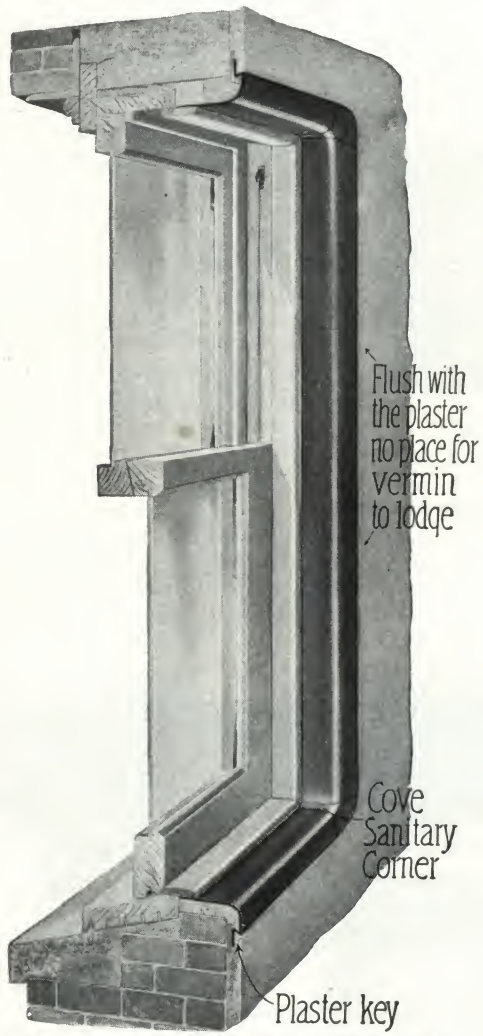
Knapp Brothers have in their organization an experienced registered architect and an engineer who will be glad to assist in the solution of technical problems connected with the Knapp products.

Standard Primer

Knapp products, with some few exceptions, are made of tightcoat galvanized steel, and the surface that will be exposed after plastering is primed with a special galvanic primer at the factory. This primer adheres to the metal and forms the basis of subsequent decorations.

Sanitary Metal Window Trim and Reveal Lining (Patented)

Style No. 302—Can be used either as a stool only or continued around a window opening to form a complete trim, as shown below. The cove corner fittings,



Style No. 302 Window Trim Used Entirely Around Opening

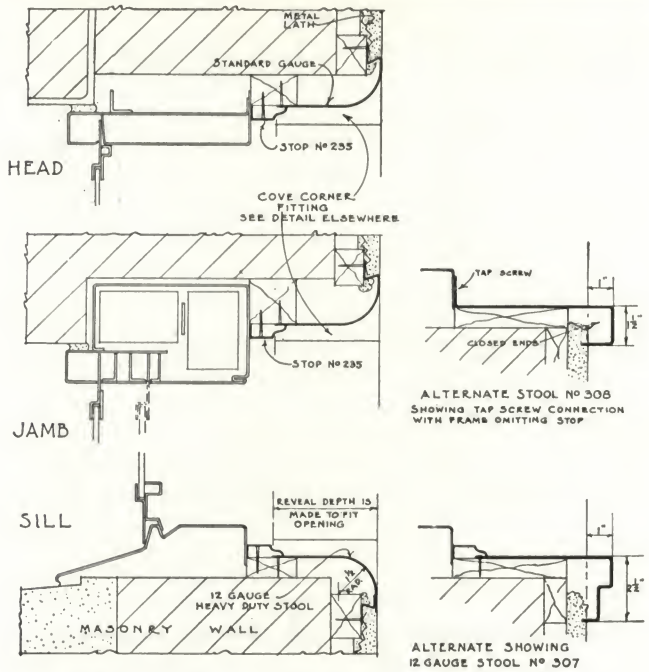
A One Man Job

For the standard size window we recommend shipping this metal trim assembled. For the larger sizes, the corner fittings are attached to the stool and head members and the four sides are shipped knocked down. The necessary stove bolts are furnished and the assembly at the job is a simple and easy operation.

The outstanding advantages of this type of trim are: sanitation; no shrinking, swelling or warping; flush with plaster; self-grounding; no place for vermin to harbor and multiply; fire retardant; economical; installed cost on a par with average wood trim.

Window Trim Being Put in Place by One Man

Continued on next page



No 302 SANITARY WINDOW TRIM USED IN CONNECTION WITH SOLID METAL WINDOW

together with the flush-with-the-plaster feature, constitute an absolutely sanitary trim. This trim is erected before plastering and provides a screed for the plaster. Curvature of the nose can be had in either 1½ or ¾-in. radius.

Styles Nos. 304, 307 and 308—Project slightly beyond the plaster line. These styles are designed as stools only, but are frequently used in connection with Style 302 jamb and head trim or with any of the plain or bullnose type of corner beads.

Gauge of Metal Recommended—No. 20 gauge metal is recommended when the length of the stool is 5 ft. or less and the depth of the reveal is 4 in. or less. No. 18, No. 16, No. 14 or No. 12 gauge metal (depending upon extreme dimensions) are recommended for stool dimensions greater than the above.

No. 20 gauge is ample for jambs and head for all practical purposes.

When a No. 16, No. 14 or No. 12 gauge stool is required, the nailing flange is electrically welded to the stool member, making a sharp edge and positive plaster key.

Spot grouting under the stool is very desirable and always recommended, but in most cases it is ignored. Therefore, a heavy gauge stool is desirable to provide the necessary stiffness to prevent sagging and indentations.

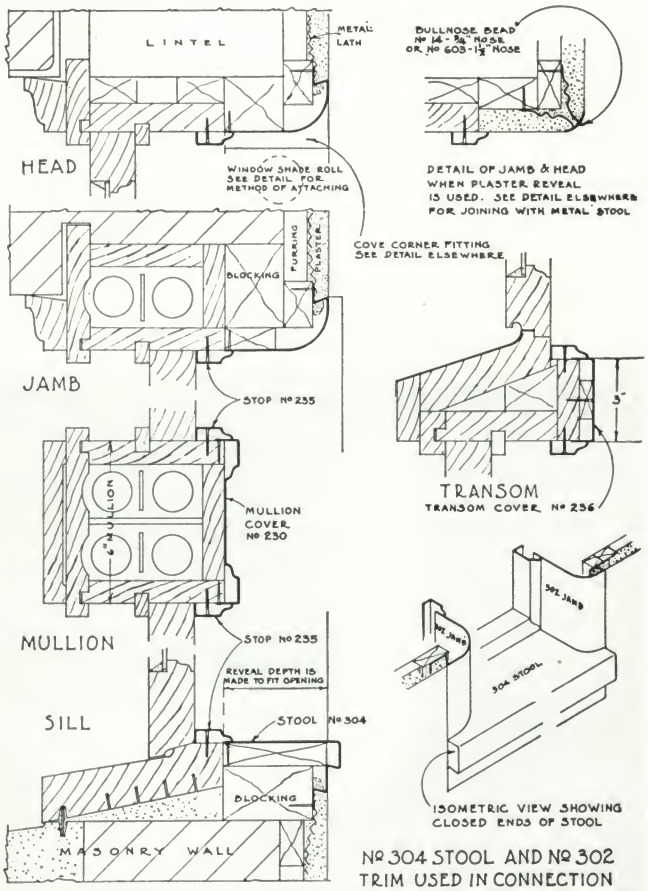
Corner Fittings—In addition to the standard cast corner fittings, we can furnish 1½-in. radius stamped metal fittings, which give a very neat appearance, cost 25% less, and are highly recommended.

How Furnished—All our window trim is made to order to fit the individual window opening.

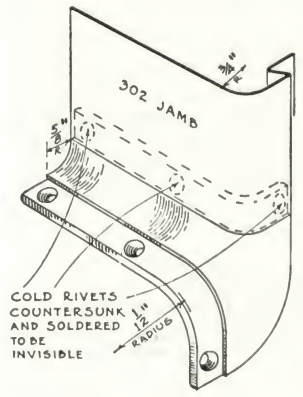
We require the contractor to furnish us with exact dimensions, and when this is done, the trim is shipped knocked down, ready to be set in place in the building or in made up welded units if desired.

Further Details—Write for full set of details showing how trim can be used with casement windows, steel windows, curved head windows and mullioned windows.

The saving feature of No. 302 as a unit trim is worth careful consideration.



No 304 STOOL AND No 302 TRIM USED IN CONNECTION WITH STANDARD BOX FRAME



Left

No. 302 Cast Eccentric Corner Fitting

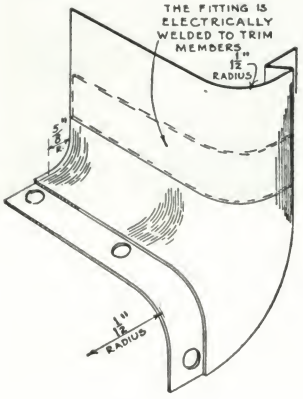
1½-in. radius stool with ¾-in. radius jamb. This fitting for use with No. 302 Metal Trim or ¾-in. radius Bullnose Bead. Can also be furnished in stamped metal

Right

No. 302 Stamped Metal Corner Fitting

1½-in. radius stool with 1½-in. radius metal or plaster jamb. This fitting can also be furnished in cast iron.

See new catalogue for complete information on corner fittings, etc.



Architect's "Handbook on Metal Trim" is now ready for distribution and contains complete information and details on corner fittings, etc.

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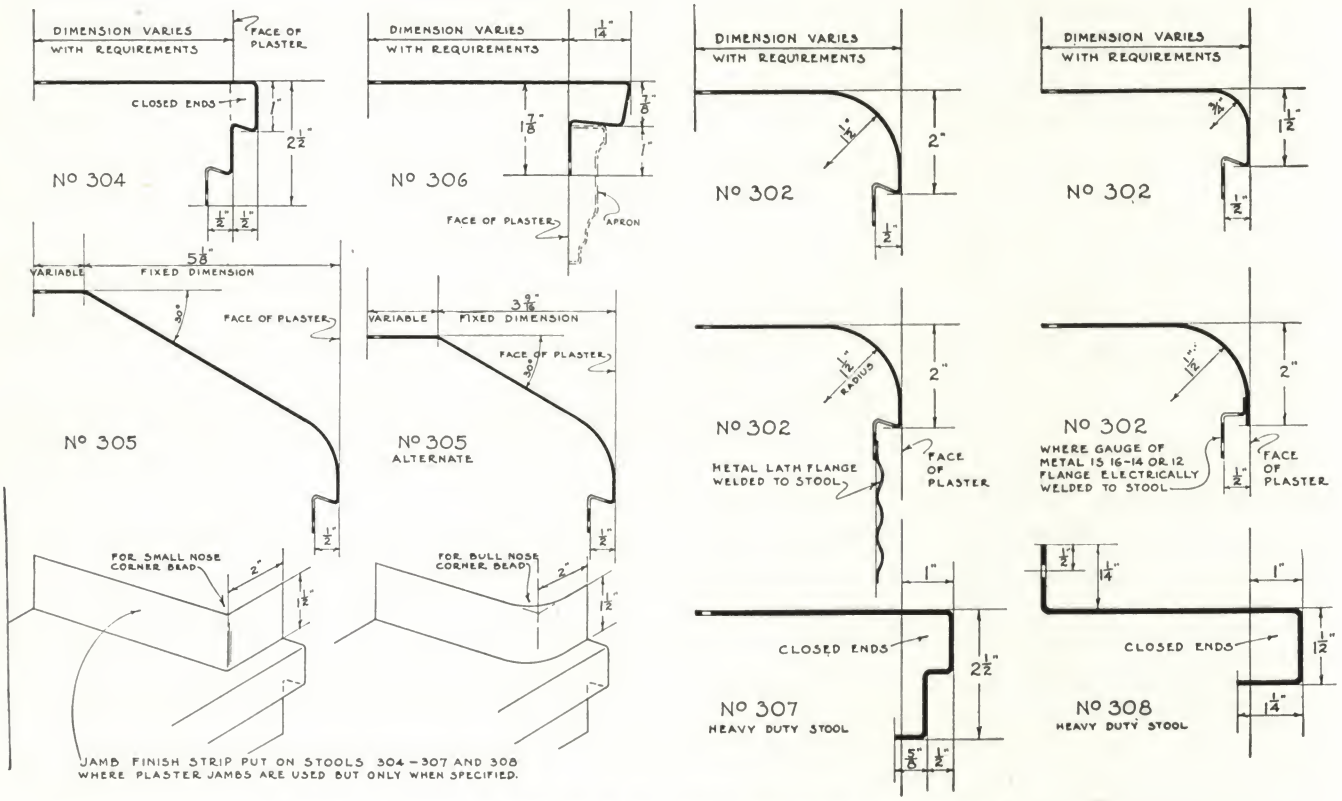


Section Profiles of Standard Knapp Metal Windows, Stools and Trim

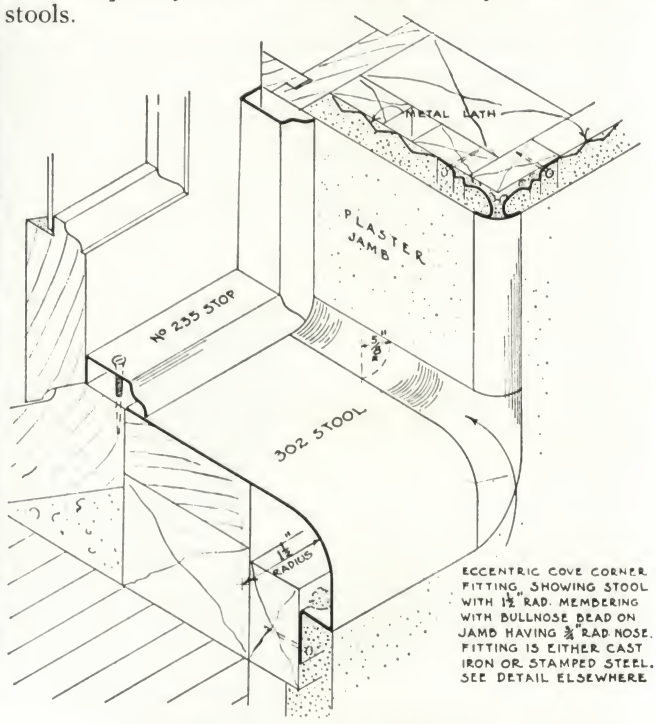
Style No. 302 Window Trim with Lath Strip Welded to Flange

Section of stool and jamb showing sanitary cove corner. The lath strip is welded to flange only where specified and is used only when wood bucks or blocking are not otherwise covered

This type of construction is a guarantee against plaster cracking which sometimes occurs, due to the swelling and subsequent shrinking of wood when plaster is applied on wood structure.

The drawings above illustrate the various standard stool profiles.

The No. 302 type is also used as a jamb and head trim frequently in combination with any of the other stools.



Nº 302 SANITARY STOOL
SHOWING COVE CORNER WITH PLASTER JAMB

Architects Handbook on Metal Trim—A new 136-page treatise showing a complete line of details and suggestions for the use of metal trim. If interested, you may have a copy.

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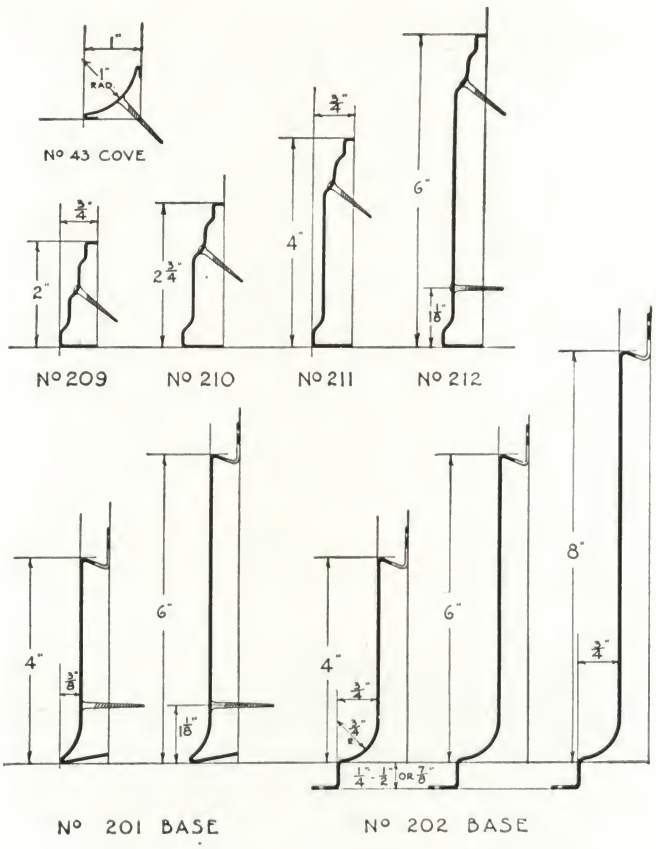

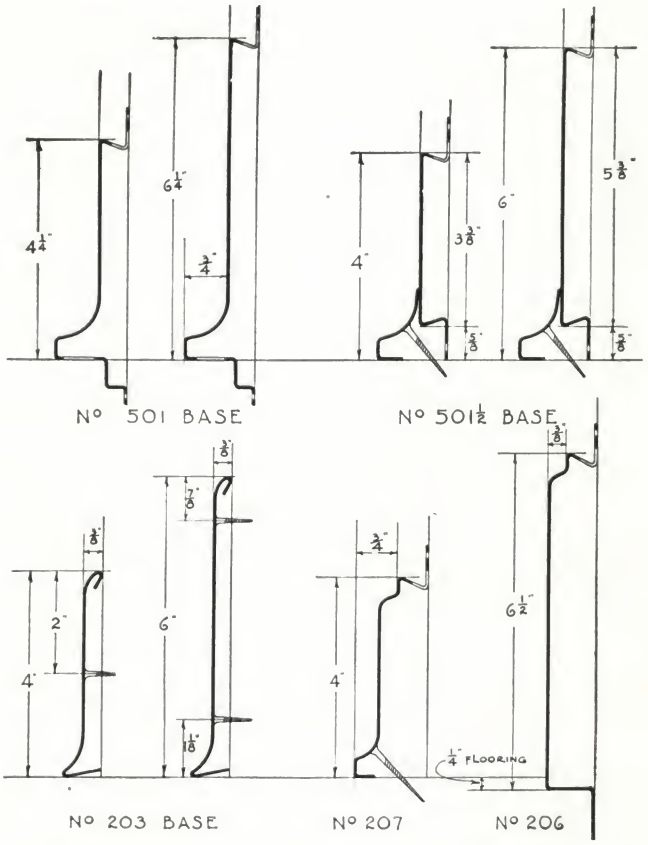

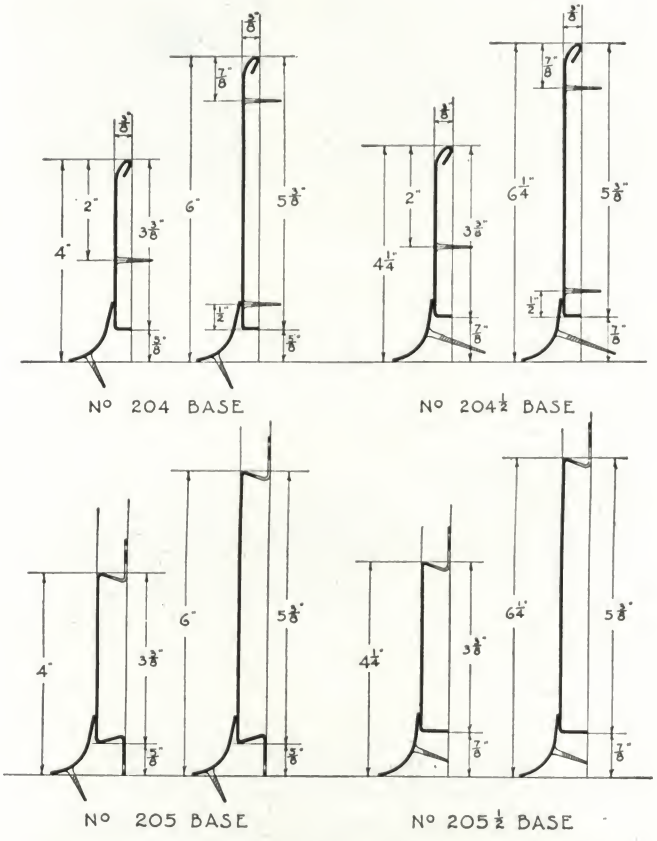

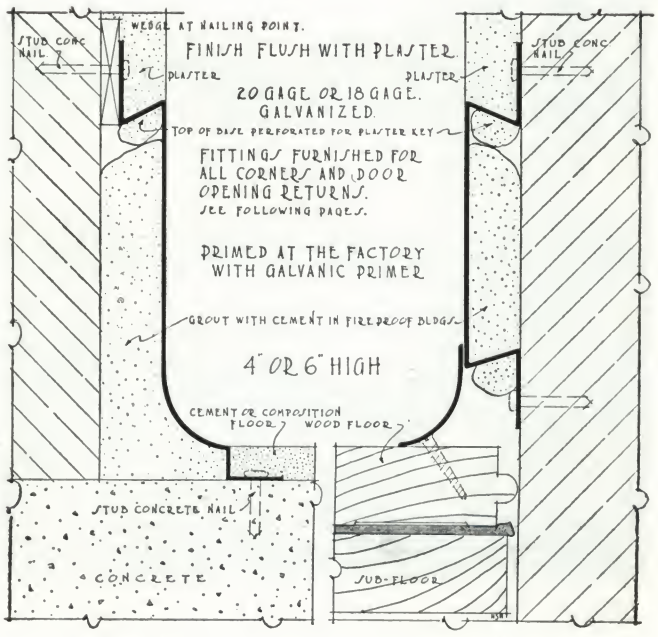

Base No. 202 Base No. 205

The details on this page show profiles of the various types of Standard Knapp Sanitary Bases. The large detail (lower right) shows typical installation details for the flush types of bases. The following baseboards are made standard in No. 20 gauge steel only; Nos. 209, 210, 211, 212, 203 both 4 in. and 6 in.—207, 204, 204½ both 4 in. and 6 in. All the 6-in. baseboards, with the exceptions just noted, are made of No. 18 gauge only. The 4-in. baseboards with the exceptions of 203, 204, 204½, 211 and 207 can be furnished in both No. 20 gauge and No. 18 gauge.

In all "flush-with-plaster" types of metal bases, the grouting is simplified and becomes an easy operation on account of the improved 2½-in. grouting slot now standardized.

A complete line of fittings for corners, plinths, etc., are available. Tools for cutting and punching are loaned by the manufacturer.

Write for complete catalogue and specification guide.

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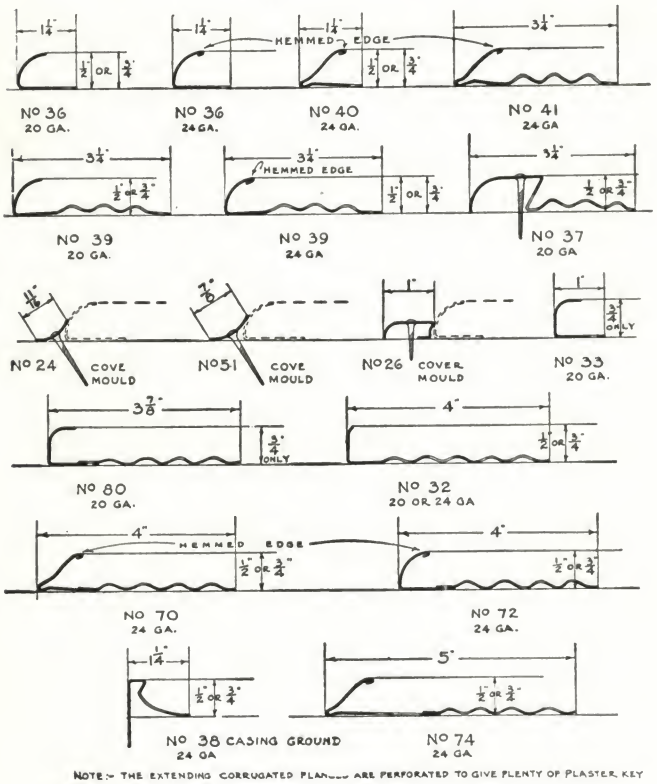
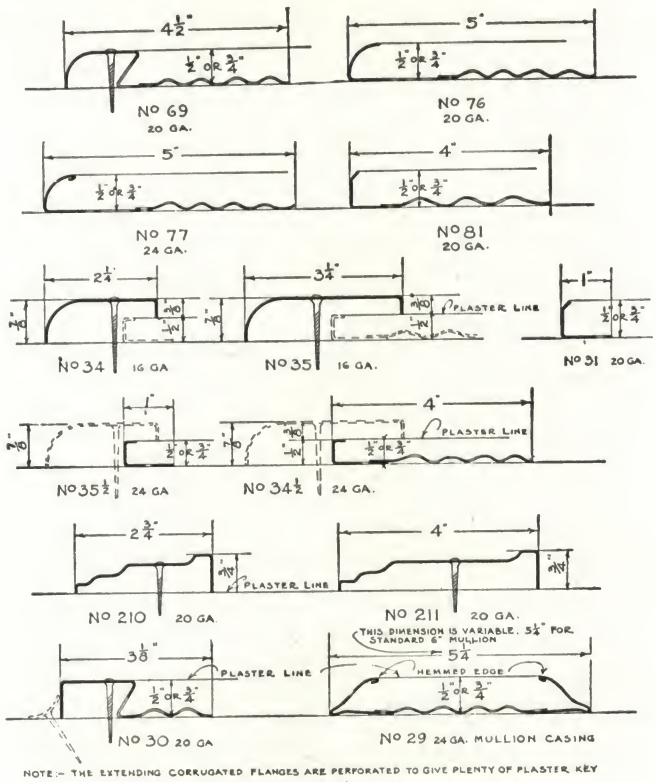
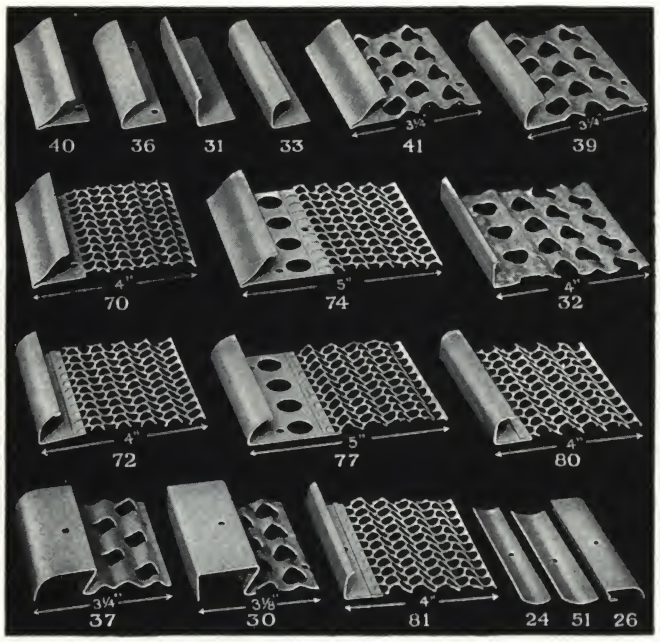
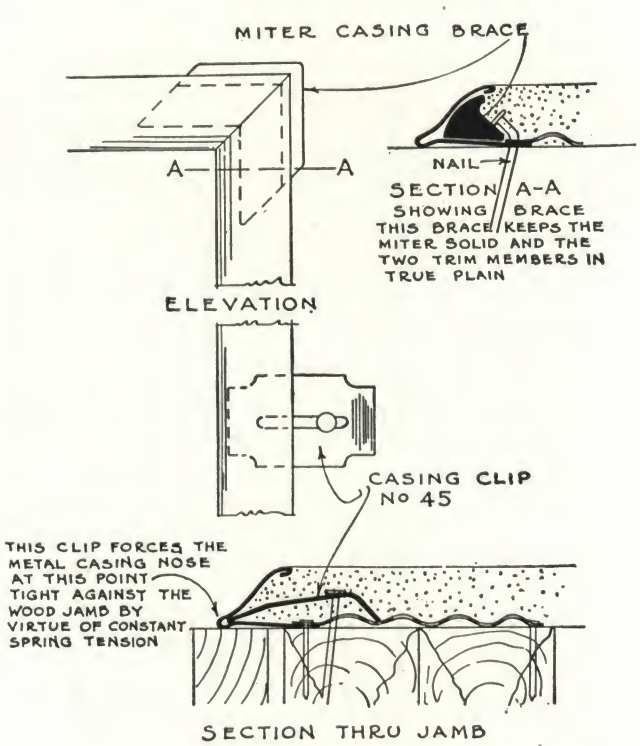








DETAIL SHOWING APPLICATION OF KNAPP CASING CLIP No. 45 AND No46 MITER CASING BRACE
USED WITH ANY OF THE O-G OR QUARTER ROUND PLASTERED-IN CASINGS HERE IN ILLUSTRATED.

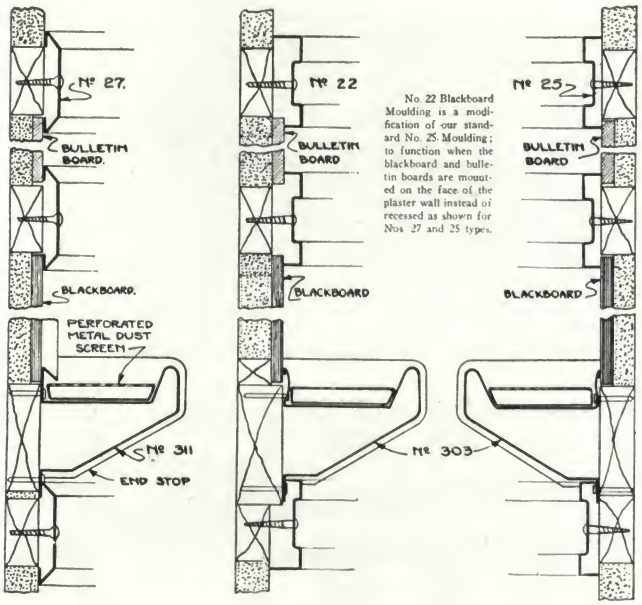
The details and photograph on this page illustrate the Knapp Standard Metal Casings, mouldings for trimming around doors, windows, cased openings, borrowed lights, vents, grilles, or any other places where trim is required. All of the above designs except Nos. 34, 35, 210, 211 are finished flush with the plaster and are put in place when lathing. Mouldings 24-51 and 26 are used to cover the shim joint between door jambs and buck. Casings with solid perforated flanges like Nos. 39, 32, 37, 30 and 41 are recommended for use with all openings except doors. For door openings, any of the other styles are recommended.

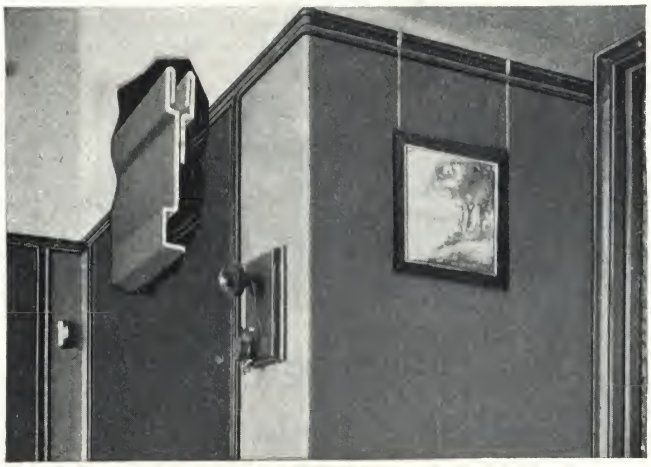
Write for new catalogue and specification guide.

No. 46 Miter Casing Brace keeps the two mitered ends in close contact and in true plane. Suitable for both ogee and quarter round types.

No. 45 Casing Clip forces and holds the casing nose in tight contact with the wood jamb, and the slot enables the mechanic to install the casing easily and quickly without danger of denting the face of the casing.

Continued on next page





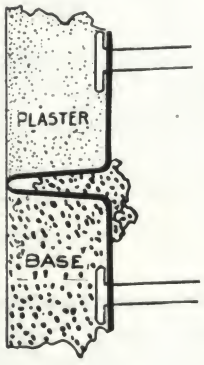
No. 25½ Functioning as Map Mould, Picture Mould, Dado Mould and Blackboard Mould

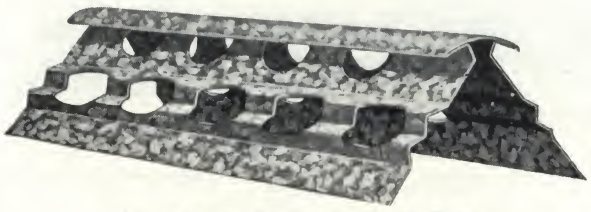
Right:

No. 1 Flush Base

Ground 26 gauge (No. 1½, 24 gauge). Made only for ½-in. or ¾-in. plaster thickness

Hump Clip for Fastening Short Flange Corner Beads





No. 14¾-in. Radius Bullnose Bead

26 gauge, flanges crimped for strength. 2½-in. flange width

Left:

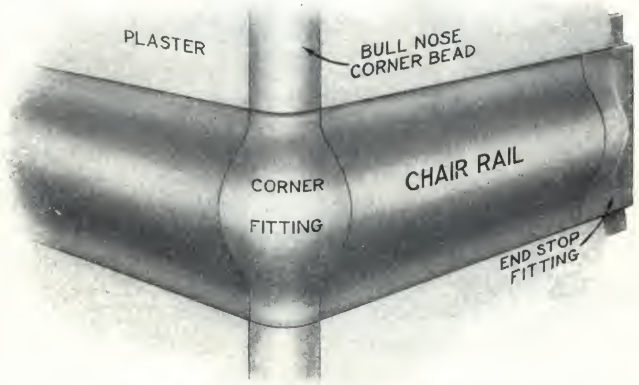
Nos. 311 and 303 Chalk Trough. Nos. 27, 22 and 25 Blackboard Mould

Nos. 27, 22, 25 Blackboard, Bulletin Board Mouldings; Nos. 311 and 303 Chalk Trough and Dust Screen Tray.

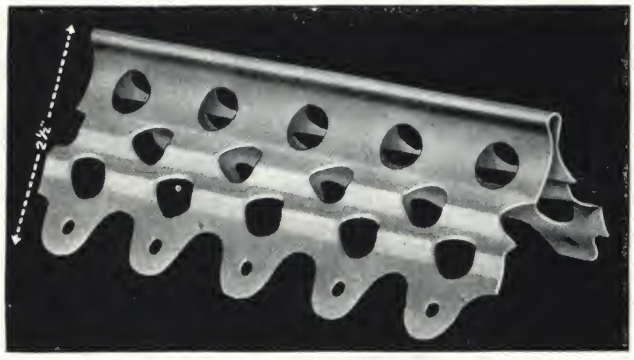
In the above sectional drawings are shown three different types of blackboard and bulletin board mouldings. Nos. 27 and 25 are used when the blackboard is recessed flush with plaster wall. No. 22 is used when the blackboard is placed on top of the plaster wall. The following fittings are available for all three types: right angle corner fittings; T fittings; cross fittings. Nos. 303 and 311 chalk troughs are similar except in one minor detail. The perforated chalk dust screen may be had as a plain insert or in a unit combination with a pan. Both types are furnished in 3, 4 and 5-ft. standard lengths. Both types of chalk trough are furnished in 6, 8 and 10-ft. standard stock lengths. The blackboard mouldings are furnished in 10-ft. standard stock lengths.

Metal mouldings and chalk trough stay put—do not crack, swell nor shrink and considering the better appearance and durability are on a par cost with wood mouldings.

Ask for architects' new 136-page Handbook on Metal Trim for complete details and specification data.

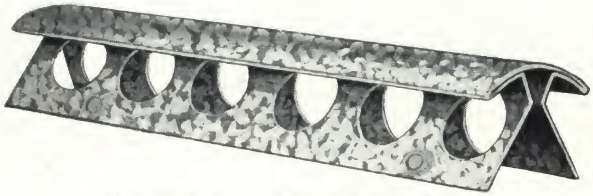


No. 300 Chair Rail Showing ¾-in. Radius Corner Fitting, End Stop and ¾-in. Radius Bullnose Bead



No. 16 Perfection Corner Beads, 26 Gauge Perfect Plaster Key, Rigid Flanges, Straightedge in Itself

Erected quickly



No. 604 ¾-in. Radius Bullnose Bead

26 gauge hump clip necessary for fastening

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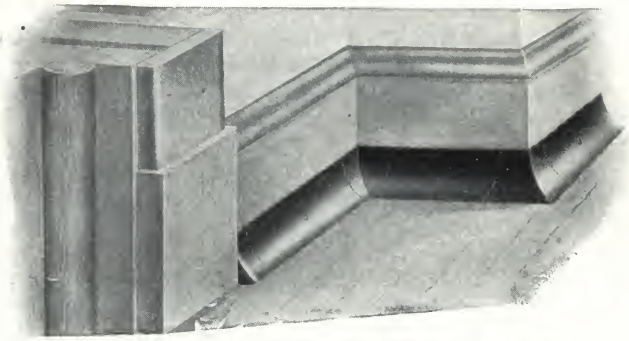
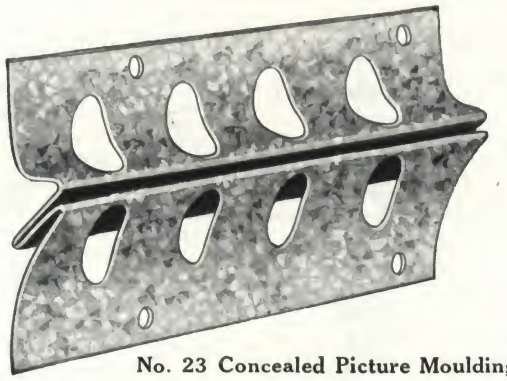
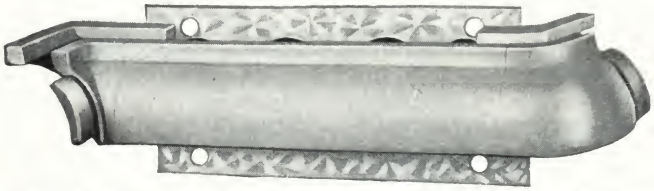


No. 43 Sanitary Metal Cove, 26 Gauge (Patented)
For old wood baseboards showing fittings at corners and return at door

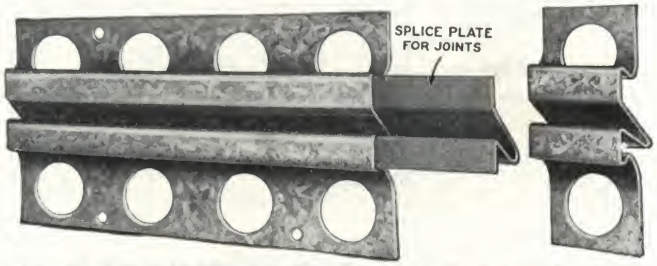


Section

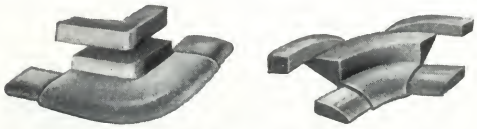
No. 23 Concealed Picture Moulding, 26 Gauge



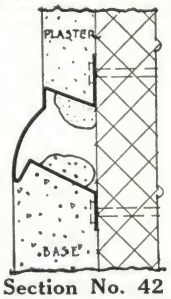
No. 42 Base Screed with Corner Fittings, 26 Gauge



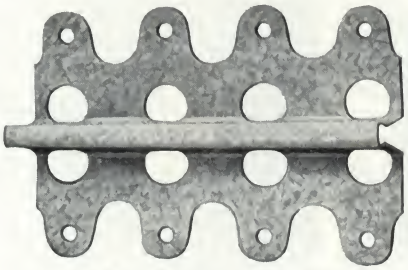
No. 20 Concealed Picture Moulding, 26 Gauge (Patented)
Painting the two exposed faces provides a double border ornament and separation



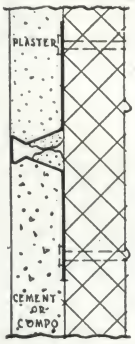
No. 49 Corner Fittings



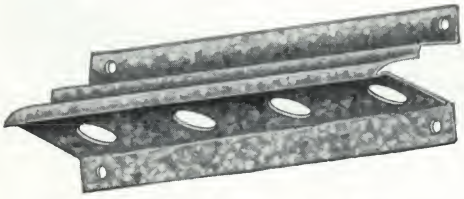
Section No. 42



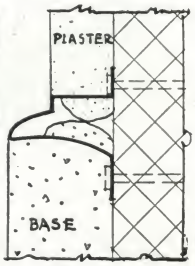
No. 2 Base Ground, 26 Gauge
Note the plaster key



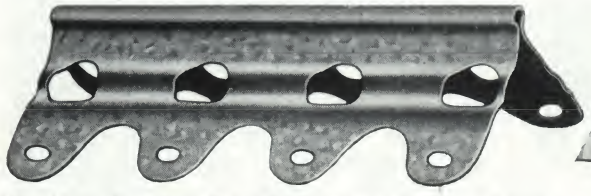
Section No. 2



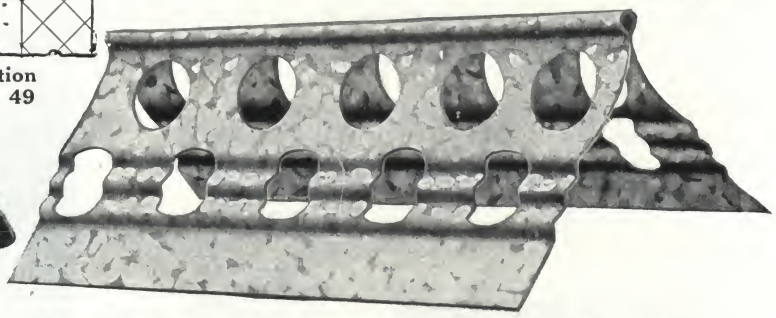
No. 49 Base Screed, 26 Gauge



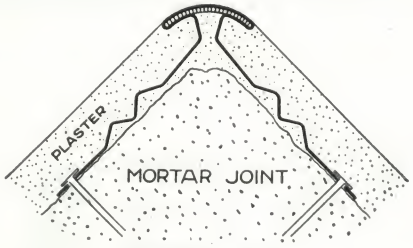
Section No. 49



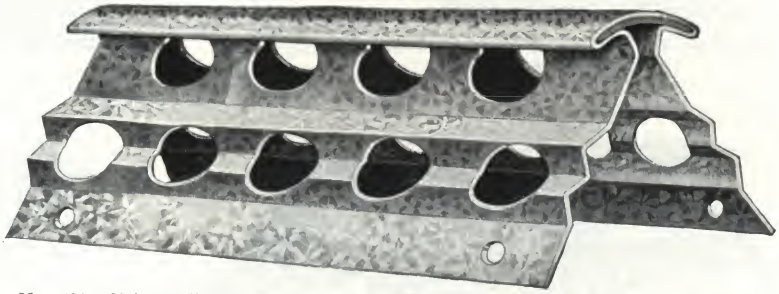
No. 15½ Corner Bead, No. 26 Gauge Scalloped and Crimped Flanges for Strength



No. 12 "Ideal" Non-clip Corner Bead, 26 Gauge (Patented)
A positive straight-edge in itself



Section No. 600



No. 600—¾-in. radius nose, 26 gauge No. 603—1½-in. radius nose, 26 gauge
Nose is heavily reinforced

Reinforced Bullnose Corner Beads (Patented)

All illustrations on this page are approximately half natural size

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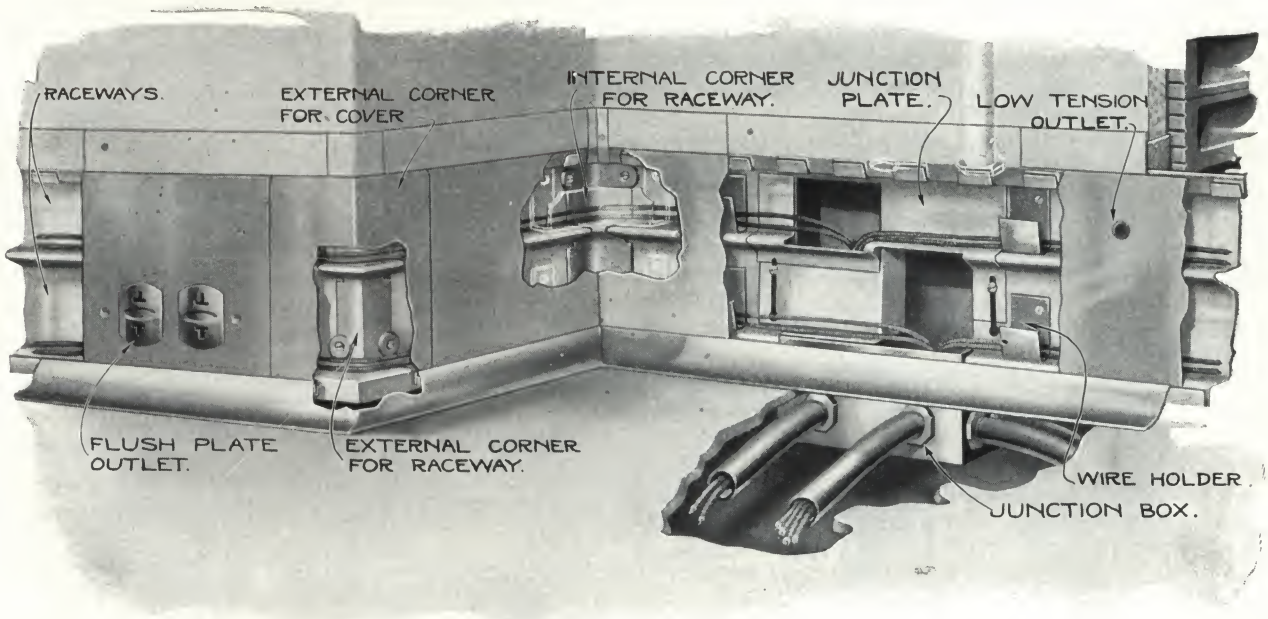


(Listed and Labeled by Underwriters' Laboratories, Inc.)
Manufactured under license on patents for Conduo-Base issued Nov. 28, 1922 and Dec. 21, 1926. Other patents pending

Wyr-Way Base Branch Circuit Distribution System

The Problem

The use of modern electric appliances has created an electrical distribution problem that is of paramount importance to building owners and must receive consideration from the architects and engineers responsible for its proper solution. In office buildings where undivided floor spaces have to await the requirements of the tenant before partitions can be located or where partitions have to be shifted from time to time, the problem is particularly acute. The Wyr-Way system provides a degree of flexibility in branch circuit distribution approaching the ideal solution of this problem.

Relative Cost

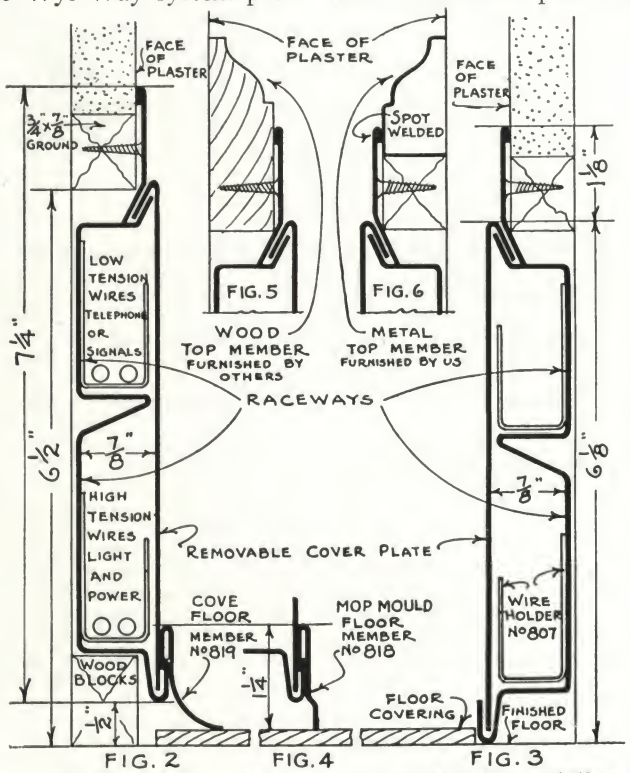
If the electrical layout is designed from the start to use the Wyr-Way system, and if given credit for what it replaces, Wyr-Way Base will cost no more than the past method of using predetermined outlets with a hardwood baseboard.

The experience in office building construction in the past shows that innumerable changes have to be made in every job in the location of predetermined outlets involving cutting and channeling of walls and floors, plaster patching, and re-decorating. All this is made unnecessary by Wyr-Way and when this fact is taken into proper consideration *the cost of this system will be less* than other methods.

General Description and Explanation

Wyr-Way Base consists of two wire-carrying raceways with an easily removable cover plate concealing them. The upper raceway is designed to carry low tension wires, such as telephone, signal circuits, telegraph wires, etc. The lower raceway is designed to carry high tension wires for all lighting or power appliance requirements. The wires are laid in the raceways directly and do not have to be installed in conduits. The cover plate over the raceways is designed to be held in place by friction contact without the necessity for screws or other holding devices. While this cover is easily removable when needed, it is in no sense a loose cover.

Junction boxes of types depending on local requirements are provided so that the circuits may be conveniently brought to the raceways. Cast iron corner fittings are provided to eliminate the necessity for mitering at corners. Flush plates prepared for convenience outlets are provided so that they may be inserted at any point in the base for present or future outlets. The low tension outlets may be obtained by drilling a hole anywhere in the cover plate in front of the upper raceway. A floor member is provided so as to complete the artistic effect of the base and give a sanitary finish at the floor line.



Half Full Size

Continued on next page

Wyr-Way Base Branch Circuit Distribution System provides a way to obtain an outlet for either high tension or low tension service at any point in the perimeter of a room. This is accomplished without tearing out any part of the construction. The normal cost of one predetermined wall outlet will pay for several feet of Wyr-Way Base installed in place in which additional outlets can be had or changes in locations of outlets can be made at any time with but a small labor cost. This takes care of the requirements of the original occupants and the future tenants. It should be exceedingly important to the owners and tenants to know that there need be no exposed wires tacked to the trim or dangling in the air.

Floor Outlets

In large office spaces where it is desirable to use floor outlets in connection with the base outlets, it is possible to cross connect from any one of our Wyr-Way Base Junction Boxes to a standard floor box or outlet elbow. If steel joist construction is used, the connection is made from the floor outlet to the nearest respective raceways.

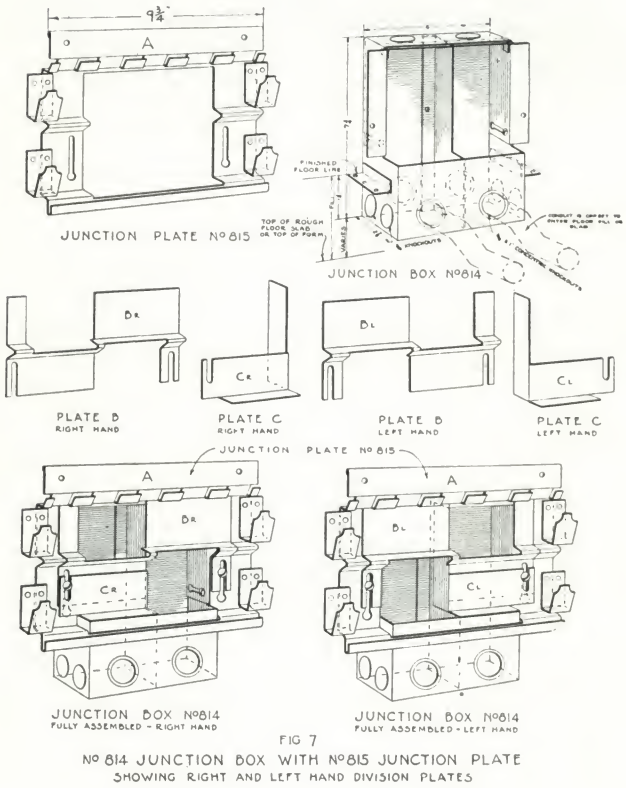


FIG 7
Nº 814 JUNCTION BOX WITH Nº815 JUNCTION PLATE
SHOWING RIGHT AND LEFT HAND DIVISION PLATES

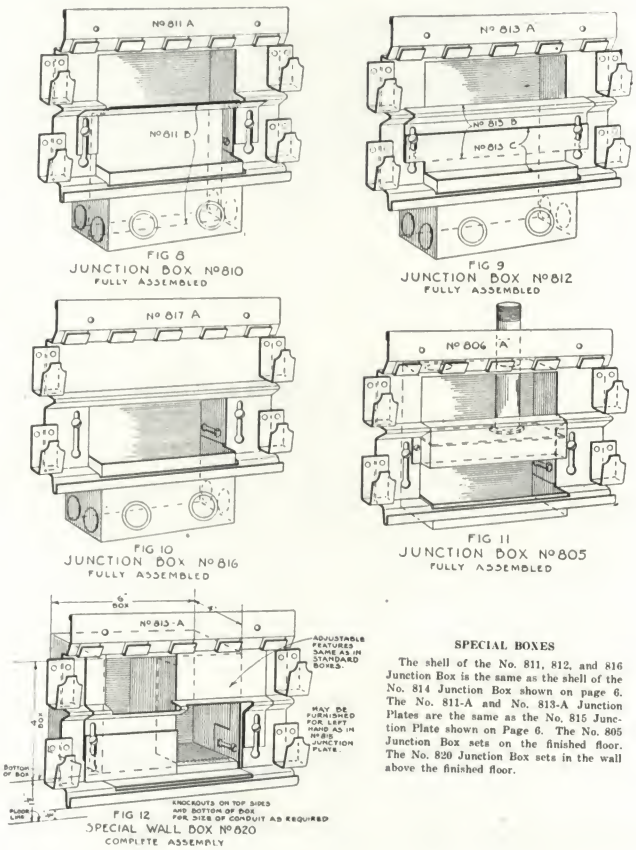


FIG 8
JUNCTION BOX Nº810
FULLY ASSEMBLED

FIG 9
JUNCTION BOX Nº812
FULLY ASSEMBLED

FIG 10
JUNCTION BOX Nº816
FULLY ASSEMBLED

FIG 11
JUNCTION BOX Nº805
FULLY ASSEMBLED

FIG 12
SPECIAL WALL BOX Nº820
COMPLETE ASSEMBLY

Essential Information for Architect and Engineer

Layout Design—Figure 16 (on following page) shows a layout with Wyr-Way Base Branch Circuit Distribution for a typical office condition where the partitions are not predetermined. A junction box is placed at the column and one at the outside wall per bay. These junction boxes are connected together by standard conduit and are placed at the time the roughing-in conduit work is done.

To both the initiated and uninitiated, a careful study of Figures 16, 17, 18, 19, and 21, will show the adaptability and flexibility of the Wyr-Way Base Branch Circuit Distribution System. Note that service from this layout may be brought to the door from either side, thus eliminating the necessity for door jumpers, except in rare cases.

The raceways on the outside walls are kept continuous and not interrupted by partitions, forming a complete loop for high tension and low tension service, thus making it possible to utilize circuits originally provided for one section where it is not used in another section, where the requirements are greater than originally anticipated.

Our Electrical Engineering Department is at your service for layouts and further data.

Wyr-Way System a Timely Development—The modern trend in floor construction is to minimize the floor load consistent with carrying capacity of floor required. In this type of floor construction the use of an underfloor duct system cannot be considered because the accepted underfloor duct systems on the market require from 3½ to 5-in. floor fill. Wyr-Way Base Branch Circuit Distribution System offers a solution to this problem.

Wyr-Way Base with Underfloor Duct System—The system can be used conveniently and economically in conjunction with any of the accepted underfloor duct systems. The junction box placed at outside walls and columns can be hooked up with the cross-overs of the underfloor duct system.

Regardless of how much underfloor duct is used on the building, there is still necessity for side outlets and the smaller the subdivision, the greater their necessity and less the necessity for floor outlets. By using the system in conjunction with underfloor duct, and taking the high tension home runs from the ceiling distribution, a connection between the ceiling distribution, the base distribution, and the floor distribution for high tension service is established, and maximum flexibility is allowed in floor and base board for low tension service.

The fact that specifyng the system does not add to the cost of the job when considered in the original design, makes it advisable for the engineer to use Wyr-Way Base Branch Circuit Distribution System either with or without underfloor duct.

Continued on next page

Suggested Specification—In Electrical Specification Under Special Apparatus

Wyr-Way Base Branch Circuit Distribution System—(1) This contractor shall provide and install throughout the spaces hereinafter mentioned, a distribution system for electric, telephone and miscellaneous signal systems, comprised principally of a two-compartment metal base known as Wyr-Way Base and as manufactured by the Knapp Brothers Manufacturing Company, Chicago, Ill.

The system shall be complete with junction boxes, grounding clips, wire holders, flush plates, right and left-hand junction plates, internal and external corner fittings and metal floor member.

Note: This kind (bronze or steel) and type (cove mould or mop mould) of floor member should be mentioned.

This system shall be provided in the following spaces: .....

(2) Wyr-Way Base shall be of the two compartment type, the top being used for telephone and the low tension wiring, and the bottom for lighting circuits.

It shall be not less than 7/8 in. clear inside depth and approximately 7 in. from finished floor to top of plaster strip.

It shall be made of not less than No. 18 U. S. S. gauge special tight coat galvanized sheet steel. (Furniture Steel, if baked-on finish is required.)

All exposed parts shall have a special prime coat, the final finish to be applied as per architect's sample by the painting contractor. (If baked enamel finish is desired, specify whether in plain colors or grained to imitate wood; also state whether cover plate only is to be so finished or all exposed parts of base.)

Flush plates approximately 6 in. long shall be used to receive receptacles where shown on plans. These shall be furnished punched to receive receptacles, one plate to each 10 ft. of base.

Where telephone or signal outlets are required, a 3/8-in. bushed opening shall be provided by the electrical contractor at the extreme upper edge of cover plate in front of low tension compartment and at locations later to be determined by architect.

(3) ***Junction Boxes***—These shall be Knapp No. 814 Junction Box with knock-outs for both systems at top, front, rear and sides, permitting conduits to enter floor and wall. These boxes shall be made to accommodate the Knapp No. 815 Right or Left-Hand Junction Plate.

(4) Where door jumpers are required, Knapp No. 810 Junction Box shall be used so that 3/4-in. conduit may be run in the floor for both systems directly from one junction box to the other.

(5) ***Continuous Raceways***—The raceways on the outside walls shall be continuous and not interrupted by partitions. The Wyr-Way Base on partitions is to intersect with the raceways on the outside walls so that the wiring may continue to both sides of the partitions or brought into the raceways on the partitions. Curved internal corner wire holders shall be used at all internal corners, similar to Knapp No. 809.

(6) ***Wood Grounds***—These shall be furnished and installed by the general contractor, but the electrical contractor shall co-operate very closely, giving the necessary details and information to insure a proper installation. Care shall be exercised to see that the grounds are exactly parallel with the finished floor and at the correct height above floor.

(7) ***Branch Circuits***—In addition to branch circuits shown on plans, conduits shall connect Wyr-Way Junction Boxes to distributing cabinets and (Corridor wire mould) in accordance with (drawing? Number?).

(8) ***Labor***—All tools, material and labor for the erection of the Wyr-Way Base Branch Circuit Distribution System shall be furnished by the Electrical Contractor.

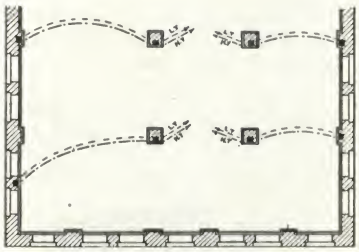


FIG. 16
PLAN SHOWING KNAPP WYR-WAY BASE BRANCH CIRCUIT DISTRIBUTION SYSTEM ON OUTSIDE WALLS AND COLUMNS

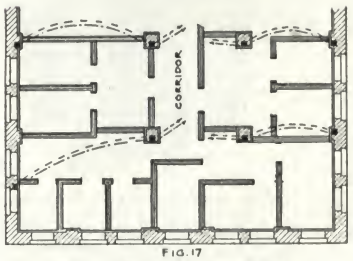


FIG. 17
PLAN SHOWING KNAPP WYR-WAY BASE BRANCH CIRCUIT DISTRIBUTION SYSTEM WITH PARTITIONS

SYMBOLS
WYR-WAY BRANCH CIRCUIT DISTRIBUTION SYSTEM

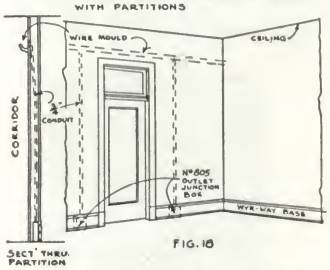


FIG. 18

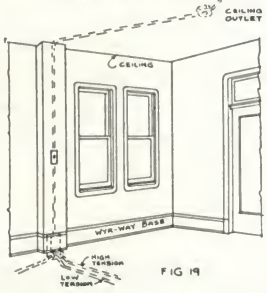


FIG 19

LAYOUT SHOWING KNAPP WYR-WAY BASE BRANCH CIRCUIT DISTRIBUTION SYSTEM

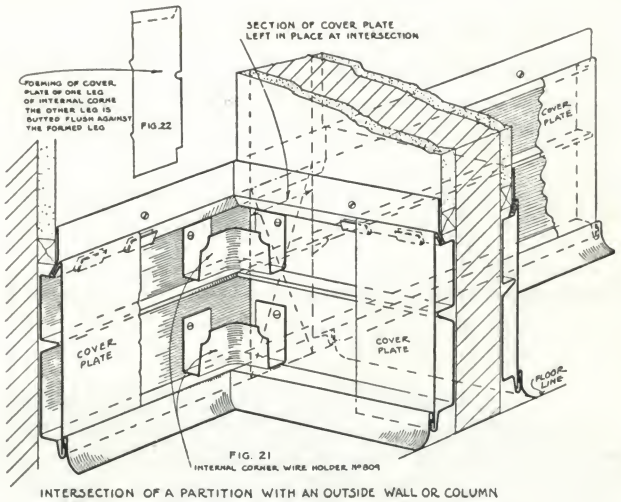


FIG. 21
INTERNAL CORNER WIRE HOLDER No 809

INTERSECTION OF A PARTITION WITH AN OUTSIDE WALL OR COLUMN

MILCOR STEEL COMPANY

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CHICAGO, ILL. KANSAS CITY, MO. LA CROSSE, WIS.

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"EXPANSION" BULLNOSE CORNER BEAD No. 10.
OLD STYLE CORNER BEADS.
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"EXPANSION" BASE SCREED, FLASHING, ETC.
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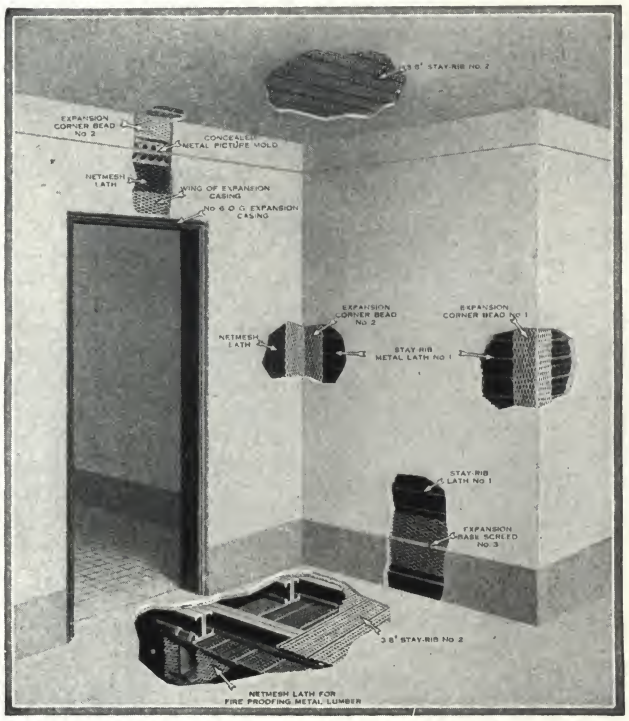
Also Base Screeds, Metal Window Stools, Cove Bases, Chalk Rails; Architectural Ornaments; Marquees; Ornamental Cornices, Eaves Trough, Conductor Pipe and Elbows; Furnace Pipe and Fittings, Stove Pipe and Elbows, and other Sheet Metal Products.

For our pages on Steel Basement and Fireproof Windows, and Metal Tile Roofing, see Manufacturers' Index.



Practical application of Milcor Products shown at left. Wall construction exposed to show various Milcor Products essential to better plastering and fire-safe, crackfree walls, ceilings and floors.

Metals Used

All Milcor Products, including metal lath, are now available in the famous rust-resisting *Armco* Ingot iron, as well as in steel, copper alloy steel, pure zinc, or genuine Anaconda copper.

Catalogues Available

8½x11 in. to fit your files.

No. 20-E—"The Milcor Manual" (96 pages) on metal lath and allied products, including standard architectural specifications for fire-safe construction.

No. 20-D—"Reinforcing Rib Lath—¾ in. Stay-rib No. 3" (16 pages).

"Modern Modes in Better Plastering" (32 pages).

No. 24-A—"Milcor Architectural Sheet Metal Guide" on roofing, cornices, architectural ornaments, ventilators, etc.

No. 29—Furnace Pipe and Fittings Catalogue (72 pages).

No. 26—"Invisible Joint" Metal Ceiling Catalogue (288 pages).

No. 28—Milcor Sheet Metal Handbook (128 pages) on general sheet metal products.

Milcor Stay-Rib and Smalmesh Metal Lath

Milcor Stay-Rib Lath is designed particularly to solve the specific problems encountered in better plastering and in modern reinforced concrete floor and roof construction. The combination of sturdy ribs with the intermediate stays, or strands, results in greater strength and rigidity, and therefore makes safer work possible with less labor and materials. No jagged corners or sharp points. The mesh is open enough to insure thorough bonding of the lath with plaster or concrete, but the mesh is close enough to prevent excessive use of plaster or dripping losses of concrete. Compare Milcor Stay-Rib Metal Lath with any other types of rib lath. Samples free.

Milcor Smalmesh is a particularly sturdy type of diamond expanded metal lath. Samples free on request.

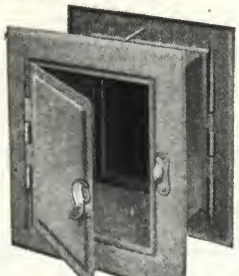
Furnished in steel, copper alloy steel, *Armco* Ingot or Toncan iron, zinc or copper, in standard weights and sizes. Consult "The Milcor Manual" and bulletin on "Reinforcing Rib Lath" for complete detailed data.

COMPARATIVE PROFILES OF STAY RIB LATH

STAY RIB METAL LATH NO. 1, RIBS ⅛"

⅜" STAY RIB NO. 2, RIBS ⅜"

¾" STAY RIB NO. 3, RIBS ¾"



Milk and Package Receiver

Made from highest grade copper alloy steel sheets, stamped and drawn. No rivets nor welding. Hinges are integral with doors and frames. Two frames and doors are connected by adjustable body which fits walls 5 to 14 in. thick

Flue or Clean-out Doors

Stamped from heavy copper alloy sheet steel. Hinges are integral with frames and doors. No rivets or welding. Catches are of wrought steel. Sizes 8x8, 8x10 and 10x12 in.

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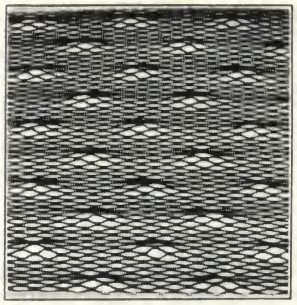
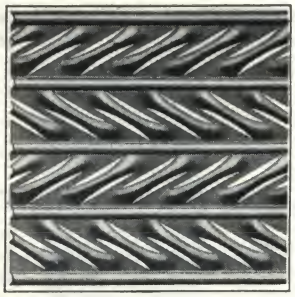


Milcor Furlath

A self-furring stucco base. Indentations fur lath away from sheathing. Metal strands become embedded in mortar forming steel reinforcement. Cut from open hearth steel, or copper alloy steel (painted black) in 2.20, 2.50, 3 and 3.40 lb. weights; and from galvanized steel, galvanized Armco Ingot iron or Armco Ingot or Toncan iron painted black in 2.50 and 3.40 lb. weights

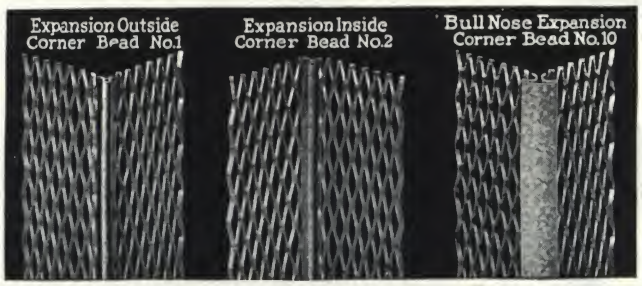


Milcor Tilath

For tile and terrazzo backing. Strong ribs and diagonal raised stays reinforce sheet and prevent sagging. Stays also provide reinforcing plaster key. Made from open hearth sheet steel 4.50 lb. per sq. yd. (painted); Milcor galvanized sheet steel 6.18 lb. per sq. yd., or copper alloy steel in same weights. Furnished in 24 by 96 in. sheets packed 9 to the bundle (16 sq. yd.).

Milcor No. 12 Extra Wide Flange Corner Bead

For outer corners only. Wings 2½ in. wide strengthened by lengthwise corrugations. Oval shaped nose, staggered plaster keyholes.



Milcor "Expansion" Corner Bead

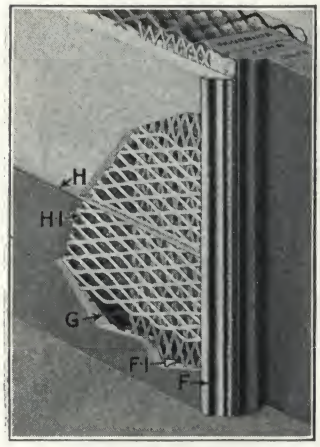
Patent No. 1419232

The superiority of Milcor expanded metal corner beads—the "Expansion" line—is recognized everywhere. Millions of feet of this bead installed in hundreds of the finest buildings and in thousands of homes.

No. 1 "Expansion" Corner Bead for outer, exposed corners.
No. 2 "Expansion" Corner Bead for inner corners, ceiling angles, etc.
No. 10 "Expansion" Bullnose Corner Bead. Patent No. 1678813.
Complete details in "The Milcor Manual." Samples free

Milcor Old Style Corner Beads

The Milcor line of Old Style Corner Beads is still available and while we recommend that Milcor "Expansion" Corner Beads be carefully considered for all outer and inner angles, there are often circumstances where it is practical to use these Old Style Corner Beads. Large stocks are always maintained in standard lengths, and deliveries always can be made promptly. Complete details in "The Milcor Manual." Samples free

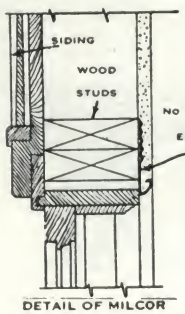


Section of Wall Exposed

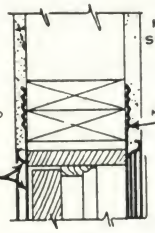
"F"—Exposed metal moulding of "Expansion" casing; F-1—Expanded metal wing of casing; G—Netmesh metal lath; H—Bead of "Expansion" base screed; H-1—Expanded metal wing of base screed

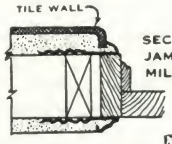
Milcor "Expansion" Casings (Pat'd June 13, 1922 and Jan. 26, 1926) for Door and Window Trim

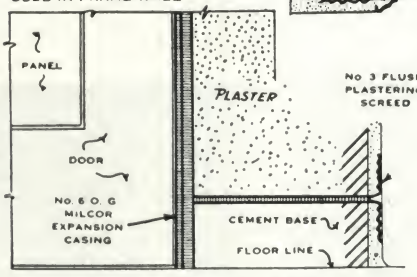
These modern Milcor "Expansion" Casings take the place of costly, clumsy, unsanitary wooden trim for doors and windows, with interior plastering or exterior stucco. Although this metal trim adds considerable to the architectural beauty and finish of the interior or exterior, it is more economical than many other less satisfactory types of trim. This metal trim also prevents cracks in plaster around doors and windows and it is fireproof.



DETAIL OF MILCOR No. 4-¼ ROUND EXPANSION CASING USED IN FRAME WALL

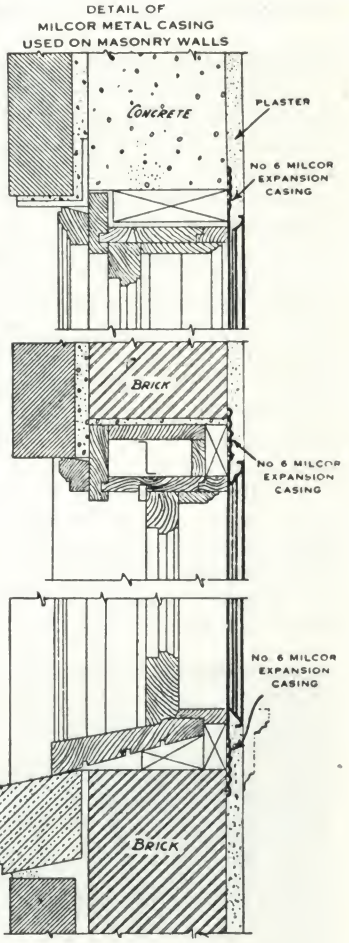




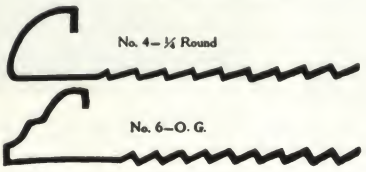


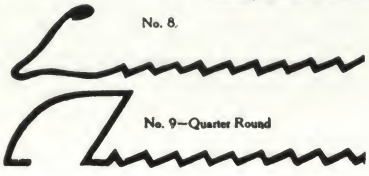
ELEVATION AND SECTION SHOWING EXPANSION No. 3 FLUSH PLASTERING SCREED BUTTING INTO No 6 O. G. EXPANSION CASING

SECTION SHOWING No. 3 MILCOR SCREED SEPARATING TILE WAINSCOT FROM PLASTER



Casing Easily Fastened to Door or Window Jamb with Milcor Patented Casing Lock or Clip





Left: **Four Styles of Mouldings**

NATIONAL STEEL FABRIC COMPANY

DIVISION OF PITTSBURGH STEEL COMPANY

Manufacturers of Steeltex (4 Types)

GENERAL OFFICES

902 Union Trust Building, PITTSBURGH, PA.

DISTRICT SALES OFFICES

ATLANTA, GA., Walton Building
BUFFALO, N. Y., Builders Exchange Building
CHICAGO, ILL., Straus Building
CINCINNATI, OHIO, Dixie Terminal Building
DETROIT, MICH., Dime Bank Building
LOS ANGELES, CAL., 1358 Wholesale Street
NEW YORK, N. Y., 41 East 42nd Street
PHILADELPHIA, PA., Franklin Trust Building
ST. LOUIS, MO., Railway Exchange Building
SAN ANTONIO, TEX., Builders Exchange Building
SAN FRANCISCO, CAL., 351 Bryant Street
SYRACUSE, N. Y., 261 Buckingham Avenue

Products

STEELTEX (Welded Wire Mesh with Integral Fibrous Backing). There are four styles of STEELTEX—same principle, same protection—RIBBED STEELTEX LATH for interior plaster; STEELTEX for stucco; STEELTEX for brick or stone veneer; STEELTEX lath for floors and roofs (concrete and gypsum).

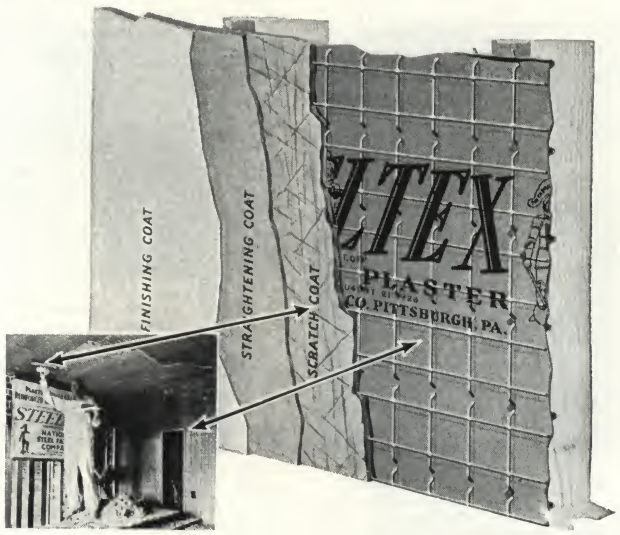
National Reinforcing (welded wire fabric), for buildings, roads, streets, sidewalks, driveways, runways, canals, concrete pipe, gunite and all other types of concrete construction, and STEELTEX lath for floors and roofs (concrete and gypsum), see Manufacturers' Index.

General Information

All four styles of STEELTEX have the same principle and offer the same protective qualities. Each style of STEELTEX, however, is specifically designed and manufactured to function efficiently according to the particular requirements for which each is intended. Briefly, STEELTEX is composed of electrically-welded, cold-drawn, galvanized wire mesh attached to the various types of backing. This integral backing consists of a double waterproof membrane for stucco and brick and stone veneer, a heavy absorbent fibrous backing for plastering and a cord-reinforced backing for floors and roofs. In the different styles of STEELTEX the galvanized wire mesh varies in gauge and spacing according to the purpose it is to serve. The attachment of the backing to the reinforcing element of STEELTEX is accomplished by independent furring wires or ribs, as the case may be, and so manufactured as to offset the backing a correct distance away from the plane of the fabric to assure positive embedment of the steel wires within the plastic material when it is poured, plastered, or otherwise deposited against the backing.

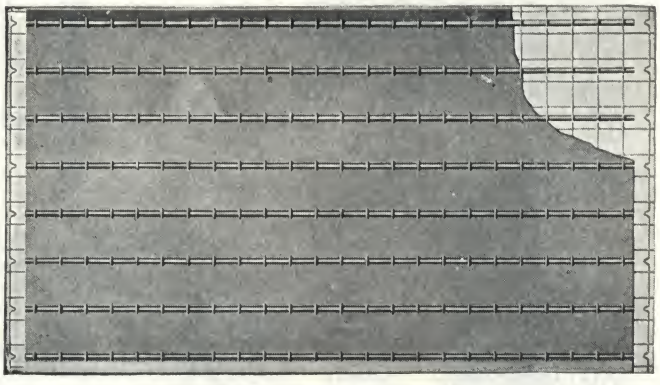
Ribbed Steeltex Lath for Interior Plaster

Ribbed STEELTEX lath is composed of three major units as follows: (a) The heavy, tough, fibrous backing onto which is woven (b) a 2x2 in. mesh of electrically-welded steel wires (heavily galvanized). (c) Across the back of STEELTEX for plaster are rows of V-shaped metal rib stiffeners 3¾ in. on center which give Ribbed STEELTEX lath board-like rigidity.



Above:
A cutaway section of a wall lathed with Ribbed STEELTEX. Note how the network of galvanized steel wires are embedded in the plaster, giving protection against plaster cracks and strengthening the entire framework of the building. The STEELTEX fibrous backing, becoming an integral part of the plaster slab, effectively seals the entire surface, tending to prevent heat leakage and preventing lath or joint marks

Front or plaster side of a full-size sheet of Ribbed STEELTEX for interior plaster. Note the network of electrically-welded, steel-reinforcing wires woven onto the heavy, fibrous backing



Extending across the back of the Ribbed STEELTEX sheet at 3¾-in. intervals are rows of V-shaped metal rib stiffeners. These stiffeners, plus the wire mesh and heavy backing, give STEELTEX its board-like rigidity

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RIBBED STEELTEX LATH FOR INTERIOR PLASTER

Applying and Lapping

To obtain maximum results in plastering, start lathing on the ceiling at the corner of the room. After the first corner sheet has been nailed in place, apply second and succeeding sheets as shown in the accompanying illustrations.

Side wall sheets should be applied from the ceiling down to the floor so that all horizontal laps shall take place over the top sheets. Sheets shall be staggered on both ceilings and side walls and laps shall be made on studs or joists and never between. Ribbed STEELTEX sheets should be nailed with 4d common wire nails or STEELTEX hooked lath nails or staples.

STEELTEX, as manufactured by the NATIONAL STEEL FABRIC COMPANY, Pittsburgh, Pennsylvania. A 2x2-in., 16-gauge, cold-drawn, electrically-welded, self-furring Galvanized Wire Fabric, to which a tough fibrous backing is secured by means of a 26 gauge V-shaped rib.

STEELTEX shall be attached to walls and ceilings with 4d common wire nails or STEELTEX blued lath nails or staple over each alternate rib into each stud or joist. All sheet joints shall be staggered on both ceilings and side walls. Each sheet shall be placed so that all joints shall overlap the face of the fabric 1 in. on end laps and ½ in. on long sides. Plaster over STEELTEX shall be finished to ⅝ in. thickness.

To afford one hour fire protection, partitions must be plastered on both faces to full ¾ in. thickness with Gypsum Plaster.

Detailed Specifications of Lathing for Plaster*

All interior Walls, Partitions, and Ceilings (where so specified and designated plaster) shall be lathed with Ribbed

*Taken from United States Government Specification.

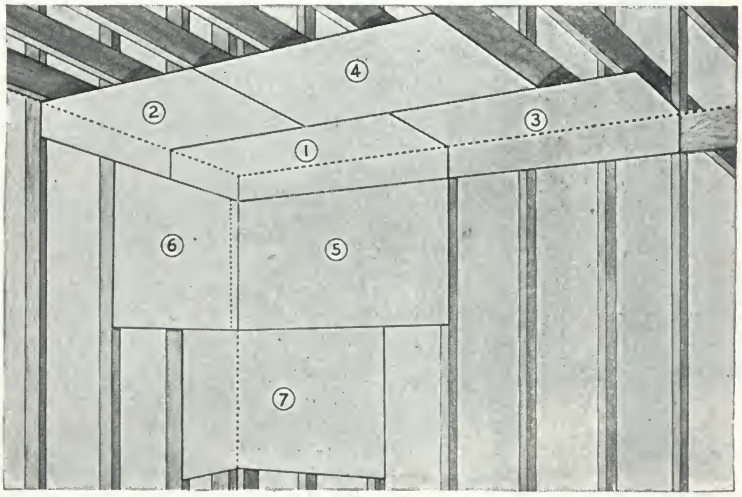
Start lathing on ceiling at the corner of the room. Bend the first Ribbed STEELTEX sheet at the ceiling angle to provide a 6-in. drop or apron down the side wall as illustrated above. To form the side wall apron, cut a corner out of the sheet making a shoe

After Ribbed STEELTEX sheets have been applied on the entire ceiling, sheet number 5 is started at the corner. This sheet is also bent around the corner to form the corner angle. Note how the sheets on the ceiling have all been bent to form a 6-in. apron. Side wall sheets shall be lapped on top of apron of ceiling sheets

The next Ribbed STEELTEX sheet is applied as shown in the illustration above. Sheet number 2 is also bent to provide a 6-in. apron down the side wall. Note that part of sheet number 2 has been cut off at the joist for the purpose of breaking the joint. This method of application gives staggered sheets with proper lapping. Sheet number 2 is now nailed

Sheets numbers 5 and 6 are shown applied. The indicating arrow points to the angle that has been formed by the bending of sheet number 7 around the side wall corner. Note that sheet number 6 has been cut off at the stud to break the joints; sheets 5 and 7 are full size

The illustration above shows application of sheet number 4 with sheet number 3 already in place. Note the 6-in. apron on sheet number 3, the same as on sheets numbers 1 and 2. Successive sheets for ceiling lathing are now easily and accurately applied. The above picture shows clearly how this application method breaks the joints



The above analytical drawing illustrates the proper method of lathing Ribbed STEELTEX for interior plaster. Note how all joints are properly broken and staggered. Sheet number 1 is the key sheet. Always start at the corner on the ceiling as indicated by sheet number 1, complete lathing on ceiling, then start side wall lathing as indicated by sheet number 5, and work down to floor

Continued on next page

STEELTEX 3 AND 4-IN. HOLLOW PARTITIONS

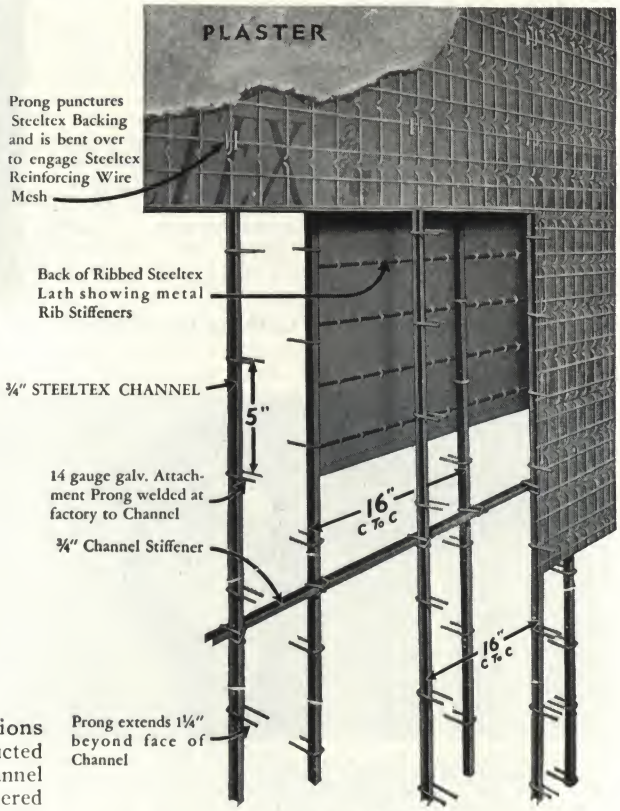
STEELTEX Channel Studs are comprised of ¾ and 1½-in. hot and cold rolled channels to which are welded 14 gauge galvanized prongs 5 in. on center. The purpose of these prongs being to afford speed and economy of STEELTEX lathing.

The STEELTEX Channel Studs are spaced 16 in. on center and sheets of Ribbed STEELTEX are lathed by merely pushing the prongs through the backing and bending them over the reinforcing wires on the face of the sheet. When scratch coat of mortar is applied it bonds together both tying prongs and reinforcing wires, giving a secure monolithic plaster slab.

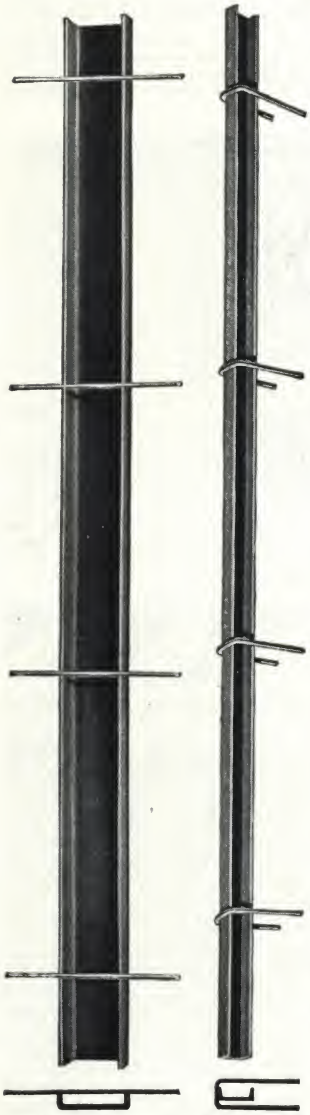
The STEELTEX Partition is lighter than others of a similar nature, and by reducing dead loads a considerable saving is afforded in the steel superstructure and concrete foundations.

STEELTEX has been tested by the Bureau of Standards for Sound Transmission, the results of which prove that it has a high sound-deadening value at varying frequencies.

STEELTEX Hollow Partitions permit easy access for electrical conduits and piping.



4-in. Hollow Partition
Using ¾-in. STEELTEX Channels and Ribbed STEELTEX Lath



Cross sections and views of 1½-in. and ¾-in. STEELTEX Channels. Note attachment prongs electrically welded to channels

Specifications

Steeltex for 4-in. Hollow Partitions—4-in. hollow partitions shall be constructed with two rows of ¾ in. STEELTEX channel studs, spaced 16 in. on center and staggered on opposite sides with prongs projecting on the outside face of partition.

¾ in. channel stiffeners 6 ft. on center shall be placed on the back and between studs wire tied to each stud for support and correct spacing of studs.

STEELTEX sheets shall be applied over studs by starting at the ceiling and working down to the floor so that all horizontal laps take place over the top sheets. Sheets shall be attached to studding by pushing the prongs of the studding through the backing and when the sheet is placed firmly against studding, these prongs shall be bent over reinforcing wires and pressed in firmly.

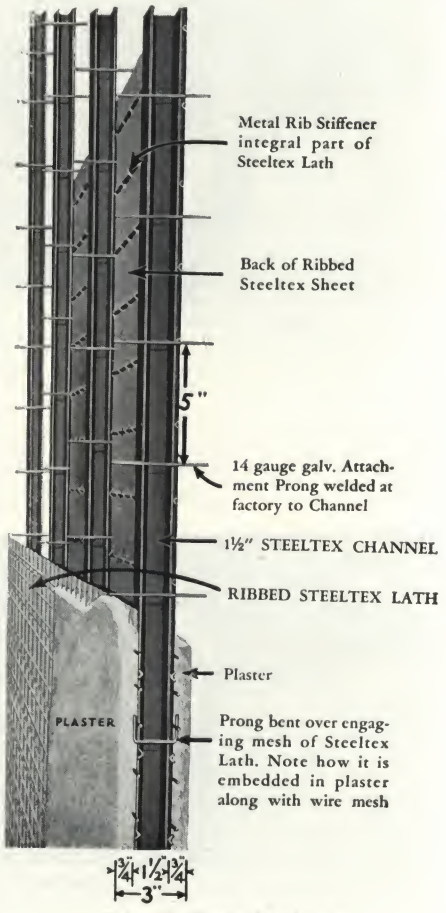
Joints shall be staggered in placing so that four corners of intersecting sheets shall not occur at any one place. Horizontal laps shall be ½ in. Vertical laps shall be made over studs only and shall be 1 in. Care must be taken in making laps that rib of top sheet shall not be placed over rib of under sheet.

Steeltex for 3-in. Hollow Partitions—3-in. hollow partitions shall be constructed with 1½-in. STEELTEX channel studs spaced 16 in. on center, secured to floors and ceilings with (1) runner channels, (2) nailing, (3) ceiling and floor brackets, or (4) holes cut in concrete floor, or other accepted practice.

The STEELTEX channel studs shall have 14 gauge electric welded wire prongs extending on both sides of stud and spaced 5 in. on center.

Ribbed STEELTEX sheets shall be applied on both sides of the studs by starting at the ceiling and working down to the floor so that all horizontal laps take place over the top sheets. Sheets shall be attached to studding by pushing the prongs of the studding through the backing and when the sheet is placed firmly against studding, these prongs shall be bent over reinforcing wires and pressed in firmly.

Joints shall be staggered in placing so that four corners of intersecting sheets shall not occur at any one place. Horizontal laps shall be ½ in. Vertical laps shall be made over studs only and shall be 1 in. Care must be taken in making laps that rib of top sheet shall not be placed over rib of under sheet.



3-in. Hollow Partition
Using 1½-in. STEELTEX Channels and Ribbed STEELTEX Lath

Continued on next page

STEELTEX 2-IN. SOLID PARTITION

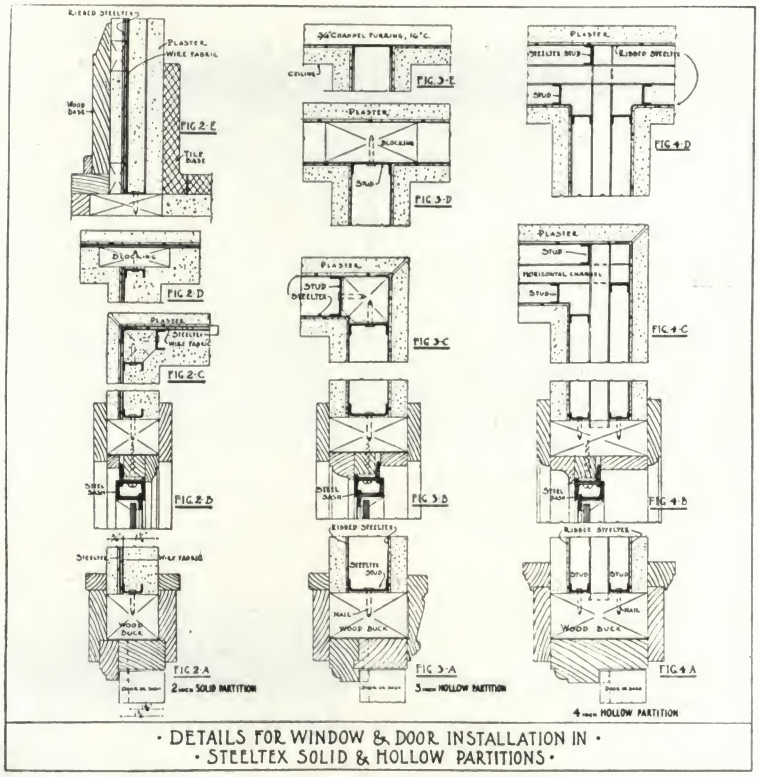
Specifications—2-in. plastered partitions shall be constructed with ¾ in. STEELTEX channel studs spaced 16 in. on center and having 14 gauge wire prongs welded to stud 5 in. on center.

Studs may be attached to floors and ceilings with (1) runner channels, (2) nailing, (3) ceiling and floor channel brackets, or (4) holes cut in concrete floor or other accepted practice.

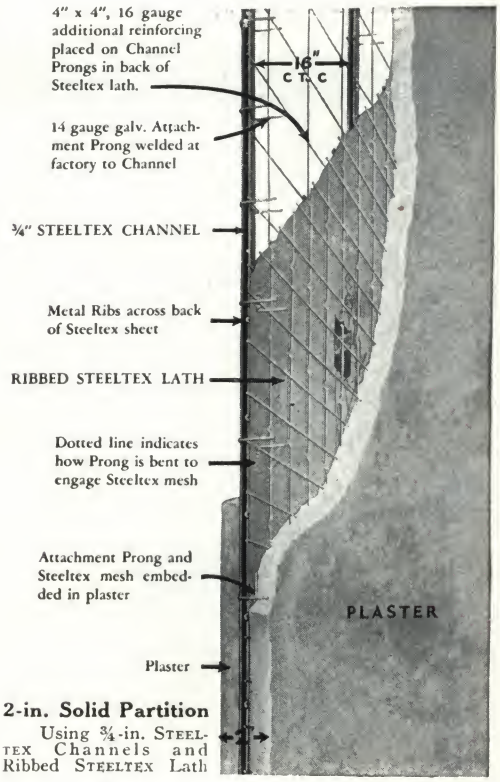
Ribbed STEELTEX for Plaster shall be put in place by starting at the ceiling and working down to the floor so that all horizontal laps take place over the top sheets. Sheets shall be attached to studding by pushing the prongs of the studding through the backing and when the sheet is placed firmly against studding, these prongs shall be bent over reinforcing wires and pressed in firmly.

Joints shall be staggered in placing so that four corners of intersecting sheets shall not occur at any one place. Horizontal laps shall be ½ in. Vertical laps shall be made over studs only and shall be 1 in. Care must be taken in making laps that rib of top sheet shall not be placed over rib of under sheet.

Before starting lathing a 4x4-in., 16-gauge galvanized cold drawn wire fabric should be hung on the channel prongs so as to provide the necessary reinforcing for the back of the plastered slab, and studding shall be temporarily braced every 6 in. by tying a channel horizontally across the back of the studs, or by a form of wood bracing attached to the floor so as to hold partition in rigid position until scratch coat has been applied and becomes hardened.



· DETAILS FOR WINDOW & DOOR INSTALLATION IN · · STEELTEX SOLID & HOLLOW PARTITIONS ·



2-in. Solid Partition
Using ¾-in. STEELTEX Channels and Ribbed STEELTEX Lath

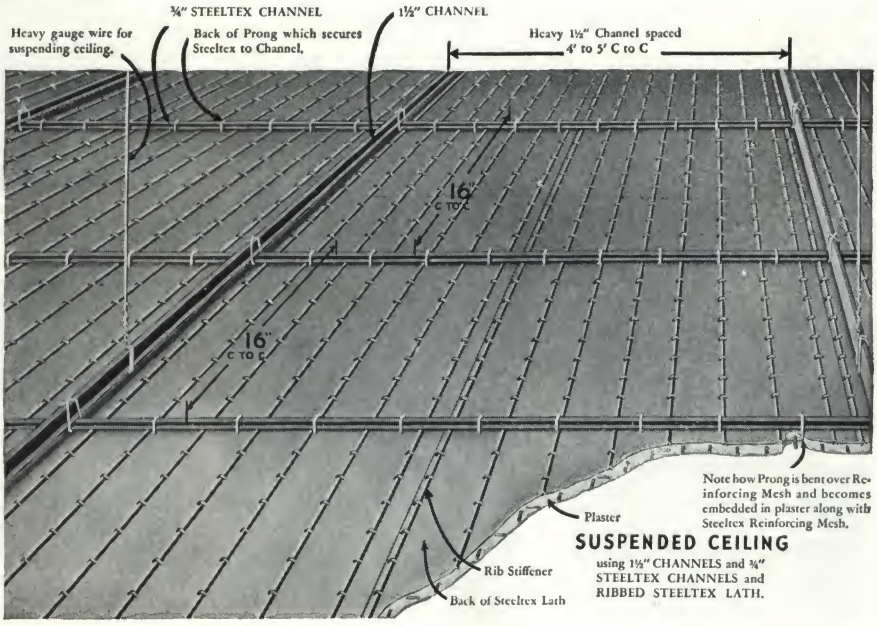
STEELTEX SUSPENDED CEILINGS

Specifications—Plastered ceilings suspended from flat slab, arches, pan system or other similar floor construction shall be constructed with ¾-in. STEELTEX channels spaced 16 in. on center, and having 14 gauge galvanized wire prongs welded to channels 5 in. on center.

1½-in. channels spaced 4 to 5 ft. on center are suspended the required distance from the floor slab with heavy gauge galvanized wire or strap iron to which STEELTEX channels are attached with 18 gauge, galvanized annealed tie wire.

Ribbed STEELTEX for Plaster shall be attached to STEELTEX channels by pushing the prongs through the backing and when sheet is placed firmly against STEELTEX channel these prongs shall be bent over reinforcing wires on face of sheet and pressed in firmly.

Joints shall be staggered in placing so that four corners of intersecting sheet shall not occur at any one place. Laps shall be ½ in. on long side of sheets and 1 in. on end laps. Care must be taken in making laps that rib of top sheet shall not be placed over rib of under sheet.



SUSPENDED CEILING
using 1½" CHANNELS and ¾" STEELTEX CHANNELS and RIBBED STEELTEX LATH.

Continued on next page

STEELTEX ATTACHMENT BARS

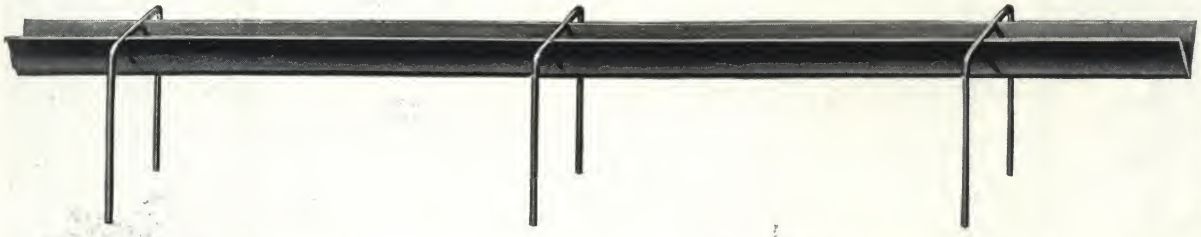
The STEELTEX V-shaped Attachment Bar is used extensively as a means of securing STEELTEX for plaster, stucco, and brick or stone veneer to many kinds of steel framing up to 36-in. centers. If the spacing is greater than 36 in. the ¾-in. STEELTEX Channel is used.

The STEELTEX Attachment Bar is made of either 19 gauge or 16 gauge, 1-in. steel strip, formed into a "V" shape for stiffness, to which are welded 14 gauge galvanized wire prongs 4 in. on center. The strip is thoroughly lacquered to resist rust.

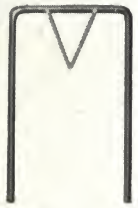
The Attachment Bar is either wire tied or clipped 16 in. on center to the steel framing (including steel floor joists).

STEELTEX is then attached to the Attachment Bars by pushing the STEELTEX against the prongs so that the prongs puncture the backing, and when the STEELTEX is placed firmly against the bar, the prongs are bent over the reinforcing wires on the face of the STEELTEX, holding it securely in place.

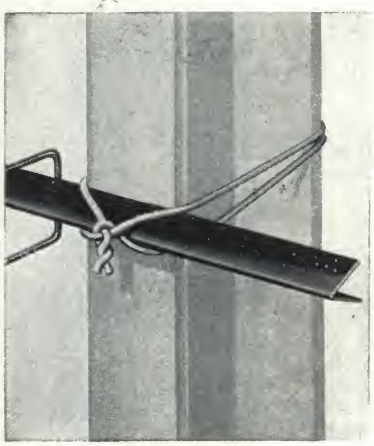
The STEELTEX Attachment Bar provides an economical method of lathing. It is furnished in 16-ft. lengths, 20 pieces to the bundle—packed in fibre board cartons of 320 linear ft. each. (For Specifications see next page.)

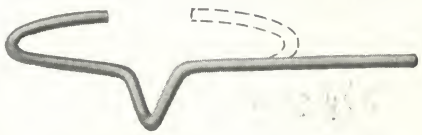


Above: A section of STEELTEX Attachment Bar. Note the U wire prongs welded to the V-shaped bar



End view of Attachment Bar

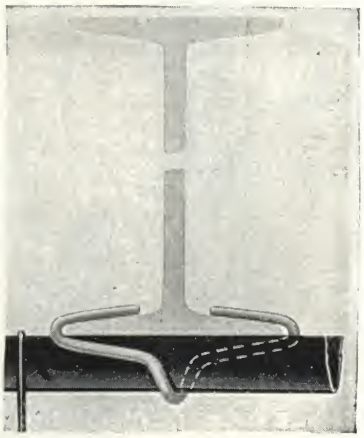




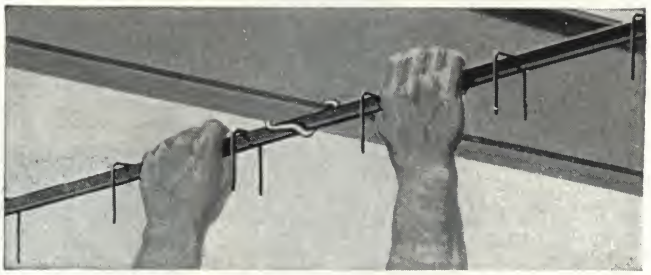
Above:
The STEELTEX beam clip for the STEELTEX Attachment Bar is designed to fit the V-shaped member of the Attachment Bar. Application of the beam clip is rapid—simply bend over beam flange into position. (See dotted line)

At right:
The STEELTEX beam clip holds the Attachment Bar securely in place on the ceiling joist

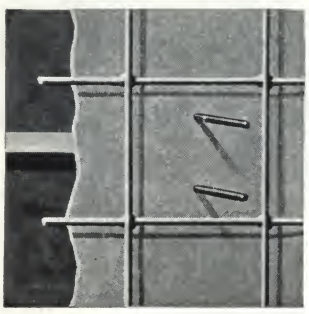
At left:
STEELTEX Attachment Bars are tied by a double turn of 14 gauge galvanized wire to the steel studs as shown

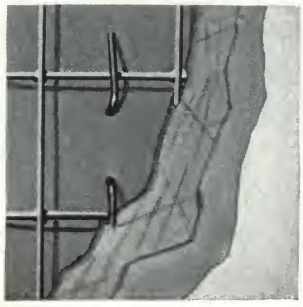


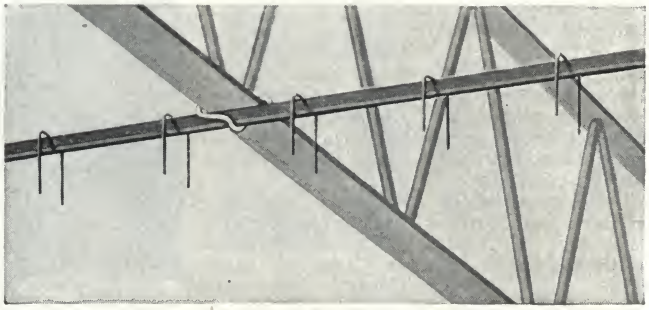
After all Attachment Bars are clipped in place on the wall studs and ceiling joists, it is a simple matter to apply and attach STEELTEX. The backing of STEELTEX is easily punctured by the galvanized wire prongs or projecting ends of the STEELTEX Attachment Bar. The illustration at the left below shows how the attachment bar wire prongs puncture the STEELTEX backing. The illustration below at right shows the prongs bent back in place over the STEELTEX reinforcing wire. When the plaster is applied these wire prongs become automatically embedded in the plaster along with the wire reinforcing mesh of STEELTEX (see below).



The STEELTEX beam clip forms a strong, rigid attachment for the STEELTEX Attachment Bar







For flat top, open web joists the same STEELTEX beam clip may be used for attachment—or the attachment bar may be secured by an ordinary wire tie

Continued on next page

STEELTEX LATHING OVER STEEL FRAMING

The STEELTEX Attachment Bar and STEELTEX Channel provide a secure and speedy method of attaching STEELTEX for plaster, for stucco, or for brick or stone veneer to ceilings and side walls over steel studs and joists, and over concrete and other surfaces where nailing is impracticable.

Spans up to 24 in.—use 19 gauge Attachment Bar.
Spans 24 to 36 in.—use 16 gauge Attachment Bar.
Spans over 36 in. use ¾ in. Channel.

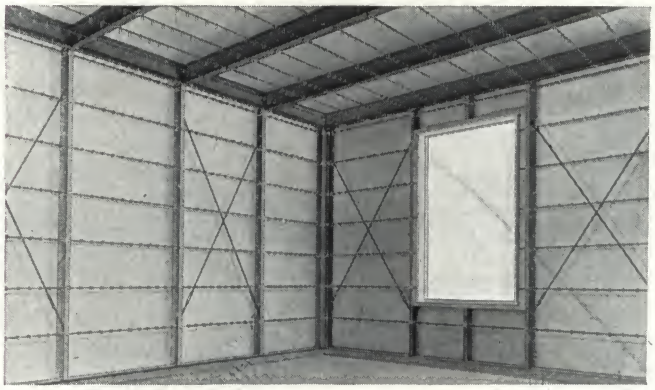
The Channel or Attachment Bar, in accordance with standard practice, are either wire tied or clipped to the steel members. The STEELTEX is then lathed by pushing the prongs of the Attachment Bar or Channel through the backing of the STEELTEX sheet. The wire prongs are then bent over to engage the reinforcing mesh of STEELTEX, completing a secure and economical method of positive attachment to the steel framework.

Specifications for Steeltex Ceiling Lathing, Under Rolled Section or Bar Joist Floor Construction—STEELTEX Attachment Bars or STEELTEX Channels shall be attached to the flange of rolled section joists with clips which hook over the flange of the beam or to the bottom chord of bar joists by tying with a double strand of 18 gauge galvanized annealed wire.

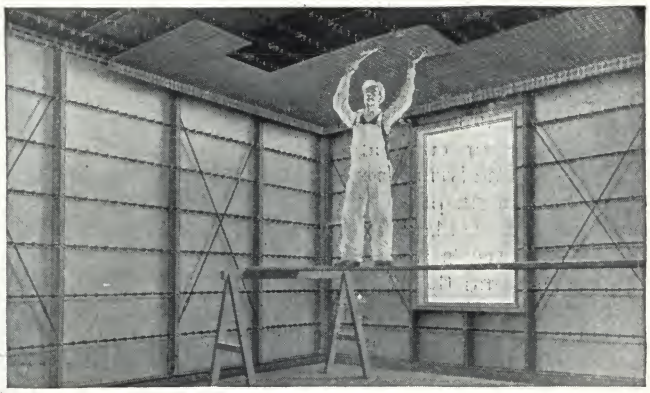
Attachment Bars (having 14 gauge galvanized wire prongs welded 4 in. on center) shall be spaced 16 in. on center, using 19 gauge bar where floor joist spacings are 24 in. and under, and 16 gauge bar where joist spacing is 24 to 36 in., and ¾-in. STEELTEX Channel (having 14 gauge galvanized wire prongs welded 5 in. on center) where floor or ceiling joists are spaced over 36-in. centers. In all cases, spacing of Attachment Bars shall be arranged so that joints of Ribbed STEELTEX sheets shall be made over Attachment Bars and not between bars.

Ribbed STEELTEX shall be lathed by starting at the corner of room and bending the first sheet at the ceiling angle to provide a 6-in. drop or apron down the side walls. The angle in the sheet shall be made sharp and straight. Ribbed STEELTEX shall be attached to STEELTEX Attachment Bars by pushing the prongs through the backing and when sheet is placed firmly against Attachment Bar, prongs shall be bent over reinforcing wires on face of sheet and pressed in firmly.

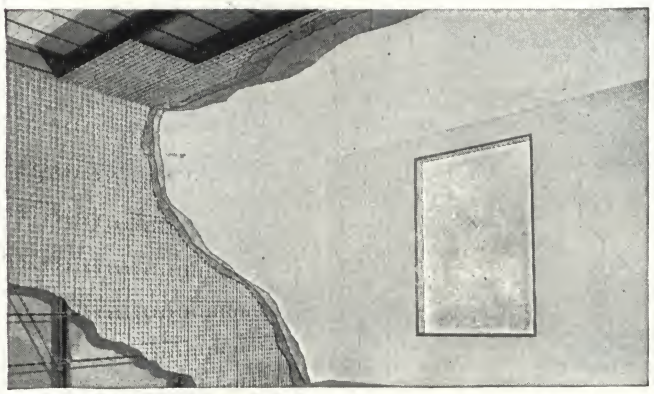
Joints shall be staggered in placing so that four corners of intersecting sheets shall not occur at any one place. Laps shall be ½ in. on long side of sheet and 1 in. on end laps.



The illustration above shows STEELTEX Attachment Bars in place, ready for the application of STEELTEX lath, and also the method of using STEELTEX Attachment Bars in connection with vertical steel columns supported up to 36 in. on centers; on spans over 36 in. the STEELTEX channel is used in the same manner



Ribbed STEELTEX lath being applied to Attachment Bars at the ceiling over steel framing is shown in the above illustration. The sheets of STEELTEX are pushed up and punctured by the extending prongs of the STEELTEX Attachment Bars. The prongs are then bent into position and hold the STEELTEX lath firmly and securely in place



Here the STEELTEX lath is shown cut away at the side wall and at the ceiling to show the STEELTEX Attachment Bars clipped by the STEELTEX beam clips to the ceiling joists and tied by wire to the side wall studs. As the plaster is applied over ribbed STEELTEX lath, the welded steel mesh of STEELTEX, along with the wire prongs, becomes automatically embedded in the plaster producing a solid, one-piece, steel-reinforced plaster slab.

Specifications for Steeltex Lathing Over Steel Frame Side Walls—STEELTEX lath for walls of standard steel framing shall be attached to the flanges of steel framing with Attachment Bars or STEELTEX Channels placed 16 in. on center, same to be wire tied or clipped to the flanges of steel framing members. Ribbed STEELTEX sheets on side walls for this class of construction shall be placed with back-up ribs at right angles to Attachment Bars. Sheet shall be secured to the Attachment Bars by pushing the prongs of Attachment Bar through the fibrous backing, bending over main reinforcing wires, and pressing in firmly. Joints shall be staggered or broken so that four corners of intersecting sheets shall not occur at any one place. Laps on the long side of STEELTEX sheet shall be ½ in. and end laps shall be 1 in.

Specifications for Reinforced Brick Veneer Construction Over Steel Framing—All exterior walls over steel frame construction shall be sheathed with STEELTEX style 38-16, as manufactured by NATIONAL STEEL FABRIC COMPANY. When steel framing is of standard rolled sections, STEELTEX may be attached to the flanges of structural members with STEELTEX V-shaped attachment bars. Attachment bars shall be placed horizontally over the outside framing, spaced 16 in. on center, wire tied or wire clipped to flanges of structural members.

Start placing STEELTEX at the sill line, finishing the first width around building; the second width of STEELTEX shall be laid overlapping (shingle fashion) the first width at least 1 in. Brick work shall be laid not less than 1 in. from the face of the studs, and the space between the STEELTEX sheathing and back of brick work shall be filled with brick laying cement mortar, as each course of brick is laid. The back-up mortar shall be well spaded in with bricklayer's trowel, so as to insure bond to both brick and STEELTEX.

The illustration above shows the application of STEELTEX Attachment Bar running at right angles to horizontal steel girts. When the span is greater than 36 in. the STEELTEX Channel is used. The bars or channels are attached to the columns and girts by tying with 14 gauge galvanized wire

Continued on next page

STEELTEX FOR BRICK OR STONE VENEER

The STEELTEX system of building a brick or stone veneer wall may be more accurately termed Reinforced Brick Construction or Reinforced Stone Construction. It does not involve a single change in building methods and is no more costly than less satisfactory methods usually employed. In place of the usual method of simply tying the brick or stone to the framework by means of wall ties, the brick or stone are actually built into a reinforced cement slab and the whole securely attached to and greatly strengthening the framework. (Wall ties are frequently used because contractors are accustomed to their use in older forms of construction. However, they are not necessary with STEELTEX.)

STEELTEX for Brick or Stone Veneer is exactly like STEELTEX for Stucco (see following page), except that the reinforcing wires are 16 gauge instead of 14 gauge. The 2x2-in. galvanized wire fabric is secured to a membrane backing made up of two layers of heavy water-resistant backing cemented together with a waterproof mastic or compound.

The STEELTEX is wrapped about the building shingle fashion in place of sheathing. As each course of brick or stone is laid, the mortar is spaded in behind with the bricklayer's trowel to fill up the 1-in. space between the brick and the STEELTEX. The mortar flows around the reinforcing wires of STEELTEX, thoroughly bonding to them and to the brick or stone.

Specifications—Reinforced Brick Veneer Construction over Wood Framing—*Framing*—Exterior walls as well as all partitions on interior building to be framed with 2x4-in. studding, spaced 16 in. on center, doubled around all window and door openings and tripled at all corners. Studs shall be set in box sill on foundation made from 2-in. framing. Studding shall be double capped at each story height.

All framing work shall be braced temporarily to hold it plumb and in alignment until brickwork has been completed.

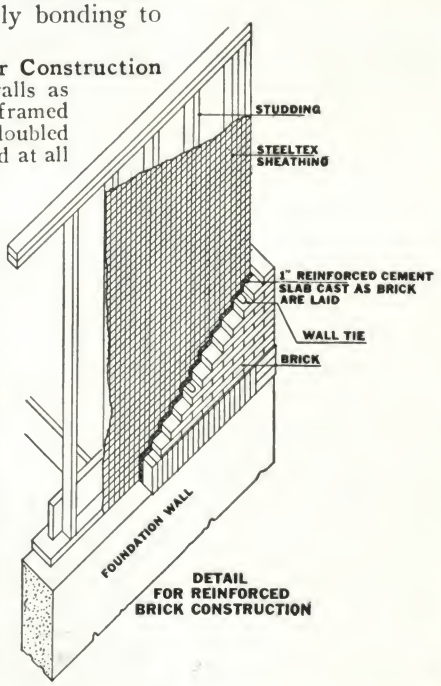
Sheathing—All outside walls for brick veneering shall be covered with STEELTEX Style 38-16, 2x2-in. mesh, electric welded wire fabric, underlined with a double layer fibrous backing with mastic between, to be furnished in rolls or sheets. STEELTEX sheathing shall be started at the sill line and the first width put around building and likewise the second width of STEELTEX, overlapping backing of first course at least 1 in. In placing STEELTEX sheathing where furnished in rolls, disregard window and door openings. Cover them over where found more expedient to do so, cutting out the window and door openings after STEELTEX sheathing has been attached and securely nailed. The STEELTEX sheets cut from window and door openings may be used for covering gables and other miscellaneous places.

STEELTEX sheathing shall be attached to studs with offset head nails, 4d common nails or staples. The sheathing shall be nailed every third wire or 6 in. on center to each stud and shall be securely nailed over every wire or 2 in. on center around all openings.

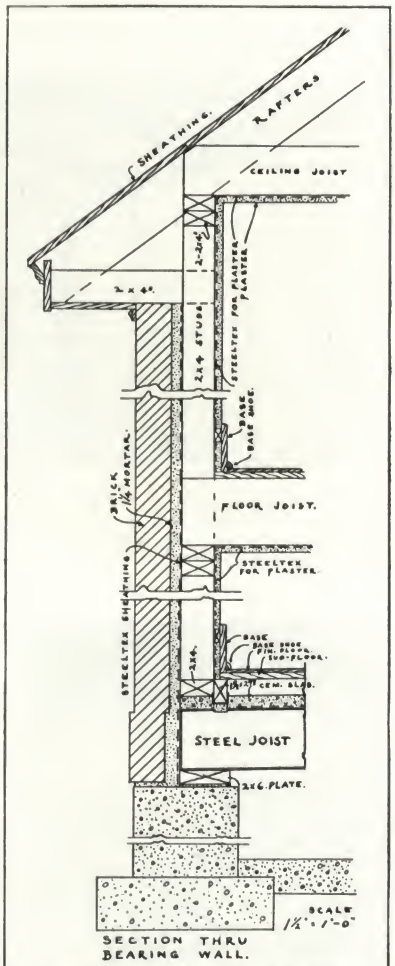
Reinforced Brickwork—All exposed walls of building showing brick shall be faced with one course of standard size approved brick. The back of brick shall be laid 1 in. from the face of the studs. The space between STEELTEX sheathing and back of brickwork shall be filled with cement mortar as each course of brick is laid. The mortar shall be one part portland cement, three parts clean, sharp sand and 10% hydrated lime.

The brick shall be laid in full beds of same mortar with the vertical joints well filled and the back-up mortar well spaded in with bricklayer's trowel so as to assure bond of both brick and STEELTEX sheathing. The class of brick used, as well as the style of joint desired, to be selected by the architect or owner.

Note: To lay brick and to form back-up slab to the foregoing specifications will require ¾ ton of sand and 2 barrels of cement for each thousand brick thus laid.



DETAIL FOR REINFORCED BRICK CONSTRUCTION



DETAIL FOR REINFORCED BRICK CONSTRUCTION

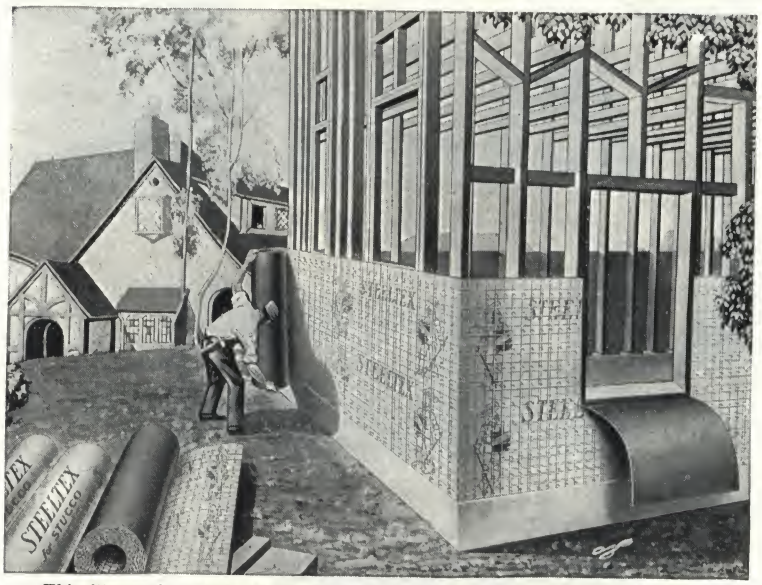
The illustrations above show typical applications of STEELTEX used in brick veneer and stone veneer construction. Note how the mortar is spaded in behind the brick or stone

The net result of a STEELTEX reinforced brick or stone job is comparable to that of a house built of reinforced cement stucco and then encased in a veneer of brick or stone

Continued on next page

STEELTEX FOR STUCCO

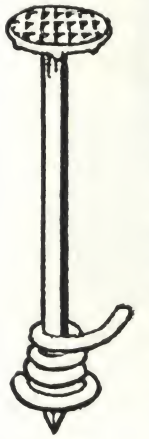
STEELTEX for Stucco is composed of a 2x2-in. galvanized welded wire fabric attached to a double layer, waterproof membrane backing. The reinforcing element of STEELTEX adds tensile strength to the stucco slab (reinforcing it just as well designed concrete slabs are reinforced). The membrane backing in addition to providing a suitable base to receive and hold the wet mortar, gives to the stucco slab very necessary dampproofing and insulating qualities.

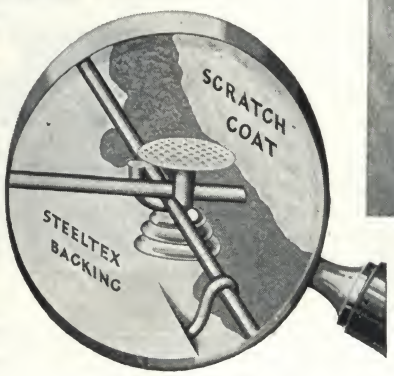


This illustration above shows how STEELTEX for Stucco is cut to length and nailed completely about the building, one width above the other in shingle fashion. Window and door openings are cut away after the STEELTEX has been nailed. The cut out pieces are salvaged in gable work, etc.

Functions of Backing—The membrane backing, which is an integral part of STEELTEX for Stucco, is composed of two layers of heavy, water-resistant backing cemented together with a waterproof mastic compound. The wet mortar (stucco) is plastered against this backing and held in place by it until the stucco has set around the reinforcing wires. Thus the back of the stucco slab is completely sealed against the penetration of dampness and insulated against heat and cold.

Steel Fabric Reinforcement—The galvanized wire network extends across the face of STEELTEX for Stucco. It is secured to the backing by means of stitch wires which are crimped to permit positive embedment of the steel reinforcing, to a depth of ⅜ in. by use of the STEELTEX furring nail. As the wet mortar is applied against the backing, it flows under and around the wires, completely embedding them in the scratch coat. In this manner the stucco slab is reinforced with the correct amount of steel just as concrete is reinforced. The wire fabric is overlapped at all joints so that it forms a continuous network about the building, imparting to the stucco, strength to resist ordinary strains and stresses without cracking (the square rigidly welded mesh gives equal strength in all directions) and adding structural value to the framework about which it is wrapped.





Detailed Specifications

All exterior walls (where so specified and designated stucco) shall be lathed with STEELTEX for Stucco as manufactured by the NATIONAL STEEL FABRIC COMPANY, Pittsburgh, Pa. (A 2x2-in. 14-gauge, cold drawn electrically welded galvanized wire fabric, to which a double layer of tough fibrous backing with a mastic filler between is secured. Rolls 50 in. x 108 ft., or sheets 50x52 in.)

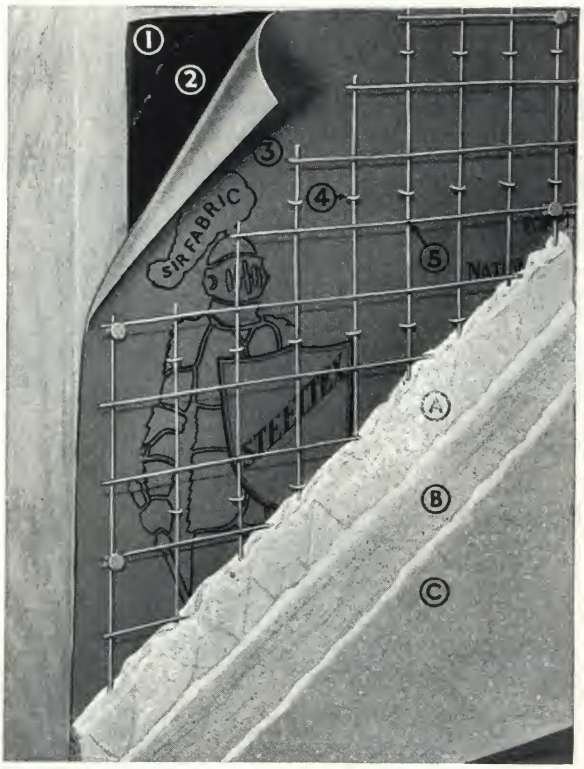
STEELTEX for Stucco shall be nailed over every stud horizontally across the building, and every 6 in. vertically on the stud, placing STEELTEX furring nails under the horizontal wire. Material shall be toe-nailed at corners of mesh to automatically stretch the fabric taut.

The first width of STEELTEX for Stucco shall be started at base line and extend around building. The second width shall be placed lapping over (shingle fashion) the first course ¾ in., making the laps wire to wire no backing between. Where vertical joints occur the same method of lapping shall be employed. STEELTEX for Stucco shall be applied direct to studs or sheathing as the case may be (or over siding in case of overcoat work) by nailing to bearings.

STEELTEX for Stucco shall be carried up to the openings or moulding of all doors and windows, and in no case shall vertical joints be joined at corners, under or over window or door openings, or between studs where STEELTEX for Stucco is applied direct to studs, or in no case shall STEELTEX for Stucco be butted nor shall the backing extend over face of the wire mesh at joints.

Stucco over STEELTEX shall be three (3) coat work finished to not less than ¾-in. grounds.

When sheets are used they shall be placed so that all joints shall overlap the fabric ¾ in. with wire to wire, no backing between. Directions for applying are plainly printed on each sheet of STEELTEX for Stucco and every few feet along the roll.



Above:

Analytical illustration of a built-up wall section in which STEELTEX for Stucco is used.

DESCRIPTION OF ABOVE SECTION—(1) Waterproof backing. (2) Waterproof compound. (3) Second layer of backing to which stucco bonds. (4) Furring device. (5) Rustproofed steel reinforcing fabric. (A) Scratch coat of stucco. (B) Straightening coat. (C) Finishing coat

PENN METAL COMPANY

Manufacturers of Steel Plaster Base, Metal Corner Beads and Cold Formed Channels

BOSTON, MASS., 40 Central Street
NEW YORK, N. Y., 60 East 42nd Street
CHICAGO, ILL.,
PARKERSBURG, W. VA. (Pittsburgh District)

Products

MESHTEX EXPANDED STEEL PLASTER BASE; DURABOND RIB AND MESH PLASTER BASE; MASTERIB ⅜-IN. RIB PLASTER BASE; PRE-FURRED (NON-FURRING) PLASTER BASE; PENCO CORNER BEADS, Wing, Bullnose, Base and Rail Types; CORNERITE; STRIPLATH COLD FORMED STEEL CHANNELS.

Meshtex Expanded Steel Lath

Meshtex is the expanded lath with uniform mesh throughout—not merely a plaster base; it is a potent reinforcement. It lays flat while being put up, and stays flat when plastered.

MESHTEX

The strand is just turned enough to induce a free flow of plaster around each mesh, without cutting the key.

The extra wide sheet (27 in.) produces a decided saving in time required for installation, there being 12% fewer laps than where 24-in. sheets are used.

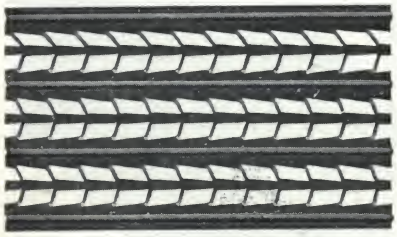
Weight per sq. yd., lb.	
Painted	Galvanized
2.20	2.50
2.50	....
3.00	3.40
3.40	....

Every sheet is painted singly and baked dry.

Furnished in copper bearing steel and pure iron where desired.

Durabond Steel Lath

Durabond is a real economy lath, with a uniform mesh of more than usual stiffness, due to the frequency and unique formation of the ribs, and the slanting curvature of intervening meshes.



Durabond

Takes plaster readily, yet its rib and mesh structure prevents the waste of overcoating.

One-third of the lath surface enmeshes and keys the plaster; two-thirds of the lath surface bracing and reinforcing the ceiling or wall. Sheets 27 in. wide, save time in putting up—12% fewer laps than on 24-in. and 50% over 18 in.

Every sheet is painted singly and baked dry. Made in weights painted 3.0 and 3.4 lb. per sq. yd.

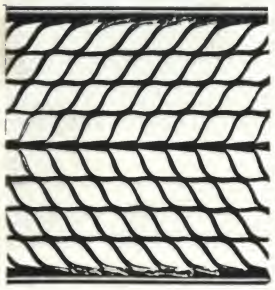
Furnished in copper bearing steel where desired.

Masterib ⅜-in. Rib Lath

Seven ribs spaced 4½ in. on centers.

Combines rib and mesh formation. Ribs ⅜ in. in height, in channel or U-shape.

Serves where stud spacing is greater than 16 in. on centers—walls, partitions, floors, roofs, suspended ceilings, etc.



MASTERIB

Ribs act as furring and hold mesh area out from supports for free troweling and thorough plaster penetration. The ideal lath for bar-joist construction, metal dome (tin pan) construction, ceilings and floors.

Sheets 27 in. wide—painted singly and baked dry. Made in weights 3.0, 3.4 and 4.0 lb., painted.

Penco Cornerite

Penco Cornerite welds the joint of wall and ceiling together into an unbroken unit.

The steel mesh absorbs the stresses and reinforces all the joints.

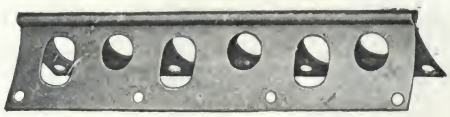
Penco Cornerite should always be used to reinforce the *corners* where *wood lath* or other plastering substitute is used.

4 in. wide on each flange—8 in. wide over all.

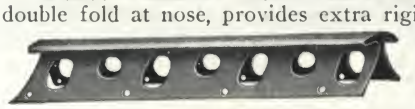
Strips are an even 8 ft. long.

Penco Corner Beads

Penco Wing Bead—The accepted standard type for general construction. Reinforces plaster corners and insures accuracy of line. Made of tight coat heavy weight sheets that never discolor plaster. Lengths 6, 7, 8, 8½, 9, 10, 12 ft. standard plaster grounds. Weight per 1000 ft. crated, 200 lb.

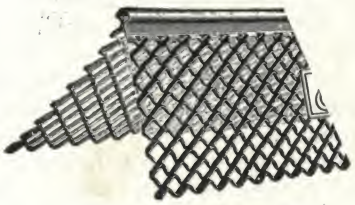


Penco Bullnose Bead—Makes a large rounded corner double fold at nose, provides extra rigidity. Nose formed on ¾-in. radius with 1-in. face. Used in leading hospitals, public buildings, schools, etc.



Lengths 8, 10, 12 ft. standard plaster grounds. Weight per 1000 ft. crated, 315 lb.

Expanded Corner Bead—A combination bead with all-metal nosing and the keying advantages of Meshtex.



Put up with staples or wire—no clips required.

Lengths 6, 7, 8, 9, 10, 12 ft.

Weight per 1000 ft. crated, 230 lb.

Penco Base Screed

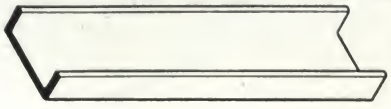
Unites plaster and cement or tile at the joints and eliminates cracks.

Made in 10-ft. lengths for standard plaster grounds. Weight per 1000 ft. crated, 185 lb.

Penco Cold Formed Channels

All formed from No. 16 gauge steel—strong, accurate, uniform, widely used for suspended ceilings, partitions, false beams, etc.

Stock lengths 20 ft.—4 sizes, ¾, 1, 1½ and 2 in. Other lengths as desired. Weights per 1000 lin. ft.: ¾ in., 276 lb.; 1 in. 332 lb.; 1½ in., 442 lb.; 2 in. 553 lb.



RICHSTO METAL TRIM COMPANY

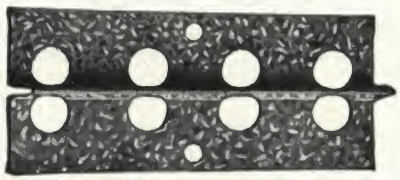
1054 Douglas Avenue

AURORA, ILL.

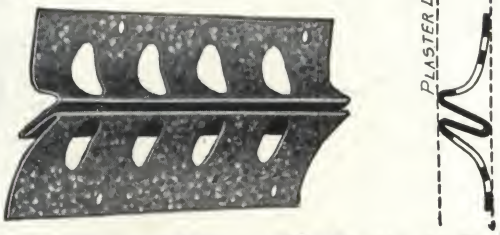
Products

METAL CORNER BEADS, BASE SCREEDS and GROUNDS; METAL PICTURE MOULDING; DOOR and WINDOW CASING and WINDOW STOOLS; METAL COVE BASE and CHAIR RAIL; CHALK TROUGH and BLACKBOARD TRIM.

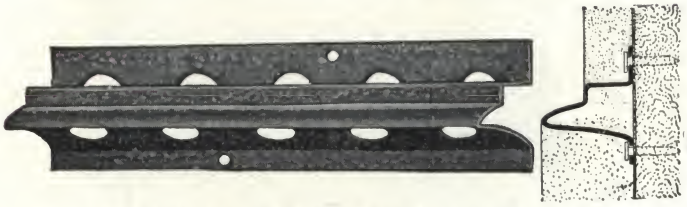
No. 20 Richsto Corner Bead—No. 26 Gauge
One-half actual size



No. 60 Base Ground—No. 26 Gauge
No. 62 Base Ground—No. 24 Gauge
Grounds ½, ⅝ or ¾ in.
One-half actual size

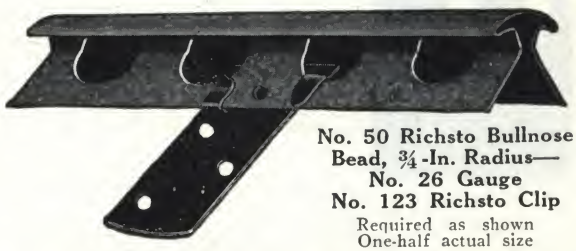


No. 70 Richsto Concealed Picture Mould—No. 26 Gauge
One-half actual size

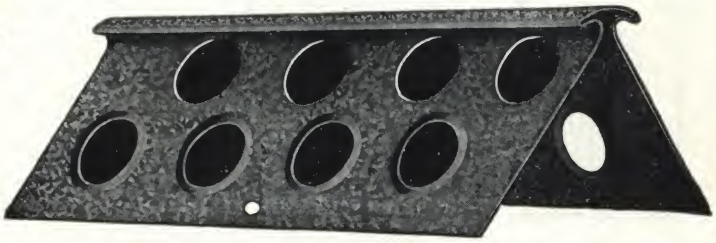


No. 74 Richsto Curved Point Base Screed—No. 26 Gauge
The grounds on top and bottom of this screed are ½ in. and 1 in., respectively
One-half actual size

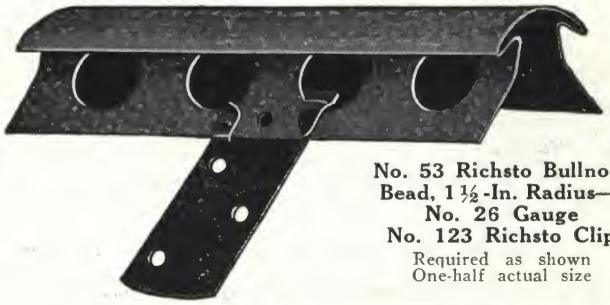
No. 78 Richsto Base Screed—No. 26 Gauge
The grounds on top and bottom of this screed are ½ in. and 1 in., respectively



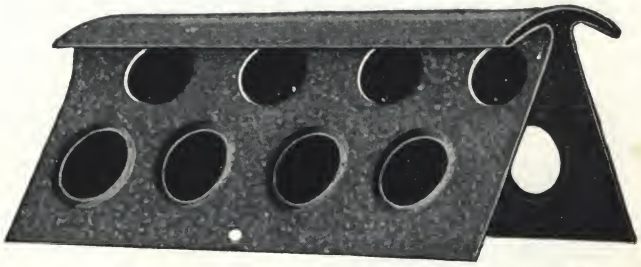
No. 50 Richsto Bullnose Bead, ¾-In. Radius—No. 26 Gauge
No. 123 Richsto Clip
Required as shown
One-half actual size



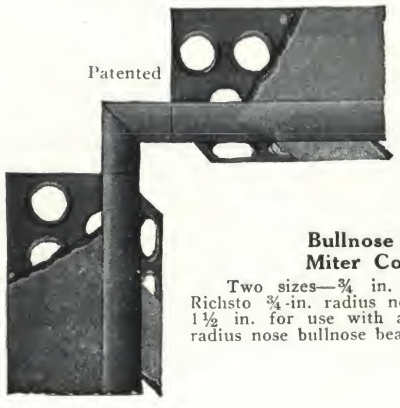
No. 41 Richsto Bullnose Bead, ¾-In. Radius—No. 26 Gauge
One-half actual size



No. 53 Richsto Bullnose Bead, 1½-In. Radius—No. 26 Gauge
No. 123 Richsto Clip
Required as shown
One-half actual size

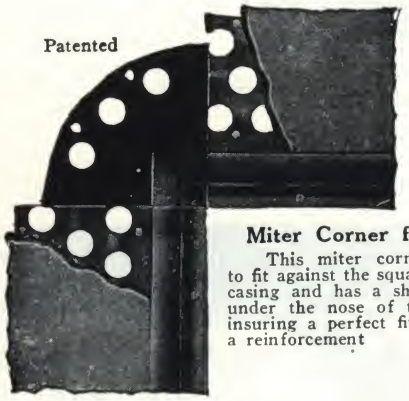


No. 44 Richsto Bullnose Bead, 1½-In. Radius—No. 26 Gauge
One-half actual size



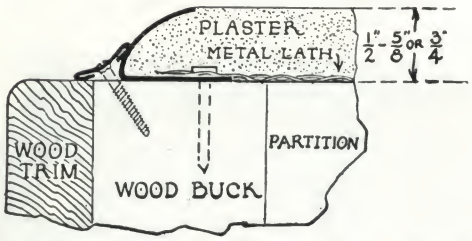
Bullnose Bead Miter Corners
Two sizes—¾ in. for use with any Richsto ¾-in. radius nose bullnose beads; 1½ in. for use with any Richsto 1½-in. radius nose bullnose beads

Continued on next page



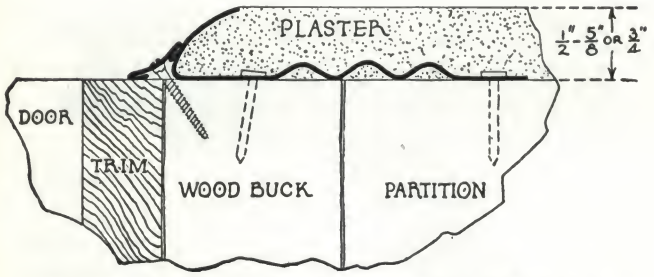
Miter Corner for Casings

This miter corner is designed to fit against the squared edge of the casing and has a shoulder that fits under the nose of the casing thus insuring a perfect fit and acting as a reinforcement



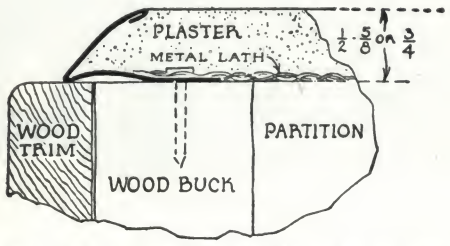
No. 138 Richsto Casing—Made in 20 and 24 Gauge

1⅜-in. nailing flange
One-half actual size



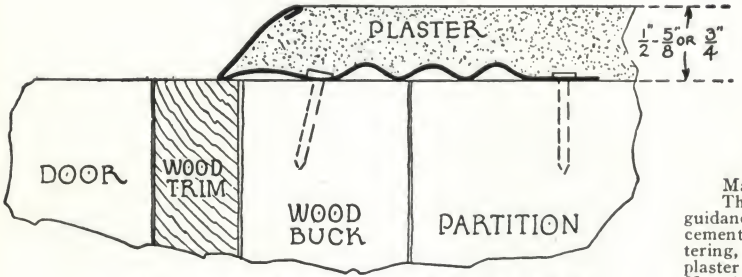
No. 141 Richsto Casing—Made in 20 and 24 Gauge

4-in. nailing flange
No. 120 Moulding generally used with No. 138 and No. 141 Casings as shown
One-half actual size



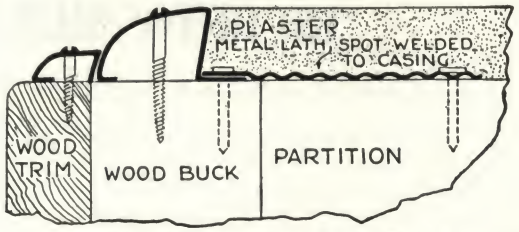
No. 139 Richsto Casing—Made in 24 Gauge

1⅝-in. nailing flange
One-half actual size



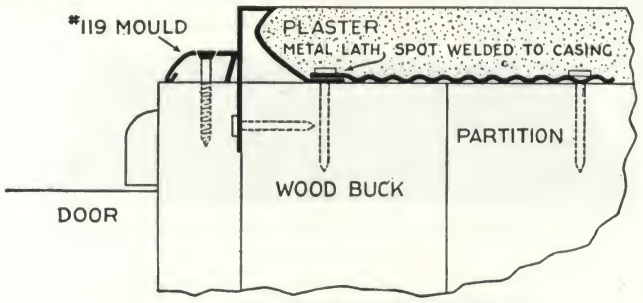
No. 140 Richsto Casing—Made in 24 Gauge

4-in. nailing flange
One-half actual size



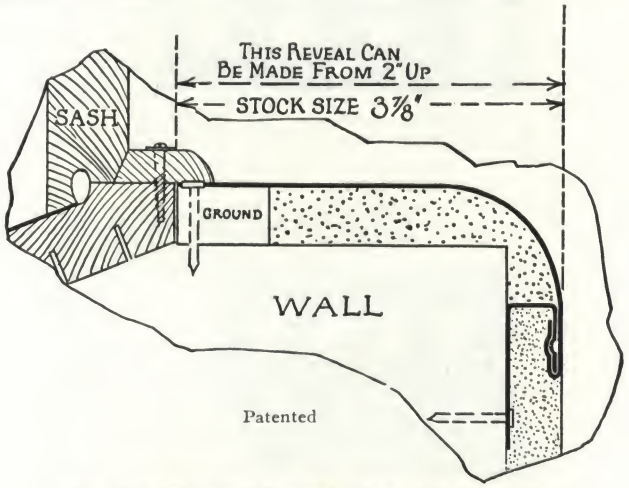
No. 204 Richsto New Style Casing

Made in No. 20 gauge, ½ and ¾-in. grounds. Furnished in ¾-in. ground unless otherwise specified. Approximate shipping weight 620 lb. per 1000 ft., crated



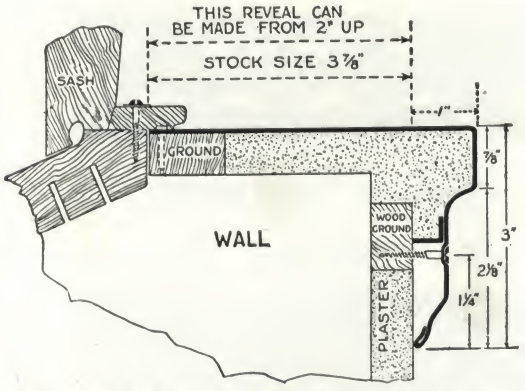
No. 205 Richsto Corner Ground

Made in No. No. 26 gauge only. Approximate shipping weight 325 lb. per 1000 ft., crated



No. 100 Richsto Curved Metal Window Stool

Either No. 18 or 20 gauge, special, tight coated galvanized sheet steel. All exposed surfaces primed with our special gray primer



No. 105 Richsto Window Stool with Apron

Made in No. 18 or 20 gauge.

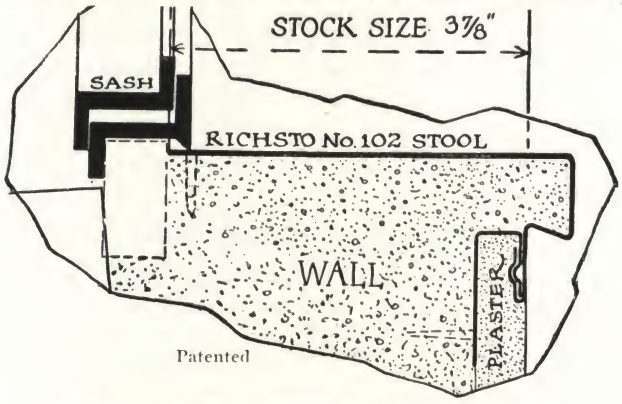
The design and manner of installation is illustrated above for your guidance. Note that stools should be filled, at time of setting, with cement or mortar. Installation can be made either before or after plastering, which depends upon the construction. Has 1-in. projection beyond plaster line. Furring strip is welded to apron and reinforces it. 1½-in. No. 5 wood screws are furnished for the apron. These changes and improvements make a stool simple in design, easy to erect, and exceptionally pleasing finished effect. Ends closed with No. 20 gauge galvanized steel.

Continued on next page

No. 102 Richsto Flat Metal Window Stool

Made of either No. 18 or 20 gauge special tight coated galvanized sheet steel. All exposed surfaces primed with our special gray primer.

Richsto No. 102 Flat Window Stool and Richsto ¾-in. radius bullnose beads for head and jamb.



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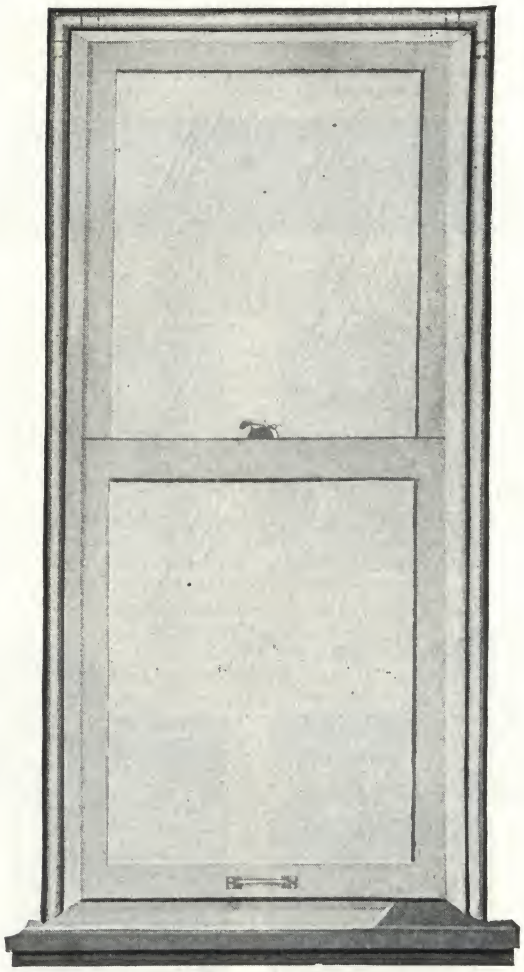


Patented

No. 125 Richsto Chalk Trough and Blackboard Trim

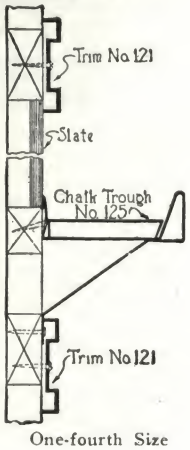
Chalk trough is made of No. 24 gauge sheet steel. The perforated tray is removable for cleaning.

Stock lengths 10 ft.; special lengths to order.

Trim—Our 121 trim is shown for use in combination with chalk trough.

Stock lengths 10 ft.; special lengths to order.

Made of No. 20 gauge steel.



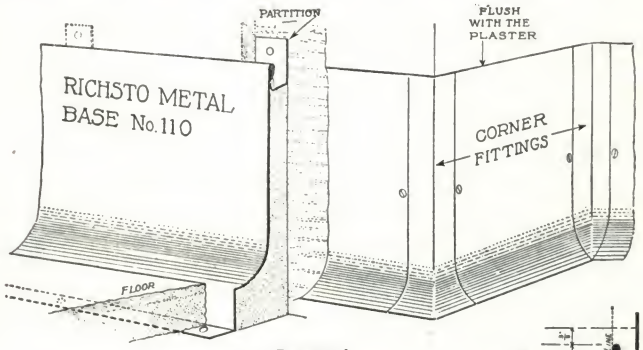
One-fourth Size

No. 110 Richsto Flush Metal Cove Base

Made of No. 18 or 20 gauge galvanized sheet steel. Used with cement, composition, or wood floors.

Our method of attaching base to construction permits of grouting base in back after erection without the use of grouting can or buttering of mortar on back before erection. Base is secured at the top by a clip, making it possible to fasten to construction at the point desired. Lower part of base bent to right angle for floor nailing.

Furnished either 4 or 6 in. high.



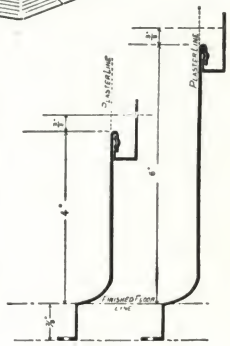
Patented

No. 114 Richsto Adjustable Base

A number of important changes has been effected in this Richsto No. 114 adjustable base.

The pocket in back of base and the machine screw have been omitted. This makes it possible to now erect the lower part of the base after plastering and floor are laid, by the use of wood screws, as shown. The necessary 1-in. No. 5 wood screws are furnished for the cove of this base. Contractors will find important time savings through these improvements. Cove is shipped in separate crates.

See our catalogue for fittings furnished.



Patented

No. 116 Richsto Removable Base

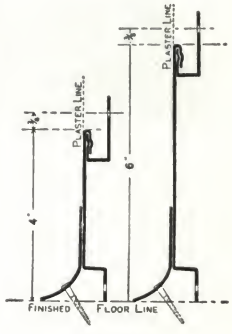
No. 116 base is of the removable type. Applied after plaster and flooring. Furnished in No. 20 gauge galvanized sheet metal. Stock lengths 10 ft.; special lengths to order.

Necessary tools rented for erection when desired.

Inside and outside square, ¾-in. radius and 1½-in. radius corners and end stops supplied for all bases.

Plinths and plinth blocks supplied for use with all bases and all casings.

Furnished either 4 or 6 in. high.



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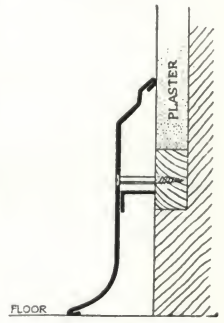


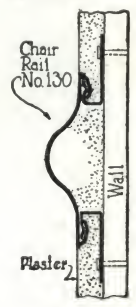
Patented

No. 130 Richsto Chair Rail

Made of No. 20 gauge galvanized steel, has sliding clip arrangement for attachment. This makes it possible to nail at convenient points about 12 in. on centers and leaves ample openings for easy grouting after erection.

Stock lengths 10 ft.; special lengths to order.

Complete supply of corner and end fittings available.



Patented
One-fourth Size

TRUSCON STEEL COMPANY

Manufacturers of a Complete Line of Permanent Building Products Including Metal Lath, Steel Channels and Plasterers' Specialties

EXECUTIVE OFFICES AND PLANT

YOUNGSTOWN, OHIO

Offices and Warehouses in Principal Cities—For list see our pages on Steel Windows

Products

HY-RIB; METAL LATH; STEEL CHANNELS; CORNER BEADS; BASE SCREEDS, METAL TRIM.

For other Truscon Products, see pages in this edition on Concrete Reinforcing Steel, Steel Joists, Steeldeck Roofs, Standardized Buildings and Structural Steel, Steel Doors, Steel Windows, as listed in Manufacturers' Index.

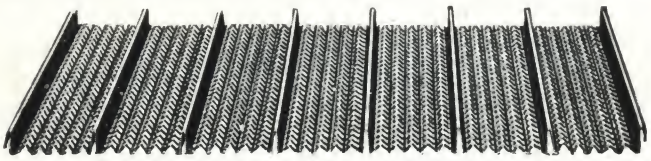
PRODUCTS OF TRUSCON

Truscon ¾-in. Hy-Rib Lath

A reinforcement for floors, roofs, sidewalls, arches and other types of concrete construction. Rigidity of lath permits extremely wide spacing of supports in ceilings and sidings. It is an ideal furring where considerable air space is desired. The sheets may be furnished curved in practically any desired radius.

Floors and Roofs—Hy-Rib provides thin reinforced concrete roofdecks without the use of forms, reduces costs and simplifies construction.

Industrial Walls and Sidings—Apply the Hy-Rib, plaster both sides, and the wall is complete. Hy-Rib provides a solid, monolithic wall, 2 in. thick, at half the cost of brick. No forms are required. Considerable floor space is added.



¾-in. Hy-Rib

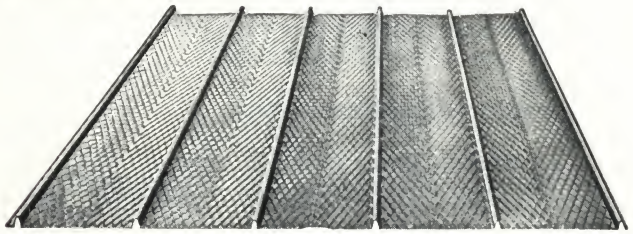
PROPERTIES OF ¾-IN. HY-RIB*

Weight per sq. ft., lb.	Cross-sectional area per foot width, sq. in.	Length sheet, ft.	Sq. ft. per bundle	Wt. per bundle, lb. .58 lb. per sq. ft.	Wt. per bundle, lb. .68 lb. per sq. ft.	Wt. per bundle, lb. .78 lb. per sq. ft.
.58	.1172	6	112	65.0	76.1	87.4
.68	.1407	8	149⅓	86.6	101.6	116.5
.78	.1642	10	186⅔	108.3	126.9	145.6
		12	224	129.9	152.3	174.7

Height of ribs, ¾ in.; spacing of ribs 4 in. C to C; 8 ribs per sheet; width of sheet, 28 in.; packed 8 sheets per bundle.

Truscon ⅜-in. Diamond Rib Lath

Truscon ⅜-in. Diamond Rib Lath is a self-furring lath with ⅜-in. deep ribs, which permits wide spacing of supports and thus saves in cost of erection. It is used principally as a base for plaster on ceilings, straightaway partition work with channels and for exterior stucco. It is particularly recommended for use with steel joists as a base for the plastered ceiling and as a reinforcement for the concrete slabs.



⅜-in. Diamond Rib Lath

PROPERTIES OF ⅜-IN. DIAMOND RIB LATH*

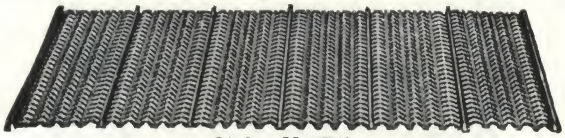
Weights per sq. yd., lb. Painted	Weights per sq. yd., lb. Copper bearing	Size of sheets, in.	Ribs spaced c-c, in.	Area of sheets, per sq. yd.	Sheets per bundle	Yards per bundle
3.0	3.0	24x96	4.8	1 7/9	9	16
3.5	3.5	24x96	4.8	1 7/9	9	16
4.0	.....	24x96	4.8	1 7/9	9	16

Truscon ⅜-in. Hy-Rib Lath

⅜-in. Hy-Rib lath is a self-furring lath. It is generally preferred because it permits wide spacing of studs, and saves channels and wiring.

Used for stucco, and plaster work in ceilings, straightaway partition work with channels, in siding, as furring, etc. There is absolutely no waste in side laps.

Partitions—Solid Hy-Rib partitions, only 2 in. thick, save floor space, stop fire, prevent cracks and are sound resisting, rigid and economical. Hy-Rib lath with ribs extending horizontally is supported by widely spaced channels.



⅜-in. Hy-Rib

PROPERTIES OF ⅜-IN. HY-RIB*

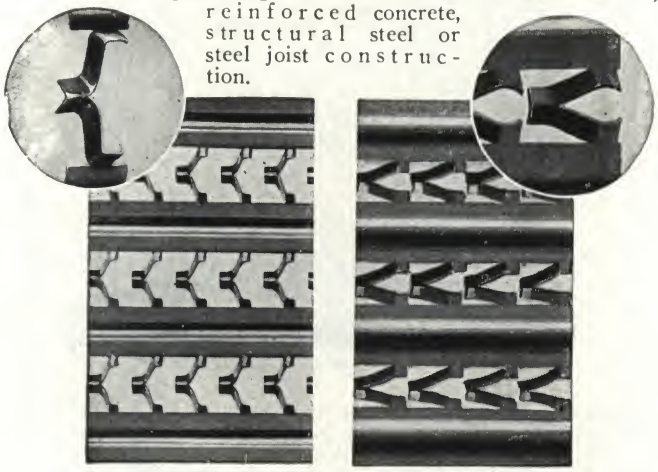
Weight per sq. yd., lb.	Stud spacing for walls and partitions, in.	Spacing supports for ceilings, in.	Cross-sectional area per ft. width, sq. in.
3.0	19 to 24	16 to 24	.0522
3.4	24 to 30	16 to 24	.0610
4.0	32 to 36	24 to 32	.0712

Height of ribs, ⅜ in.; spacing of ribs 4 in. C to C; 7 ribs per sheet; width of sheet, 24 in.; sheets 6, 8, 10 or 12 ft. long. Packed 9 sheets per bundle. Furnished in either copper bearing or open hearth steel.

Truscon "A" Metal Laths

Truscon A-Laths are preferred by plasterers because they combine the rigidity of sheet lath with the plaster bond, permanent key and reinforcing features of expanded metal laths.

Truscon A-Laths are recommended only for one-side, interior plastering in connection with wood, reinforced concrete, structural steel or steel joist construction.



Truscon 1-A Lath
For use where support spacings do not exceed 20 in.

Truscon 2-A Lath
For use where support spacings exceed 20 in.

PROPERTIES OF TRUSCON "A" LATHS

Weight per sq. yd., lb.	Length sheet, in.	Width sheet, in.	Sq. yd. in sheets	Sheets per bundle	Sq. yd. per bundle	Weight per bundle lb.	Maximum stud spacing, in.	Maximum joist spacing, in.
Truscon 1-A Metal Lath								
3.0	96	18	1⅛	15	20	60	20	20
Truscon 2-A Metal Lath								
3.4	96	16⅞	1¼	16	20	68	24	24

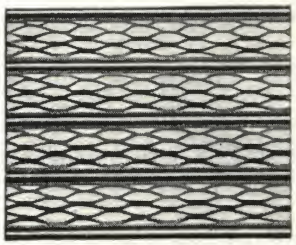
Furnished painted black.

*Catalogue, containing load tables, sent free upon request.

Continued on next page

Truscon Diamond "A" Metal Lath

Truscon Diamond "A" Metal Lath is a product of unusual rigidity, designed primarily as a base for interior plastering on ceilings and sidewalls. Manufactured in three weights, there is a proper weight to provide essential rigidity for use with various support spacings.



Truscon Diamond "A" Lath

Truscon 2.75 lb. Diamond "A" Metal Lath is particularly recommended to supplant ordinary Diamond Lath on spans not exceeding 16 in. where the additional rigidity and the special designed mesh will result in an appreciable saving in material and labor costs. Extreme rigidity is provided by the unvarying deep, closely spaced ribs.

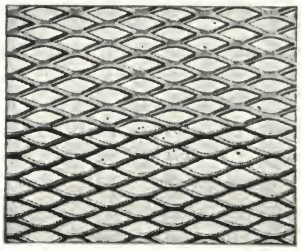
PROPERTIES OF DIAMOND "A" METAL LATH

Weight per sq. yd., lb.	Support spacings for walls, in.	Support spacings for ceilings, in.
2.75	12 to 16	12 to 16
3.0	16 to 20	16 to 20
3.4	20 to 24	20 to 24

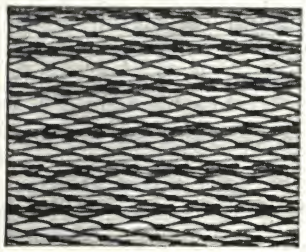
The sheets, being 24 in. wide by 96 in. long, are of maximum practical size. Packed 9 sheets (16 sq. yd.) per bundle. Furnished in either open hearth or copper-bearing steel.

Truscon Diamond Laths

Diamond lath is a general utility lath for any lathing requirement where supports are not spaced over 18 in. apart. It is used as a base for interior plastering, for solid metal-lath-and-plaster partitions, and as a base for backplastered stucco construction. When used as a base for exterior stucco over sheathing, Self-Furring Diamond Lath is furnished with ½-in. deep corrugations running full length of the sheet and spaced



Diamond Lath



Self-Furring Diamond Lath

1½ in. apart. These deformations act as furring to bring the face of the lath away from the sheathing, thus allowing the plaster to penetrate through the mesh for an efficient, permanent bond. Truscon Diamond Lath is particularly adaptable for forming fire stops, cornices and false beam work, where ease of bending, yet rigidity in structural formation, is essential.

PROPERTIES OF TRUSCON DIAMOND LATH

Weight per square yard, lb.		Stud spacing for walls and partitions, in.	Joist spacing for ceilings, in.	Weight per bundle, lb.
Truscon	2.2	Up to 12	Up to 12	44
	2.5	12 to 14	12 to 14	50
	3.0	12 to 14	12 to 14	60
	3.4	14 to 16	14 to 16	68
Galvanized	2.5	12 to 14	12 to 14	50
	3.4	14 to 16	14 to 16	68

Length of sheet, 96 in.; width of sheet, 27 in.; 10 sheets per bundle; bundle 20 sq. yd. Can be furnished in either open hearth or copper-bearing steel. All material excepting galvanized is painted.

Truscon Small Mesh Diamond Lath

A newly developed lath in which the diamonds are greatly reduced in size as compared to ordinary diamond lath. The smaller diamonds, besides increasing the rigidity of the sheets, make for plaster economy by offering greater resistance to the penetration of excess plaster. Small Mesh Diamond Lath is available in the same weights as ordinary diamond lath (see table above).

Truscon Small Mesh Diamond Lath

Truscon Stucco-Steel

A *stucco* reinforcement for use over sheathing. It is expanded from 17 gauge steel, with 1¼x2½ in. diamonds. Furnished in sheets 8 ft. long by either 2 or 4 ft. wide, weighing 1.8 lb. per sq. yd. Also furnished in sheets weighing 3.6 lb. per sq. yd.

Fig. A

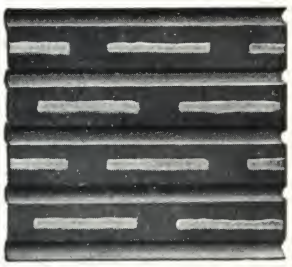
Fig. A shows a special type of nail used for attaching Stucco-Steel to sheathing. The nail acts as a furring device, as shown by Fig. B, and securely locks the Stucco-Steel ⅜ in. from the sheathing. This accurate furring-method and the large size diamond mesh permit the stucco to penetrate and thoroughly embed the Stucco-Steel. The result is a permanent, fireproof and crack-proof exterior.

Fig. B

Truscon Sheet Lath

A metal lath designed primarily for plaster economy. It takes less plaster than wood, is very rigid and its properly spaced perforations assure a satisfactory key.

Weight, per sq. yd. painted	Sizes of sheets, in.	Area of sheets, sq. yd.
4.625	13½x96 24 x96	1 1-7/9

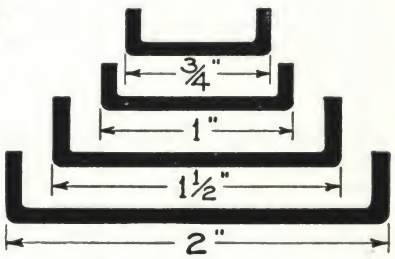


Truscon Sheet Lath

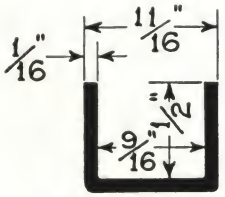
Truscon Cold Rolled Steel Channels

Truscon cold rolled steel channels are used in suspended ceilings, solid partitions and for furring metal lath.

Channels are carried in stock lengths of 12, 14, 16, 18 and 20 ft. ¾ and 1-in. channels are shipped in bundles of 25; 1½ and 2-in. are shipped in bundles of 10.



Cold Rolled Steel Channels



Square Channel

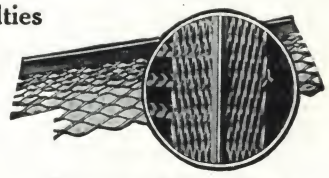
PROPERTIES OF TRUSCON CHANNELS

Size channel, in.	Weight per lin. ft., lb.
¾	0.276
¾ square	0.275
1	0.332
1½	0.442
2	0.553

Truscon Plasterers' Specialties

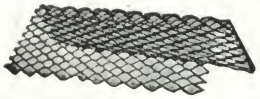
Rib Steel Corner Bead

Particularly adapted for nail-on work



Expanded Corner Bead

Used to protect outside plaster corners from shocks and cracks



Cornerite

Used for reinforcing plaster at inside corners

Stripite

A plaster base for use in narrow places and around odd-shaped corners

Truscon Metal Trim

The Truscon line of metal trim is complete in every respect and includes various types of metal base screeds, base grounds, bullnose corner beads, door casing, window casing, floor base, chair rail, chalk trough, window stool and similar materials.

SIMPLEX STEEL PRODUCTS CO.

Non-bearing Partitions and Suspended Ceilings

TELEPHONE
LAKEVIEW 0395

1146 Roscoe Street
CHICAGO, ILL.

Product

The SIMPLEX SYSTEM of PARTITION and CEILING CONSTRUCTION.

The SIMPLEX SYSTEM
PARTITION AND CEILING CONSTRUCTION
THE TIE THAT BINDS
TRADE-MARK

The Simplex System

An effective and economical method of constructing fireproof and soundproof partitions (non-bearing) and suspended or furred ceilings.

Gypsum plaster board has long been recognized as a building and lathing material of considerable merit due to the fireproof qualities of the gypsum and excellent insulating qualities of both the gypsum and the paper surfacing on both sides of the plaster board.

Simplex studs are designed so as to furnish a continuous shoulder on which the plaster boards are securely fastened by No. 10 gauge wire pins 3 in. long. This method of attachment leaves an open joint between plaster boards and permits the plaster to key between the boards and through to the hollow space in the studs.

The prong (integral with the stud) and pin project less than ⅛ in. from the surface of the plaster boards, permitting the rapid application of plaster to the surface.

Advantages Offered by the Simplex System

(1) Fireproof—All materials entering into Simplex construction are *fireproof*—steel and gypsum—and constructions of this nature have been passed upon by underwriters and building departments of most principal cities.

(2) Soundproof—The Simplex hollow partition contains all the desirable elements for good insulation: (1) a complete air space; (2) gypsum in generous quantity, and (3) four thicknesses of paper, which excels all other materials for sound insulation.

(3) Light Weight—The hollow Simplex partition plastered (when dry) weighs 10 lb. per sq. ft. This is a saving of from 40 to 70% of the partition load as compared to the heavier built-up partitions.

This light weight permits economical structural designing and is particularly advantageous when designing buildings for light occupancy using steel or bar joists, or similar light and rapid construction.

(4) Saves Space—Because of the construction details and the method of erection, Simplex partitions save from 1 to 2½ in. in finished thickness with results equally as effective and satisfactory.

The following sizes carried in stock for immediate shipment. Other sizes made to order.

1¼-in. hollow studs for partitions to finish 3 in.
2¼-in. hollow studs for partitions to finish 4 in.
3 -in. hollow studs for partitions to finish 4¾ in.
4¼-in. hollow studs for partitions to finish 6 in.
6 -in. hollow studs for partitions to finish 8 in.

(5) Conceals Piping—Conduit and other piping is readily concealed in the hollow space and by using the proper size studs, piping as well as steel columns, etc., can be completely covered without patching or the use of other materials.

(6) Rigid Construction—In erecting Simplex partitions steel channel runners are used on the floor and ceiling. The studs are set upright in these runners. The result is, walls that are straight with all units securely fastened.

(7) Sanitary—Simplex partitions are plastered with gypsum (hardwall) plaster, resulting in a hard smooth finished surface, sealed at floor and ceiling with steel runners, insuring sanitation to the highest degree.

(8) Wood Grounds, etc.—Ground nailing blocks, strips, door bucks and other attachments are cared for so as to permit the utmost in economy with permanency assured.

(9) Economical—All units being large and light in weight, as well as low in cost, permits the completion of work at a saving in both time and expense.

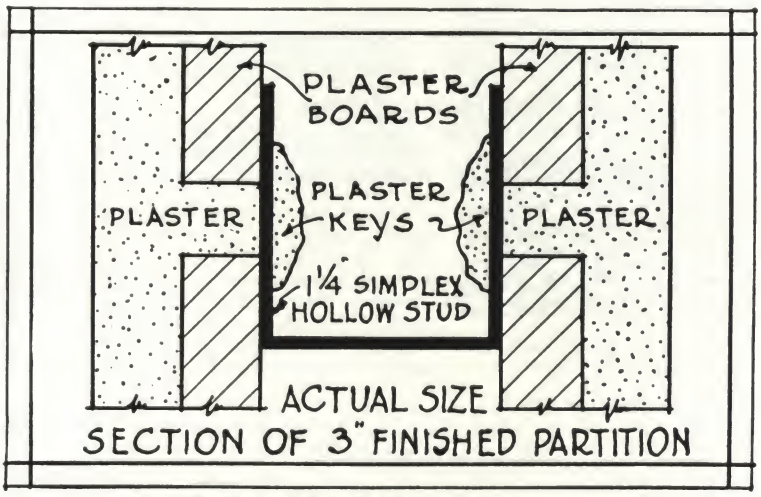
(10) Better Plastering—The nature of plaster board is such that it is most economical to use a rich mixture of gypsum plaster, with the result that a better quality of work, a more lasting and smoother surface are at all times assured.

(11) Salvage Value—The character of studs and fastenings permits the easy salvaging of studs and runners for re-use, with a minimum of waste and debris.

(12) Adaptability—The economical cost, rapid erection, simple details, light weight and the high quality of the materials used make Simplex construction the most logical for use where savings in time and cost as well as high grade construction are desired in such buildings as hotels, apartments, office buildings, schools, dormitories, hospitals, etc.

Details and Handbook

Full size and scale details showing economical and substantial methods of caring for such items as door bucks, grounds, carpet strips, blackboards, ironing boards, metal base, etc., have been prepared and will be sent on request with complete textbook.



Section of 3-inch Finished Partition

Continued on next page

Specifications for Hollow Partitions

This contractor to erect hollow Simplex partitions where shown, using Simplex studs of the sizes shown on plans, anchoring channel runners to floor and ceiling, and setting studs upright on 24½-in. centers. Studs to be securely nailed to door bucks and nailed or wired to intersecting walls. Corner studs to be used where required.

After studs have been properly placed, attach ⅜x24x32-in. gypsum plaster board to each side of studs, using No. 10 wire pins secured in place by use of Simplex tying tool to hold boards securely against steel studs. Pins to be 6 in. or less apart.

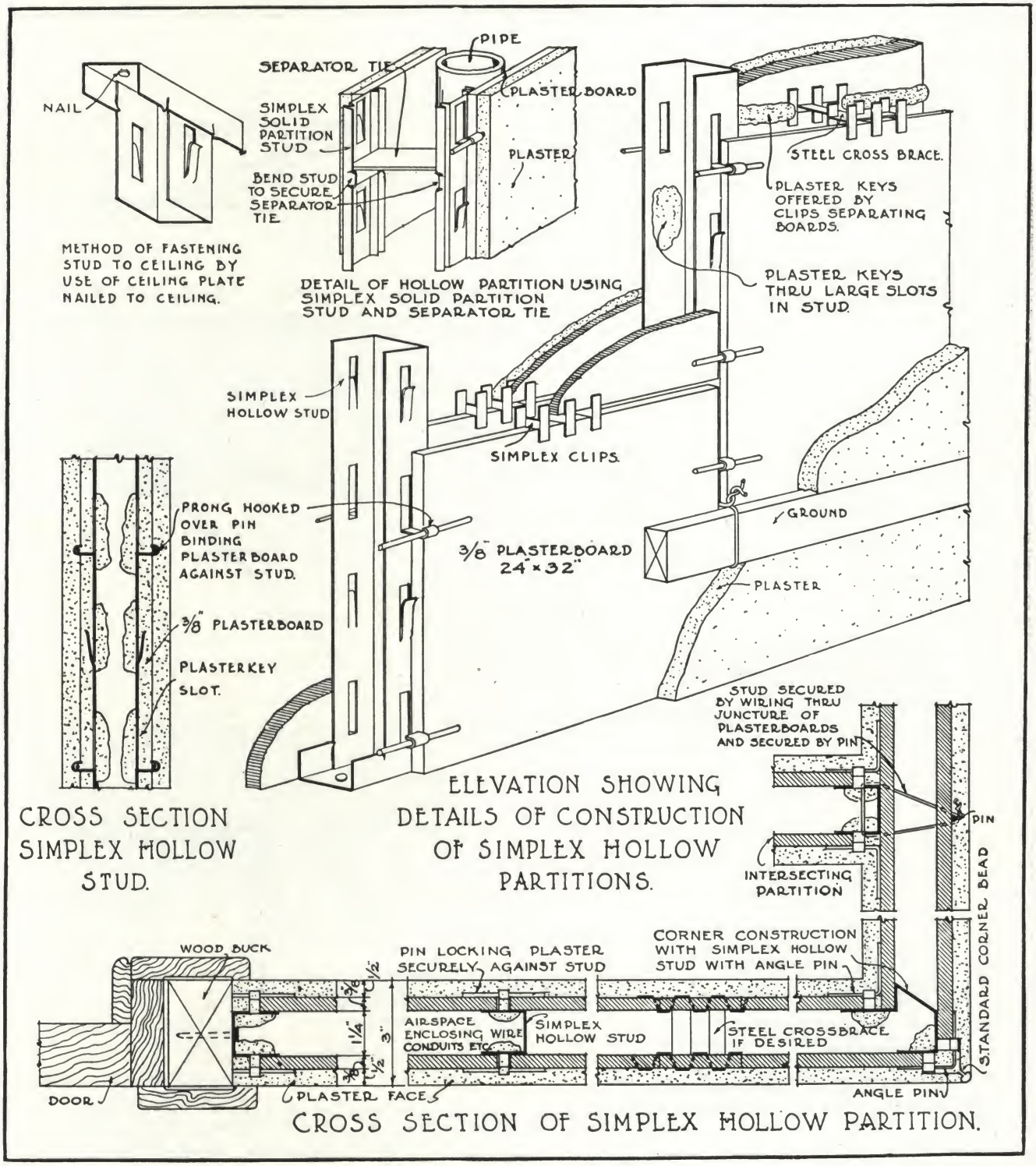
The bottom row of plaster boards shall be full and half size, alternated to give broken joints. In center of each horizontal joint furnish and place one Simplex cross clip to separate boards not less than ¼ in. for plaster key.

If more practical for wide partitions, two rows of studs may be used with plaster board attached to exposed sides only.

All exposed surfaces to be plastered in accordance with recommended specification of the Gypsum Industries.

Note: Suggested specifications detailing three methods of mixing and applying plaster to Simplex partitions and ceilings have been prepared and will be sent on request.

Simplex construction insures you of getting straighter, better walls at less cost and in less time, better plastering, smoother surface and faster work. They create harmony on the job, eliminate congestion and debris.



Details of Construction of Simplex Hollow Partitions

Continued on next page

Specifications for Simplex Ceilings

This contractor to erect or attach all flat suspended or furred ceilings by the Simplex System.

Under Concrete Slabs or Joists—Wire hangers of No. 8 or 9 gauge to be inserted in concrete at time of pouring, on about 2-ft. centers both ways.

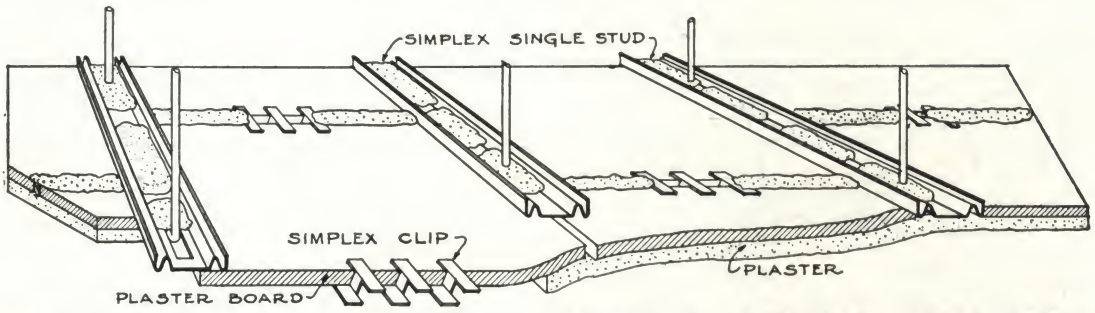
After hangers have been straightened and marked for height level, bend at right angles and tie around ¾-in. channel irons and cross furr under channel iron with Simplex ceiling runners set on 24½ to 24⅝-in. centers properly paralleled, using a double strand of No. 18 gauge tie wire. Cross tie on each channel. Where ceilings are to carry plank walk, gauge of hangers should be increased and channel irons should be 1½-in. instead of ¾-in.

Under Steel Joists—Where ceilings are attached to under side of steel joists, Simplex ceiling runners are to be attached immediately below joists, set on 24½ to 24⅝-in. centers, using Simplex steel joist clips for attaching.

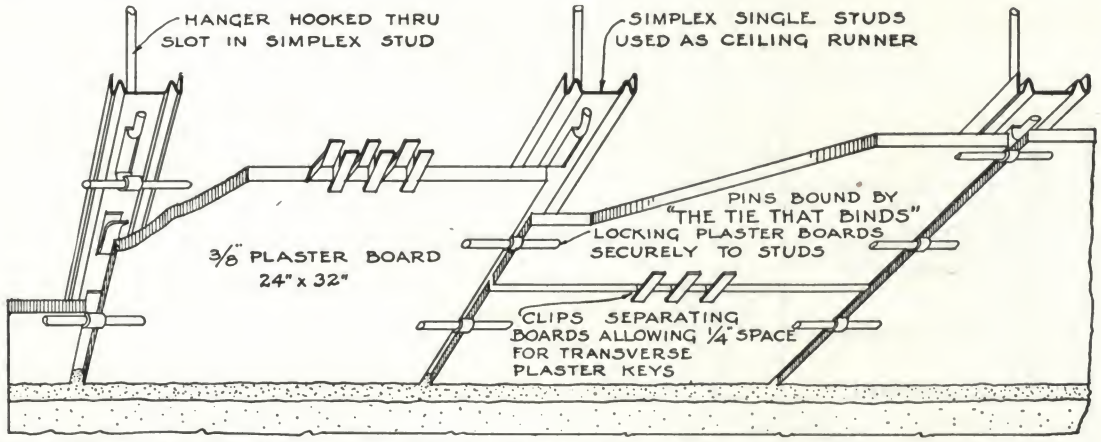
Under Steel Bar Joists—Where ceilings are attached to underside of bar joists, Simplex ceiling runners are to be tied to underside of joists transverse to joists, on 24½ to 24⅝-in. centers, using a double strand of No. 18 galvanized tie wire. Cross tie on each bar.

All Ceilings—After ceiling runners have been properly supported, attach ⅜x24x32-in. gypsum plaster boards, securing them to runners with 3-in. long wire pins, using Simplex tying tool to firmly lock pin in prong to hold board in place. Plaster board courses to be started with full and half size pieces alternated to provide broken joints. In center of each joint between plaster boards, place one Simplex cross clip to separate boards not less than ¼ in., which separation and slots in runners are to be used for plaster keys.

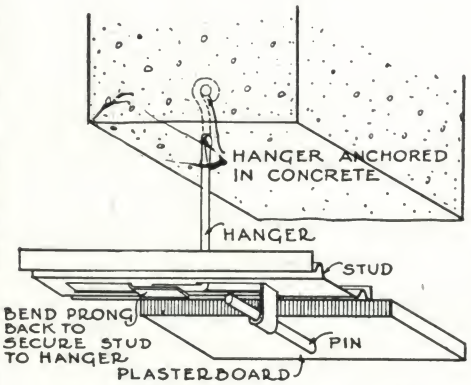
Note: For plastering specifications see Simplex Partitions.



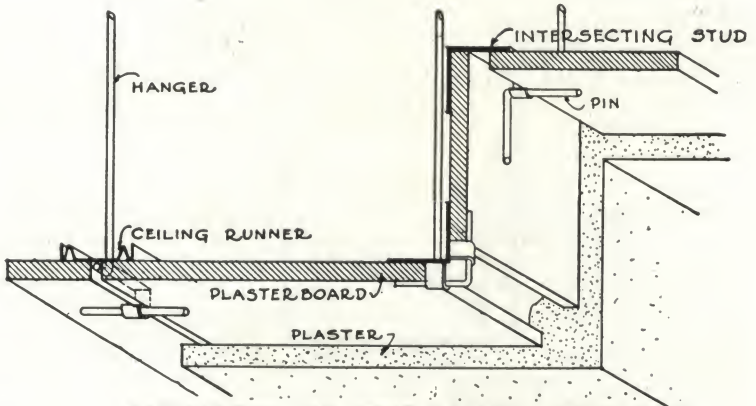
UPPER SURFACE OF SIMPLEX SUSPENDED CEILING SHOWING NETWORK OF PLASTER KEYS ALONG STUDS AND BETWEEN PLASTER BOARDS



PLASTERING SURFACE OF A SIMPLEX SUSPENDED CEILING



DETAIL OF METHOD OF FASTENING STUD TO HANGER



METHOD OF FURRING AROUND BEAMS OR PIPES IN CEILINGS

Details of Construction of Simplex Suspended Ceilings

WHEELING CORRUGATING COMPANY

Manufacturers of Steel Building Materials

WHEELING, W. VA.

BRANCH OFFICES

RICHMOND, VA. | PHILADELPHIA, PA. | CHATTANOOGA, TENN. | MINNEAPOLIS, MINN.
KANSAS CITY, MO. | COLUMBUS, OHIO | CHICAGO, ILL. | DES MOINES, IOWA
ST. LOUIS, MO. | NEW YORK, N. Y. | BUFFALO, N. Y. | DETROIT, MICH.

Products

WHEELING STANDARD DIAMOND LATH, painted; cut from galvanized sheet or cut from black sheet and galvanized after expansion.

WHEELING ARCH LATH, painted or galvanized.

WHEELING BAR RIB LATH, painted.

WHEELING BAR-X-LATH, painted.

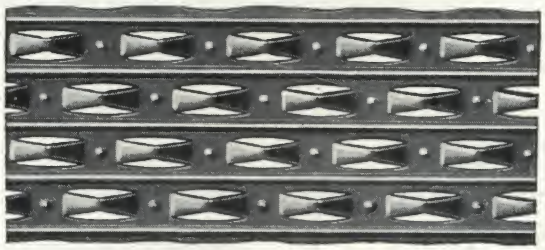
WHEELING FLAT APRON, SCALLOPED EDGE and BULLNOSE CORNER BEADS.

WHEELING CURVED POINT and STRAIGHT POINT BASE SCREEDS.

Also Ash Pit Doors, Coal Doors, Wall Ties, Wall Plugs, Channels, Stucco Binder, Cornerite, Tie Wire, Stub Nails, Corner Bead Clips and Corner Shields.

Wheeling Arch Lath

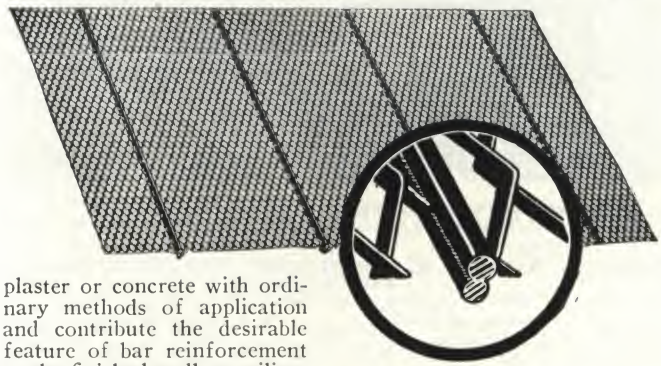
A distinctive type of steel lath weighing 4.5 lbs. per sq. yd., designed to provide the strongest and most rigid base of fireproof lath for plastered walls and ceilings. Manufactured of painted or galvanized steel, painted or galvanized Cop-R-Loy, the *Copper Alloyed Steel.* Sheets 27 in. wide, 96 in. long.



Wheeling Bar-X-Lath

A combination of expanded diamond lath, recognized as having the best mechanical key for plaster, and wire rods welded in pairs to the sheet to give additional stiffness and reinforcement.

The diamond lath is made in the usual manner after which, by a process developed exclusively by this company, each pair of rods is welded together on each side of the sheet of lath at intervals of 7 in. On long spans or wide spacing of supports where rigidity is required, Bar-X-Lath will deflect less than other types of equal weight. The rods are embedded in the plaster or concrete with ordinary methods of application and contribute the desirable feature of bar reinforcement to the finished wall or ceiling. Manufactured of painted steel and painted Cop-R-Loy, the *Copper Alloyed Steel.* Sheets 27 in. wide, 96 in. long.

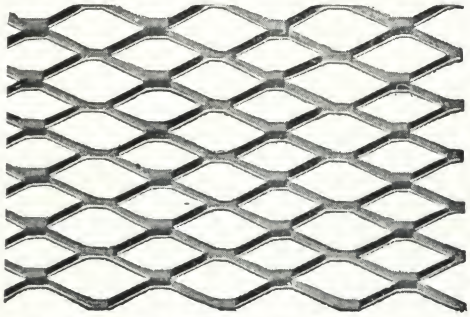


Wheeling Bar Rib Lath

A rib stiffened expanded diamond lath in which U-shaped ribs are an integral part of the sheet. Designed as a self-furring, fireproof metal lath base for plastered walls and ceilings. Made in three weights, 2.75, 3.0 and 3.4 lbs. per sq. yd., of steel or Cop-R-Loy, the *Copper Alloyed Steel,* painted finish. Sheets 27 in. wide, 96 in. long.

Wheeling Standard Diamond Lath

A flat metal lath of uniform small diamond meshes used as a fireproof base for plastered walls and ceiling. Sheets 27 in. wide, 96 in. long. Furnished in all standard weights, made of painted and galvanized steel, painted and galvanized Cop-R-Loy, the *Copper Alloyed Steel.* Also furnished in Cop-R-Loy or steel, hand-dipped in pure molten zinc after the sheets are fabricated.



Wheeling Bullnose Corner Bead

Designed for hospitals, public institutions and all places where square corner projections are to be avoided. The broad rounded surface of the exposed part provides a strong reinforcement for the corner and assures a neat and workmanlike finish. Used extensively as trim around windows. Made exclusively of galvanized Cop-R-Loy, the *Copper Alloyed Steel.*

Wheeling Flat Apron Corner Bead

A wing type bead with medium nose for all classes of construction. Made only of 26 gauge galvanized Cop-R-Loy, the *Copper Alloyed Steel.*

Wheeling Curved Point and Straight Point Base Screeds

The use of Wheeling Screeds forms a true line between the plastered wall and the base preventing the weakening of the concrete.

Wheeling Curved Point Base Screed furnishes a neatly rounded cap for the base which also prevents water from getting behind plaster.

Made exclusively of galvanized Cop-R-Loy, the *Copper Alloyed Steel.*

Literature and Samples

Metal Lath Catalog and Descriptive Folders.
Specifications Metal Lath Construction.
Samples of Lath and Accessories upon request.
Address the nearest branch office.

WICKWIRE SPENCER STEEL COMPANY

Woven Wire Lath

GENERAL OFFICES
41 East 42nd Street, NEW YORK, N. Y.

OFFICES AND WAREHOUSES

WORCESTER, MASS., Webster Street
CHICAGO, ILL., 208 So. La Salle Street
LOS ANGELES, CAL., 1070 No. Alameda Street
BUFFALO, N. Y., River Road
CLEVELAND, OHIO, 1217 Guarantee Title Building
TULSA, OKLA., The Philtower
SAN FRANCISCO, CAL., 114 Townsend Street
SEATTLE, WASH., 1025 Sixth Avenue, So.
PORTLAND, ORE., 361 14th Street, No.

Products

CLINTON WIRE LATH.

For our pages on Electrically Welded Wire Fabric for concrete reinforcement, Wire and Iron Fences and Gates, and Metal Grilles, see Manufacturers' Index.

Clinton Wire Lath

Clinton wire lath has been the recognized standard of quality for over half a century and is the most efficient and trustworthy lathing material in use at the present time.

The Clinton Wire Cloth Company (Wickwire Spencer Company, successor), the originator of wire cloth weaving, was the first concern to engage in the manufacture of fireproof lath.

Soon after the invention of power looms for the weaving of woolens and cotton, the Clinton Wire Cloth Company perfected a form of loom for weaving wire and entered into the manufacture of their wire lath. This woven wire mesh was the first efficient form of metal fireproofing ever used. It was used for fireproofing purposes as early as 1856, and many buildings are now standing which were fireproofed with this material at that time.

Wire versus Sheet Metal—A drawn steel wire when compared with a sheet metal is, in the matter of strength and general quality of material, a superior product.

The wire, which is made by being drawn through a die, is, during its manufacture, subjected to a high tensile stress. This drawing and working of the material renders the wire a fibrous material of uniform quality and for this reason it is stronger and more reliable than sheet metal, which is necessarily of an inferior grade and which suffers more or less injury through the process of cold cutting and expansion.

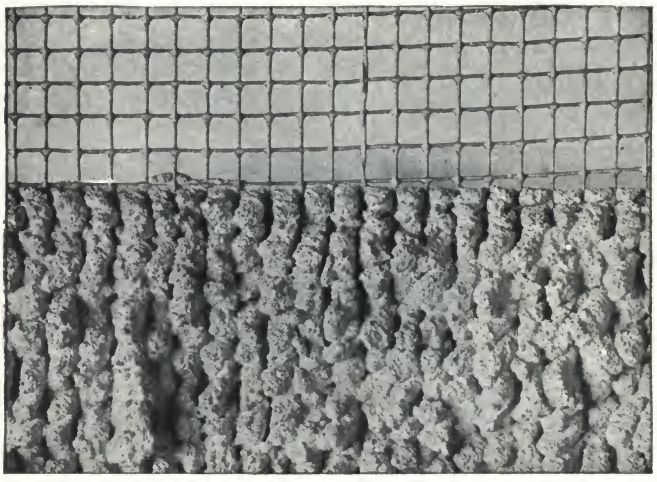
Perfect Key—The primary function of any lathing material is to serve as a foundation to grip and hold mortar. It is the key or the clinch of the backplaster which actually determines the efficiency of the plastered surface.

V-stiffeners—In cases where special rigidity is desired or where furring strips are widely separated, Clinton lath may be provided with V-stiffeners. These are rigid V-shaped ribs of No. 24 gauge steel securely fastened to the wires and extending across the fabric at intervals of 8 in.

In addition to giving additional stiffness, these V-stiffeners also afford an offset of ⅜ in. from the supports to which the lath is attached.

Stock Grades and Sizes of Clinton Wire Lath

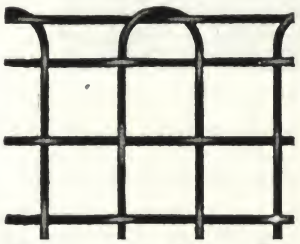
Mesh and Gauge—All stock grades of Clinton wire lath are woven from No. 18 to No. 21 Washburn & Moen gauge wire with 2 and 2½ meshes per lineal inch in each direction.



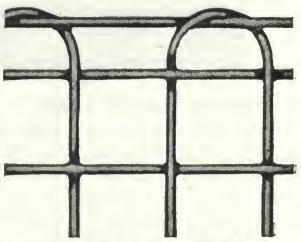
Key of Clinton Wire Lath

New York Telephone Building, Barclay and Vesey Streets, New York, N. Y.

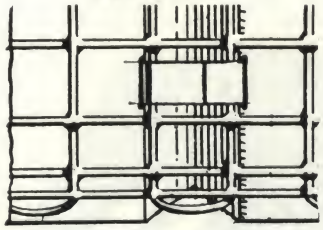
McKENZIE, VOORHEES & GMELIN, Architects
WILLIAMSON & ADAMS, Lathing Contractors



Plain Japanned or Galvanized Wire Lath
2½x2½ mesh



Plain Galvanized Wire Lath
2x2 mesh



Stiffened Galvanized Wire Lath
2½x2½ mesh

Japanned Lath—All sizes of Clinton lath, either plain or stiffened, may be obtained either japanned or galvanized.

Galvanized-after-woven Lath—Clinton lath, either plain or stiffened, is galvanized after weaving.

Size of Rolls—Clinton plain V-stiffened lath, either japanned or galvanized-after-woven, is furnished in rolls 150 ft. long x 36 in. wide.

SHIPPING WEIGHTS AND DIMENSIONS ONE ROLL CLINTON WIRE LATH*

Mesh §	Gauge	Plain Lath				Stiffened Lath			
		Painted		Galvanized		Painted		Galvanized	
		Wgt., lb.	Dia., in.	Wgt., lb.	Dia., in.	Wgt., lb.	Dia., in.	Wgt., lb.	Dia., in.
2	18	126	13	160	14	170	19	220	21
2	19	98	13	122	13	142	18	182	20
2	20	72	12	105	12	116	16	165	20
2½	18	161	13	203	14	203	19	263	21
2½	19	124	13	158	14	165	18	218	20
2½	20	90	13	124	13	135	16	188	20
2½	21	75	13	105	13	120	15	165	19

*All lath 36 in. wide; i.e., height of all rolls 36 in.
§Meshes per lineal inch in each direction.

Specifications for Interior Furring and Lathing

Furnished upon request.

RYBER MANUFACTURING COMPANY

427 Board of Trade Building, INDIANAPOLIS, IND.

PRONTO PARTITIONS (FIREPROOF—WITHOUT PLASTER)

Patented October 19, 1926

PRONTO PARTITIONS are designed to supply the increasing demand for a method of constructing incombustible non-bearing walls that will give satisfactory and permanent results *without the use of plaster.*

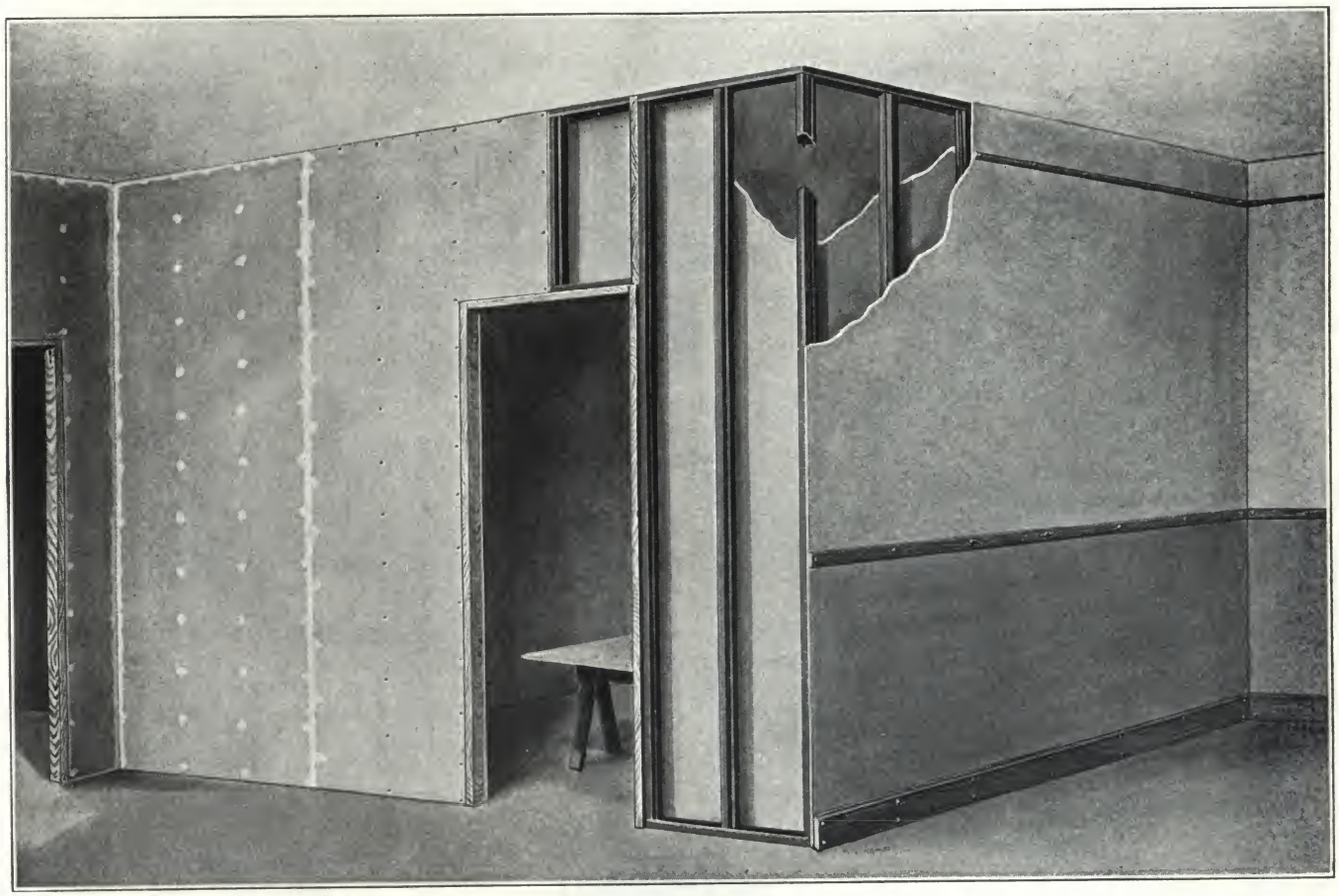
PRONTO box-shaped steel studs make possible the application of gypsum wallboard direct to the face of the studs with special screws, and leave nothing protruding to mar the finished surface. All joints between wallboards and the screwheads are filled with joint finisher, making a perfectly smooth surface. Any form of decorative material, such as wallpaper, calcimine, flat paint, gloss paint, plastic paint, etc., may be used.

PRONTO PARTITIONS are strong, rigid and light weight, giving a straight, smooth wall surface which can be decorated immediately. The speed and ease with which they can be erected, decorated and the space made ready for occupancy, and the very small amount of dirt to be cleaned up, are important advantages.

PRONTO steel studs and gypsum wallboards will not shrink, warp, buckle nor burn. PRONTO PARTITIONS make possible the installation of a non-plastered construction under the heading of *incombustible* or *fireproof.* By using a reasonable amount of care in the erection and in filling the joints the finished result will satisfy the most critical. PRONTO PARTITIONS have been installed in office buildings, apartments, hotels, hospitals, nurses' homes, store buildings, etc. *Carpenters do the entire job; erect studs, set bucks, attach wall boards and trim.*

PRONTO whole studs are 1⅝ in. face by 2¾ in. thick. When ⅜-in. gypsum wall boards are attached to both faces of the PRONTO studs the finished partition is 3½ in. thick. This finished partition weighs less than 5 lb. per sq. ft.

PRONTO materials can be *salvaged* and *re-used,* and there is scarcely any dirt made in doing it. In office buildings, where partition changes are relatively frequent, these advantages of PRONTO PARTITIONS are particularly worthy of consideration.



SPECIFICATIONS FOR PRONTO PARTITIONS (CARPENTRY)

Lay out the partitions, marking the door openings. The channel shaped floor and ceiling plates are to be nailed to the floor and ceiling, using hardened nails where the floor is concrete. PRONTO steel studs are set vertically into the floor and ceiling plates, and as they fit snugly it is not necessary to secure the studs to the plates. Half studs are used against permanent walls or columns; whole studs are used for all other locations, except for external corners where corner studs are used. PRONTO studs are to be set on 16-in. centers; *for low ceilings, booth construction or temporary work 24-in. center to center spacing is satisfactory.*

Rough wood door or window bucks to be made of regular 2x4-in. stock. Rabbet the vertical pieces to receive the seam in the PRONTO whole stud so the pieces will fit flat against the whole stud. Nail through the PRONTO stud into the wood buck. Door and window bucks are placed before wall boards are attached.

Gypsum wall boards, 4 ft. wide and full ceiling height—cut to exact height when necessary—are set in place against the PRONTO studs and plates. Factory folded edges of wall board are to be butted tight; cut edges are to be sandpapered to a bevel to leave an open joint for filler.

Using the PRONTO punch, small holes are made through the wall boards and in the studs at the same time. The special PRONTO screws are inserted in these holes, securely attaching the wall boards to the studs. At the floor and ceiling lines the screws go through the wall boards, the legs of the floor and ceiling plates, into the studs, tying together the whole partition. Wall boards are to be screwed to intermediate studs first and edges last, spacing screws on 12-in. centers on intermediate studs and 9-in. centers on vertical edges.

After wall boards have been completely attached, properly countersinking the screws, fill all joints and screwheads with joint filler or finisher. Decoration to be as desired.

CERTAIN-TEED PRODUCTS CORPORATION

GYPSUM DIVISION

Manufacturers of Gypsum Lath

GENERAL OFFICES

100 East 42nd Street
NEW YORK, N. Y.

For Sales Offices, see Gypsum Plaster pages

For Our Other Products, see Manufacturers' Index

GYPSUM LATH FOR GYPSUM PLASTERING

Certain-teed and *Beaver* Gypsum Lath are made from gypsum rock plaster and faced with tough fibre surfacings front and back. Millions of tiny air cells, embedded in the gypsum base by a special process, greatly increase the natural insulating properties of gypsum.

These slabs are available in the following sizes: 16x32 in., 16x48 in., 32x36 in. and 32x48 in. in ⅜ in. thickness, also 32x36 in. in ¼ and ½ in. thicknesses.

This form of lath is quickly applied—clipped to steel studs and joists in fireproof buildings or nailed to frame construction. It braces the framing, bonds with gypsum plaster securely, saves time and material in plastering and does not spoil the "set" of plaster by absorbing any quantity of water from it. It will not swell, buckle, rust or burn. The finished wall is a better insulator against heat, cold and sound.

The two outstanding features required of gypsum lath are strength and binding qualities with plaster.

Government specifications require that gypsum lath shall have a transverse (across grain) strength of 20 lb. pressure. The minimum required in our laboratories is 80 lb. transverse and 40 lb. parallel strength.

TRADE-MARKS

The following table which gives the adhesion in pounds per square inch of plaster to various lath backings, shows that our gypsum lath forms the best adhesion with gypsum plaster:

BONDING QUALITIES OF GYPSUM PLASTER ON VARIOUS KINDS OF LATHS*

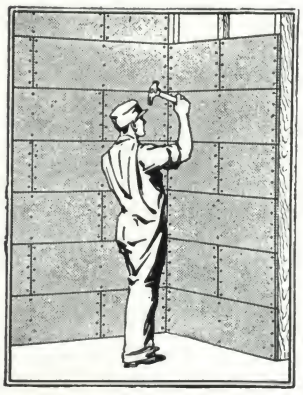
Kind of lath backing	Adhesion, lb. per sq. in.
1. Wood Lath No. 1	2.1
2. Metallic Laths	
(a) Sheet Metal	1.6
(b) Expanded Metal	4.3
(c) Woven Wire	2.4
3. Plaster Boards	
(a) Fibre	2.3
(b) Gypsum	6.0

*U. S. Bureau of Standards Tests.

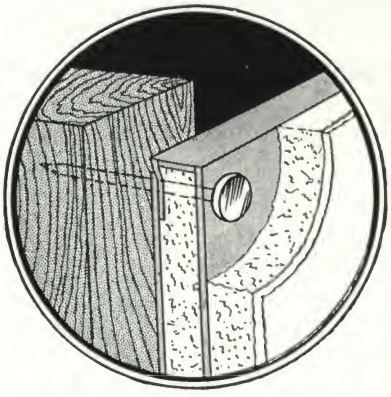
Certain-teed and *Beaver* gypsum lath, being built from gypsum rock, are highly fireproof. Permanent satisfaction in using it depends largely upon staggering the panels and on using standard grounds in plastering.

When Used in Frame Buildings

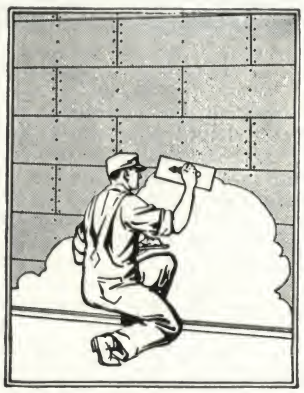
Gypsum lath makes a smooth, evenly finished plastering job, and saves time in lathing, labor and material. The slabs are light, easy to handle and nail to the studs and joists. Being uniform in size, they are easy



Light in Weight and Easy to Nail to Studs and Joists



Gypsum Lath Builds a Sturdy Wall



The Full Base Coat Is Applied in One Operation

Continued on next page

to cut to fit around openings and into odd-shaped corners. Plastering over it is quick work and gratifying to careful workmen. The full base coat is applied in one operation. It is firm and true, and the surface takes hold of the plaster with even suction at every point, making it just right for rapid troweling.

Specifications for Use in Frame Buildings

General—This contractor shall examine all studs, joists and furring and see that they are all spaced 12 or 16 in. on centers, and are set straight and true to line; also that all wood grounds are of the correct thickness and properly installed. Where the above work is not satisfactory he shall so advise the General Contractor who shall arrange to have the proper adjustments made.

Note: The placing of studs, joists and furring on 12 or 16 in. centers and setting them straight and true to line should be included in the specification for Carpenter Work.

Note: All wood grounds for plastering should be furnished and set by the Carpenter and included in the specification for Carpenter Work. They should be ⅞ in. thick for ⅜ in. gypsum lath, ¾ in. thick for ¼ in. gypsum lath and 1 in. thick for ½ in. gypsum lath.

Lathing—All lath shall be *Certain-teed* or *Beaver* Gypsum Lath for all walls, partitions and ceilings. They shall be .... in. thick x .... in. x .... in.

Spacing Boards shall be so spaced that all joints at right angles to studs, joists and furring shall be ¼ to ⅜ in. All nailing edges on studs, joists and furring shall have a bearing not less than ¾ in.

Note: Where it is desired to have all horizontal joints staggered, use the following paragraph.

Breaking Joints—The bottom rows on walls and the starting rows on ceilings shall consist of alternate half and full size boards to provide for breaking of horizontal joints on walls and cross joints on ceilings. Vertical joints on opposite sides of partitions and walls shall not occur on the same stud.

Note: Where it is desired to have all vertical joints staggered, use the following paragraph under the heading "Breaking Joints."

The boards shall be applied across all studs, joists and furring the long way, breaking all vertical joints on walls and all butt joints on ceilings. Vertical joints on opposite sides of partitions shall not occur on the same stud.

Plastering—Gypsum lath shall not be wetted before plastering. First coat shall be thoroughly applied and the plaster worked well into the joints and the surface scratched or scored to provide a bond for the second coat.

Nailing—Lath shall be well nailed to studs, joists and furring. The center of lath shall be nailed first—then edges. Nails shall be spaced about 3 in. apart at ends and intermediate studs. All nails shall be driven home.

Nails—Shall be 1¼-in. 3d sterilized blue lath nails or 3d common nails for ⅜ and ¼-in. lath and 4d common nails for ½-in. lath.

Note: For balance of plastering specification see *"Basic Specification"* in the plaster section of CERTAIN-TEED PRODUCTS CORPORATION pages in Sweet's.

When Used in Fireproof Buildings

Clipping the uniform size slabs of *Certain-teed* or *Beaver* Gypsum Lath to steel studs and joists is rapid work. Plastering the true, firm surfaces of uniform coolness and suction is a time-saving job of real satisfaction to the plasterer. He "scratches" and "browns" to the full thickness of the base coat, in one operation, quickly getting a true surface for a finish coat of even thickness and strength. He saves plaster, too, for these laths provide a natural bond with gypsum plaster, of great strength, and there are but few openings in the backing it builds. Add to the savings of application those of supporting construction due to its lighter load, and you can realize the worthwhile economy Certain-teed and Beaver Gypsum Lath can effect.

Specifications for Use in Fireproof Buildings

Note: Gypsum lath can be readily placed on any of the various types of solid or hollow metal stud walls or partitions and suspended ceilings.

Solid Partitions

Supports—Will be metal studs for solid partitions spaced 24½ in. on centers and anchored to flooring and ceiling, furnished and installed under another contract.

Note: If the above partition framing is to be included in this specification the above paragraph should be revised and should include the type of construction and the manufacturer's name.

Lathing—Shall be *Certain-teed* or *Beaver* gypsum lath (include sizes), erected on one side of studs only, and secured to metal studs by approved device specified by the manufacturer of studs used. Bottom row shall consist of alternate half and full size boards to provide for breaking of horizontal joints over entire wall. Metal clips shall be placed at middle of each horizontal joint separating boards not less than ¼ in.

Grounds—Will be furnished and wired to studs by the Carpenter, and of sufficient thickness to allow at least ½ in. thickness of plaster beyond face of lath.

Note: The furnishing and setting of the above grounds should be included in the specification for Carpenter Work.

Plastering—Gypsum lath shall not be wetted before plastering. First coat shall be thoroughly applied and the plaster worked well into the joints and the surface scratched or scored to provide a bond for the second coat.

Hollow Partitions

(Exceptions to above specifications as applied to hollow partitions.)

Note: Revise the various clauses of the above specification to include the requirements for a hollow partition construction.

Supports—Will be metal studs for hollow partitions.

Lathing—To be erected on each side of studs. Full and half size boards of bottom rows to match on opposite sides of studs. Steel cross braces to be fastened to opposite horizontal joint clips, if necessary.

Grounds—(As above.)

Plastering—(As above.)

Suspended Ceilings

(Exceptions to solid partition specifications as applied to suspended ceilings.)

Note: Revise the various clauses of the solid partition specification to include the requirements for a suspended ceiling construction.

Supports—Solid partition metal studs to be used as joists and suspended on hangers, embedded or otherwise anchored at intervals as specified by the manufacturer of metal used.

Lathing—(As on solid partition.)

Grounds—(None required.)

Plastering—(On under surface as specified for solid partitions.)

Other Uses

Gypsum lath is a material easy to saw and nail; it is uniform in size and thickness; it will not burn; has superior heat, cold and sound insulating properties; is moisture proof and has remarkable strength. With all these advantages it fills many other requirements in the building field besides serving as the ideal plaster base.

As a sheathing for the frame building it adds strength to the studs to withstand building sway and settling, saves fuel in winter, keeps out heat in summer, and adds immeasurable fire protection. Also, the speed with which it is placed saves time in building.

It is used in large quantities for fire protection, being nailed direct to timbers; for building fire-stop partitions and ceilings and for lining closed spaces susceptible to fire.

Under flooring, it serves as an effective sound, heat, cold and fire insulation.

Under roofs and on attic walls it saves many dollars in fuel by preventing heat from escaping. It keeps out sun heat in summer and is excellent insurance against the spread of fire.

For poured gypsum roofs it is a part of an excellent type of construction. It serves as a base and as the poured gypsum bonds with it, becomes an integral part of the roof.

For the factory where the underside of the roof is the ceiling, its fibre surface is clean, dustless and attractive, and adds heat and cold insulation to the gypsum of the roof itself.

GENERAL BUILDING PRODUCTS CORPORATION

Manufacturers of Insulating Lath, Board, Roofing

Chrysler Building
NEW YORK, N. Y.

Builders' Building
CHICAGO, ILL.

Cumfert Insulating Lath

All that any insulation or combination insulation or plaster base offers plus:

(1) Waterproof—Predicted for 10 years in the building field—now it is here.

(2) Mechanical Key—In tests conducted by the Armour Institute of Technology, Cumfert Lath withstood more than 1000 lb. plaster pull, per square foot.

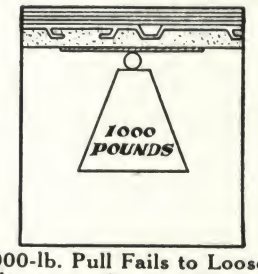
(3) Asphalt Shiplap Joint—A joint that actually seals, when installed, to make an airtight wall and ceiling.

(4) Vermin and Moth Proof—Repulsive to rats, mice, moths, bedbugs, cockroaches and all bacteria.

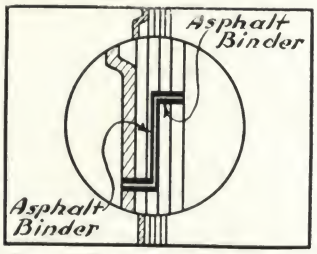
(5) Insulation—It insulates against heat, cold, sound, dampness and wind. Built-in, dead-air spaces increase the thermo-insulation.

(6) Strength—No hooks, wires or other reinforcing devices. It has 25% greater structural strength than many insulating products.

Sizes—Furnished in standard size panels 18x48 in. Packed in bundles, wrapped in cartons. Each bundle contains 60 sq. ft.

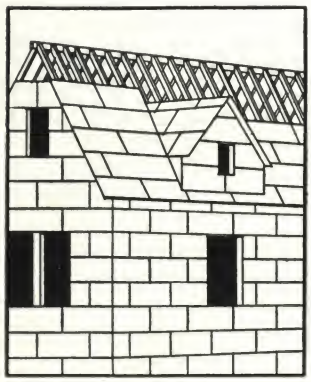


1000-lb. Pull Fails to Loosen Plaster on Cumfert Insulating Lath in Actual Armour Institute Official Tests



Cross Section of Asphalt-coated, Shiplap Joints That Unite to Form an Airtight Wall and Ceiling

Cumfert Insulating Board



Applied to Walls and Roofs for Insulation Against Heat, Cold and Sound

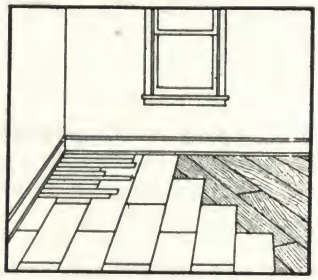
Cumfert Waterproof Insulating Board provides excellent insulation when used in walls, roofs or floors. The scientific construction of the alternate layers of fibre and asphalt provides an insulation against heat, cold, dampness, vermin and the transmission of sounds.

The structural strength of Cumfert Insulating Board adds greatly to the rigidity of the building in which it is used. It will not buckle, warp or shrink.

Its sound insulating value is close to the ideal material, as expressed by the Bureau of Standards—namely, the greatest mass (weight), and the greatest flexibility.

It is easily and quickly applied—no special framing is required. The standard size panels are nailed directly to the studding.

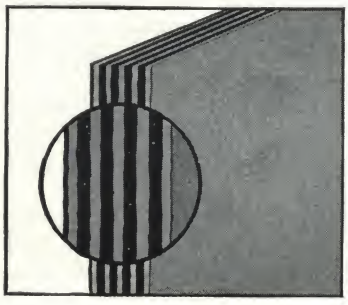
Furnished in standard size panels 18x48 in.; also in even lengths 6 to 10 ft.



Applied Between the Flooring to Insulate Against Heat, Cold and Sound

Cumfert Built-up Insulation Roof Board

A distinctly new product that marks an innovation in roofing and roof insulation. The alternate layers of fibre and asphalt supply the equivalent of a built-up roof, plus thermo-insulation qualities now provided by separate insulating materials.



It provides a punctureproof roof. It prevents leakage, being waterproof clear through to the roof deck. It adds structural strength to the roof deck—increasing its load-carrying capacity, and in addition, it costs no more than other insulated built-up roofs.

It cuts labor and material costs. It goes on rapidly and requires no preparation. All materials are delivered to the job ready for application. The cold mined asphalts with which it is applied are extremely long lived.

Some Cumfert Insulated Built-up Roofs carry a 20-year guarantee, and if provided with maintenance of top dressing or cap sheet, should last for 50 years. This top dressing or cap sheet maintenance is inexpensive and is based on 6 or 7-year service periods.

Size—2½x4 ft.

WOOD LATH BUREAU, INC.

44 Whitehall Street
NEW YORK, N. Y.

Wood Lath—The Original Plaster Base

Millions of homes built in the last hundred years have been built with wood lath as a plaster base. The fact that practically all of them are in constant use and in the best of condition is the most striking tribute that can be paid to wood lath's lasting quality.

The plaster base is so important a part of a building that it must contribute to its structural strength. Wood lath serves this purpose because it brings to a building those qualities which make for sound construction and lasting service.

Structural Strength

Sheathing boards put on diagonally strengthen a house more than any other method. Wood lath and plaster on the inside of the wall add just as much strength as diagonal sheathing.

Tests recently conducted by the U. S. Forest Products Laboratory on panels 9x14 ft. prove that panels with diagonal sheathing, nailed with two nails were over four times as rigid as the two-nail horizontally sheathed panel taken as the basic unit.

Lath and plaster alone were twice as effective in stiffening properties as the two-nail diagonal sheathing.

Quiet Rooms

The U. S. Bureau of Standards acoustical authorities say that outside noise cannot be excluded from a building that has windows. But this same authority shows that wood lath and plaster walls and partitions are efficient sound barriers.

Low Cost

The structural strength, rigidity, etc., are of paramount importance to architectural design, and the relatively lower cost of wood lath and plaster are of significant importance to the owner.

Insures a Good Plaster Job

Wood lath takes more plaster than some plaster bases. It takes more plaster to form the "keys" between and behind the lath, gripping them tightly. But the wall will be more solid, since it is impossible to put on a skim coat over wood lath without slight irregularities in the surface revealing the thin coat.

Conversely, when the builder uses ¾-in. grounds and plasters out to them, the additional rigidity is apparent.

Minimum of Cracking Over Wood Lath

No plaster base alone can keep plaster from cracking—a panel 15 ft. long will stretch only two one-hundredths of an inch before it shows cracks.

Plaster over wood lath has withstood remarkable impact tests. Blows of 20 feet pounds were delivered against two panels to represent the effect of falling objects, etc., on plastered ceilings. Wood lath panels required 33 and 35 impacts, respectively, before cracking, resisting more than twice the impacts which cracked other plaster bases.

Fire Resistant

Underwriters and builders rate plastered partitions according to the period for which they will keep a hot fire from breaking through from one room to another.

Insurance men will tell you that wood lath makes no difference in the insurance rates. They know that such matters as open doors, early discovery or prompt fire department response reduces the importance of the plaster base, in residences.

Insulation Properties

The most efficient insulation is a thin layer of "dead" air. A plaster wall over wood lath provides such insulation. Increased insulation obtains with the use of a flexible insulator placed between the studs. But the plaster base itself makes comparatively little difference.

Specifications

(1) Quality—Wood lath shall be No. 1 Lath or No. 2 Lath (specify which).

(2) Size—Wood lath shall be not over 1⅝ in. wide, not less than $\frac{1}{16}$ in. nor more than ⅜ in. thick, and either 48 or 32 in. long. The usual size tolerances admitted by the lumber manufacturers' grading rules for No. 1 Lath will be allowed.

(3) Wetting—Lath shall be thoroughly soaked immediately before it is applied and shall be well wetted before plastering.

(4) Application—Wood lath shall be nailed to every stud, joist or bearing with at least one 3d fine No. 16 gauge wire nail. Joints shall be broken, with not over 7 lath on the same bearings consecutively. The spacing between lath shall be not less than ⅜ in. for lime mortar, nor less than ¼ in. for hard plaster. No diagonal or vertical lathing shall be permitted. Lath on ceiling shall run in one direction only. In no case shall the spacing of bearings exceed 16 in. on centers.

(5) Grounds—Wood grounds shall be at least 25/32 in. thick, measured from face of stud to face of finished plaster.

(6) Framework — Studs, joists, or other bearing for lath shall be spaced on either 12 or 16-in. centers; no bearing face shall be over 4 in. in width unless furring strips are used.

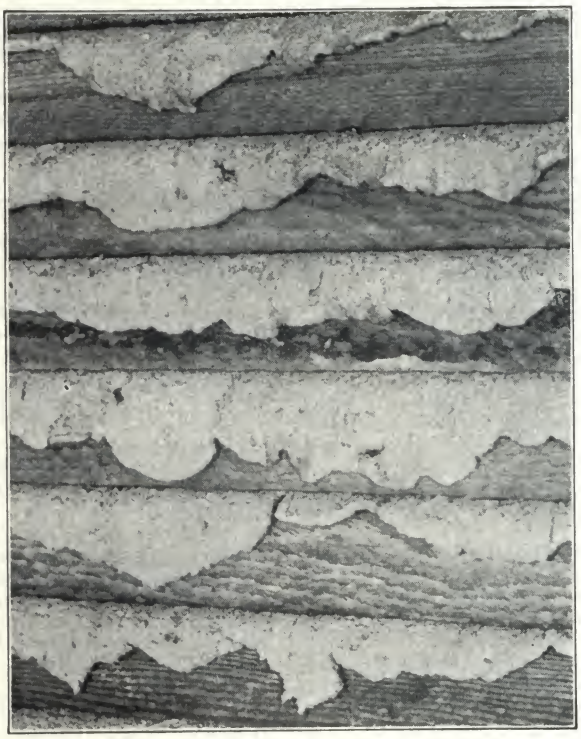


Illustration of Thick Strong "Keys" Obtainable with Wood Lath

ATLANTIC GYPSUM PRODUCTS COMPANY, INC.

Manufacturers and Distributors of Wall Plaster, Plaster Finishes, Moulding and Pottery Plasters, Lime, Joint Filler, Gypsum Lath, Gypsum Partition Tile, Metal Lath

40 Central Street, BOSTON, MASS.

BRANCH OFFICES

NEW YORK, N. Y., 60 East 42nd Street

PHILADELPHIA, PA., Franklin Trust Building

MANUFACTURING PLANTS

PORTSMOUTH, N. H.

NEW YORK, N. Y.

CHESTER, PA.

BRIGHTON, MASS.

CAMBRIDGE, MASS.

MINES: WALTON, ASPY AND CHETTICAMP, NOVA SCOTIA

A COMPLETE LINE OF MODERN GYPSUM AND RELATED BUILDING PRODUCTS

ROCKWALL GYPSUM PLASTERS for all purposes, pages 2 to 4.
ROCKWALL GYPSUM LATH, page 5.
ROCKWALL GYPSUM PARTITION TILE, page 5.
ROCKWALL METAL LATH and ACCESSORIES, page 6.
Rockwall Gypsum Wall Board, see Manufacturers' Index.
For location of catalogues on the following subjects see Manufacturers' Index:
Insulating Board and Lath, see Wood Fibre Board Co.
Plastic Paint, see Craftex Co.
Interior Wall Paint, see Craftex Co.

ROCKWALL
(Reg. U. S. Pat. Off.)

TRADE-MARKS

Experience

The ATLANTIC GYPSUM PRODUCTS COMPANY, INC. has been manufacturing the Rockwall line of gypsum products for more than 35 years. During this time a large and enviable following has been built up in the eastern building trade, due to the company's policy of adapting its products to meet every requirement of the architect, builder, and owner.

Quality

The Rockwall name is a recognized assurance of satisfaction both in product and service. Highest grade raw materials, careful supervision of manufacturing processes and exacting tests in laboratory and in the field, maintain a standard of quality which has put Rockwall into the finest buildings of the territory served by the ATLANTIC GYPSUM PRODUCTS COMPANY, INC.

Manufacturing Facilities

ATLANTIC GYPSUM PRODUCTS COMPANY, INC. plants are strategically located in respect to the source of supply of raw material and the market for the finished products. All are completely equipped with modern machinery for continuous large-scale production.

Quarries

The ATLANTIC GYPSUM PRODUCTS COMPANY, INC. controls and operates inexhaustible beds of the finest Nova Scotia gypsum rock, noted for its exceptional purity and strength.

From Nova Scotia the gypsum rock is transported by water directly to the company gypsum plants in New York, N. Y.; Chester, Pa.; and Portsmouth, N. H.

Direct Shipping Facilities

The location of our manufacturing plants provides the least possible delay in shipments, either by water, rail or truck to all points in the eastern section of the United States.

Architectural Service

The ATLANTIC GYPSUM PRODUCTS COMPANY, INC. is ready at all times to co-operate with architects or their clients in any way possible regarding the application or use of any Atlantic Gypsum Products. Manufacturing and distributing so many types of materials, we are in a position to make unbiased recommendations as to the products which will most satisfactorily meet your requirements.

A Few Representative Rockwall Installations and Their Architects

New York, N. Y.

Lincoln Building, J. E. R. Carpenter, Architect
Hotel New Yorker, Sugarman & Berger, Architects
Bank of Manhattan, H. Craig Severance, Architect
Lee Higginson Building, Cross & Cross, Architects
Columbia University (18 buildings), McKim, Mead & White, Architects
Columbia-Presbyterian Medical Center, Jas. G. Rogers, Architect
Chase National Bank Building, Graham, Anderson, Probst & White, Architects
New York Athletic Club, York & Sawyer, Architects
Level Club, Clinton & Russell, Architects
Irving Trust Co., 1 Wall St., Voorhees, Gmelin & Walker, Architects
Salmon Tower, 500 Fifth Ave., Shreve, Lamb & Harmon, Architects
San Remo Apartments, Emory Roth, Architect

Newark, N. J.

National Newark & Essex Bank, John B. and Wilson C. Ely, Architects

Philadelphia, Pa.

Strawbridge & Clothier, Eighth and Market Sts., Simon & Simon, Architects
Aldine Trust Co., Twentieth and Chestnut Sts., Barthmaier & White, Architects
University of Pennsylvania Dormitory, Thirty-sixth and Spruce Sts., Stewartson & Page, Architects
N. W. Ayer & Son, Inc., Building, Ralph Bencker, Architect
Pennsylvania Hospital for Nervous and Mental Diseases, A. H. Brockie, Architect
University Club of Philadelphia, Seventeenth and Locust Sts., Grant M. Simon, Architect

Boston, Mass.

North Station, B. & M. R. R., Funk & Wilcox, Architects
United Shoe Machinery Building, Parker, Thomas & Rice, Architects
Dunster Hall, Harvard University, Cambridge, Mass., Coolidge, Shepley, Bulfinch & Abbott, Architects
Gymnasium, Harvard University, Cambridge, Mass., Coolidge, Shepley, Bulfinch & Abbott, Architects
New England Telephone Building, Densmore, Le Clear & Robbins, Architects

Providence, R. I.

Industrial Trust Building, Walker & Gillette, Architects
Masonic Temple, Osgood & Osgood, Architects
State House Annex, Jackson, Robertson & Adams, Architects

Continued on next page

ROCKWALL GYPSUM PLASTERS

For Every Plastering Use

Quality and Reputation

The Rockwall trade-mark on a bag of plaster is assurance of highest quality and uniformity. The greatest care is taken to have every bag of Rockwall Plaster exactly like every other bag.

Since the earliest days of "hard plaster" Rockwall Gypsum Plasters have been used where quality was of utmost importance. Today, Rockwall is better than ever, due to its purity, strength and modern methods of manufacture.

The Type of Bag and Identification Label

Rockwall Gypsum Plaster for Modern Construction

For more than 35 years Rockwall Gypsum Plaster has been recognized as a plaster of highest quality. It has been used in many of the finest buildings in the East.

Today Rockwall Gypsum Plaster is especially appreciated. Where time is at a premium and every step of the construction must be completed on schedule, you can depend on Rockwall for uniform set and quick drying.

Rockwall's prompt deliveries, easy working qualities and greater spread enable the plasterer to complete his work in the shortest possible time. Application of trim can follow immediately.

Raw Materials and Manufacturing Processes

Rockwall Gypsum Plaster is made of purest gypsum rock, uniform and strong, and manufactured by improved specialized machinery. Mills of the latest type grind the gypsum rock finer than has previously been possible, insuring a light, fluffy plaster, highly developed for easy working qualities, uniform set and greater spread.

Frequent testing of the finished product keeps Rockwall Gypsum Plaster at the highest standard of quality and assures a hard wall that withstands the roughest usage without marring or chipping.

Identification

Rockwall Gypsum Plasters are supplied in 100-lb. jute sacks or in the popular 100-lb. 5-ply multiwall paper bags. The multiwall bags are constantly gaining in favor because they do not have to be returned to the plant, are easily handled and afford adequate protection against moisture and leakage for the plaster under ordinary service conditions.

Directions for use are printed on the face of each bag.

HOW AND WHERE ROCKWALL LATHS AND PLASTERS SHOULD BE USED

Grounds and Lathing

Specifications for general preparation of building, grounds, lath, and lathing to be the same as usually written for best class of work. Where stud partitions or furring strips come against brick work or other masonry, the angles should be covered with an 8-in. strip of Rockwall Metal Lath, bent at angle to fit corners, and securely fastened.

Gypsum Lath	Use Rockwell Gypsum Lath. Break joints at every course. Stagger joints between walls and ceilings. Space nails 4 in. apart. Do not wet Gypsum Lath.
Insulating Lath	Use Arborite Insulating Lath 18x48 in.; space ends ¼ in. apart. Securely nail. Do not wet Aborite Lath before plastering.
Metal Lath	Use Rockwall Metal Lath, painted, or galvanized, and securely fastened; lapped at least 1 in. at all seams; turned down on all walls at least 6 in. at ceiling intersection, and securely fastened; must not be butted in angles; requires three-coat work (scratch, brown, finish).
Wood Lath	Use best quality, not exceeding 1½-in. width—green as possible; if dry, thoroughly soak several hours before applying plaster. Space not less than ¼ in. apart at sides and ends, breaking joints every seventh lath. Securely nail.

Plastering Base Coats

Note: Architects will note backgrounds in left margin below to be plastered over, and opposite each the Rockwall Gypsum Products to be used.

Rockwall Gypsum Lath Arborite Insulating Lath Rockwall Metal Lath Wood Lath	*Scratch Coat*—Rockwall Neat Gypsum Plaster mixed with two parts sand by weight. *Browning Coat*—Rockwall Neat Gypsum Plaster mixed with three parts sand by weight, or Rockwall Sanded Plaster for both coats mixed with water only.
Rockwall Gypsum Tile Brick Clay Tile	*Scratch and Browning Coats*—Rockwall Neat Gypsum Plaster mixed with three parts sand by weight, or Rockwall Sanded Plaster mixed with water only.

Note: It is sometimes necessary to wet brick and clay tile to reduce suction. Sand shall conform to the A.S.T.M. specifications. All proportions for mix are by weight. When using Rockwall Sanded Plaster mix with water only.

Portland Cement Concrete	*Scratch Coat*—Rockwall Concrete Bonding Plaster. Mix with water only; scratch, but do not darby. *Browning Coat*—Use same material. Mix with water only; darby and straighten in regular way.

Note: When concrete surfaces are to be plastered do not oil or grease forms. Clean the surface, thoroughly hack. Detailed directions for mixing and applying supplied upon request.

Finishing Coats

Note: Work tops and bottoms together to avoid joinings.

Smooth, white trowel finish	Regular hard finish; Riverside Gauging Plaster and Lime Putty.
Rough float sand finish	Rockwall Neat Gypsum Plaster; after sifting out fibre mix with equal parts of sand by weight. For lime putty use Rockwall Hydrated Finishing Lime, lime to be run into putty day before using.

Continued on next page

DESCRIPTIONS OF ROCKWALL GYPSUM PLASTER

Rockwall Plaster is supplied in 100-lb. jute sacks and 100-lb., 5-ply multiwall paper bags.
Rockwall Lime is supplied in 50-lb. paper bags.

Rockwall Neat Gypsum Plaster

For more than 35 years, Rockwall Neat Gypsum Plaster has been used by those who demand quality, richness and easy spreading in plaster.

Carefully tested to insure maximum uniformity, it covers more surface, is not sticky, is easy to mix and spread on the wall, and has uniform set. It makes a strong white, good looking wall.

Rockwall Sanded Gypsum Plaster

A ready mixed sanded plaster for use where clean, sharp sand is not obtainable. Ready for use when mixed with water.

Rockwall Wood Fibre Plaster

A popular high grade plaster for one coat work, carefully mixed with clean tough wood fibre, flexible enough to stay well buried in the plaster. Water only need be added, eliminating chances of poor sand or over-sanding.

Extremely easy to work, Rockwall Wood Fibre Plaster makes a light, tough wall which can be sawed like lumber.

Rockwall Concrete Bonding Plaster

A superior plaster for use on concrete, specially mixed and prepared to produce a strong bond where ordinary plaster would not stand up.

Riverside Gauging and Moulding Plasters, for Finishing and Casting

Made exclusively from the best gypsum rock obtainable and manufactured by the latest and best methods, Riverside Gauging and Moulding Plasters are white, fine ground, bulky, light in weight, and set very hard. These plasters work easily and have great spread. They are dependable, uniform and of the highest quality.

Rockwall Hydrated Finishing Lime

A high grade Ohio hydrated finishing lime, extremely white in color. It spreads far, does not pit and works easy.

Rockwall Hydrated Masons' Lime

A highly plastic building lime. Excellent for use in cement mortar, on brickwork or for any purpose in place of old fashioned lump lime. This lime has great water carrying capacity.

SPECIFICATIONS FOR THE PREPARATION AND USE OF ROCKWALL GYPSUM PRODUCTS

Materials

General—All materials used in lathing and plastering shall conform to the requirements prescribed for such by the American Society for Testing Materials.

All manufactured materials shall be delivered in their original unbroken packages, and shall be properly stored and protected from damage.

Sand—Sand shall be dry, clean, sharp, free from salt, alkalies, organic and other deleterious substances, and graded from fine to coarse. The sand shall comply with the American Society for Testing Materials Specifications for Gypsum Plastering Sand.

Gypsum Plaster—Shall be [Rockwall Neat Gypsum Plaster, Rockwall Sanded Gypsum Plaster or Rockwall Wood Fibre Plaster], as manufactured by the Atlantic Gypsum Products Company, Inc., mixed and applied in accordance with the manufacturer's directions.

Bond Plaster—Shall be Rockwall Concrete Bonding Plaster, mixed and applied in accordance with the manufacturer's directions.

Gauging and Moulding Plasters—Shall be Riverside Gauging and Moulding Plasters.

Hydrated Lime—Shall be Rockwall Hydrated Finishing and Mason's Lime.

Gypsum Tile (For Wall Furring, Partitions and Column Covering)—Shall be Rockwall Gypsum Tile, size [2 or 3 in. solid 3, 4 or 6 in. hollow], and shall be laid up in gypsum mortar.

Gypsum Lath—Shall be Rockwall Gypsum Lath. Gypsum lath shall be nailed at every support with 1⅛-in., 13-gauge, ⅜-in. head nails spaced 4 in. apart. The center shall be nailed first. The sheets shall be put on horizontally on walls, and across the supports on ceilings. Joints shall be broken on studding joists and furring, and joints between walls and ceilings shall be staggered so that the vertical wall joints will not meet the ceiling joints. Gypsum lath shall not be wet before plaster is applied.

Metal Lath—Shall be Rockwall Metal Lath applied in accordance with the specifications of the Associated Metal Lath Manufacturers, Inc.

Wood Lath—Shall be No. 1 grade, spaced not less than ¼ in. or more than ⅜ in. apart at the edges and not less than ⅛ in. apart at ends, and shall be nailed securely with 3d nails to each support. Joints shall be broken every seventh lath and no lath shall run through from one room to another. Wood lath shall be thoroughly wet at least 4 hours before plaster is applied.

Insulating Lath—Shall be Arborite Insulating Lath nailed securely to frame with 4d common or blued nails for ½ in. lath and 8d common or blued nails for 1 in. lath. Space nails 5½ in. apart, at least ½ in. from shiplapped edges and ⅜ in. from ends. Nail center first then the ends. Nail Arborite lath horizontally, staggering the vertical joints which should be spaced ¼ in. apart. All internal vertical angles and corners shall be covered with Rockwall Striplath. Shiplapped edges shall be brought to moderate contact. Never force Arborite lath into place. Do not wet Arborite lath before plastering.

Concrete Surfaces—All concrete surfaces shall be roughened where smooth, by hacking, and shall be free from grease, dirt, loose particles and frost. Efflorescence, if present, shall be removed with a solution of muriatic acid, mixed one part of acid to four (4) parts water, and the acid shall be washed off with clear water.

Grounds—⅞ in. for Rockwall Gypsum Lath, and Arborite Insulating Lath, ¾ in. for Rockwall Metal

Continued on next page

Lath, and wood lath; ½ in. for Rockwall Gypsum Tile; ⅝ in. for brick, and clay tile.

Proportions for Rockwall Neat Gypsum Plaster

Three-coat Work—***On Gypsum Lath, Arborite Lath, Wood Lath and Metal Lath***—The scratch coat shall consist of one part plaster to not more than two (2) parts, by weight, of sand.

The second or browning coat shall consist of one part plaster to not more than three (3) parts, by weight, of sand.

On Brick, Clay and Gypsum Tile—The scratch and brown coats shall consist of one part plaster to not more than three (3) parts, by weight, of sand.

Two-coat Work—***On Gypsum Lath, Arborite Lath, Wood Lath and Metal Lath***—Use one part plaster to not more than two (2) parts, by weight, of sand.

On Brick, Clay Tile and Gypsum Tile—Use one part plaster to not more than three (3) parts, by weight, of sand.

Mixing—***Hand Mixing***—All plaster shall be mixed in a clean, tight box. Mix the plaster and sand thoroughly in the mixing box to a uniform color, then hoe the mixture into the water in one end of the box and mix to a uniform consistency, for applying. Clean the mortar box and tools after each mixing. Never retemper plaster after it has begun to set. Do not mix one batch with another.

Mechanical Mixing—(a) Put in approximate amount of water needed for batch. (b) Put in approximately one-half sand required. (c) Put in all plaster required for the batch. (d) Put in balance of sand required.

Clean mixer at regular intervals to avoid quick setting.

Rockwall Ready-sanded Plaster and Rockwall Wood Fibre Plaster

How to Mix—Mix with water only. Put plaster in one end of the box and water in the other. Hoe the plaster into the water and mix thoroughly to the proper consistency for applying.

Note: Wood Fibre Plaster can be used with equal parts of sand on gypsum tile, brick and clay tile.

Application—***On Gypsum Lath and Arborite Lath***—*Three-coat Work*—Apply the first (scratch) coat over the surface, working the plaster well into the joints, and scratch to form a rough surface for the second (browning) coat. After the first coat has set firm and hard, apply the second coat, bringing it out to grounds and straighten in regular way. The surface of the second coat must be left rough to receive the finishing coat. When set and practically dry, apply the finishing coat.

Two-coat Work—Apply with sufficient pressure to cover the lath, working the plaster well into the joints. Then double up immediately with the same material. Bring out to grounds and straighten in regular way. The surface must be left rough to receive the finishing coat. When set and practically dry, apply the finishing coat.

On Rockwall Metal Lath—*Three-coat Work*—Apply the first (scratch) coat with sufficient pressure to fill all meshes and cover the lath, and scratch to form a rough surface for second (browning) coat. After the first coat has set firm and hard, apply the second coat, bring out to grounds and straighten in regular way. The surface of the second coat must be left rough to receive the finishing coat. When set and practically dry, apply the finishing coat.

On Wood Lath—*Three-coat Work*—Wet the lath thoroughly at least 4 hours before plaster is applied to prevent swelling of the lath after plaster is applied, and to prevent the lath absorbing water from the plaster necessary for crystallization. Apply the first (scratch) coat with sufficient pressure to obtain a good full key and scratch to produce a rough surface for the second (browning) coat. After the scratch coat has set firm and hard, apply the second coat, bring out to grounds and straighten in regular way. The surface of the second coat must be left rough to receive the finishing coat. When set and practically dry, apply the finishing coat.

Two-coat Work—Apply with sufficient pressure to obtain a good full key, then double up immediately with the same material. Bring out to grounds and straighten in regular way. The surface must be left rough to receive the finishing coat. When set and practically dry, apply the finishing coat.

Rockwall Concrete Bonding Plaster

How to Mix—Mix with water only. Do not add any sand. Put plaster in one end of the box and water in the other. Hoe the plaster into water and mix to proper consistency for applying.

Application—Concrete surfaces which are to be plastered shall be rough. If the required degree of roughness has not been procured by using rough forms, the surface shall be hacked. Before plastering, all concrete surfaces shall be cleaned and all dust and loose particles removed. Grease, oil or efflorescence, if present, shall be washed off with a solution of one part of commercial muriatic acid to four (4) parts of water and the surface then washed again with clean water. Apply first (scratch) coat with strong pressure and scratch to form a rough surface for the second (browning) coat. After the first coat has set firm and hard, apply the second coat of same material. The surface of the second coat must be left rough to receive the finishing coat. When set and practically dry, apply the finishing coat.

Lime Putty—Trowel Finish

Proportions—Rockwall Riverside Gauging Plaster shall be mixed with a lime putty made from thoroughly slaked finishing quicklime or with a hydrated finishing lime. The finish coat shall consist of one part Rockwall Riverside Gauging Plaster, by volume, to not more than three (3) parts lime putty.

Mixing—Make a ring of thoroughly hydrated lime putty on the mixing board; put clean water in the center of the ring; sift the gauging plaster into the water, allowing it to soak for a few minutes. Mix thoroughly, then cut the lime putty into the mixture until of a uniform color.

Application—Apply over nearly dry base coat. Scratch in thoroughly, then double back and fill out to an even surface. Next fill in all imperfections. Allow to draw a few minutes, then trowel to a finish in the usual way. Work top and bottom of wall surfaces to avoid joinings.

Sand Float Finish Coat

Proportions—The finish coat shall consist of one part Rockwall Unfibred Neat Gypsum Plaster to one part clean, sharp sand, by weight. Mix the plaster and sand thoroughly in the mixing box to a uniform color, then hoe the mixture into the water in one end of the box and mix to a uniform consistency for applying. Apply sand float finish coat after base coat has set hard but while still green. Apply with trowel, then use a float (cork, carpet or felt), working the finish to a true and even surface, free from blemishes. Use as little water as possible while floating. Work top and bottom of wall surfaces to avoid joinings.

Continued on next page

ROCKWALL GYPSUM LATH

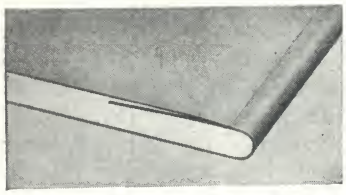
A Closed Edge, Smooth, Strong, Fire-safe Plaster Base

Improved Construction of Rockwall Gypsum Lath

The base for gypsum plaster has every feature desired in modern construction. The edge is closed and beveled; the surfacing (a new A.G.P. fibre material developed exclusively for Rockwall Lath) is tough, hard and smooth. The fibre surface is turned into the solid gypsum core a full inch. This double reinforcement makes the strongest possible nailing edge and keeps the lath firm and rigid on the studding.

Back of Lath Showing Identification

Smooth, strong, fire-safe and good-looking walls and ceilings are a certainty with Rockwall Gypsum Lath. They are easily applied and are economical. Labor and plaster costs are saved: no "keys" are necessary, no plaster drops back of lath. There is also a large saving in drying, all dampness being on the face of the lath—no wet mortar back of lath or studs. These features assure smooth, hard walls that are permanently satisfactory.



Section Through Both Edges Showing the Closed Edge

Fibre Surface Increases Adhesion of Plaster

The improved surface of Rockwall Gypsum Lath increases the adhesion of the plaster to a remarkable degree.

When the plaster sets and the crystals interlock with the fibres of the lath surface, a bond is formed that cannot be broken without breaking the board itself.

Sizes

Rockwall Gypsum Lath is supplied bundled and wrapped, in easily handled sheets 16 in. wide, 32 and 48 in. long—32 sq. ft. to the bundle.

Identification

Bundles of Rockwall Gypsum Lath can be identified by the name "Rockwall Lath" and trade-mark printed on both edges.

In addition, the name and trade-mark is stenciled on the back of each lath as shown in the illustration.

Specifications for the Application of Rockwall Gypsum Lath

Rockwall Gypsum Lath shall be ⅜ in. thick. It shall be securely fastened at center and end supports with 1¼-in. large-head, coated wire nails, 4 in. apart. Centers shall be nailed first. Sheets shall be applied horizontally on walls, and across the supports on ceilings. Joints shall be broken on studding, joists and furring, and staggered between walls and ceiling so that vertical wall joints will not meet the ceiling joints. Lath shall not be butted above or below windows, or above door openings on studs extending from floor to ceiling alongside such openings, but shall extend over to next support on either side.

Note: Do not wet gypsum lath before plastering is applied.

Fitting of Rockwall Gypsum Lath Around Window and Door Frames Is Quickly Done

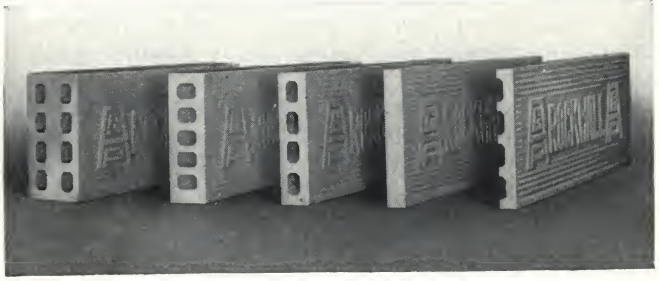
ROCKWALL GYPSUM PARTITION TILE

A Light, Strong, Durable and Fireproof Structural Unit

Rockwall Gypsum Partition Tile is made of the finest Nova Scotia Gypsum.

Tests show that gypsum tile is one of the very best fire resistants known to man. Heat cannot pass through it at greater temperatures than 212° F. until it is completely calcined. It efficiently keeps fire from spreading.

Rockwall Gypsum Partition Tile fully meets the standard specification for gypsum partition tile of the American Society for Testing Materials. It is an excellent plaster base and does not stain the plaster or wall decorations.



Sizes—Rockwall Partition Tile is made in seven sizes: 1½-in. split furring; 2-in. split furring; 2-in. solid; 3-in. solid; 3-in. hollow; 4-in. hollow, and 6-in. hollow. All thicknesses are 12 in. wide and 30 in. long.

Ease of Installation—Rockwall Gypsum Partition Tile is very adaptable, easily handled, quickly laid in the wall and can be cut with a saw.

Ease of sawing makes for simple fitting around columns, beams, pipe chases, etc. Curved work is also easily accomplished.

Identification—Rockwall Gypsum Partition Tile is readily identified by the Rockwall name and trade-mark cast in relief on each tile (see illustration).

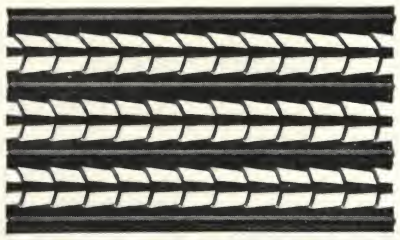
Continued on next page

ROCKWALL METAL LATH

**Carried in Stock at Warehouses: Portsmouth, N. H.; New York, N. Y.; Chester, Pa.*

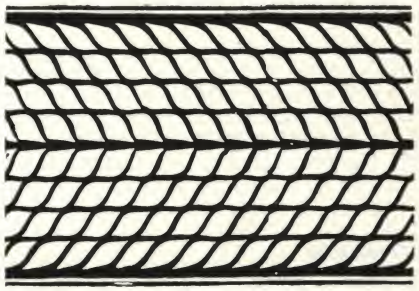
Diamond Mesh or Flat Expanded Lath

Size of each sheet is 27x96 in. or 2 sq. yd. Packed in bundles of 10 sheets or 20 sq. yd.
Weights—*Painted*—*2.2, 2.5, 3.0 and *3.4 lb. per sq. yd.
Galvanized—*2.5 and *3.4 lb. per sq. yd.



⅛-in. or Flat Rib Lath

Size of each sheet is 27x96 in. or 2 sq. yd. Packed in bundles of 10 sheets or 20 sq. yd.
Weights—*Painted*—*2.75, *3.0 and *3.4 lb. per sq. yd.
Galvanized—3.75 lb. per sq. yd.



⅜-in. Rib Lath

Size and packing same as ⅛ in.
Weights—*Painted*—3.0, *3.4 and 4.0 lb. per sq. yd.
Galvanized—3.6 lb. per sq. yd.

Note: The above types and weights of lath conform to the U. S. Department of Commerce Simplified Practice Recommendation No. R-3.

Every sheet painted singly and baked dry. This eliminates bare spots; prevents sheets or bundles from sticking together on the job. Each sheet 27 in. wide—the "common sense size"—requires fewer laps, saves time in erecting. Exactly 2 sq. yd. to a sheet to save time in figuring and reduce errors. 10 sheets (20 sq. yd.) to a bundle.

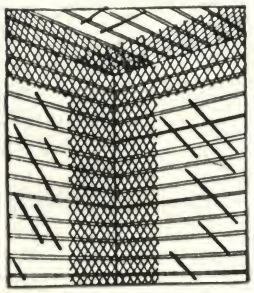
All copper bearing lath is painted black with a patent detachable seal tag affixed to each bundle for identification.

Rockwall Cornerite

Made flanged in 8-ft. lengths and shipped 600 lineal ft. to the crate.

Crated Weights per 1000 Ft.—*Painted*—*4x4 in., 200 lb.; *3x3 in., 160 lb.; 2x2 in., 120 lb.

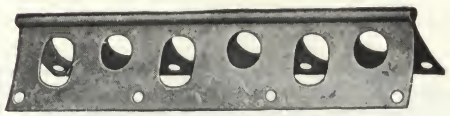
Galvanized—4x4 in., 213 lb.; 3x3 in., 170 lb.



Rockwall Striplath

Made in 8-ft. lengths only and shipped in bundles of 50 pieces.

Crated Weights of 1000 Ft.—3-in. width, 74 lb.; 6-in. width, 148 lb.

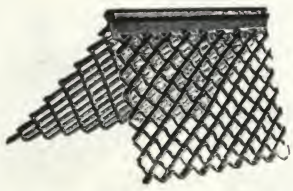


Rockwall Wing Type Corner Bead

Made of 26 gauge galvanized, in lengths of 6, 7, 8, 8½, 9, 10, 11 and 12 ft. Packed 10 pieces per bundle, 50 or 100 pieces per crate.
Crated Weight per 1000 Ft.—*200 lb.

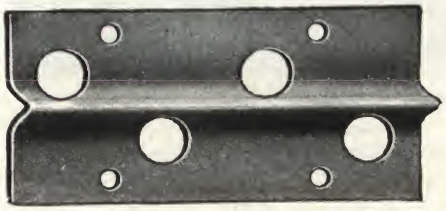
Rockwall Bull Nose Corner Bead

Made of 26 gauge galvanized, ¾-in. radius, 1-in. face, in lengths of 8, 10 and 12 ft. Packed 10 pieces per bundle, 50 or 100 pieces per crate.
Crated Weight per 1000 Ft.—*315 lb.



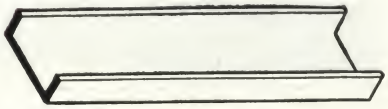
Expanded Flange Corner Bead

Made of 26 gauge galvanized, in lengths of 6, 7, 8, 8½, 9, 10, 11 and 12 ft. Packed 10 pieces per bundle, approximately 500 or 1000 ft. per crate.
Crated Weight per 1000 Ft.—*230 lb.



Rockwall Base Bead or Screed

Made of 26 gauge in 10-ft. lengths with ½-in. grounds. Packed 10 pieces per bundle.
Crated Weight per 1000 Ft.—195 lb.



Rockwall Cold Formed Channels

Widths of ¾, 1 and 1½ in. made in 16 and 20-ft. lengths; 2-in. width in 20-ft. length only. Packed in bundles of 25 pieces for ¾ and 1-in. sizes, and 10 pieces for 1½ and 2-in. sizes.
Crated Weight—¾ in., 276 lb.; 1 in., 332 lb.; 1½ in., 442 lb. and 2 in., 553 lb. The above are carried in stock at warehouses in 20-ft. lengths.

THE BEST BROS. KEENE'S CEMENT CO.

MEDICINE LODGE, KANS.

EASTERN SALES OFFICE: Chicago Daily News Building, CHICAGO, ILL.

BRANCH OFFICES

SAN FRANCISCO, CALIF. TOLEDO, OHIO PHILADELPHIA, PA. KANSAS CITY, MO.

Products

Manufacturers of BEST BROS. KEENE'S CEMENT and "PIONEER" PLASTERS.

Grades of Keene's Cement

Best Bros. Keene's "Regular" for general plastering.

Best Bros. Keene's "Fast Finish" for finishing.

Best Bros. Keene's "Fine" is made from selected gypsum rock. It is used for wainscots, columns, etc. It is also used for producing artificial Caen Stone and Travertine finishes, and for backing up Scagliola or art marble.

Best Bros. Keene's "Quickset" is used for castings.

Best Bros. Keene's "Superfine" is used for facing scagliola or art marble.

It is slow setting, pure white, of high tensile strength and takes a high polish.

Grades of White Plaster

"Pioneer" Casting.
"Pioneer" Moulding.
"Pioneer" Gauging.
"Pioneer" Finish.

Description

The various grades of Best Bros. Keene's Cement and "Pioneer" plasters are manufactured from gypsum rock of exceptional purity. Careful, standardized attention from quarry to finished product insures the uniform excellence of the various grades.

THE BEST BROS. KEENE'S CEMENT CO. is the original and largest manufacturer of Keene's Cement in this country, having been established since 1889.

Advantages

Best Bros. Keene's Cement forms the toughest, most durable and whitest wall it is possible to obtain, and can be troweled or floated to practically any style of finish that may be desired.

It is non-resonant, sanitary and fire resistant. It will not corrode metal lath.

Best Bros. Keene's Cement also combines perfectly with lime.

It possesses two other qualities of great value; first, the fact that it will keep indefinitely and can be used with perfect results after being stored for years; secondly, it can be retempered as often as necessary.

It does not "kill."

Packages

Best Bros. Keene's Cement is packed in paper or cloth bags containing 100 pounds each.

"Pioneer" plasters are packed only in paper.

Additional

Comprehensive and detailed specifications are given in our A.I.A. folders, which will be promptly supplied on request.

Memorial Union Building, University of Wisconsin, Madison, Wis.

ARTHUR PEABODY, *Architect*
GEORGE THILL, *Plastering Contractor*
PFEFFER CONSTRUCTION CO., *General Contractor*

Plastered Throughout with Best Bros. Keene's Cement

Always "Best" for Plastering

Continued on next page

Specifications for Plastering

General—All plastering shall be done with Best Bros. Keene's Cement mixed and applied according to the specifications of the manufacturer, provided they do not conflict with the requirements herein.

Three-coat Work on Wood or Metal Lath—

(A) ***Scratch Coat***—Shall be mixed in the following proportions: To 160 pounds of lime putty add 700 pounds (42 No. 2 shovels) of sand and plenty of good, well beaten, water soaked cattle hair. Gauge this mixture with one (1) bag of Best Bros. Keene's "Regular" of 100 pounds weight.

(B) ***Brown Coat***—Shall be mixed in the following proportions: To 180 pounds of lime putty add 1050 pounds (63 No. 2 shovels) of sand, and gauge this mixture with one (1) bag of Best Bros. Keene's "Regular" of 100 pounds weight.

Two-coat Work on Tile, Brick or Gypsum Block—

(A) ***Brown (or Base) Coat***—Shall be mixed in the following proportions: To 150 pounds of lime putty add 1000 pounds (60 No. 2 shovels) of sand, and gauge this mixture with one (1) bag of Best Bros. Keene's "Regular" of 100 pounds weight.

Two-coat Work on Concrete Walls and Ceilings—

(A) ***Brown (or Base) Coat***—Shall be mixed in the following proportions. To 80 pounds of lime putty add 450 pounds (27 No. 2 shovels) of sand, and gauge this mixture with one (1) bag of Best Bros. Keene's "Regular" of 100 pounds weight.

Finish Coats—

Sec. 1. Smooth Finish—To each 100 pounds of Best Bros. Keene's "Fast Finish" add 80 pounds of lime putty.

Sec. 2. Sand Float Finish—To each 100 pounds of Best Bros. Keene's "Regular" add 120 pounds of lime putty and 400 pounds (24 No. 2 shovels) of sand.

Smooth Hard Finish for Bathroom, Wainscots and Similar Work—The finish coat shall be mixed in proportions of 400 pounds of Best Bros. Keene's "Regular" and 100 pounds of lime putty. (If an extra hard white finish is required, use Best Bros. Keene's "Regular" neat with no lime to be added).

Brick and Tile Surfaces—All brick and tile surfaces shall be thoroughly broomed off and washed before the mortar is applied, and shall be damp when it is applied.

Concrete Surfaces—New concrete must not be plastered until it is dry. All dust and loose particles shall be removed from concrete or cement surfaces by brushing well with a wire brush The surfaces shall be washed with clean water and kept moist while the plaster is being applied. Should the concrete surfaces be oily or gummy, they must be washed with a 10 per cent solution of muriatic acid and water (one quart of acid to a bucket of water), and washed out with clean water within twenty minutes after the acid solution is applied. Any cracks in the concrete shall be cut to a V-shape and filled in with neat cement and water, which must be allowed to dry thoroughly before the plaster is applied.

This coat must be laid on with a trowel or wooden float, and not touched again except to knock off the rough edges with the float. Great care must be exercised in applying the base coat to concrete. It must be laid on in one operation and not touched again, for if the coat is moved in any way the bond is broken.

Any plastered surfaces that are loose and not properly attached to the concrete after the mortar has dried out must be cut out and done over again, and sufficient area shall be thus removed to make a uniform surface without having the appearance of patch work.

Finish coat should never be applied direct to concrete walls or ceilings.

Grounds—On wood lath, grounds shall be ⅞ inch; on metal lath, ⅝ inch; on brick or tile, ½ inch.

Sand—Must be screened, clean and sharp; free from loam, quicksand or other impurities.

Lime—Hydrated lime shall be soaked in watertight boxes, for at least twenty-four hours before using.

Lump lime shall be well slaked; run through a sieve of ⅛-inch mesh, and properly stored and protected for a sufficient time before using to ensure all particles being thoroughly slaked.

Lathing—Metal lath shall be either painted or galvanized. Wood lath shall be of a good grade, free from knots, sap and bark (white pine preferred). It shall be thoroughly dampened shortly before plaster is applied.

Specifications for Ornamental Work

Lathing—If the work is to be applied to lathed surfaces, only coated or galvanized metal lath shall be used.

Plastering—Scratch and brown coats shall be mixed in the same proportions as specified for wall surfaces (see above). Allow scratch coat to dry and brown out to within ¼ inch of the finish coat with a muffled mould. The finish coat shall be applied while the brown coat is green.

Run Work—All mouldings, window stools, door and window trim and work of like character shall be run in Best Bros. Keene's "Fine."

Mouldings shall be run straight and true, using metal templates with profiles as given on full sized details.

Cornices—The finish coat for cornices shall be mixed in proportions of 400 pounds Best Bros. Keene's "Fine" and 200 pounds of lime putty.

Cast Work—Ornamental work of every kind, excepting run mouldings and cornices as previously specified, shall be cast with Best Bros. Keene's "Fine" used neat. (The contractor shall have the option of using Best Bros. Keene's "Quickset" in place of the "Fine" for this work). Add only sufficient water to bring it to the consistency of a thick paste. It shall be thoroughly pressed and worked into place, making all members neat and clean. All castings shall be set in place and securely anchored as hereinbefore specified.

Scagliola Work (Artificial Marble)—Scagliola columns, pilasters, walls, etc., shall be browned out to a true and even surface with a brown coat mixed in the following proportions: To 160 pounds of lime putty, add 700 pounds (42 No. 2 shovels) of sand, and plenty of good, well beaten, water soaked cattle hair. Gauge this mixture with one (1) bag of Best Bros. Keene's "Regular" of 100 pounds weight.

This work shall be done by the plastering contractor under the supervision of the contractor for the scagliola work.

After the base coat is dry, the scagliola contractor shall apply a brown coat of Best Bros. Keene's "Fine" mixed with marble dust in the proportions of two (2) parts of Best Bros. Keene's "Fine" to three (3) parts of marble dust. This brown coat shall be brought out to a thickness of ⅝ inch.

The facing, or finish coat shall be ⅜ inch thick, and shall be composed of Best Bros. Keene's "Superfine" with sufficient dry colors to produce a correct reproduction of the type of marble specified. This finish coat shall be stoned with Bimmstein, Scotch hones and razor hones, and shall be filled between the different stonings.

This finish coat shall be polished with putty powder, oxalic acid and alcohol, and shall be brought to a high polish. No shellac or French polish will be accepted.

Where scagliola work is to be pre-cast, it shall be cast in moulds with a facing composed of Best Bros. Keene's "Superfine" as specified hereinbefore, and shall be backed up to the required thickness with a mixture composed of two (2) parts of Best Bros. Keene's "Fine" and three (3) parts of marble dust, and shall be reinforced with burlap.

STRUCTURAL GYPSUM CORPORATION

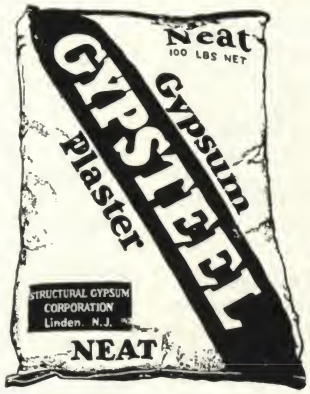
Manufacturers of Gypsteel Gypsum Plasters

GENERAL OFFICES AND FACTORY
LINDEN, N. J.
NEW YORK OFFICE, 535 Fifth Avenue
BRANCH OFFICES IN THE PRINCIPAL CITIES OF THE UNITED STATES

Product

GYPSTEEL GYPSUM PLASTERS.

For Gypsteel Gypsum Partition Tile, and Gypsteel Pre-cast Roofs and Floors, see Manufacturers' Index.



Quality

The outstanding high quality of Gypsteel Gypsum Plasters as to working qualities and strength of wall and ceiling produced, is due to the combination of purity of the gypsum with a distinctive process of chemical control that insures uniformity in the finished product.

These important factors impart to the plastering extraordinary toughness and strength. At the same time, it makes a mix which is easy for the craftsman to apply to the wall, permitting of better and cleaner workmanship.

Daily Delivery Service

Our plant at Linden, New Jersey, is located in the heart of the Metropolitan New York area. This enables us to deliver Gypsteel Plasters by truckloads within 50 miles of New York City the morning following the receipt of orders. Deliveries as far south as Washington, D. C., and as far north as Boston, Mass., are made by rail.

Advantages of Gypsteel Gypsum Plasters

(1) Great Slip and Spread—The high purity of the gypsum imparts to Gypsteel Gypsum Plaster great spread and easy working qualities.

(2) Strong and Tough Walls—The great purity of Gypsteel Gypsum Plaster makes strong and tough walls.

(3) Retards Fire—Gypsum is universally recognized as a most advantageous fire-resistant material.

(4) Non-expansiveness—Since the coefficient of expansion of gypsum is practically zero, gypsum plaster walls do not expand or contract.

(5) Durability—Gypsteel Gypsum Plasters form strong, tough walls that will last as long as the building, and provide a permanent base for the finish coats of plaster.

(6) Uniformity—Constant laboratory tests of the gypsum in process of manufacture, and of the other materials going into the plaster, insure uniform quality and dependable strength in every bag.

Identification

All Gypsteel Gypsum Plasters are shipped in strong paper bags or jute sacks, marked with a large diagonal green stripe. The paper bag protects the plaster from danger of breakage in ordinary use, and from moisture. The paper bags are not paid for and do not have to be returned, thereby eliminating any investment by the dealer or contractor.

Full Line of Plasters

Gypsteel Gypsum Plasters are supplied for all uses—Neat, Sanded, Woodfibred, Gauging, Moulding, Bond Coat for application to concrete, and Colored Finishing Plasters.

Endorsement

Typical of the trade's comment on Gypsteel Gypsum Plasters is the following letter to us from a leading plastering contractor of New York City:

"In answer to your letter of December 3rd, wish to advise that I do not see what improvement could be made in your Gypsteel Bond or Gypsteel Neat.

"I have no hesitancy in recommending the superior qualities and working qualities of your materials. It has more strength than any neat material I have ever handled.

"That is my opinion and also the opinion of all our foremen and also the plasterers who are applying it eight hours every day. As a rule, they are the best judges.

"Yours very truly,
"H. W. MILLER, INC.
"By Thos. Calhoun, Vice President."

Representative Gypsteel Plaster Jobs

ADDRESS	ARCHITECT	PLASTERING CONTRACTOR
New York, N. Y.		
Empire State Bldg.	Shreve, Lamb & Harmon	Martin Conroy & Sons, Inc.
Standard Oil Building Addition, 26 Broadway	Shreve, Lamb & Harmon	H. W. Miller, Inc.
Hotel Carlyle, 76th, 77th Sts. and Madison Ave.	Rosario Candela	Frank Morell Co.
Apartment, 1040 Fifth Ave.	Rosario Candela	Frank Morell Co.
895 Park Ave.	Sloan & Robertson	P. J. Durcan
Apartment, 21 E. 79th St.	Van Wart & Wein	C. H. Meyn, Inc.
Apartment, 133 E. 80th St.	Peabody, Wilson & Brown	Klee-Thompson Co.
New York Trust Co., Fifth Ave. and 57th St.	Cross & Cross	Architectural Plastering Co.
N. Y. County Trust Bldg., 14th St. and Eighth Ave.	Wm. . Whitehill	Duffy Bros.
Barbizon Hotel, 58th St. and Sixth Ave.	Murgatroyd & Ogden	Volpe Plastering Co.
Hotel Edison, 47th St. and Broadway	Herbert Krapp	P. J. Durcan
1100 Park Ave. Apt. Hotel	DePace & Justen	Parisi & Gagliano
Chatham & Phenix Bank in Lincoln Bldg.	L. S. Weeks	H. W. Miller, Inc.
Salisbury Hotel	Jardine, Hill & Murdock	Circle Plastering Co.
Other Cities		
Peekskill High School, Peekskill, N. Y.	Wilson Potter	Joseph Cuddihy
Knoll Club, Boonton, N. J.	Starrett & Van Vleck	Dittman & Co.
Pelham Memorial High School, Pelham, N. Y.	Tooker & Marsh Hart & Shape Wm. B. Ittner Asso.	Johnson & Miller
Jersey City Hospital, Jersey City, N. J.	John T. Rowland	Edward DeForge
American Insurance Bldg., Newark, N. J.	J. H. & W. C. Ely	Duffy Bros.

Consultation

The STRUCTURAL GYPSUM CORPORATION invites the architect and builder to submit any special problem in wall construction. The long experience we have had as gypsum manufacturers permits of extending cooperation and service of a creative and constructive character.

Continued on next page

Gypsteel Neat Plaster

Requires addition of sand on the job. Most economical on large operations where a good clean sharp sand is available. Is well fibered for scratch or brown coats over wood lath, metal lath, brick or gypsum and clay surfaces. May be supplied unfibered when desired. When mixed according to directions, one ton with sand added will cover as much surface as three tons of ready sanded plaster.

Specifications—Grounds should be ¾ in. for two coat work and ⅞ in. for three coat work.

Wood Lath—Good quality and free from sap, bark and knots, spaced about ⅜ in. apart, joints broken every seventh lath. Lath should be wet before application of plaster. Use two parts of sand to one part of plaster by weight. Lath should be well nailed and ¼ in. allowed between ends.

On Plasterboard—Do not wet board. Plastering to be three coats. Scratch coat should be allowed to set before application of brown mortar. Plaster to be ½ in. thickness. All angles and base should be straightened ready to receive finish.

On Metal Lath—Apply a light scratch coat to cover lath and fill meshes. After the scratch coat has set firmly but before it is dry apply the second coat and bring to straight and even surface with rod and darby ready to receive the finish coat.

Gypsum Tile, Brick or Clay Tile—Spray dry walls to reduce suction. Use three parts sand to one part of plaster by weight. Apply sufficient material to fill out to grounds.

Mixing—The dry plaster and sand should be thoroughly mixed before adding water, then mix with sufficient water to make the mortar plastic.

Gypsteel Bond Plaster

A material especially manufactured for application to interior concrete ceilings and walls. Gypsteel Bond insures the greatest adhesion to concrete surfaces. Used with the addition of water only. Walls must be clean and free from dust, oils or efflorescence. It is advisable to clean the concrete surface with a weak solution of muriatic acid, using a wire brush. Grounds to be of sufficient thickness to bring to a true and even surface—usually ¼ in. Dries to a light gray surface, ready for application of white finish coat or it can be finished by troweling to its natural gray color.

Gypsteel Sanded Plaster

Is ready for use with addition of water only. Sand is clean and sharp, assuring a mortar that is smooth and easily worked. Especially recommended in localities where good sand is not available at reasonable prices. For use on wood lath, metal lath, gypsum tile, brick or clay tile.

Specifications—Grounds and lathing to be same as neat plaster.

Directions for Mixing—Nothing is to be added to sanded plaster but water and under no circumstances will the contractor be allowed to add more sand. Plaster is placed at one end of mortar box, then hoe material into water mixing thoroughly; work to proper consistency for application.

Application—Apply same as specified for neat plaster.

Gypsteel Wood Fibered Plaster

Contains finely shredded wood fiber giving the plaster toughness, flexibility and bulk. Spreads easily and is especially suitable for two coat work. Comes ready to apply with the addition of water only. If desired, equal parts of good clean sand may be added at the job. Wood fibered plaster is more bulky than other grades and will cover a slightly greater area.

Specifications—Grounds and lathing same as for neat plaster. Is to be used with or without sand. If sand is added at the job it will accelerate its set, consequently, the mill should be notified how the material is to be used so that proper retardation can be made.

Plasterboard—Do not wet board. Plaster should be applied not less than ⅜ in. thickness for best results, giving total grounds of ¾ to ⅞ in. May be left rough to receive finish, or troweled smooth to a gray finish.

On Wood Lath—Lath should be thoroughly wet before application of plaster. First apply a thin coat of mortar and before it sets follow with sufficient material to fill out to grounds. Where wood fibered plaster is to be troweled down for a smooth finish it should be used without addition of sand, otherwise surface should be left rough to receive finishing coat. If a finish is to be applied, scratch or broom the wood fiber plaster well before it sets.

On Wire and Metal Lath—Apply the mortar a little stiff and scratch a thin coat on the lath. After this has set hard apply a second coat, rough or broomed to receive the finish.

For Brick or Clay Tile—Mix equal parts, by weight, of plaster and clean sharp sand applying material in usual way.

Mixing—Wood fibered plaster should be placed in upper end of mixing box and hoe plaster in water and allow to soak for approximately ten minutes. Mix thoroughly to right consistency. As indicated above, when sand is added material must be specially retarded.

Gypsteel Gauging Plaster

Is manufactured from selected gypsum. It is cool and smooth working and has uniform setting qualities.

For Trowel Finish—Mix approximately three parts of lime putty, by measure, with one part of dry gauging plaster; equal to two parts of dry hydrated lime and one part of dry gauging plaster, by weight. Mix thoroughly and apply in the usual manner.

Gypsteel Moulding Plaster

Is an exceptionally high grade and finely ground material. Possesses cool working qualities and assures a clean sharp definition in finished cast.

Gypsteel Prepared Finishes (In Colors)

A ready prepared finish requiring only the addition of water. Comes in various colors and tints. Color chart furnished upon request. Permits a wide variance in decorative schemes in textured and stippled finishes of all kinds. Colors are lasting.

Specifications—Gypsteel colored finishes require only the addition of water to make them ready for application. Mix thin and in small batches as required. Base coat should be well scratched or broomed before applying finish and walls should be dry.

COVERING CAPACITY OF GYPSTEEL PLASTERS (APPROXIMATE)

Plastering base	Neat, yd. per ton	Wood-fibre, yd. per ton	Sanded, yd. per ton
Wood lath	225 Sanded 2 to 1	115 Unsanded	75
Metal lath	200 Sanded 2 to 1	90 Unsanded	65
Plaster board	120 Sanded 2 to 1	60 Unsanded	40
Gypsteel tile	235 Sanded 3 to 1	140 Sanded 1 to 1	65
Clay tile and masonry	180 Sanded 3 to 1	110 Sanded 1 to 1	50

CERTAIN-TEED PRODUCTS CORPORATION

GYPSUM DIVISION

BEAVER AMERICAN CEMENT PLASTER DIVISION
ACME CEMENT PLASTER DIVISION

Manufacturers of a Complete Line of Gypsum Plasters, Wall Board and Tile

GENERAL OFFICES
100 East 42nd Street
NEW YORK, N. Y.

SALES OFFICES

ALBANY, N. Y.	CHICAGO, ILL.	HONOLULU, T. H.	MEMPHIS, TENN.	OMAHA, NEB.
ATLANTA, GA.	CINCINNATI, OHIO	INDIANAPOLIS, IND.	MILWAUKEE, WIS.	PHILADELPHIA, PA.
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BOSTON, MASS.	DALLAS, TEX.	KANSAS CITY, MO.	NEW ORLEANS, LA.	PORTLAND, ORE.
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PLANTS

ACME, TEX.	LARAMIE, WYO.	AKRON, N. Y.	BLUE RAPIDS, KAN.
NO. HOLSTON, VA.	FORT DODGE, IOWA	GRAND RAPIDS, MICH.	GYPSUM, OHIO

Products

CERTAIN-TEED-ACME and BEAVER AMERICAN GYPSUM PLASTERS, for base and finish coats.

CERTAIN-TEED, SATIN SPAR, BLUE RAPIDS GAUGING, SUNFLOWER MOULDING, etc., for special finishing, gauging and moulding work.

For Our Other Products, see Manufacturers' Index

QUALITY, REPUTATION AND GUARANTEE

The CERTAIN-TEED PRODUCTS CORPORATION is one of the largest producers of gypsum products in the United States, having mills with modern equipment, strategically located at practically every gypsum producing center east of the Rocky Mountains.

Architects will find this line of plasters full and complete, and this company can at all times advantageously serve its trade in all principal markets with short hauls and low freight costs.

The plasters described on the following pages have a national reputation and meet every requirement of the American Society for Testing Materials as to quality, tensile and crushing strength, spreading and covering capacity, working qualities as well as fire resisting and endurance properties required by leading laboratories.

TRADE-MARKS

Guarantee

All the products listed and described herein are fully guaranteed as to quality. They will give the best results when used in accordance with the company's specifications.

GYPSUM PLASTERS—THEIR USE AND IDENTIFICATION

Architects, builders, plastering contractors and general contractors of wide experience have shown a preference for *"Certain-teed"* and *"Beaver American"* plasters wherever easy, economical spreading, uniform setting, hardness and durability of finished work, and other qualities of good plastering are desired to an exceptional degree.

For any type of building; for plastering over any approved plaster backing; for procuring any effect of finish; for any climatic conditions; for any local preference as to working characteristics, there is a *"Certain-teed"* or *"Beaver American"* plaster whose superior fitness has been established by long experience.

Continued on next page

Standardized Brands

The combined factory brands of the Certain-teed and Beaver divisions are numerous, and include many that are among the best known and the most popular in the trade, but irrespective of the brand, the same high standard of quality is maintained throughout the whole line.

Architects, builders, owners and plasterers may depend upon each product made in the Certain-teed-Beaver plants to give the most satisfactory results.

Containers and Weights

Our plasters are shipped in convenient containers, prominently labeled for identification.

Jute bags contain 100 lb. each (plaster and Keene's cement)—20 bags to the ton.

Paper bags contain 80 lb. each—25 bags to the ton. Also 100 lb. each—20 bags to the ton.

Wood barrels contain 235 lb. net—250 lb. gross—8 barrels to the ton. Wood kegs contain 115 lb. net—125 lb. gross—16 kegs to the ton.

Paper bags for lime contain 50 lb. each—40 bags to the ton.

Standard Plasters for General Use | Finishing Plaster | Moulding Plaster

A Few of Our Well Known Brands of Gypsum Plaster

DESCRIPTION AND CLASSIFICATION OF CERTAIN-TEED GYPSUM PLASTERS

Gypsum Neat Plasters (Unsanded)

"Certain-teed;" "Certain-teed-Acme" and *"Beaver American"* brands of gypsum neat plaster (sometimes called cement plaster or patent plaster) is the product of ground, calcined gypsum which is carefully selected and tested as to its plastering value, strength, hardness, resistance to heat and moisture, and other important physical and chemical properties. The word "neat," in connection with the name of the plaster, implies that the product, as shipped by the manufacturer, does not contain sand; the sand necessary is added at the building site.

This plaster is furnished with or without a small percentage of fiber. The fibered material is used for plastering on wood and metal lath, while the unfibered is usually used for plastering on brick, tile and similar solid surfaces. This plaster, with the addition of fine sand at the building site, is sometimes used for a sand float finish in place of lime putty. Any type of finishing coat may be used over the brown coat, including: Gypsum plaster finish, lime putty finish, sand float finish, Keene's cement finish, caen stone finish, etc.

Covering Capacity—The covering or spreading capacity of gypsum neat plaster depends to a large extent upon the quantity and quality of sand used, the character of base to which it is applied, and the thickness of the plaster coats. Under average circumstances gypsum neat plaster, mixed and applied in accordance with the specifications for same, and to the grounds specified will spread or cover about as follows:

One part of plaster to two parts of sand:

On gypsum lath—from 225 to 240 yards per ton.
On metal lath (expanded or wire)—from 105 to 135 yards per ton.
On wood lath—from 180 to 210 yards per ton.

One part of plaster to three parts of sand:

On gypsum tile—from 235 to 255 yards per ton.
On clay tile or brick—from 165 to 200 yards per ton.

Gypsum Ready-Sanded Plasters

"Certain-teed," "Certain-teed-Acme" and *"Beaver American"* brands of gypsum ready-sanded plaster (sometimes called prepared or sanded plaster) are the product of ground calcined gypsum which is carefully selected and tested as to its plastering value, strength, hardness, resistance to heat and moisture, and other important physical and chemical properties. The expression "ready-sanded," in connection with the name of the plaster, implies that the product, as shipped by the manufacturer, contains, intimately mixed, a suitable proportion of clean, sharp, dry sand, and that it is intended to be used without the admixture of additional sand at the building site.

Gypsum ready-sanded plaster, fibered or unfibered, is used for all of the purposes where a gypsum neat plaster with sand, fibered or unfibered, can be used. The fibered material is used for plastering on wood or metal lath, while the unfibered is usually used for plastering on brick, tile and similar solid surfaces. Gypsum ready-sanded plaster is especially desirable in

Continued on next page

cases where a suitable grade of plastering sand cannot be economically procured, or during cold weather when local sand supplies are liable to contain frost.

Covering Capacity—The covering or spreading capacity of gypsum ready-sanded plaster depends to a large extent upon the character of the base to which it is applied, and the thickness of the plaster coats. Under average circumstances gypsum ready-sanded plaster, mixed and applied in accordance with specifications for same, and to the grounds specified, will spread or cover about as follows:

Plaster mixed with water only—no additional sand:
On gypsum lath—from 75 to 80 yards per ton.
On metal lath (expanded or wire)—from 35 to 45 yards per ton.
On wood lath—from 60 to 70 yards per ton.
On gypsum tile—from 65 to 70 yards per ton.
On clay tile or brick—from 45 to 55 yards per ton.

Gypsum Wood-Fibered Plasters

"Certain-teed," "Certain-teed-Acme" and *"Beaver American"* brands of gypsum wood-fibered plaster are the product of ground calcined gypsum, which is carefully selected and tested as to its plastering value, strength, hardness, resistance to heat and moisture, and other important physical and chemical properties.

The expression "wood fibered," in connection with the name of the plaster, implies that the product as shipped by the manufacturer, contains, intimately mixed, a suitable amount of non-staining wood fiber made by the grinding or shredding of wood. When shipped this plaster contains no sand, and in general is intended to be used without the admixture of sand at the building site.

This plaster is extensively used where a high degree of fire resistance is necessary, and in some instances where sand of the desired quality is not easily obtained.

Note: Gypsum wood-fibered plaster *with but one part* of sand by weight can be used on gypsum and clay tile, brick and wood lath surfaces, and for the second (brown) coat upon gypsum lath and metal lath. It is important to bear in mind that the addition of sand to gypsum wood-fibered plaster will hasten its time of setting. *When it is intended to use sand the manufacturer should be advised so as to enable further retarding of this plaster at the mill before shipment.*

Covering Capacity—The covering or spreading capacity of gypsum wood-fibered plaster depends to a large extent upon the character of base to which it is applied, and the thickness of the plaster coats. Under average circumstances gypsum wood fibered plaster, mixed and applied in accordance with the foregoing specifications, and to the grounds specified, will spread or cover about as follows:

Plaster mixed with water only (no sand):
On gypsum lath—from 115 to 120 yards per ton.
On metal lath (expanded or wire)—from 55 to 65 yards per ton.
On wood lath—from 90 to 100 yards per ton.
On gypsum tile—from 90 to 105 yards per ton.
On clay tile or brick—from 75 to 85 yards per ton.

Bond Plaster for Concrete Surfaces

"Certain-teed" and *"Beaver American"* brands of bond plasters are made for direct application on interior concrete surfaces. Requires the addition of water only to prepare it for use, and its cohesive and adhesive properties make it an ideal plaster base and bonding coat on interior concrete surfaces.

Finishing Plasters

"Certain-teed" and *"Beaver American"* brands of prepared finish plasters are designated as *Sand Float, Smooth Trowel Finish,* and *Wainscot Finish.*

Sand Float—A prepared sanded finish to be used with the addition of water only.

Smooth Trowel Finish—A prepared finish to be used instead of ordinary lime putty finish. Ready for use with the addition of water only.

Wainscot Finish—This finish sets in from one to three hours when mixed with water only. On the job about 20 lb. of clean fine sand is generally mixed with 100 lb. of finish to improve its working quality. It is used for finishing wainscoting in kitchens, bath rooms, etc.

Covering Capacity—The covering or spreading capacity of gypsum finishes depends upon the condition of the surface or base coat of plaster to which the finishing coat is applied, and the thickness of the finishing coat. Under average circumstances gypsum finish plasters, mixed and applied in accordance with specifications, will spread or cover about as follows:

Gypsum Smooth Trowel Finish—from 350 to 400 yards per ton.

Gypsum Sand Float Finish—from 250 to 275 yards per ton.

Gauging Plasters for Lime Putty Finishes

"Certain-teed" and *"Beaver American"* brands of gauging plasters are made from carefully selected gypsum rock which is unexcelled for its purity and adaptability for manufacturing the highest grade finishing plaster. They are uniformly ground to the exact fineness for a finishing plaster to mix freely and quickly with lime putty.

"Satin Spar"—This brand of gauging plaster has been properly retarded at the mills and is used as a gauging with lime putty for the finish coat. When used with not more than three parts lime putty will set in about one-half hour.

"Blue Rapids Gauging"—This brand of gauging plaster is unretarded. Same as Satin Spar but as it is unretarded it sets much more quickly. Should be retarded on the job as conditions require.

"Sunflower" Moulding and Casting Plaster

Sunflower Moulding Plaster is specially prepared to have the proper mixing consistency for ornamental and run work, marble setting, etc., where smooth working qualities and a normal set are desired. When mixed with lime, excellent textured effects can be obtained.

Sunflower Casting Plaster has maximum density and strength at mixing consistency, and provides a strong, long-wearing cast with a minimum of air holes. It is used extensively in making moulds in the manufacture of pottery, chinaware, metal castings, statuary and similar articles.

Both of these plasters are pure white products, and will set in from 15 to 25 minutes.

Keene's Cement

A superior, pure white cement for high grade work, where an extremely hard material and very smooth surface are desired. Used on extra fine finished columns, pilasters, wainscoting, imitation tile bases, mouldings, cornices, beading, figured cast work, etc.

Also for high grade base-coat work, for plain plastering and finish. It can be troweled or floated to form any finish that may be desired.

Continued on next page

BASIC SPECIFICATION FOR LATHING AND PLASTERING

For the Lathing and Plastering of a Building of any Type of Construction—Using Certain-teed, Certain-teed-Acme or Beaver American Neat Gypsum Plaster, to be Sanded at Building

Notes: This specification is arranged to cover an installation of plaster on all types of lath and masonry surfaces. After various paragraphs will be found interpolated notes—which offer information and suggestions. Notes included in ( ) refer directly to preceding paragraph.

Following this specification will be found general notes in explanation of various provisions of the specification which are referred to in the interpolated notes.

Alternate specifications are suggested and will be found in small type in [ ] inserted after the proper clauses or section of the main specification paragraphs.

Note for Specification Writer: When writing a specification for a project at hand it is only necessary to use the paragraphs that cover the type of construction contemplated. It may be necessary to slightly revise certain paragraphs to fit the individual requirements.

I. General

(a) The General Conditions of this specification are hereby made to constitute a part of the specification for Lathing and Plastering.

(See General Notes at end of specification, Pars. (e), (f) and (g).)

(b) The contractor for plastering shall furnish all materials, labor and scaffolding necessary to completely finish the building in accordance with the intent of the drawings and of the specifications.

(c) The contractor for plastering shall examine all walls, furring, partitions, ceilings, etc., and see that same are in every case secure, true, and plumb or level. He shall report any which are not so to the General Contractor for correction before proceeding to apply any lath, or plaster, on same. Failure to so report shall be taken as assumption of full responsibility for satisfactory conditions by the plastering contractor.

(For frame buildings all exterior and interior studding, all furring, joists, rafters, collar beams, etc., will, of course, be specified under Carpentry where it is assumed they will be required to be placed properly and on the centers mentioned under General Notes, paragraph (d)—namely: 16 in. for joists and studs and 24 in. for rafters and collar beams.)

II. Extent of Work and Exceptions

(a) Unless otherwise specified and indicated on the drawings, the entire interior of the building shall be lathed and plastered or plastered on masonry, as hereafter specified.

(If any plastering is to be included in an out building or elsewhere, it should be mentioned in Par. (a) unless to be separately contracted for.

(The drawings should distinguish between furred and unfurred masonry and the specifications for Masonry, Carpentry, etc., should likewise provide for the furring or studding out where installed. See General Notes Par. (c). If there are no masonry walls to be plastered, strike out reference to same in Par. (a).)

(b) The plastering shall be the best three coat work on all lath and two coat elsewhere. The scratch and brown coats shall be carried down to the rough floor back of all bases, etc., and extended up on all walls of skylights, light wells, etc., unless otherwise provided under *Exceptions.* On ceilings or other surfaces where there are no grounds, the thickness of the lath and plaster shall equal the full thickness of the grounds specified for that lathing material.

(c) The wall surface in back of all tile wainscoting for walls shall be plastered with a scratch coat of cement mortar, consisting of 1 part Portland cement and 3 parts sand.

(In certain localities labor jurisdiction has allotted the scratch coat to the tile setters, in which case Par. (c) should be omitted. In this connection the "Basic Specification for Tilework" of the Associated Tile Manufacturers will be found very useful—2nd Edition 1924.)

(d) **Exceptions**—The only places not to be plastered are (list here locations) and all other spaces marked "not plastered" on the drawings (or, listed in schedule on drawings). No plastering will be required back of (list here such items as, marble, tile and brick wainscoting, etc.).

(In locations where the scratch coat in back of tile wainscoting or wall is conceded to the plasterers, the reference to tile in the list of exceptions should be omitted.)

III. Furring

Notes: For frame buildings the wood furring or wood suspended ceilings, to receive lath and plaster, should be included in the Specification for Carpenter Work.

For metal furring or metal suspended ceilings, see Standard Specifications issued by Associated Metal Lath Manufacturers, Inc., which cover all types of metal supports, furring, arches, beams, cornices and suspended ceiling construction. When the desired type of construction has been selected, the paragraphs should be inserted in this section of the Specification—(III Furring).

Masonry furring consisting of various types of hollow fireproof blocks or tiles, etc., is of course included in the specification for Mason Work.

IV. Lathing and Preparation of Surfaces

Wood Lath and Lathing

(a) Lath with wood lath all studs, joists, etc., and all wood furred masonry walls throughout all portions of the building specified to be plastered.

(In cases where any masonry is to be plastered direct or where exterior walls are entirely of frame, paragraph (a) above or in the specifications for "Gypsum Lath" or "Metal Lath" should be modified accordingly.)

(b) Wood lath shall be of good merchantable quality, non-staining, and free from loose knots. All lath shall be spaced not less than ¼ in. nor more than ⅜ in. apart and shall be laid at right angles to supports. All ends of lath shall have solid bearing and all lath shall be well nailed to each support with 3d lathing nails. A space of ¼ in. shall be left between abutting ends of lath. Joints shall be broken not more than every seven laths. No lath shall be carried through from one room to another.

(In some cases this specification for wood lath may not be considered sufficient and the architect should revise paragraph (b) in accordance with the Standard Grading Specifications issued by the Lumber Manufacturers Association functioning in the locality where the work is situated.)

(c) Over any heat pipes concealed in walls or partitions, furnish and install strips of gypsum lath at least ¼ in. thick or painted expanded metal lath or wire lath well secured, with good bearing, at nearest supports. Wherever any wood-lathed walls, partitions or ceilings abut unfurred masonry secure strips of painted expanded metal lath extending at least 8 in. on to wood lath and 8 in. on to masonry. Strips shall be cut from lath weighing not less than 2.5 lb. per sq. yd.

(In some localities it is customary to specify the lathing-in of heat pipes as a part of the heating contractors' work in which case provide accordingly and modify this paragraph. When gypsum lath or metal lath is specified, this paragraph should be stricken out.)

(d) Over the heating plant in basement and extending 3 ft. beyond the outlines of same, and of smoke pipe to wall, furnish and securely install gypsum lath ⅜ in. thick or painted expanded metal lath or galvanized wire lath weighing not less than 3.0 lb. per sq. yd.

(The Committee on Building Construction of the National Fire Protection Association recommend the protection of woodwork over heating apparatus and over fuel storage (other than anthracite). The above paragraph is suggested as a minimum.)

(e) (See note following.)

(For other uses of incombustible lath, if any are desired to replace wood lath in special locations, describe in this space.)

(f) All grounds for wood lath and lathing shall be three-quarters (¾ in.) inch thick and will be furnished and installed as specified under Carpentry. Thickness of grounds includes the thickness of the lath.

(Provisions for the furnishing and setting of all grounds should be made under Carpenter's Work.)

Gypsum Lath ("Plaster Board")

(a1) Lath with Gypsum Lath (Plaster Board) all studs, joists, etc., and all furred masonry throughout all portions of the building specified to be plastered.

(b1) All Gypsum Lath shall be Certain-teed or Beaver Gypsum Lath, ⅜ (or ¼, or ½) in. thick. Nailing edges shall have bearing not less than ⅝ in. on studs, joists, etc., with horizontal joints in walls and joints at right angles with ceiling joists broken at each board and with vertical joints on opposite sides of partitions not on the same studs. Nails shall be 3d or lathing wire nails, set not more than 6 in. apart into center joists and studs and 3 in. apart on edges of boards and shall be driven home. The center of the board shall be nailed first. The spaces between boards shall be well filled with mortar, either by pointing the joints with quick setting neat mortar before the first coat of plaster is applied, or by pressing mortar used for the first coat well into the joints when first coat is applied.

(c1) Wherever any gypsum lathed walls, partitions or ceilings abut unfurred masonry, secure strips of painted expanded

Continued on next page

metal lath extending at least 8 in. on to gypsum lath and 8 in. on to masonry. Strips shall be cut from lath weighing not less than 2.5 lb. per sq. yd.

(d1) All ground for gypsum lath shall be seven-eights (⅞ in.) inch thick and will be furnished and installed as specified under Carpentry. Thickness of grounds includes the thickness of the lath.

(Provisions for the furnishing and setting of all grounds should be made under Carpenter's Work.)

Metal Lath

(a2) Lath with metal lath, all wood studs, joists, etc., back of all tile wainscoting (or, walls), and all furred masonry walls (or, all steel studs, beams, metal furring, metal suspended ceilings, etc.) throughout all portions of the building specified to be plastered, including all arches, beams, cornices, etc.

(b2) *For Walls, Furring and Partitions with Wood (or Steel) Supports Spaced 16 in. or Less on Centers.* Painted expanded metal lath weighing not less than 4.5 per sq. yd. shall be used.

For Ceilings with Wood Joists (or Wood Furring) (or Metal) Spaced 16 in. or Less on Centers. Painted expanded metal lath weighing not less than 3.0 lb. per sq. yd. shall be used.

For Ceilings with Wood Joists, Rafters or Collar Beams (or Wood Furring) (or Metal Furring) Spaced 24 in. on Centers. Painted expanded metal lath of the rib type weighing not less than 3.5 lb. per sq. yd. shall be used.

(c2) Metal lath shall be applied with the long dimension of the sheet across the supports. Sheets shall be lapped at sides not less than ½ in. and at ends not less than 1 in.

(d2) Sheets shall be attached to wood supports by not less than 6d nails or by 1¼ inch No. 14 gauge wire staples; either of these shall be driven to a penetration of not less than ⅞ in. and be spaced not to exceed 6 in. on centers. Nails shall be driven on a slant, alternating the slant of adjacent nails, and be bent over at least one strand of the lath.

Note: For fireproof building the following paragraph [d2a] should be used instead of paragraph (d2).

[d2a] Sheets shall be wired to all metal supports at intervals not exceeding 6 in., with not less than No. 18 gauge galvanized soft annealed wire.

(e2) All horizontal laps of sheets on sidewalls shall be tightly tied at least once between supports, and side laps on ceilings shall be tied twice between supports, with No. 18 gauge galvanized soft annealed wire.

End laps shall generally occur only over supports; if between supports, sheets shall be securely laced every 6 in. with wire just described. At internal angles the lath on one wall shall be extended on the adjoining wall not less than 15 in. beyond the corner (to the nearest support).

(f2) Wherever any walls, partitions or ceilings abut unfurred masonry the metal lath shall be extended at least 6 in. onto the masonry and be well secured at the edges into the joints.

(g2) All grounds for metal lath shall be three quarters (¾ in.) inch thick and will be furnished and installed as specified under Carpentry.

(Provisions for the furnishing and setting of all grounds should be made under Carpenter's Work.)

Other Lathing Backgrounds

Various types of woven wire lath, welded wire meshed materials and wood, with and without paper backgrounds, and other special patented lathing materials are on the market. No attempt is made to provide for these in this specification. When their use is considered, the manufacturer's data should be consulted.

Masonry Surfaces

Provision should be made under "Masons Work" for all joints to be rough struck in brick, hollow tile, gypsum or concrete block walls which are to be plastered direct.

(a3) The surfaces of all unfurred masonry to be plastered shall be brushed clean with a wire brush and shall be free from oil, grease, soot or projecting mortar.

(b3) Any low places shall be filled out and any unevenness of walls shall be straightened with unfibered plaster ahead of the base coat.

(c3) All grounds for brick, hollow tile and concrete block walls shall be five-eighths (⅝ in.) inch thick, and one-half (½ in.) inch thick for gypsum partition tile. Grounds will be furnished and installed as specified under Carpentry.

(When any of the masonry materials mentioned above are not to be used in the building being specified, the reference to same may be stricken out.)

V. Corners, Angles, etc.

(a) Furnish and securely set at all external or projecting angles a stiff galvanized metal corner bead, the same to run from top of base to ceilings, heads or beams, or to spring-lines in the case of any arches.

(If the architect's experience warrants a preference for any particular corner bead, its name can be inserted. If it is desired to have chamfered or rounded corners, strike out reference to corner beads and insert a new paragraph accordingly—and add the "cornerite" of metal lath mentioned in the following paragraph (b).)

(b) In all vertical internal or re-entrant angles and in all angles between ceilings, soffits, and walls, partitions or furring, lightly attach, over the wood lath, "cornerites" made from strips of painted expanded metal lath cut 12 in. wide from sheets weighing not less than 2.2 in. per sq. yd. and bent into the shape of an "L" 6 in. on each side. "Cornerites" shall be fastened along each edge but shall not be fastened in the corner. All these angles shall be plastered square and straight.

(This reinforcement of angles by metal lath "cornerite" will tend to prevent or reduce cracks in the angles. When gypsum lath is specified, change the words "wood lath" to "gypsum lath." When metal lath is specified this paragraph should be stricken out.)

VI. Metal Base Screeds or Grounds, Picture Moulds, etc.

Notes: Special metal, base screeds, grounds, moulds, coves; complete metal bases with or without electric wire-ways; metal picture moulds, chair rails, door and window trim, etc. Where such items are desired they should be included in the proper trade specification as required by local trade jurisdictions.

Where the installation of any or all of the above products will cause special conditions or requirements in the plastering or lathing work, suitable paragraphs should be inserted in this section of the specification under a suitable heading.

VII. Materials and Mixing

Plaster

(a) All base plaster shall be Certain-teed or American Gypsum Neat Plaster and all finishing plaster shall be Certain-teed or American Gypsum Finishing or Gauging Plaster as manufactured by the CERTAIN-TEED PRODUCTS CORPORATION, or other plaster if approved in writing by the architect.

(If other than the types of Certain-teed or American plaster on which this specification is based are to be used modify Par. (a) accordingly.)

Sand

(b) All sand for base coats shall be clean and sharp, free from alkali, salt or quicksand and from objectionable amounts of loam or clay and shall be graded from fine to coarse, and when dry not more than 6 per cent by weight shall be retained on a No. 8 sieve; not less than 80 per cent by weight shall be retained on a No. 50 sieve, and not more than 6 per cent by weight shall pass a No. 100 sieve. These sieves shall meet the specifications given in the Bureau of Standards' Standard Screen Scale. (See American Society for Testing Materials Specifications for Gypsum Plastering Sand, Serial Designation C35.)

(If any sand float finish is to be included (see Finishing Coat, Pars. VIII (b5) and (b5a)) the sand for same should be specified in Par. above.)

Mixing

(c) All plaster shall be mixed with clean water in clean, tight boxes and in accordance with best local practice, the intent of these specifications, and the directions of the maker on file in the office of the architect.

(Mixing and the importance of clean water and directions of the maker are of vital importance to good work.)

VIII. Proportions and Application

The specification below is for plaster of the regular thickness of the grounds applied in three coats.

In some parts of the country and under certain conditions, plaster is applied to the thickness of the grounds in two coats. Provision is therefore made at the end of this section VIII for such plastering under the heading "Two-coat Work."

Base Plaster on Wood Lath

(a) First or Scratch Coat shall be one part fibered plaster, to not more than two parts, by weight, of dry sand.

Continued on next page

(b) Wood lath shall be thoroughly wetted 12 to 24 hours before plastering is started. First coat shall be applied with sufficient pressure to fill all spaces between lath and obtain good key, leaving a light coat over the lath and the surface shall be scratched or scored to provide a bond for the second coat.

(c) *Second or Browning Coat* shall be one part plaster, fibered or unfibered, to not more than three parts, by weight, of dry sand.

(d) Second coat shall be applied when the first coat is set firm and hard but before it is dry. Second coat shall be applied with strong pressure and straightened to a true even plane. The surface shall be broomed or otherwise roughened to receive the finishing coat.

On Gypsum Lath

(a1) *First or Scratch Coat*—(Same as Par. (a) above for Wood Lath).

(b1) The boards shall not be wetted before plaster is applied. First coat shall be thoroughly applied and the plaster worked well into the joints and the surface shall be scratched or scored to provide a bond for the second coat.

(c1) *Second or Browning Coat*—(Same as Par. (c) above).

(d1) Second coat shall be applied when the first coat is set firm and hard but before it is dry. Second coat shall be straightened, keeping back sufficiently from the grounds to allow for finishing coat and the surface shall be broomed or otherwise roughened to receive the finishing coat.

On Metal Lath

(a2) *First or Scratch Coat*—(Same as Par. (a) above for Wood Lath).

(b2) First coat shall be applied with sufficient pressure to fill all meshes and obtain good key, leaving a light coat of plaster over the lath and the surface shall be scratched or scored to provide a bond for the second coat.

(c2) *Second or Browning Coat*—(Same as Par. (c) above for Wood Lath).

(d2) Second coat shall be applied when the first coat is set firm and hard but before it is dry. Second coat shall be applied with strong pressure and straightened, keeping back sufficiently from the grounds to allow for finishing coat and the surface shall be broomed or otherwise roughened to receive the finishing coat.

Base Plaster on Masonry

(a3) *Base Coat* shall be one part plaster, unfibered, to not more than three parts, by weight, of dry sand.

(b3) The surface of all unfurred brick, hollow tile or concrete block walls shall be wetted before plastering is begun when necessary to kill excessive suction. The plaster shall be applied to a thickness of ⅝ in. beyond the wall face in two operations. A thin layer shall first be applied with strong pressure to secure a good bond and shall be followed immediately with a second layer which shall be straightened to a true, even plane. The surface shall be broomed or otherwise roughened to receive the finishing coat.

(Provision is not made in the above specification for plastering on rubble masonry or on poured concrete. The first it is presumed will never be done without furring and the latter is covered in the following paragraphs.)

Base Plaster on Poured Concrete

All concrete surfaces which are to be plastered, should be put in condition to receive and retain the plaster coats.

(a4) All concrete surfaces to be plastered shall be treated as follows: Remove with a wire brush all dust and loose particles. Grease, oil or efflorescence shall be washed off with a solution of one part of commercial muriatic acid to four parts of water, and the surface so treated, washed again with clean water.

(b4) Smooth and dense surfaces shall be hacked so as to provide a rough base or background for the plaster. Plastering upon smooth concrete surfaces, which are first covered with so-called waterproof paints or compounds will not be allowed.

(c4) *Base Coat* shall be Certain-teed or American Bond Plaster used neat with only the addition of water. The base coat shall consist of one or more thin coats sufficient to straighten the walls and ceilings. It shall be applied with great pressure and shall be heavily scored and allowed to set hard before applying the second coat.

(If Bond Plaster is to be used as specified above, revise Par. VII (a) to include the name of manufacturer and brand.)

(d4) *Second or Browning Coat*—(Same as Par. VIII (c)).

(e4) (Same as Par. VIII (d).)

Finishing Coat

(a5) *Smooth White Finish* shall be one measure of Gypsum Finishing Plaster to not more than three measures of perfectly slaked fresh burned plasterers' lump lime putty or standard hydrated finishing lime thoroughly and uniformly mixed.

If it is desired, a prepared gypsum finishing plaster may be used for the smooth white finishing coat in which case substitute the following paragraph and revise Par. VII (a) accordingly.

[a5a] *Smooth White Finish* shall be Prepared Gypsum Finishing Plaster mixed to the proper consistency with clean water only.

(b5) Finishing coat shall be applied throughout the building except behind base and any place under *Exceptions* in Par. II (d) and shall be smooth white finish troweled to a dense true surface.

Note: If "Sand Float Finish" is desired in some locations instead of "Smooth White" add the following paragraph after, at end of Par. (b5), noting the exceptions and giving the locations.

[b5a] *Sand Float Finish* shall be four parts Gypsum Cement Plaster unfibered, one measure of perfectly slaked fresh burned plasterers' lump lime putty or standard finishing hydrated lime and five measures of clean sharp sand. A prepared sand float finish may be used. This requires only the addition of water.

(c5) (See note following.)

Note: This specification does not contemplate that colored, textural or special effects will be required as a finish in any portion of this building. If so, insert here the required paragraphs giving the location and description.

(d5) Finishing coat shall be applied when the base coat is set firm and hard and nearly dry. The surface of the base coat shall be sprinkled with water before the finish coat is applied when necessary to kill excessive suction.

(e5) All finishing coats throughout shall be applied and finished in the most workmanlike manner and shall be left plumb or level and true and even planed, free from trowel marks, blotches and without joints showing.

(f5) All finished plastering shall be protected from wind until set. In freezing weather, the contractor shall arrange with the General Contractor that plastering shall be protected from frost until set hard and thoroughly dry.

(In windy hot dry weather openings should be screened but not closed. In all clear weather after plastering has set, doors and windows should be kept open as fully as possible.)

Two-coat Work

For cautionary notes regarding "Two-coat Work" and its undesirability on certain backgrounds read the following:

Circular No. 151 of the Bureau of Standards entitled "Wall Plaster, Its Ingredients, Preparation and Properties" states in part regarding two-coat work:

" 'Doubled-up', 'laid-off', or 'laid-on' work, as it is variously called in different localities, means the application of the scratch and brown coats together, or at least without permitting the usual time to elapse between them. The scratch coat is applied in the way specified above, but it is not permitted to harden, nor is its surface scratched. The application of the brown coat is started immediately after finishing the application of the scratch coat. This method is obviously cheaper than straight three-coat work, but certain precautions are essential to its successful use. The brown coat must be applied before the hardening of the scratch coat has progressed far enough to produce a glazed surface. The backing must be sufficiently rigid of itself that it will not yield under pressure of the trowel, and will not sag under the weight of the combined coats. If it deflects to any appreciable extent, the keys which hold the scratch coat to it will probably be broken, and if it sags, it will be found extremely difficult to bring the brown coat out to a true plane surface. For these reasons, doubled-up work shall not be applied to metal lath. Its use on wood is not recommended, particularly if the plaster is to be ⅞ in. thick. On masonry backings the use of doubled-up work is largely a question of application—if the plasterer succeeds in making the plaster stick and is able to form a true and plane surface, the work will be satisfactory. This depends on the thickness of the plaster and the nature of the backing. It is difficult to apply a doubled-up coat of a thickness greater than ⅝ in. The great suction exerted by gypsum tile makes the application of doubled-up work easy; on clay tile it is almost impossible."

Two-coat Work on Wood Lath

If "two-coat work" on wood lath is desired, specify as follows substituting the proper paragraphs as noted.

(a6) (Same as Par. VIII (a).)

(b6) Wood lath shall be thoroughly wetted 12 to 24 hours before plastering is started. Base coat shall be applied in two operations—a thin layer of plaster shall first be applied with sufficient pressure to fill all spaces between lath and obtain a good key and shall be followed immediately with a second layer which shall be straightened to a true even plane. The surface shall be broomed or otherwise roughened to receive the finishing coat.

(c6) *Finishing Coat*—(Same as Pars. VIII (a5) to (f5)).

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Two-coat Work on Gypsum Lath

For two-coat work on "Gypsum Lath" specify as follows substituting the proper paragraphs as noted:

(a7) (Same as Par. VIII (a).)

(b7) The boards shall not be wetted before plaster is applied. Base coat shall be applied in two operations—a thin layer of plaster shall first be spread under pressure over the boards and the plaster worked well into the joints. This shall be immediately followed with a second layer which shall be straightened to a true and even plane keeping back sufficiently from the grounds to allow for the finishing coat. The surface shall be broomed or otherwise roughened to receive the finishing coat.

(c7) *Finishing Coat*—(Same as Pars. VIII (a5) to (f5).

Two-coat Work on Masonry

(a8) For two-coat work on brick, hollow tile or concrete block walls, same as Pars. VIII (a3) and (b3).

(b8) *Finishing Coat*—(Same as Pars. VIII (a5) to (f5).

IX. Arches, Beams, Cornices, Mouldings, etc.

(a) Wherever any arches, beam effects, corbels, etc., are indicated on the drawings, the same shall be fully formed with plaster in strict accordance with detailed drawings. All to have sharp arrises.

(If arches, beams, etc., are to be included, they will, of course, be specified to be built or formed by the Carpenter for wood frame construction. If not they should be built of metal lath and fully described in Par. IV (a2). If more ornamental features are intended, amplify. If not to have sharp arrises, change to chamfering or rounding.)

(b) Wherever any cornices, mouldings or other ornamental plastering features are shown or indicated on the drawings, they shall be run straight and true, as detailed, with Certain-teed or American Moulding and Casting Plaster, or may be precast, securely set and anchored without joints showing. All mouldings and lines shall make true intersections and be neatly mitered at angles. The girths of cornices and sizes of moulds shall be as follows:

(Here allocate and describe) .....

(If no cornices, mouldings, etc., are to be included, strike out this section in specification. If to be included, and if large enough in girth or size to require forms, mention the same for cornices, beams, etc., in Carpenter's Work or Metal Furring and Lather's Work.)

X. (Blank Heading)

(This space is suggested so that the architect may include provisions for plastering of window jambs or reveals where not of wood, any special plastering or finishing in toilet roooms, bathrooms, kitchens or laundries, etc., the plastering of any out building, any "waterproofing," etc., and clauses regarding guarantee or conduct of work or such other special items as may apply to the particular structure in hand which are not provided for under other headings.)

XI. Patching and Completion

(a) The contractor for plastering shall at all times keep the premises clean of loose mortar and rubbish resulting from his work and shall neatly patch or otherwise make good any damaged plaster after the various trades have left the building.

(It has been found in practice and as a matter of justice that both patching and waste can be avoided if provision is made for the plastering contractor to be paid for patching by the trade causing the damage. This paragraph can be amplified as desired by the architect to conform to his experience or trade custom of the locality.)

(b) The whole of the work shall be completed to the satisfaction of the architect and all shall be left perfectly straight, true and level or plumb, free from waves, cracks, blisters and defects of any kind, or be replaced until it is.

XII. Stucco

(If any exterior plastering is to be done, here enumerate and describe.)

(For exterior plastering, or Stucco, the Specifications for Lime Stucco of the National Lime Association and for Cement Stucco of the Portland Cement Association will be found very useful.)

General Notes Regarding the Provisions of the Preceding Basic Specification

(a) This specification, if used as herein given, will provide for all lathing and plastering required to make a complete interior "job" in a building of any type of construction, as follows:

Furring Lath—Wood throughout, except over heating pipes, heater, etc. Metal furring and lath throughout.

Corners—Metal corner beads.

Angles—Metal lath strips, or "cornerites."

Masonry Walls—Furred and unfurred.

Base Coat Plaster on Lath—

First Coat—Certain-teed or American Neat Gypsum Plaster, fibered.

Second Coat—Certain-teed or American Neat Gypsum Plaster, unfibered.

Base Coat Plaster on Unfurred Masonry—One coat Certain-teed or American Neat Gypsum Plaster, unfibered (in two applications).

Base Coat Plaster on Poured Concrete—Certain-teed or American Bond Plaster.

Sand—As specified, added to scratch coat or base coat plaster at the site.

Finishing Coat—

Smooth White Finish—Certain-teed or American Finish, or Satin Spar Finish, or Blue Rapids Gauging Plaster used with lime putty, or Prepared Gypsum Finishing Plaster.

Sand Float and Trowel Finishes—Certain-teed or American Sand Float, Sand Float Finish—Gypsite, or Wainscot Finish.

(b) It has been the aim to so prepare this specification as to include all items which might be required in any kind of a building and yet to eliminate in-so-far as possible all extraneous matter from the specification proper. Through this means and the interpolated notes it is hoped that the time in research and writing required of the architect and in examination by the plastering contractor will be reduced to a minimum. To carry out this idea and to make possible the reference to it as a standard to be followed, the Basic-Specification definitely calls for certain materials and finishes, as listed above. To meet conditions when these provisions do not apply, specifications for plaster board, now better known as gypsum lath, and for metal lath and for various types of plaster finishes are included, also interpolated notes so that the architect may rewrite into his own specification those paragraphs descriptive of the work he desires to incorporate in the particular building at hand.

(c) It is the intent of the compilers of this specification and notes to suggest that which they cannot cause to be a requirement, namely; that the interior of all exterior masonry walls be furred with either fireproof tile blocks or wood furring according to type of construction. In a wood frame building the masonry of interior chimneys and fireplace backs, etc., should be studded out and that chimney breasts, etc., be studded out or furred. The drawings of the architect and the provisions in his specification under Carpentry, Masonry and Metal Work or Fireproofing will control such feature.

(d) In this specification for lathing and plastering it is assumed that the joists and studding—and the furring strips in the case of masonry walls—and the fireproof tile furring blocks, etc.—will be specified elsewhere in the architect's specification under the proper trade and will be satisfactorily and securely placed. Any wood rafters and collar beams, where plastering occurs, are assumed to be set 24 in. o.c., and floor joists and studding, set 16 in. o.c.

(e) This specification does not include General Conditions (except by reference) or items relative to administrative matters such as usually form the first part of an architect's specification. In such items would be included fire, compensation, liability or other insurance, watchman service, if any, and the use of hoists, water, telephone, temporary heat and light, and storage, etc.

(f) Attention is called to this fact in order that, in the absence of an Architect's General Conditions pro-rating such items, the plastering contractor may arrange for the proper disposition of them with the owner when the contract is direct or with the GENERAL CONTRACTOR when his status is that of a sub-contractor.

(g) The use of the "General Conditions" and other Standard Documents of the American Institute of Architects is recommended to architects and plastering contractors and to the latter especially, the "Standard Form of Sub-Contract," a form of agreement between the General Contractor and the Sub-contractor. The items mentioned in the two preceding paragraphs are, however, only covered in a general way in the "Standard Form" of the A.I.A.

The Red Book of Building Material

United States Gypsum Company
300 West Adams Street, Chicago

UNITED STATES GYPSUM COMPANY

GENERAL OFFICES

300 West Adams Street, CHICAGO, ILL.

SALES OFFICES

Atlanta, Ga., 1510 Candler Bldg.
Baltimore, Md., 402 Keyser Bldg.
Buffalo, N. Y., 636 Ellicott Square Bldg.
Charlestown, Mass. (Boston Office), Mystic Wharf
Cincinnati, Ohio, 1009 Atlas Bank Bldg.
Cleveland, Ohio, 1514 Builders' Exchange Bldg.
Dallas, Tex., 1310 Santa Fe Bldg.
Denver, Colo., Continental Oil Bldg.
Detroit, Mich., 1327 Majestic Bldg.
Indianapolis, Ind., 417 Architects' Bldg.
Kansas City, Mo., 505-6-7 Fairfax Bldg.
Los Angeles, Calif., 507 Architects Bldg., 5th St. at Figueroa
Memphis, Tenn., Bank of Commerce Bldg.
Milwaukee, Wis., Oregon and Grove Sts.
Minneapolis, Minn., 2510 Foshay Tower
New York City, N. Y., 220 E. 42nd St.
Omaha, Neb., 925 Woodmen of the World Bldg.
Philadelphia, Pa., 1500 Walnut St.
Pittsburgh, Pa., 1604 Law and Finance Bldg.
St. Louis, Mo., Continental Life Bldg.
San Francisco, Calif., 408 Second St.
Washington, D. C., 604 Lenox Bldg., 16th and L St., N. W.
Toronto, Ont., Canada, 159 Bay St.

MILLS, MINES, QUARRIES AND WAREHOUSES—See Map

1. Alabaster, Mich.
2. Amanda Park, Calif.
3. Arden, Nev.
4. Blue Rapids, Kan.
5. Boston, Mass.
6. Bronx, New York City
7. Buffalo, N. Y.
8. Chicago, Ill.
9. Cleveland, Ohio
10. Cordova, Ill.
11. Detroit, Mich.
12. East Chicago, Ind.
13. Falls Village, Conn.
14. Eldorado, Okla.
15. Farnams, Mass.
16. Fort Dodge, Iowa
17. Genoa, Ohio
18. Great Barrington, Mass.
19. Grand Rapids, Mich.
20. Gypsum, Ohio
21. Harrison, N. J.
22. Heath, Mont.
23. Hillsboro, N. B.
24. Hollywood, Calif.
25. Jeannette, Pa.
26. Lancaster, Ohio
27. Laramie, Wyo.
28. Los Angeles, Calif.
29. Loveland, Colo.
30. Midland, Calif.
31. Milwaukee, Wis.
32. New Brighton, S. I., N. Y.
33. North Kansas City, Mo.
34. Oakfield, N. Y.
35. Oakland, Calif.
36. Philadelphia, Pa.
37. Piedmont, S. D.
38. Plasterco, Va.
39. Portland, Ore.
40. Sacramento, Calif.
41. San Francisco, Calif.
42. Seattle, Wash.
43. Southard, Okla.
44. Sweetwater, Tex.
45. Warren, Ohio
46. Wentworth, N. S.
47. Windsor, N. S.

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PRODUCTS DESCRIBED IN OTHER CATALOGUES

See Sweet's Manufacturers' Index for:

(1) Econo Expanded Metal.
(2) Sheetrock—Pyrofill; Marks T System of Roof Construction; Reinforced Roof Tile; Monolithic Floors and Roofs; Pyrobar Partition and Furring Tile; Pyrobar Beam and Column Fireproofing.
(3) Chromite Sheet Metal Wall Tile.
(4) Insulation Products.
(5) Architectural Acoustics, Noise Abatement and Sound Control.
(6) U. S. G. Paint Products.

UNITED STATES GYPSUM COMPANY GENERAL COMMODITIES

Wall Plasters, Plaster Finishes, Lime, Exterior Stucco, Metal Lath, Gypsum Lath, Gypsum Wallboard and Sheathing Board

Experience

The UNITED STATES GYPSUM COMPANY is a pioneer in the gypsum industry in America. For more than twenty-eight years, the company—through its laboratories, experimental departments and field investigations—has closely studied the requirements of the building industry. Its formulae and mechanical equipment have been painstakingly designed to adapt each of its gypsum and other products to meet comprehensively these requirements.

U.S.G. TRADE-MARK

Manufacturing and Distributing Facilities

The superiority of U.S.G. products is based upon high grade raw material, perfected processes of manufacture and one control from mining to shipping.

The forty-seven mines, milles and warehouses, strategically located throughout the United States, assure exceptional national distribution facilities and a product specially manufactured to fulfill variable local climatic conditions. The map below shows the location of the forty-seven U.S.G. centers and visualizes these important service facilities. In Canada, these commodities are sold exclusively by the Canadian Gypsum Company, Ltd.

Sales and Service Facilities

The twenty-two sales offices in the important building centers guarantee adequate service to architects.

Complete Diversified Line of Products

Wherever gypsum is adapted to building uses there is a U.S.G. product specially designed to fulfill the particular requirement.

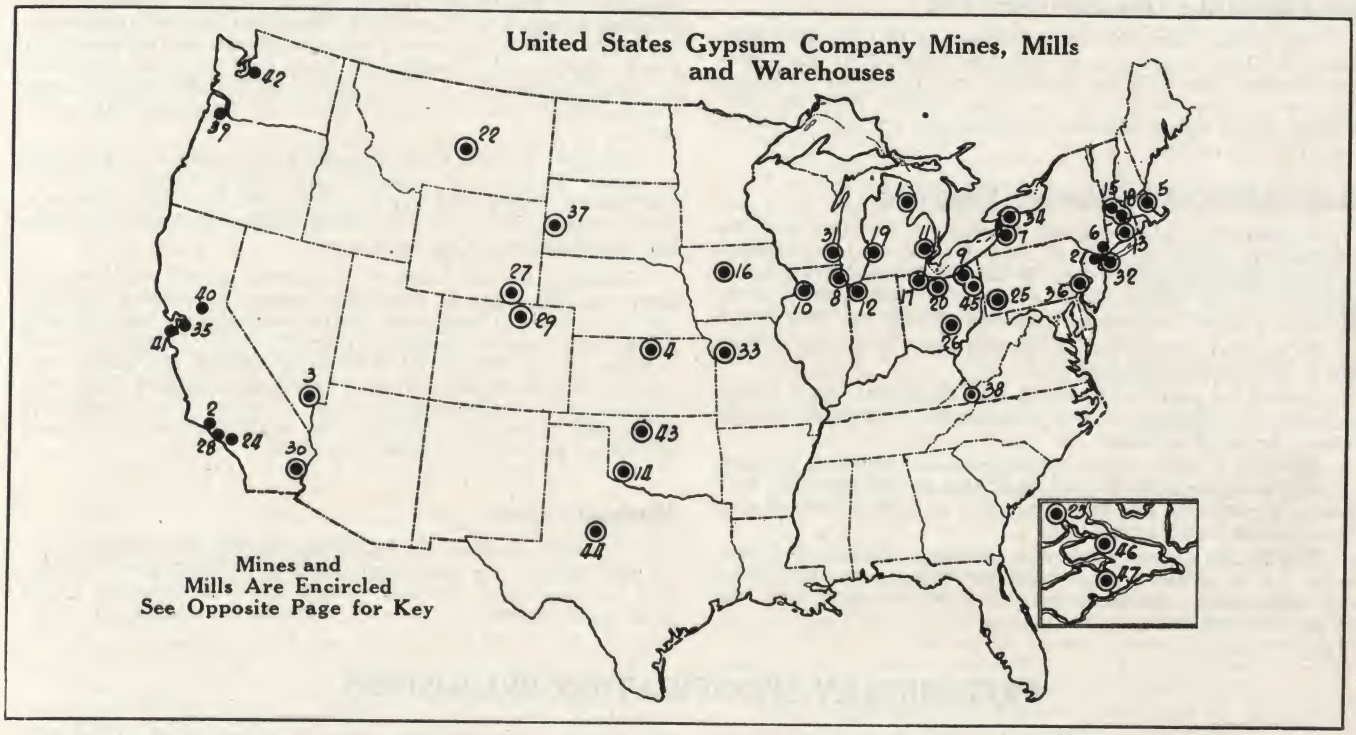
The broad scope of the company's gypsum and other products is indicated by the Products Index.

The Trade-mark

Products bearing the trade-mark of the UNITED STATES GYPSUM COMPANY are safeguarded against imperfections. They are rigidly inspected by experts at every stage of production, from the selection of the raw materials to the shipment of the finished products.

Any variation from the highest U.S.G. Standard means rejection.

This rigid maintenance of quality over a long period of years has established the name and trade-mark of the UNITED STATES GYPSUM COMPANY as synonymous with the highest standard of excellence in building materials.



GYPSUM—GENERAL TECHNICAL DATA

Gypsum—Chemically, Gypsum is hydrous calcium sulphate $CaSO_4.2H_2O$. It is a widely distributed mineral found in rock formation. The rock gypsum is crushed, ground and then calcined, which drives off a part of the molecular water, forming the hemi-hydrate or plaster of paris. This product, when mixed with water, recrystallizes or sets.

Fireproof—The superior qualities of gypsum as a fireproof building material have been definitely established by numerous tests made by the Underwriters' Laboratories, Inc., The Bureau of Standards, Columbia University, and by the bureau of buildings in many of the larger cities. (Authentic test data furnished on request.)

The temperature on the unexposed side of the gypsum slab cannot exceed 212° F. while there is any water of crystallization in the gypsum. This is due to the fact that the water of crystallization in the gypsum must be vaporized during the application of fire to it, and as the gypsum slowly calcines, the cellular structure fills with steam. It is this barrier of calcined material which stubbornly resists the progress of the fire.

Continued on next page

STANDARD X PLASTERING SYSTEM

(Trouble-free Plastering)

Introductory

Through its twenty-eight years' experience in the manufacture and sale of lathing and plastering materials, the UNITED STATES GYPSUM COMPANY has had forcibly impressed upon it the fact that unsatisfactory plaster work is usually the result of thinness ("skimping") of plaster coats, oversanding of plaster, or both. Exhaustive investigation has disclosed that these difficulties are eliminated with the Standard X Plastering System.

As a result, the UNITED STATES GYPSUM COMPANY has purchased the patents, good will and the sole privilege of manufacturing and marketing the Standard X Plastering System. The purchase was made only after an investigation of some hundreds of buildings in which Standard X had been used, after consultation with architects, plastering contractors and building owners, and after extensive laboratory tests.

The Standard X System has been extensively used in Detroit and other cities for more than five years. It has been used in residences ranging in cost from $10,000 to $1,000,000, in apartment buildings and in business buildings. Owners, architects and plastering contractors have, without modification, declared it to be the solution of the plastering problem where trouble-free wall and ceiling finishes are sought.

Has Passed the One-hour Fire Test

This system has successfully withstood the Standard One-hour Fire Test in accordance with specifications of the American Society for Testing Materials, conducted at Columbia University, New York City, on June 20 and July 18, 1929. A copy of the signed abstract covering this test report will be furnished on request.

Requirements of Satisfactory Plastering

A satisfactory plastering job obviously is one that provides satisfactory plastering service, and that minimizes ordinary wall and ceiling finish defects. A satisfactory plastering job is composed of five factors—good construction, lath, plaster, workmanship, and an adequately controlled system of installation.

First, good construction eliminates many plastering defects due to settlement, shrinkage, etc.

Second, to provide maximum service, the lath used should be fireproof, verminproof, non-deteriorating and should provide a tight bond with plaster.

Third, an ideal plaster must possess structural strength to resist ordinary abuses to which it may be subjected. It must possess appreciable fire resistance, and it must permit of ease of preparation and application.

The fourth factor required to produce a satisfactory plastering job is workmanship—necessary precautions of erection and application; precautions against adulteration; and full grounds for plaster.

With the single exception of "good construction," all the factors just mentioned, including a "controlled system of installation," the Standard X Plastering System adequately provides, as exemplified in the following six paragraphs.

Standard X System—Description

General—The Standard X Plastering System is formed of Standard X Lath, Standard X Metal Fabric, Standard X Base Coat and UNITED STATES GYPSUM COMPANY Finish Plaster. It provides all the necessary requisites for a satisfactory plastering job—lath, quality of plaster, assured thickness of plaster, and adequate joint reinforcing. It further provides more fire protection and more insulation than does the ordinary lath and plaster wall or ceiling.

Standard X Lath—Standard X Lath is a special gypsum lath ⅜ in. thick, 16 in. wide and 48 in. long, finished on the back with a moisture-resisting fiber of a distinctive red color. It is shipped in bundles (a patented feature) to prevent injury. Standard X Lath is nailed and fitted with the ease of wood. It is fireproof, verminproof and non-deteriorating. Plaster, according to authoritative tests, bonds more tightly to it than to any other type of lath. In short, all the qualities necessary for a satisfactory lath are found in Standard X Lath.

Standard X Metal Fabric—Standard X Metal Fabrics, applied over all joints and corner angles after Standard X Lath has been erected, are composed of srtips of expanded galvanized metal 3 in. wide, and made with a patented selvage edge. The fabrics are easily applied. They assure adequate thickness of base coat, a very important factor.

Standard X Base Coat—Standard X Base Coat is a gypsum plaster scientifically compounded for use as part of the Standard X Plastering System. It is entirely factory-mixed. Nothing is added to Standard X Base Coat, before application, but water. This base coat plaster is exceptionally plastic. It bonds tightly with Standard X Lath, and over the Standard X Metal Fabric, to form a hard, dense, unit plaster construction that will be more resistive to cracking than other plasters.

Standard X Base Coat is much more resistive to fire than an equal thickness of ordinary sand-mixed plaster. It also has greater tensile and compressive strength, and provides a much more durable wall and ceiling finish. Authentic test data will be furnished on application.

Installation—To assure maximum good workmanship where the Standard X Plastering System is installed, installation is by licensed plastering contractors only. In each locality the UNITED STATES GYPSUM COMPANY issues licenses for the erection of the Standard X Plastering System to reliable contractors, who bind themselves to install the Standard X System according to complete specifications. Further, the Standard X Plastering System is sold only by dealers to whom licenses are issued because of known reliability.

Moderate Cost

Although Standard X Plastering System is a unique product and each of the component parts is of the highest quality, it is not expensive. Its cost is such that it is adaptable to the small home as well as the most pretentious building.

PRELIMINARY SPECIFICATION PROVISIONS

Note: The following provisions should be made in the proper specification divisions to assure the best installation of Standard X Plastering System.

(1) Carpentry Work

(1a) Furring—All masonry surfaces shall be furred.

(1b) Framework—All studding, joists and furring shall be set plumb, level and true, and where possible, spaced accurately on 12-in. or 16-in. centers.

(1c) Bracing—Place horizontal 2x4-in. bracing on line with headers at all openings for doors and arches and at headers and sills for all window openings. Bracing shall extend from the stud to which headers and sills are attached to the next stud, driven tight and securely nailed.

(1d) Backing—Where backing plates are necessary in framework provide 2x4-in. studding instead of the usual ⅞-in. boards.

(1e) Grounds—All grounds shall be standard ⅞ in. thick (face of stud to face of finished plaster).

(2) Electrical Construction

(2a) Outlet Boxes—All outlet boxes, etc., shall be accurately set with faces ⅞ in. in front of the studding and joist line (flush with face of Standard X Plaster when applied).

Continued on next page

STANDARD X PLASTERING SYSTEM—SPECIFICATIONS

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *For items such as ornamental plaster work, etc., not included here, see Master Specifications, page 16.*

(1) Work Included

The following shall be lathed and plastered with Standard X Plastering System.

Note: *List and locate here all work covered by this contract and after each item note the finish, whether "trowel," "sand float," "Oriental Interior floated or textured." See pages 14 to 16.*

(2) Examination

This Contractor shall examine all framing, grounds and provisions for electrical construction and other equipment provisions and shall report to the architect in writing any defects which will detrimentally affect the installation of Standard X Plastering System. The starting of work without such notification will be construed as acceptance of the building construction.

(3) General

All materials shall be as made by the UNITED STATES GYPSUM COMPANY. Installation shall be made only by an approved contractor, licensed by the UNITED STATES GYPSUM COMPANY. All workmanship shall be of the highest character.

(4) Materials

(4a) Lath—Standard X Lath (⅜x16x48 in.).

(4b) Metal Fabric—Standard X Galvanized Metal Angle Fabric (internal angle—2x2 in. x 48 in.) and Standard X Galvanized Flat Metal Fabric (3x48 in.).

(4c) Metal Corner Beads—Standard X Galvanized Expanded Metal Corner Beads.

(4d) Nails—Nails for application of Standard X Lath shall be Standard X Lath Nails (blued—1¼ in. x 11 gauge—½ in. very thin heads).

Nails for the application of metal fabrics shall be 2 in. finishing nails, driven and bent over.

(4e) Metal Lath—Red Top Diamond Mesh [*Painted*] [*Galvanized*] [*Copper Bearing*] [*Armco Ingot Iron*].

Note: *Used on extremely curved surfaces in lieu of Standard X Lath.*

Note: *See pages 8, 9 and 10 for complete data on U.S.G. Metal Lath and Accessories.*

(4f) Base Coat—Standard X Base Coat.

(4g) Finish Coat.

Note: *Specify Red Top Trowel Finish, Oriental Interior Finish, Gypsum Prepared Finish, or Red Top Gauging Plaster or Keene's Cement with Lime, as described on pages 13, 14 and 15.*

Note: *If more than one finishing material is required, specify each separately under subheads "Trowel," "Sand Float," "Oriental Interior," etc.*

(5) Lathing

(5a) Application of Standard X Lath—Cover all walls, ceilings and partitions, so specified, with Standard X Lath.

Place lath with trade-mark side against the studs, furring or joists. Break joints on studding, furring and joists. Perpendicular joints shall not occur on the opposite sides of the same stud. Boards shall be fitted tightly together at all angles.

In cutting—first score the lath with a pointed hatchet or knife and then break over a straightedge. Lath with chopped edges shall not be used.

Each full size lath (16x48 in.) shall be nailed to the bearings with ten (10) Standard X Nails—three (3) nails along each 16-in. edge and one (1) nail at each longitudinal edge at all intervening bearings. Nails shall be kept at least ⅜ in. and not more than ¾ in. from edges of board. Drive nails home flush, without breaking the lath surface. Nails shall be placed only around edges of lath (not in the field) except when lath is applied over curved surfaces.

All holes through lath for outlet boxes, etc., shall be cut and trimmed, clean and true, to fit snugly around opening.

(5b) Application of Metal Lath—Lath all extremely curved surfaces with metal lath substantially secured with ⅞-in. lathing staples or nails driven and bent to hook over lath.

Note: *Omit if not required.*

(5c) Application of Standard X Metal Fabrics and Corner Beads—Apply angle fabric in all internal angles, butting ends so as to make a continuous reinforcement before applying fabric over joints.

Apply flat metal fabric over all lath joints and nail heads, centering the fabric over the joint. Horizontal and continuous joints shall first be covered, using the 48-in. long fabric, then cover the short or end joints along studs or joists with 12-in. long fabric, obtained by cutting the 48-in. strips into quarters.

All openings at doors, windows, arches, etc., shall be reinforced diagonally at each corner with two (2) 3x12-in. pieces of flat fabric.

All 48-in. strips shall be secured with at least four (4) nails. Fabric shall be stretched tight with all edges flat. *Do not lap fabric.* Apply fabrics with bow outward.

All external corners shall be reinforced for their full height or length with Standard X Corner Beads securely nailed over the Standard X Lath.

(6) Plastering

(6a) General—Use only clean water, free from alkali and impurities. Keep tools clean. Do not wash tools in mixing water.

Do not mix more material than can be handled easily in about one (1) hour.

Do not mix one batch with another, and never retemper Standard X Base Coat.

Clean the mixing box after each batch.

For best results in browning, rodding, darbying, and finishing, apply Standard X Base Coat in two coats. Scratch the first coat and allow it to set and partly dry before applying the brown coat.

During summer months all openings in building should be screened with cloth to prevent plaster drying out before it has set. Should white or chalky spots appear, spray with clean water.

In winter keep plaster from freezing. After plaster has set and become hard, allow free circulation of air so it will dry quickly. If plastering is done in cold, damp, or rainy weather, provide artificial means for drying after plaster has set. If artificial heat is used, care must be taken to prevent overheating of plaster surfaces.

(6b) Application of Standard X Base Coat—The base coat shall be used neat (water only added).

Hoe plaster into the water. Let it soak from 10 to 15 minutes and mix thoroughly—thin at first, then add sufficient plaster to obtain the proper consistency.

Apply Standard X Base Coat over the surface of Standard X Lath *(and metal lath applied over curved surfaces)* in the usual manner, embedding the metal fabrics, filling out plumb and level to grounds. Leave the surface of the base coat raked or broomed to give a good key for the finish coat.

(6c) Application of Finish Coat—Over the Standard X Base Coat shall be applied the finish coat specified.

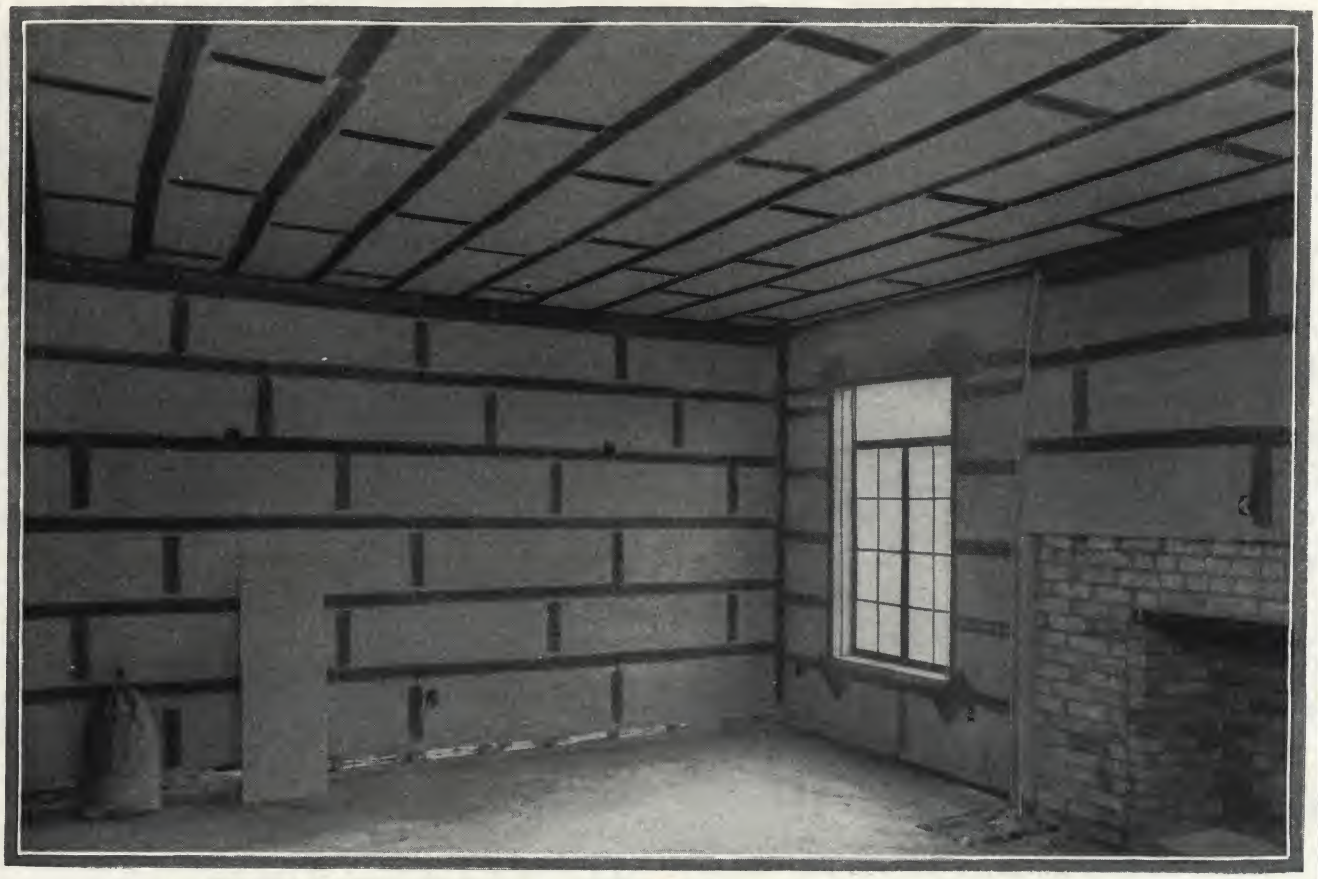
Application shall be in strict accordance with the manufacturer's standard specifications. Finished surfaces shall be brought to a true plane, finished in a manner to meet the architect's approval.

ESTIMATED QUANTITY OF STANDARD X MATERIALS FOR 100 SQUARE YARDS

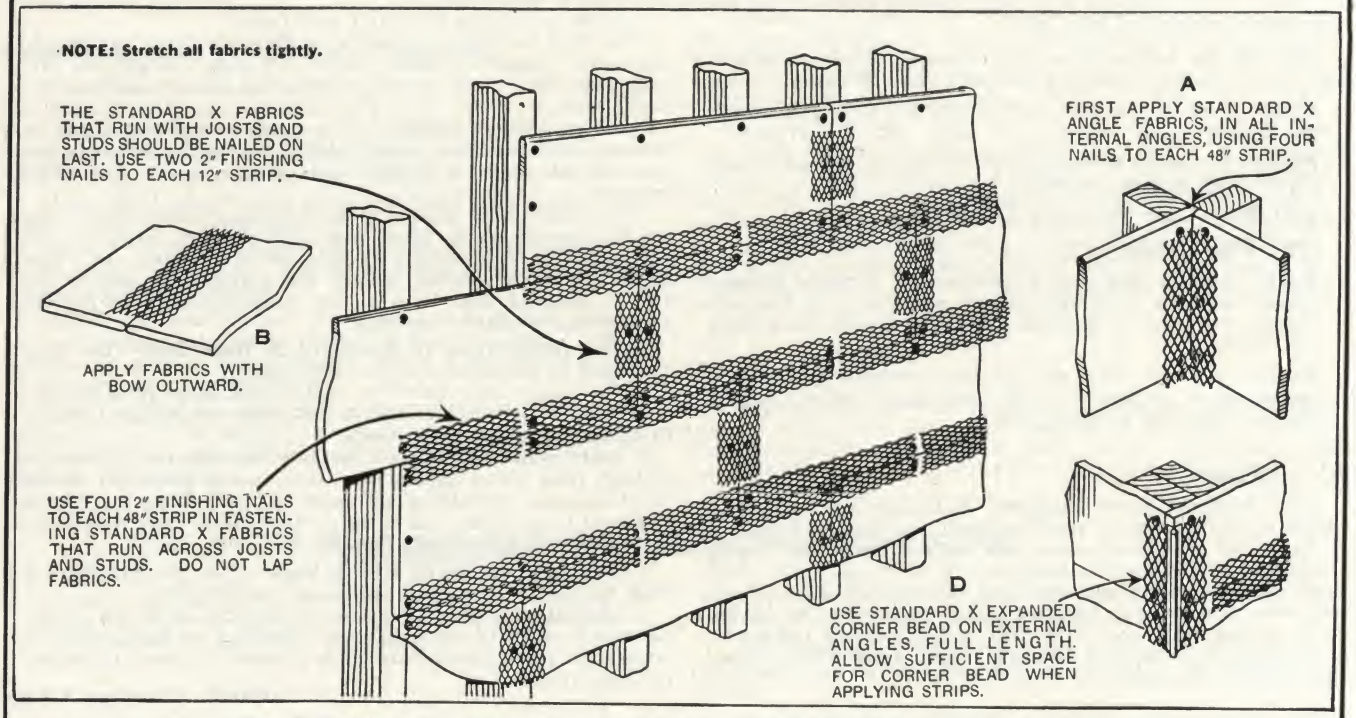
Based on Actual Area to be Covered After Openings Have Been Deducted

Grounds, in.	Lath, sq. ft.	Nails, lbs.	Base coat	Flat fabric	Angle fabric	Corner bead
¾	900	12½	20-23 (100 lb. bags)	752 lin. ft. (1 bdl.)	180 lin. ft. (1 bdl.)	As indicated
⅞	900	12½	26-29 (100 lb. bags)	752 lin. ft. (1 bdl.)	180 lin. ft. (1 bdl.)	on plans

Continued on next page



Standard X Lath and Standard X Metals in Place Ready for Standard X Base Coat Plaster
Note method of reinforcing all openings, fabric never lapped



Sketch Showing Correct Application of Standard X Lath and Standard X Metals
(Do not lap fabrics)

DETAILS—STANDARD X PLASTERING SYSTEM

Continued on next page

STANDARD X SUSPENDED CEILINGS

Description

Standard X Suspended Ceiling System is a patented system of lathing and plastering. It is sold by licensed dealers and erected by licensed contractors and must be installed according to the manufacturer's specifications and directions.

Standard X Suspended Ceiling System provides a strong, rigid and economical ceiling construction for any type of building requiring a suspended or attached ceiling.

Standard X Suspended Ceilings are hung in the manner regularly employed for supporting suspended ceilings, following standard lathing practice.

SPECIFICATIONS

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

(1) Work Included

The following ceilings shall be furred, lathed and plastered with Standard X Suspended Ceiling construction.

Note: *List and locate here all work covered by this contract and after each item note the finish, whether "trowel," sand float," "Oriental interior floated or textured."*

(2) Materials

(2a) Hangers—

(2a1) Minimum size for attaching main channels to supports—¼ in. round steel or 1x$\frac{3}{16}$ in. flat steel—spaced not to exceed 4 ft. in each direction.

(2a2) Minimum size for attaching ¾-in. runner channels direct to supports—No. 8 galvanized wire—spaced not to exceed 2 ft. 6 in. in each direction.

(2b) Tie Wire—Minimum size No. 16 gauge galvanized annealed wire.

(2c) Main Channels—Minimum size 1½ in.—minimum weight 442 lbs. per 1000 lin. ft.—maximum spacing not to exceed 4 ft. center to center.

(2d) Runner Channels—Minimum size ¾ in.—minimum weight 276 lbs. per 1000 lin. ft.—maximum spacing 2 ft. 6 in. center to center.

(2e) Lath Channels—⅞-in. Standard X Lath Channels—minimum weight 113 lbs. per 1000 lin. ft.—spacing per pair 16 in. on centers.

(2f) Lath—16x48x⅜-in. Standard X Lath—weight approximately 1850 lbs. per 1000 sq. ft.

(2g) Metal Fabrics—2x2x48-in. Standard X Angle Fabrics. 3x48-in. Standard X Flat Fabrics.

(2h) Thumb Tacks—Special large size Standard X Thumb Tacks.

(3) Erecting Channels

(3a) Standard main channel hanger spacing not to exceed 4 ft. on center in both directions, properly install ¼-in. pencil rod or 1x$\frac{3}{16}$-in. steel hangers to support 1½-in. main channels. Level and fasten main channel to hangers, and anchor channel ends at walls in an approved manner. Tie ¾-in. runner channels, spaced not to exceed 2 ft. 6 in. apart, to main channels.

Note: *Use above clause when the type of construction requires main channels.*

(3b) Concrete joist and floor arches shall have hangers spaced not to exceed 2 ft. 6 in. on center throughout the length of joists or arches. Level and fasten runner channels to hangers, and anchor channel ends at walls in an approved manner.

(3c) *(Concrete slabs) (hollow tile floor slabs)* shall have hangers spaced not to exceed 2 ft. 6 in. on centers in both directions. Level and fasten runner channels to hangers, and anchor channel ends at walls in an approved manner.

(3d) Under bar joist construction, wire ¾-in. runner channels, spaced 2 ft. 6 in. apart, to lower chords of joists. Level and fasten runner channels to hangers, and anchor channel ends at walls in an approved manner.

Note: *In the types of construction included in (3b), (3c) and (3d), ¾-in. runner channels may be fastened directly to hangers without the use of main channels.*

(4) Erecting Lath

After *(main channels and)* ¾-in. channels are in place, erection of Standard X Lath Channels and Standard X Lath shall be started.

Clip in position at right angles to runner channels and tight against the wall, across the full width of room, one pair of ⅞-in. Standard X Lath Channels, back to back. Use No. 2 Standard X Clips for attaching lath channels to runner channels.

Note: *See top view, page 6.*

Then place in position a row of Standard X Lath with trade mark up. Insert one edge of the lath into the ⅞-in. channels and support the opposite edge temporarily with No. 3 Standard X Clips, fastened to the ¾-in. runner channels.

Note: *See detail at start, page 6.*

Next place another pair of Standard X Lath Channels, back to back, in position across the full width of room. Place one channel securely over the No. 3 Clips and 48-in. lath edges, and support both channels with No. 2 Clips.

Note: *See top view, page 6.*

Erect successive rows of Standard X Lath and Standard X Channels as above.

Break joints at ends of lath.

Fill in any small places next to the wall with metal lath strips, securely fastened and completely covering adjacent lath channel joints.

Note: *See detail at finish, page 6.*

(5) Reinforcing

Apply Standard X Metal Fabrics in all angles and over all joints, butting ends to form continuous reinforcing. Do not lap ends of fabrics. Fasten fabrics to Standard X Lath with special large size Standard X Thumb Tacks, approximately 12 in. apart, staggered.

First apply Standard X Angle Fabrics in all ceiling angles, nailing one edge to wall and fastening the other edge securely to the lath.

The flat fabrics have a natural curvature. To obtain best lathing and plastering results, apply the fabrics with bow out.

Next apply Standard X Flat Fabrics over all continuous lath channel joints and then cover the remaining lath joints with 12-in. lengths of Standard X Lath Fabric, securely fastening fabrics to lath with Standard X Thumb Tacks.

Note: *See bottom view, page 6.*

(6) Plastering

Note: *Specify plastering as given in paragraph (6), page 3 for Standard X Plastering System.*

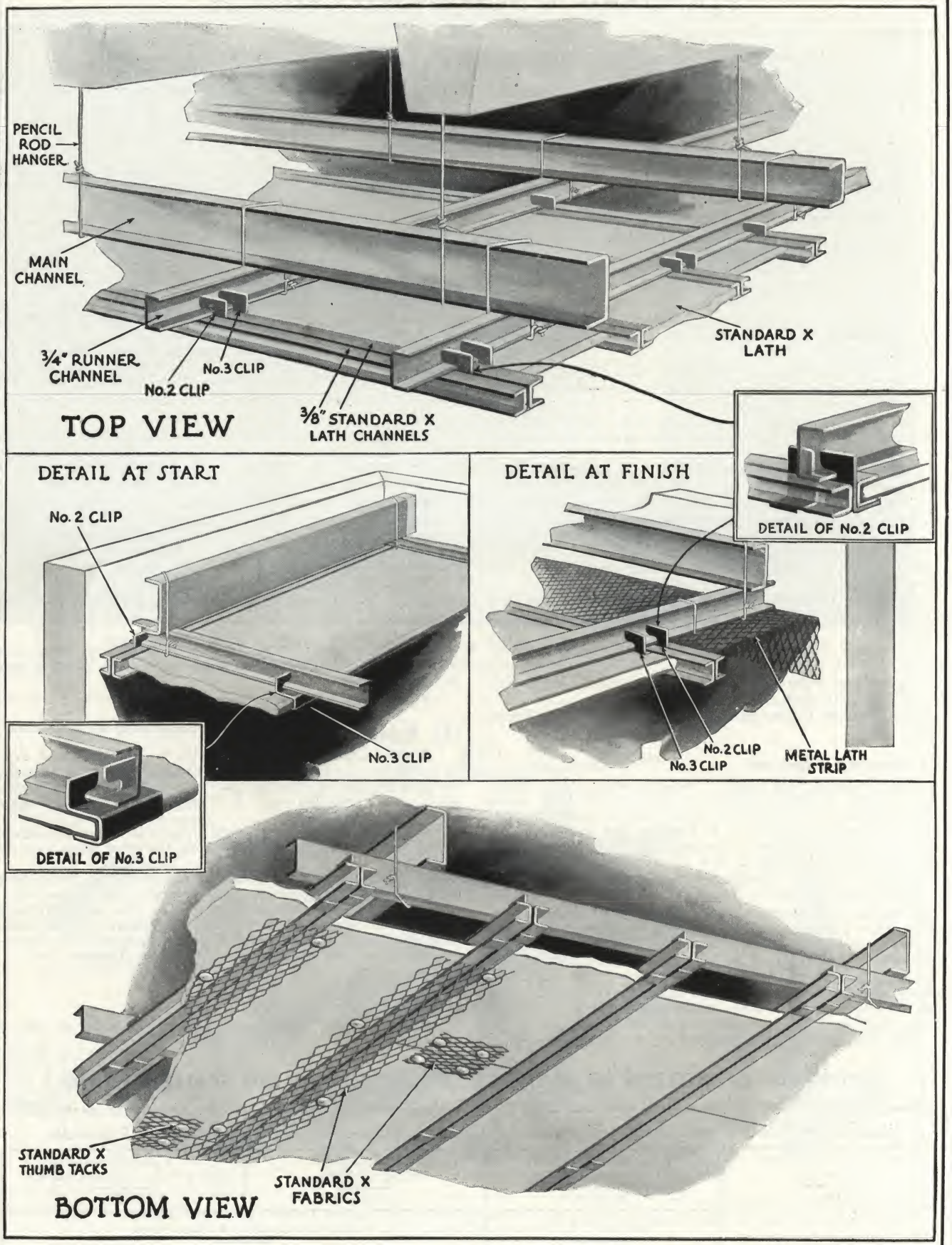
ESTIMATED QUANTITIES OF MATERIAL REQUIRED FOR 100 SQUARE YARDS

(Based on ½-in. total thickness of plaster and solid yardage measurements of ceilings, before erection of partitions)

One square foot of completed ceiling, including ½ in. plaster, weighs approximately 5 pounds

1½-in. Main Channels 4-ft. spacing 250 lin. ft.	¾-in. Runner Channels 2 ft. 6-in. spacing 400 lin. ft.	⅞-in. Standard X Lath Channels 1400 lin. ft.	No. 2 Standard X Clips for 2 ft. 6-in. channel spacing 310 pieces
No. 3 Standard X Clips for 2 ft. 6-in. channel spacing 250 pieces	Standard X Lath 900 sq. ft.	2x2x48-in. Standard X Angle Fabric Depends on partition layout	
3x48-in. Standard X Flat Fabric 825 lin. ft.	Standard X Thumb Tacks 1500	Standard X Base Coat 20-22 100-lb. bags	Finish Coat Depends on type used

Continued on next page



DETAILS OF STANDARD X SUSPENDED CEILING

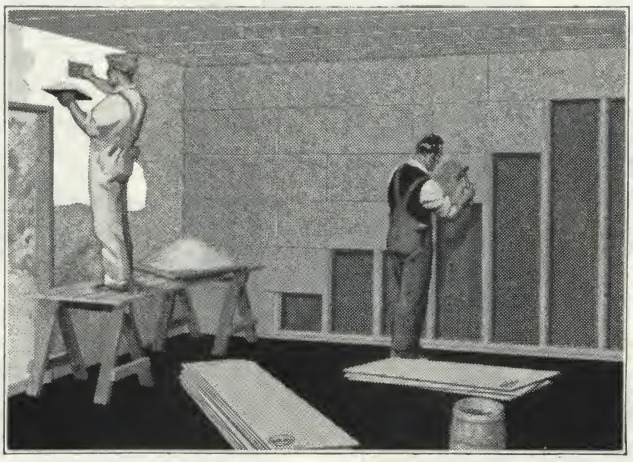
Continued on next page

RED TOP ROCKLATH

Description

Red Top Rocklath is a solid sheet of gypsum encased in a tough fibrous covering, forming a uniform, strong, fire-resisting plaster base. It is made in convenient, practical-size units. The fibrous covering affords uniform suction, insuring a permanent, strong bond with gypsum plaster. Red Top Rocklath is easily nailed to wood studding, furring or joists.

Red Top Rocklath has the U.S.G. patented reinforced folded edge which gives maximum strength. With the new rounded edge profile, the edge is not subject to injury and the boards are easy to handle.



Applying and Plastering Red Top Rocklath

Sizes, Weights, Etc.

Red Top Rocklath boards are made ⅜ in. thick and in two sizes—16 in. x 32 in. and 16 in. x 48 in. The boards are packed in bundles for easy handling and stacking—6 sheets to the bundle. Each bundle of 32-in. boards contain 21⅓ sq. ft. and weighs about 40 lbs.; each bundle of 48-in. boards contains 32 sq. ft. and weighs about 60 lbs. Each 32-in. unit weighs 6½ lbs., the 48-in. size, 10 lbs.

Either size provides the usual vertical joint break (similar to that of wood lath) without cutting.

Advantages

Fireproof—Does not burn or readily transmit heat. It interposes a continuous fireproof sheet of substantial thickness over the wood-frame construction, thus tending to confine the fire to the room in which it originates.

Enduring—Does not disintegrate or corrode.

No Expansion or Contraction—Does not expand, warp or buckle when wet plaster is applied, consequently will not shrink when plaster dries out.

An Ideal Plaster Base—The strong fiber covering with its uniform suction prevents the plaster from "slipping" when applied. Gypsum plaster is easily applied and the bond is strong and permanent. Tests show that plaster bonds more firmly to Rocklath than to any other type of lath. The uniform, dense structure of Rocklath effectively eliminates plaster discoloration.

Economy in Erection—Compared with ordinary lath, Red Top Rocklath requires only one-eighth the handling and one-third less nailing for equal areas. Bundles are stacked and carried and the light weight units handled and erected quicker and with greater ease—there are no splinters. It scores and cuts cleanly and easily without waste. May be applied vertically in closets, corners or on pilasters.

Uniform Thickness—Since no plaster is lost through droppings pushed through the lath and the ragged keying plaster behind the back of the lath is conserved, the thickness is uniform throughout.

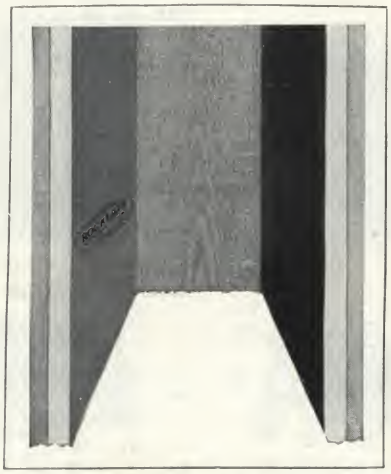
The job may be said to be both plastered and back plastered in one operation.

Eliminates Moisture—Red Top Rocklath needs no wetting before plaster is applied. The continuous dry gypsum sheet, ⅜ in. thick, eliminates its proportionate part of the usual wet plaster moisture and at the same time seals off the applied plaster moisture from contact with the absorptive wood framing, preventing much of the usual swelling and subsequent shrinkage.

Due to there being less moisture present, the plaster and building are dry and ready for the application of interior wood trim and decorating in the minimum time.

Soundproof—Gypsum is a poor conductor of sound. As compared with wood lath and plaster, tests show that Red Top Rocklath and plaster walls are superior in effectively resisting sound transmission.

Comparative Cost—The completed wall (Red Top Rocklath and plaster) costs less than metal lath and plaster, and about the same as wood lath and plaster.



Rocklath Does Not Burn

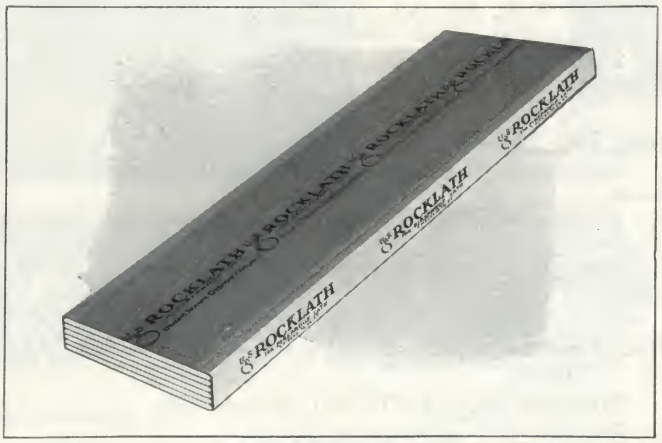
Replaces combustible material between walls; prevents waste of plaster

Specifications

See Master Specifications, page 16.

Home of Architect S. L. Adler, Mobile, Ala.

Red Top Rocklath used, also Red Top Plaster and Oriental Interior Colored Plaster Finish



Bundled Rocklath

Continued on next page

RED TOP METAL LATH AND ACCESSORIES

Introductory

That the UNITED STATES GYPSUM COMPANY may furnish all materials required for lathing and plastering, thus making available to the distributor and the contractor the economy and advantage of mixed car shipments and to the architect centralized responsibility, the company has placed upon the market the complete Red Top Line of Metal Lath and Accessory Products.

Red Top Metal Lath products are distributed nationally. Samples furnished on request.

Red Top Diamond Mesh Lath

Materials—

Open hearth steel, painted black.

Galvanized.

Copper bearing steel, painted black.

Armco ingot iron, painted black.

Weights—2.2, 2.5, 3.0, 3.4 lbs. per sq. yd.

Self-furring (corrugated)—All above materials and weights furnished in crimped or corrugated self-furring type.

Sheet Size—24x96 in. packed 9 sheets (16 sq. yds.) per bundle.

Red Top 1/8-in. Flat Rib Lath

Materials—

Open hearth steel, painted black.

Copper bearing steel, painted black.

Armco ingot iron, painted black.

Galvanized in 3.6 lb. weight only.

Weights—2.75, 3.0, 3.4, 4.0 lbs. per sq. yd. Galvanized only in 3.6 lbs. per sq. yd.

Sheet Size—24x96 in., packed 9 sheets (16 sq. yds.) per bundle.

Red Top 3/8-in. Rib Lath

Materials—

Open hearth steel, painted black.

Copper bearing steel, painted black.

Armco ingot iron, painted black.

Galvanized in 3.6 lb. weight only.

Weights—2.75, 3.0, 3.4, 4.0 lbs. per sq. yd. Galvanized only in 3.6 lbs. per sq. yd.

Sheet Size—24x96 in., packed 9 sheets (16 sq. yds.) per bundle.

Red Top 3/4-in. Rib Lath

Materials—

Open hearth steel, painted black.

Copper bearing steel, painted black.

Armco ingot iron, painted black.

Weights—.46, .56, .74 lb. per sq. ft.

Note: *3/4-in. Rib Lath sold by square foot. All other lath types sold by square yard.*

Sheet Size—24 in. wide by 4 to 12-ft. (inclusive) lengths, 6 sheets to the bundle.

Red Top Sheetlath

Materials—Open hearth steel, painted black and galvanized.

Weights—4.5 lbs. (painted black) and 6.18 lbs. (galvanized) per sq. yd.

Sheet Size—24x96 in., packed 9 sheets (16 sq. yds.) per bundle.

Red Top Expanded Metal—1 1/2-in. Mesh for Stucco

Materials—Open hearth steel, painted black.

Weights—1.8, 3.6 lbs. per sq. yd.

Sheet Size—1.8 lbs., 48x96 in., 3.6 lbs., 51x96 in., packed 9 sheets to bundle.

Furring Nails—850 to box; weight 8.5 lbs. per box.

Red Top Cornerite and Strips (Diamond Mesh—Special Selvage Edge)

Materials—Open hearth steel, painted black.

Weight—2.2 lb. per sq. yd. basis. Cornerite, 140 lbs. per M ft. Strips, 75 lbs. per M ft.

Size—Cornerite 3x3x96 in.; strips 3x96 in. each; packed 504 ft. per bundle.

Red Top Cold Rolled Channels

Material—Open hearth steel.

Stock Lengths—14, 16, 18, 20 ft.

Sizes and Weights—

3/4 in.—276 lbs. per 1000 lin. ft.; packed 20 pieces to bundle.

1 in.—332 lbs. per 1000 lin. ft.; packed 10 pieces to bundle.

1 1/2 in.—456 lbs. per 1000 lin. ft.; packed 10 pieces to bundle.

2 in.—552 lbs. per 1000 lin. ft.; packed 10 pieces to bundle.

Special large flange (Cubro) 270 lbs. per 1000 lin. ft.; packed 20 pieces to bundle.

Note: *Sold only in full, unbroken bundles.*

Red Top Corner Beads

Material—Galvanized.

Types and Weights—

No. 1A—26 gauge Expansion Type; weight 230 lbs. per 1000 lin. ft.

No. 2A—26 gauge Scalloped Type; weight 220 lbs. per 1000 lin. ft.

No. 4A—26 gauge Standard Type; weight 200 lbs. per 1000 lin. ft.

No. 5A—28 gauge 3/4-in. radius Bullnose; weight 245 lbs. per 1000 lin. ft.

No. 9A—Clips for bullnose bead.

No. 10A—26 gauge 3/4-in. radius Expansion Type Bullnose; weight 375 lbs. per 1000 lin. ft.

Packed—Crated, approximately 500 or 1000 lin. ft. per crate, sold only in full crates.

Red Top Base Screeds

Materials—Galvanized.

Types and Weights—

No. 3A—26 gauge expansion flush; weight 230 lbs. per 1000 lin. ft.

No. 6A—26 gauge plain; weight 140 lbs. per 1000 lin. ft.

No. 7A—26 gauge curved point; weight 195 lbs. per 1000 lin. ft.

Packed—Crated, approximately 500 or 1000 lin. ft. per crate, sold only in full crates.

Red Top Picture Mould

Material—26 gauge, galvanized.

Weight—220 lbs. per 1000 lin. ft.

Packed—Crated, approximately 500 or 1000 lin. ft. per crate, sold only in full crates.

Red Top Expansion Casings

Materials—Galvanized.

Types and Weights—

No. 4—26 gauge, quarter round; weight 350 lbs. per 1000 lin. ft.

No. 6—26 gauge, O. G.; weight 350 lbs. per 1000 lin. ft.

No. 8—24 gauge, O. G.; weight 390 lbs. per 1000 lin. ft.

No. 9—24 gauge, special quarter round, 435 lbs. per 1000 lin. ft.

Clips—Patent casing locking clips.

Miters—One-piece stamped casing miters for Nos. 4, 6 and 9.

Master Specifications

For use of Red Top Metal Lath and Accessories see Master Specifications, page 16.

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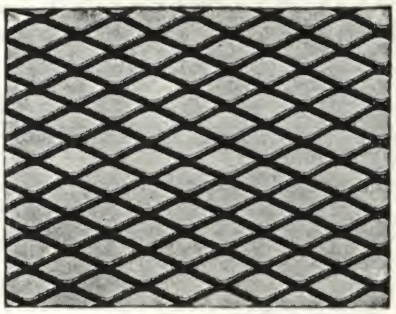
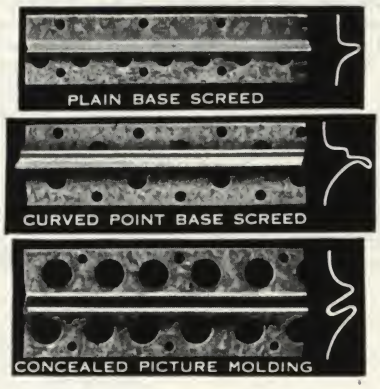
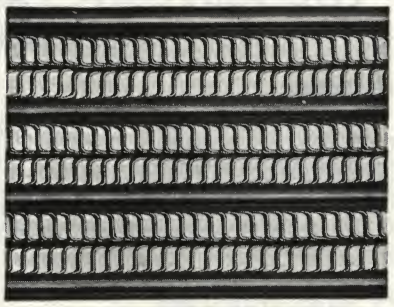
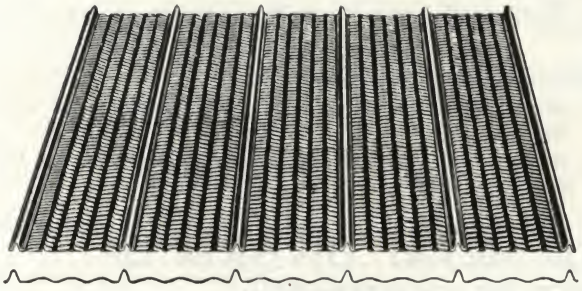


Diamond Mesh

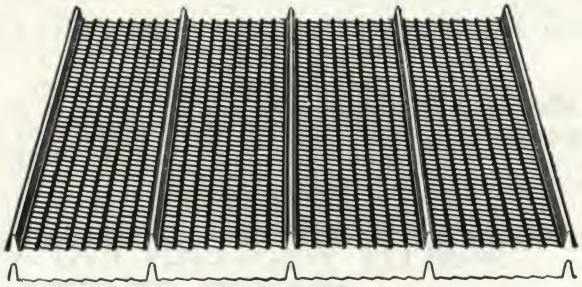




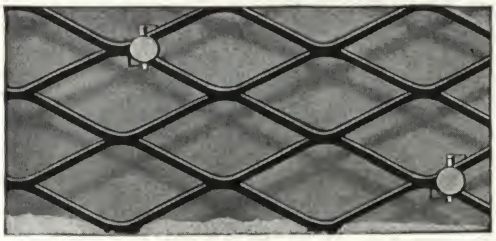
Flat Rib (Plaster Saver)



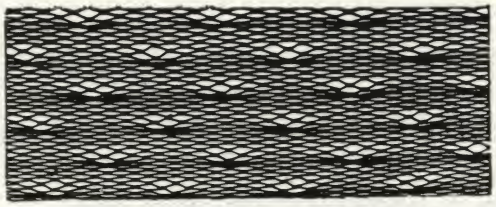
⅜-in. Rib



¾-in. Rib



Expanded Metal for Stucco

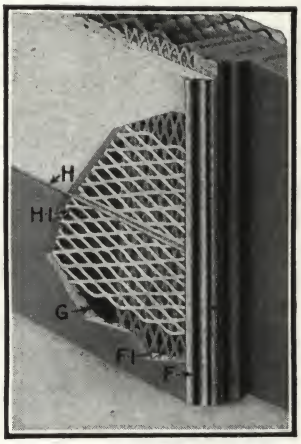


Self-furring

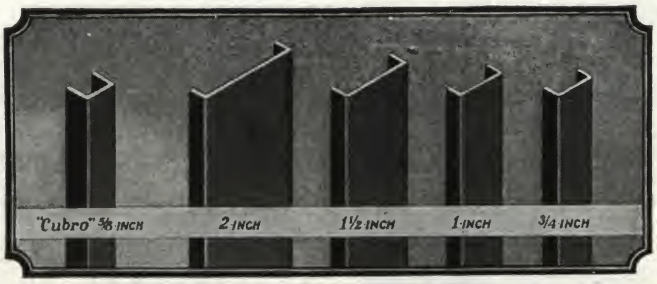
Standard Type Corner Bead No. 4A

Scalloped Type Corner Bead No. 2A

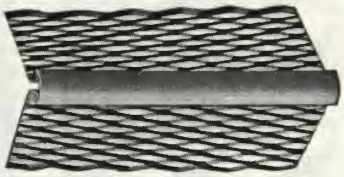
Small Bullnose Corner Bead No. 5A



Expansion Casings



Expansion Corner Bead No. 1A



Expansion Bullnose Corner Bead No. 10A

RED TOP METAL LATH AND ACCESSORIES

Continued on next page

YOUNGSTOWN PRESSED STEEL METAL LATH DIVISION OF UNITED STATES GYPSUM COMPANY

Introduction

Unprecedented service on metal lath products is assured as a result of the acquisition by this company of the metal lath division of the Youngstown Pressed Steel Company. U.S.G. will maintain on these products its usual ethical policy, and the fact of both metal lath and plaster being supplied by one reputable manufacturer suggests a unified responsibility of definite advantage to every user.

YPS ⅜-in. Rib Lath

Materials—
Open hearth steel, painted black.
Copper bearing steel, painted black.

Weights—2.5, 3.0, 3.4, 4.0 lbs. per sq. yd.

Sheet Size—24x96 in., packed 9 sheets (16 sq. yds.) per bundle.

YPS Mahoning Diamond Lath

Materials—
Open hearth steel, painted black.
Galvanized.
Copper bearing steel, painted black.

Weights—2.2, 2.5, 3.0, 3.4 lbs. per sq. yd.

Corrugated—All above materials and weights finished in corrugated (self-furring) on order.

Sheet Size—24x96 in., packed 9 sheets (16 sq. yds.) per bundle.

YPS Z-Rib Lath

Materials—
Open hearth steel, painted black.
Copper bearing steel, painted black.
Galvanized (3.4 lb. weight only).

Weights—2.75, 3.0, 3.4 lbs. per sq. yd.

Sheet Size—24x96 in., packed 9 sheets (16 sq. yds.) per bundle.

YPS Smooth Edge Cornerite

Material—Open hearth steel, painted black.

Weight—2.2 lb. Diamond Mesh.

Sizes—Flange widths, 2, 3 and 4 in. Length, 8 ft. Packed 50 pieces per bundle.

NORTH WESTERN EXPANDED METAL DIVISION OF UNITED STATES GYPSUM COMPANY

Introduction

The acquisition also of the North Western Expanded Metal Company has made the U.S.G. line of Metal Lath Products complete, has further augmented manufacturing facilities, and has brought in new technical experience which, working in conjunction with the U.S.G. and "YPS" engineers, assures manufacturing standards of the highest order. Every city and town in the country is now served by complete stocks of metal lath products close at hand.

Kno-burn, Jr. (Small Diamond Mesh Lath)

Materials—
Open hearth steel, painted black.
Galvanized.
Copper bearing steel, painted black.
Pure iron, painted black.

Weights—2.2, 2.5, 3.0, 3.4 lbs. per sq. yd.

Corrugated—All above materials and weights furnished in corrugated (self-furring) on order.

Sheet Size—24x96 in., packed 9 sheets (16 sq. yds.) per bundle.

Plasta-Saver (⅛-in. Rib Lath)

Materials—
Open hearth steel, painted black.
Copper bearing steel, painted black.

Weight—3.4 lbs. per sq. yd.

Sheet Size—24x96 in., packed 9 sheets (16 sq. yds.) per bundle.

Norwest Flat Rib Lath

Materials—
Open hearth steel, painted black.
Copper bearing steel, painted black.

Weights—2.75, 3.0, 3.4 lbs. per sq. yd.

Sheet Size—24x96 in., packed 9 sheets (16 sq. yds.) per bundle.

⅜-in. Longspan Rib Lath

Materials—
Open hearth steel, painted black.
Copper bearing steel, painted black.

Weights—3.0, 3.4, 4.0 lbs. per sq. yd.

Sheet Size—24x96 in., packed 9 sheets (16 sq. yds.) per bundle.

¾-in. Longspan Rib Lath

Material—Open hearth steel, painted black.

Weights—.50, .60, .75 lb. per sq. ft.

Sheet Sizes—2 ft. wide x 4, 5, 6, 7, 8, 9, 10, 11, 12 ft. long.

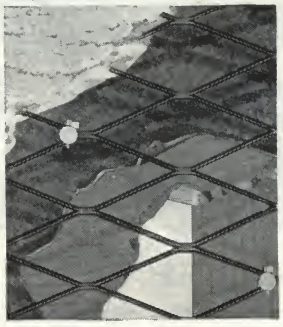
Steelhart Stucco Base

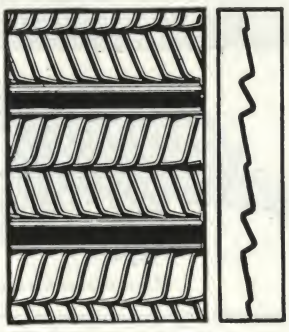
Material—Copper bearing steel, painted black.

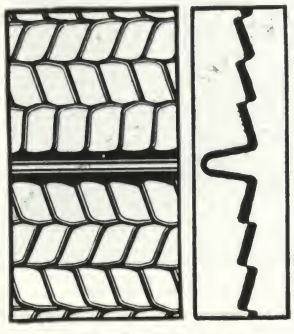
Weights—1.8, 3.6 lbs. per sq. yd.

Sheet Sizes—1.8 lb., 48x96 in. (32 yds. per bundle); 3.6 lb., 51x96 in. (34 yds. per bundle).

Kno-Burn Jr.


Steelhart Stucco Base


YPS Z-Rib Lath


YPS ⅜-Rib Lath

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GYPSUM WALL PLASTERS

General Features

Description—Gypsum Plasters are made by driving off water of crystallization from gypsum rock through calcination, or heat treatment. The addition of water to this basic product (calcined gypsum rock) forms a plastic mass which unites with the same amount of water as was driven off during calcination. When this plaster is mixed with water it re-crystallizes or sets. The plaster resists fire and is extremely hard and strong.

Quick Set—Fast Drying—Gypsum Plaster sets up uniformly hard and homogeneous within two to six hours after application. Inside of thirty-six hours, under proper drying conditions, the plaster dries and there is no further dampness or sweating.

It is due to these prime characteristics that Gypsum Plasters have acquired almost exclusive preference and use.

Advantages

Adaptability—Gypsum Plaster adheres satisfactorily to gypsum, wood or metal lath; gypsum or clay tile; brick or other approved plastering surface.

Fire Retarding—Made of gypsum, it is a valuable fire-resistant.

Exceptional Adhesiveness—Its exceptional adhesiveness adds strength which greatly increases structural durability.

Does Not Expand or Contract—It does not expand and tear itself loose from the surface to which it is applied, even when subjected to fire. It will not crack of itself, shrink or stain.

Durable—Gypsum Plaster will withstand the wear and tear of occupancy during the life of the building. Its hard, dense body affords a substantial foundation for the finish coat and applied decoration.

Saves Time—It sets in two to six hours and dries within 36 hours—interior trim and finish may thus, reasonably soon, follow the plastering without danger from moisture.

Plasticity, Richness and "Slip"—U.S.G. Plasters have been developed as much for the convenience of the plasterer as for perfection in the above named advantages. The result is an unusual richness and "slip" which is appreciated by the competent mechanic. They mix easily at the mortar box; they go on quickly and spread far, resulting in maximum coverage with minimum labor.

Uniformity

The quality of U.S.G. Plasters is rigidly controlled by means of repeated chemical tests, physical tests, and by every known kind of inspection in every stage of manufacture, from the crude gypsum rock to the finished product. Samples from every shipment, large or small, are retained for future reference.

All U.S.G. Plaster meets the standard specification for Gypsum Plaster of the American Society for Testing Materials.

Identification—Red Top Bag

In addition to the U.S.G. trade-mark on each bag of plaster, the United States Gypsum Company's Plasters are contained in the standard *Red Top* bag, which provides a positive means of identification that discourages substitution.

The red top is assurance that the material in the bag has been made and tested according to most rigid specifications.

Plaster Package

General—Every package of U.S.G. Gypsum Plaster bears the familiar trade-mark (see page 1), and bags have the *Red Top*. Each bag bears the brand and the mixing directions.

Multi-wall Paper Bag—The "multi-wall" bag, made of multiple layers of strong kraft paper with air spaces between, is the standard "paper" bag of the United States Gypsum Company.

Because of its strength the bag can be dropped from as high as one can reach without danger of breakage. The multi-wall gives adequate protection—the several layers of paper keep the plaster *dry* in the warehouse, and a sudden shower while the material is in transit or unprotected at the job will do little if any damage. It is light in weight, easily handled and stored. The dealer and contractor have no investment tied up in bags which are to be returned for credit; nor do they lose the value of sacks stolen from the job or damaged.

In view of these advantages we recommend the multi-wall bag as the most satisfactory plaster package both from an economic as well as a practical viewpoint. Multi-wall paper bags are of 80-lb. and 100-lb. capacity.

Jute Sacks—When plaster is ordered in jute sacks, these are sold with the plaster and credited when returned in good condition, freight prepaid, to the mill from which the plaster shipment was made. Return of sacks must be made in accordance with our standard shipping directions and our customary terms.

Cloth or jute sacks are of 100-lb. capacity.

Brands

The standardization nationally of U.S.G. plasters under the "Red Top" brand is a protection to the architect and a convenience to the trade.

The architect is assured that the quality of the plaster, from whatever mill shipped, will be identical.

When specifying "Red Top" for use in a distant city, the architect is assured (1) that the plaster will be the same as that with which he is familiar; (2) that a shipping mill is in close proximity; (3) that the plaster will be recognized as standard by the local mechanics.

Covering Capacity

The covering capacity of U.S.G. Plasters is as great for each type of material as it is possible to attain.

Covering capacity necessarily depends upon conditions under which the plaster is applied—upon the mechanic, thickness of grounds, kind and trueness of the surface to be plastered, spacing or voids of lath, quality of sand, etc.

The covering capacity given hereinafter with each type of material and for the various surfaces to receive the plaster is based on average conditions, and may thus be accepted as a safe basis for calculating the quantity of each class of material required according to the Master Specifications given on pages 16 to 20 inclusive.

U.S.G. Plaster Products Are Shipped in Strong Moisture-proof Multi-wall Fiber Bags

Continued on next page

CEMENT PLASTERS

Use

Use for scratch and brown coats.

Brands

Note: See "Brands," page 11.

Red Top Cement Plaster.
Red Top Eldorado Cement Plaster (Gypsite).

Note: Gypsite plasters are popularly known as "dark plasters." The distinguishing features of Gypsite are its long-keeping and easy-spreading qualities. Gypsite plasters are extensively used in the southwest states, as they are well adapted to the climatic and building conditions of that section.

Description

Cement Plasters are "neat" materials—sand to be added at the job.

Characteristics

These materials are unusually rich, spread well under the trowel and, when mixed properly with a good grade of sand, are uniformly satisfactory both in working qualities and ultimate results in the finished wall.

Package

Shipped in full weight 80-lb. and 100-lb. paper bags or 100-lb. jute sacks. Kings Windsor also supplied in 320-lb. (300 lb. net) barrels.

Covering Capacity

Note: See "Covering Capacity," page 11.

Basis—Under average conditions Gypsum Cement Plaster mixed and applied in accordance with standard specifications will cover about as follows:

Plastering surface	Wood lath	Metal lath	Gypsum lath	Brick and clay tile	Gypsum tile
Sq. yds. per ton	180–210 (Sanded 2 to 1)	105–135 (Sanded 2 to 1).	225–240 (Sanded 2 to 1)	165–200 (Sanded 3 to 1)	235–255 (Sanded 3 to 1)

Specifications

See Master Specifications, page 16.

WOOD FIBER PLASTERS

Use

Use for scratch and brown coats.

Brands

Note: See "Brands," page 11.

Red Top Wood Fiber Plaster.
Red Top Eldorado Wood Fiber Plaster (Gypsite).

Note: Gypsite plasters are popularly known as "dark plasters." The distinguishing features of Gypsite are its long-keeping and easy-spreading qualities. Gypsite plasters are extensively used in the southwest states, as they are well adapted to the climatic and building conditions of that section.

Description

Wood Fiber Plasters are shipped ready to use, requiring only the addition of water. The base is Gypsum Plaster, to which is added finely shredded wood fiber, uniformly distributed.

Characteristics

Wood fiber plaster avoids the handling of sand, the dangers of poor sand and oversanding.

The very smooth and fatty nature gives easy spreading and excellent working qualities.

Composed of gypsum and shredded wood fiber, it is of greater bulk. When applied it is about two-thirds the weight of sanded cement plaster.

Through the elimination of sand, the plaster is practically pure gypsum, wood fiber serving as reinforcement. The plaster is extremely tough, strong, dense and durable.

It is superior to sanded plaster in fire-resisting, insulating and sound-deadening qualities.

Its greater flexibility better adapts it to withstand vibrations and strains.

Wood Fiber Plaster may be sawed like wood.

It is especially adaptable to alterations and is desirable for winter use.

It is nearly as economical in cost as Cement Plaster and is rapidly gaining in popularity. In many markets it is used almost exclusively.

Package

Shipped in full weight 80-lb. and 100-lb. paper bags or 100-lb. jute sacks.

Covering Capacity

Note: See "Covering Capacity," page 11.

Basis—Under average conditions Gypsum Wood Fiber Plaster mixed and applied in accordance with standard specifications will cover about as follows:

Plastering surface	Wood lath	Metal lath	Gypsum lath	Brick and clay tile	Gypsum tile
Sq. yds. per ton	90–100 (Unsanded —water only added)	55–65 (Unsanded —water only added)	115–120 (Unsanded —water only added)	150–170 (Equal parts sand to be added)	180–210 (Equal parts sand to be added)

Specifications

See Master Specifications, page 16.

PREPARED PLASTERS (SANDED)

Use

Use for scratch and brown coats.

Brands

Note: See "Brands," page 11.

Red Top Sanded Plaster.
Red Top Sanded Plaster for Brick or Tile.
Red Top Sanded Wood Fiber Plaster.

Description

Prepared Plasters are shipped ready to use, requiring only the addition of water. The base is Gypsum Plaster to which is added nothing but sharp, clean plastering sand, thoroughly graded and screened.

Correct proportions and mixing are accomplished by automatic machines at the factory.

Characteristics

Prepared plasters are especially desirable in localities where good sand is difficult to obtain.

Since they are ready to apply with the addition of water only, they are particularly well adapted for use in winter when unfrozen sand is difficult or expensive to obtain.

Since these plasters may be readily mixed inside the building, they are useful for repair and remodeling work in all seasons.

Continued on next page

Package

Shipped in full weight 80-lb. and 100-lb. paper bags or 100-lb. jute sacks.

Covering Capacity

Note: See "Covering Capacity," page 11.

Basis—Under average conditions Gypsum Prepared Plaster mixed and applied in accordance with standard specifications will cover about as follows:

Plastering surface	Wood lath	Metal lath	Gypsum lath	Brick and clay tile	Gypsum tile
Sq. yds. per ton	60 to 70	35 to 45	75 to 80	45 to 55	65 to 70
	(Plaster mixed with water only—no sand added)				

Specifications

See Master Specifications, page 16.

BONDCRETE—FOR INTERIOR CONCRETE SURFACES

Use

Use for both scratch and brown coats applied over concrete surfaces.

Description

Ordinary gypsum plaster or lime mortar does not adhere properly to concrete—consequently the use of Bondcrete, a specially made plaster for concrete surfaces, is recommended.

Characteristics

Bondcrete Plaster adheres strongly to dry concrete because of its cementitious qualities and because it maintains a practically unchanging volume during the process of setting and hardening.

Bondcrete is dense, durable and fire-resisting. It works well under the tools, and needs only water to make it ready for use.

Bondcrete must not be applied over smooth concrete.

Bondcrete must not be covered with a sanded brown coat—use only Bondcrete full to the grounds.

Bondcrete may be finished with any of the finishes described on this and the following page.

Package

Shipped in full weight 80-lb. and 100-lb. paper bags or 100-lb. jute sacks.

Covering Capacity

Usually from 90 to 120 sq. yds. to the ton coverage depending upon regularity of concrete surface and thickness applied.

Note: See "Covering Capacity," page 11.

Specifications

See Master Specifications, page 16.

RED TOP TROWEL FINISH

Note: This finish is also furnished mixed with a small percentage of aggregate for texturing purposes.

Use

Use for white trowel finish coat only.

Description

Of exceptionally fine quality is this prepared trowel finish, which works as easy and covers as much surface as lime putty. The admixture of water fits it for immediate use. Numerous field tests have convinced us that this is the ideal prepared finish.

Characteristics

It mixes easily to a light, creamy consistency and can be applied in two coats. Because no slaking or soaking of lime is necessary and because the finish is mixed in the box instead of on the hawk, it is economical. It contains no talc, clay or other objectionable ingredient. The alkalinity of the lime content is reduced by chemical action, so that the walls may be safely decorated as soon as dry.

Package

Shipped in full weight 80-lb. and 100-lb. paper bags.

Covering Capacity

Coverage equal to lime putty and more than any other prepared finish—450 to 500 sq. yds. per ton.

Specifications

See Master Specifications, page 16.

PREPARED GYPSUM FINISHES

Use

Use for finish coat only.

Brands

Note: See "Brands," page 11.

Trowel Finishes

Red Top Universal White Trowel Finish.
Red Top Adamant Trowel Finish (White).
Red Top Adamant Slate Colored Trowel Finish.
Red Top Badger Trowel Finish (Gray).

Sand Float Finishes

Red Top Silica Sand Float Finish (White).
Red Top Adamant Gray Sand Float Finish.
Red Top Adamant White Sand Float Finish.
Red Top Sand Float Finish (Gray).

Description

Prepared Gypsum Finishes require only the addition of water to make them ready for use. Made of gypsum, they form a perfect and natural bond with any gypsum plaster base coat. The sand float finishes contain selected sharp clean silica sand, properly graded, screened and thoroughly dried.

Characteristics

These finishes are ready to use when water is added, assuring a uniform mix of correct proportion. The sand float finishes are especially recommended in winter when unfrozen sand of the requisite quality is difficult to obtain. Decorations may safely be applied as soon as the finish dries out.

Package

Shipped in full weight 80-lb. and 100-lb. paper bags or 100-lb. jute sacks.

Covering Capacity

Under average conditions Gypsum Trowel Finish, if mixed and applied in accordance with standard specifications, will cover about 350 to 400 yds. per ton; Gypsum Sand Float Finish about 250 to 275 yds. per ton.

Specifications

See Master Specifications, page 16.

ORIENTAL INTERIOR—COLORED FINISH PLASTER

Use

Use for textured or floated plaster finish coat.

Description

Oriental Interior is a colored finish plaster. The material is made in thirteen standard shades and white. Tints are produced with mineral colors, great care being taken to assure absolute uniformity of shade.

Oriental Interior is ready for use with the addition of water only. It is used as a finish coat over the regular base coat of plaster and can be floated or textured.

Continued on next page

Characteristics

With ordinary tools, attractive, tinted, float or textured finishes may be obtained with Oriental Interior in perfect accord with modern decorating practice. Tile or stone unit effects may be produced by scoring walls before Oriental Interior has hardened.

Change of color scheme may be accomplished at any time by the application of paint or other decorative materials.

Unvarying uniformity in both color and quality is assured. The material is scientifically mixed at the mill—the addition of water only is required for immediate use.

The positive regulation of color insures walls with the minimum amount of "joinings" and avoids the danger of inaccurate mixing

Package

Shipped only in full weight 100-lb. paper bags. Order by color name designated on color cards or samples.

Covering Capacity

The covering capacity of Oriental Interior finish is approximately 250 sq. yds. per ton, varying according to textures.

Specifications

See Master Specifications, page 16.

FINISHING LIME

Use

Use finishing lime for finish coat only in conjunction with gauging plaster described below.

Brands

Note: See "Brands," page 11.

Hydrated Finishing Lime

Red Top Ivory Finish Lime.
Red Top Grand Prize Finish Lime.
Red Top Finish Lime.
Farnam Cheshire Superior Hydrate.

Finishing Quick (or Common) Lime

Farnam Cheshire Finishing Lime—in Lump, Pulverized, Granular and Superfine.

Berkshire Hills Crescent Finishing Lime—in Granular and Pulverized.

Description

These limes are specially prepared for finishing purposes. They possess a rich plasticity that makes them spread easy and far; hence they save time and labor.

Characteristics

Hydrated lime saves the time and trouble of slaking and screening lime on the job. The famous Ohio dolomite from which Red Top hydrated lime is made, together with U.S.G. standards of manufacture, make this lime unexcelled for finishing purposes. It is uniformly burned and thoroughly hydrated, is of a snowy white color, and is absolutely free from "pops" and "pits." It meets the standard specifications for hydrated lime of the American Society for Testing Materials.

Farnam Cheshire and Berkshire Hills Limes are burned from selected high calcium rock and are of exceptional quality. Because of their exceeding purity and the physical characteristics of the stone, these limes are unusually quick slaking and are free from popping and pitting. They have a high putty yield.

Package

Hydrated Lime is shipped in full weight 10-lb. and 50-lb. paper bags. Quick Lime is shipped in 180-lb. and 280-lb. net weight wood barrels and steel drums, also in bulk. The Superior and Granular Quick Lime is shipped also in 80-lb. Multi-Wall paper moisture-proof bags.

Covering Capacity

Under average conditions one ton of Red Top Hydrated Lime, when used in proportion of two parts of dry lime to one part of dry gauging plaster by weight, should finish about 800 sq. yds. A ton of Quick Lime, when mixed in the above proportions, should finish about 1000 yards.

Specifications

See Master Specifications, page 16.

MASON'S LIME

Note: The United States Gypsum Company *also manufactures a high-grade Agricultural Lime.*

Use

As a mortar for setting brick, stone, etc., and for mixing with Portland cement and concrete.

Brands

Note: See "Brands," page 11.

Mason's Hydrate Brands

Red Top Mason's Hydrate.
Farnam Cheshire Superior Hydrate.

Mason's Quick (or Common) Lime Brands

Red Top Pebble Lime.

U.S.G. Mason's Quick Lime, in Lump, Granular, and Pulverized.

Farnam Cheshire Mason's Quick Lime, in Lump, Pebble, Granular and Pulverized.

Description

The use of lime for mortar means more bricks laid per hour, no loss in droppings, no loss from hardening in the mortar box, and no time lost in mixing or retempering.

Red Top and U.S.G. Mason's Hydrate are prepared limes of uniformly high quality, requiring no slaking on the job.

Of excellent quality also is our Mason's Quick Lime. It is exceedingly quick slaking and yields a putty of high sand carrying capacity.

Package

Mason's Hydrate is shipped in 50-lb. paper bags. Mason's Quick Lime is shipped in 180 or 280-lb. wood barrels or steel drums, also in bulk.

Proportions Recommended

1 part lime putty to 3 parts sand, by volume. Or 8 sacks of hydrate, or 8 cu. ft. of putty to 4 sacks Portland cement and 1 cu. yd. of sand.

GAUGING PLASTERS

Use

Use for finish coat only in conjunction with lime putty described above.

Brands

Note: See "Brands," page 11.

Slow Set

Red Top Slow Set Gauging Plaster (Gray).
Red Top Star Gauging Plaster (White).
Red Top Superfine Finishing Plaster (White).
Red Top Plaster Paris for Painters.

Quick Set

Red Top Quick Set Gauging Plaster (Gray).
Red Top Champion Gauging Plaster (White).
Red Top Kings Diamond Gauging Plaster (White).
Red Top NYC Mills Gauging Plaster.

Description

These plasters are made of raw materials carefully selected from gypsum deposits unusually well suited for the manufacture of calcined plasters for this particular purpose.

Characteristics

They are made in both "slow set" and "quick set," and are uniformly ground to just the right fineness to insure easy working and mixing qualities.

Package

Shipped in full weight 80-lb. and 100-lb. paper bags; 100-lb.

Continued on next page.

cloth sacks; 100-lb. paper-lined jute sacks; 250-lb. (230 lbs. net) barrels and 320-lb. (300 lbs. net) barrels.

Covering Capacity

Under average conditions one ton of Gauging Plaster, mixed one part of dry gauging to two parts of dry hydrated lime by weight, will cover about 1600 sq. yds.

Specifications

See Master Specifications, page 16.

RED TOP KEENE'S CEMENT

Use

Use for high grade plasterwork, particularly to receive fine decorative treatment and where the utmost in sanitation is desired.

Description

Red Top Keene's Cement is the hardest and densest gypsum material that is applied with a trowel. It is manufactured from specially selected gypsum mined at Southard, Oklahoma. Red Top Keene's Cement excels in smooth, uniform working qualities and in tensile strength, due to the selected material and the U.S.G. improved methods of manufacture and rigid mill inspection.

Note: *Red Top Keene's Cement is regarded by many manufacturers as the best on the market for scagliola work.*

Characteristics

Keene's Cement is ground to extreme fineness, is pure white in color and takes a very high, glass-like polish. Its extremely hard surface is impenetrable to rodents and vermin and affords no lodgment for disease germs. It is easily cleaned. It contains no alkali to stain delicate wall tints or saponify the oil in paints, hence it is an ideal base for fine decorating.

Package

Shipped in 100-lb. jute and paper-lined jute sacks.

Covering Capacity

Under average conditions one ton of Keene's Cement, when used neat and in accordance with specifications, will cover about 400 to 500 sq. yds.

Specifications

See Master Specifications, page 16.

RED TOP (ARIDIZE) MOULDING PLASTERS

Use

Use for ornamental moulded plaster work.

Brands

Note: *See also "Brands," page 11.*

Red Top Moulding Plaster.
Red Top No. 1 Moulding Plaster (White).

Description

The requirements for moulding plaster are distinctly different from any other class of plaster. Gypsum deposits suitable for making this material are exceedingly rare.

These plasters are produced by a manufacturing process, patented by the UNITED STATES GYPSUM COMPANY, which artificially ages the plaster, giving it those desirable characteristics of easy mixing and great hardness not obtainable in ordinary plasters until 8 to 12 months' ageing.

Heretofore, plasters have been aged by storing in warehouses but the results could not be uniform because of variations in temperature and humidity conditions. The production of Aridize Plasters, however, depends in no way on the atmospheric conditions, for an artificial atmosphere is produced at a temperature and humidity that will assure uniform ageing; consequently the plaster is always uniform.

Pre-ageing lowers the water carrying capacity of the plaster; hence Aridize Plasters set into denser, stronger and more durable moulds.

Even when green, moulds made of these plasters possess great strength, and breakage by handling and manipulation in the moulding and casting stage is diminished.

Characteristics

Aridize Moulding Plasters are made from selected gypsum ideal for the purpose and unequaled for whiteness and purity. This, together with the special patented process of manufacture, produces a particularly smooth working plaster of absolutely uniform setting quality.

These plasters are ground much finer than other similar products, assuring a more thorough solution and a finer surface to the finished work, with an absence of pinholes. The fine satin-like surface increases the life of the moulds.

In addition to these qualities, the plasters are cooler working and slower setting, which accounts for low expansion and absence of warped moulds. The slow generation of heat in setting insures protection to gelatine or glue moulds. Slow setting gives time for blending and working out trapped air bubbles and working the plaster into angles and corners of moulds.

Package

Shipped in 80-lb. and 100-lb. paper bags; 100-lb. jute and paper-lined cloth sacks and 250-lb. (230 lbs. net weight) barrels and in 320-lb. (300 lbs. net weight) barrels.

Specifications

See Master Specifications, page 16.

RED TOP PATCHING PLASTER

Use

Use for filling cracks and abrasions in plaster. Especially adapted to the repairing of old work preparatory to refinishing.

Description

Red Top Patching Plaster is the finest material obtainable for filling plaster cracks, breaks and crevices. It is white, uniform in quality, works easily, goes far and is quickly applied.

Characteristics

The set is regulated to permit ease in spreading and proper drying without shrinkage cracks. The plaster makes a hard, strong surface that withstands wear and tear and takes paint, calcimine, wall paper or Textone like a new wall, without discoloration. Red Top Patching Plaster mixes easily with clean water; nothing else is to be added.

Package

Supplied in convenient 2½-lb., 5-lb., 7½-lb. and 15-lb. packages, with a distinctive red top.

Specifications

Mixing—Pour the dry plaster on a clean, smooth board and form a central depression (bowl shape), into which pour clean water.

Thoroughly work the plaster into the water with a putty knife or semi-flexible scraping knife, adding water or plaster as required to produce the proper consistency.

Mix only in small batches that can be entirely used in 30 minutes. Do not retemper.

Application—Cracks shall be cut out to approximately ⅛ in. in width. Abrasions shall be cleaned of all loose material.

Apply the patching plaster with a putty knife, semi-flexible scraping knife or small trowel as best adapted, using sufficient force to fill the crevice completely.

Smooth carefully, making the surface level with the surrounding surfaces.

After the patching plaster has set hard, smooth carefully with fine sandpaper.

Continued on next page

MASTER SPECIFICATIONS

PREFACE

Specification Form

The form of this specification is that of a "Master" which includes all clauses which in ordinary practice apply to average work. All clauses, obviously, do not apply to every building. In formulating the "Interior Lathing and Plastering Specifications" for a particular building, only those clauses which apply should be selected for inclusion. Special provisions or methods but seldom required are not included—such clauses should be added wherever necessary to clearly define the procedure and especially to obviate controversy involving responsibility and cost.

Local Ordinances

Correlate these specifications with the requirements of Local Ordinances and Trade Customs relating to this division of the work.

Alterations and Additions

These specifications cover new work only. For additions and alterations add such clauses covering repairs and replacements and the joining of old and new work as may be required.

Advisory Service

The technical staff of the UNITED STATES GYPSUM COMPANY is at all times accessible for advice and recommendations in the formulating of the specification for Interior Lathing and Plastering. Special data, the result of much extended research work, relating to the selection and application of Interior Plastering and "Explanations of Job Conditions which Affect Plastering" will be furnished on request.

Notes

Notes in italics are explanatory or advisory only and should not be included in the specification.

Selective Words or Phrases

Wherever words or phrases occur in the body of the specification paragraph printed in italics and enclosed in parentheses, choose that word or phrase which applies to the particular work, omitting those that are irrelevant. Wherever the word "specify" occurs in italics enclosed in parentheses, thus *(specify)*, add the particular word or clause applicable, optional with the specification writer.

INTERIOR LATHING AND PLASTERING

Note: *For complete guaranteed and bonded plastering system see Standard X Plastering System, page 2.*

Note: *For exterior stucco, see Oriental Exterior Stucco, page 21.*

Note: *For Sabinite Acoustical Plaster, see* SWEET'S *Manufacturers' Index for the* UNITED STATES GYPSUM COMPANY'S *complete catalogue covering "Fireproof Sound Absorbents—Acoustical Treatment" and "U.S.G. System of Sound Insulation."*

(1) General Conditions

The general conditions governing the General Contract apply to the work under this division.

Note: *The American Institute of Architects' standard form of General Conditions is advocated.*

(2) Work Included

(2a) The work included under this heading shall be the following:

(2b) All metal suspended or furred ceilings.

(2c) All metal stud partitions.

(2d) All metal wall furring.

(2e) All miscellaneous metal furring.

(2f) All lathing.

(2g) All plastering.

(3) General Scope

Note: *List and locate either in schedules on plans or here portions of the building to be finished, the base to receive plaster and here include sufficient data to insure accuracy in estimates.*

(3a) The following require no plaster *(list and locate)*.

(3b) The following require but *(one (1)) (two (2))* coats of plaster *(list and locate)*.

(3c) Ceilings noted as furred *(on plans) (in schedules)* are furred with *(metal) (gypsum board) (wood)*.

(3d) All supports for lath are spaced 16 in. on centers.

(3e) All exterior walls are furred with *(specify)*.

(3f) Exterior walls are not furred. Plaster shall be applied directly on the *(specify)*.

(3g) Partitions are of *(specify)*.

(3h) Walls back of finished tile work shall be lathed only. No plaster shall be applied.

(3i) Omit all plaster on interior masonry walls and *(hollow tile) (Pyrobar)* partitions back of marble work.

(3j) All exterior masonry walls, not furred, shall receive one coat of plaster back of marble work.

(3k) Omit the finish coat of plaster on all stud walls back of *(marble work) (blackboards) (specify)*.

(3l) Omit the finish coat of plaster back of all *(wood wainscots) (specify)* and similar solid trim.

(3m) *(Specify)* shafts shall be plastered full height.

(3n) All chases in unfurred masonry walls which are to be plastered shall be lathed with metal lath. Lap the masonry at least 3 in. and secure at masonry joints. Wide chases (over 16 in.) shall be furred to receive lath.

(4) Scaffolding

(4a) This contractor shall provide and erect all scaffolding, staging, etc., necessary for the proper execution of his work.

(4b) He shall co-operate with other trades to the extent that erection of scaffolding shall not conflict with the execution of other work immediately preceding or carried on, without undue conflict, simultaneously with the lathing and plastering.

(4c) If, after due authority has been granted to erect scaffolding, it is necessary to remove parts thereof for the accommodation of others, demolition and re-erection shall be done only after allocation of cost, if any, has been equitably adjusted.

(5) Heat

(5a) Adequate temporary heat will be provided by others for the proper execution of work under this contract.

(5b) This contractor shall provide salamanders, fuel and attendance and shall maintain without fire hazard adequate heat for the proper execution of work under this contract.

Continued on next page

(6) Closures

(6a) Provide temporary cloth closures for all exterior openings during plastering.

(6b) During the summer months exterior openings shall be screened to prevent plastering drying out before it has crystallized.

(7) Protection

(7a) Adequately protect from damage and plaster droppings all finish of the building.

(7b) Adequately protect the building with layers of heavy waterproof paper from damage by water at sources, gauging barrels and mixing boxes.

(8) Damage

Breakage of glass or other damage to the building or equipment through accident or carelessness incident to work under this contract shall be satisfactorily repaired or made good by replacement at this contractor's expense.

(9) Cleaning

(9a) At completion, remove all rubbish, plaster droppings, etc., and leave the building broom clean.

(9b) This contractor shall remove all plaster from glass and other finish and leave in the condition found.

(10) Cutting and Patching

After the erection of finish by others, this contractor shall, when called upon, cut out where required, patch and paint up all finished plaster work and leave the entire work in perfect condition.

(11) Sample Panels

This contractor shall furnish and erect, where directed for the approval of the architect, sample panels of one square yard area each, to illustrate each type of finish required under this contract.

The finished work shall equal in all respects the approved panels.

(12) Concrete Surfaces

Note: *Concrete surfaces to receive plaster must not be smooth. Use rough form boards. Avoid dressed or oiled boards.*

(12a) Concrete surfaces must be half green and free from dust, oils and efflorescence.

(12b) Burn off all oil or grease from the surface with a torch.

(12c) Remove efflorescence with a wire brush and wash with a one (1) to five (5) solution of muriatic acid and water. Thoroughly wash off acid with clean water.

(12d) Surfaces too smooth to receive plaster shall be thoroughly hacked.

(12e) Hacking will be done by others.

(13) Grounds

All lathing and plastering shall be laid to not less than the following grounds:

¾ in. for ¼ in. gypsum lath, wood, wire or expanded metal lath; ⅞ in. for ⅜ in. gypsum lath; ⅝ in. for brick or clay tile; ½ in. for Pyrobar.

(14) Guaranty

(14a) This contractor shall guarantee all work and materials under this contract for a period of *(specify)* from the date of completion and acceptance.

(14b) Any defects attributable to faulty workmanship or material furnished under this contract shall be made good at this contractor's expense.

(14c) This shall include the cost of repairs or replacement of any decorating or other finish damaged by the defects.

(15) Workmanship

All work shall be executed by skilled workmen in a manner to satisfactorily fulfill the provisions of these specifications.

(16) Examination

(16a) All construction to receive lathing and plastering is presumed to be substantial, sound, level, plumb and true.

(16b) This contractor shall examine all construction, supports and base to receive lathing and plastering and shall report to the architect in writing any defects which will deleteriously affect work under this contract.

(16c) Failure to so report defects for correction or replacement prior to execution of the work under this contract will be construed as acceptance of the construction and shall not relieve the contractor from obligation under his guaranty.

(17) Materials and Mixing

(17a) **General**—Store all plaster at the site in a dry place, raised above the bare ground.

Provide clean, water-tight mixing boxes (approximately 3½x7 ft.x10 in. deep for base coats and 2½x4½ ft.x10 in. deep for finish coats) raised 4 in. at one end. Clean mixing boxes after each gauging.

Tools shall be kept clean. Do not rinse tools in gauging water.

Do not mix more material than can be applied in approximately one (1) hour.

Do not mix one gauging with another. Never retemper plaster after it has commenced to set.

All material except sand *(wood lath)* shall be as manufactured by the UNITED STATES GYPSUM COMPANY.

(17b) **Water**—Water shall be clean, free from alkali and impurities.

(17c) **Sand**—Sand shall be clean and sharp and free from organic matter with grains graded from fine to coarse, meeting fully the Standard Specifications for Plastering Sand of the American Society for Testing Materials. Screen through a 6-mesh screen.

(17d) **Metal Furring**—*(Specify sizes)* Red Top Cold Rolled Channels.

Note: *See page 8.*

(17e) **Metal Partition Studs**—*(Specify sizes)* Red Top Cold Rolled Channels.

Note: *See page 8.*

(17f) **Wood Lath**—No. 1 *(white pine) (cypress) (spruce)* free from knots, sap and bark.

(17g) **Gypsum Lath**—Rocklath ⅜ in. thick, 16x32 in. and 16x48 in.

(17h) **Metal Lath**—*(Specify brand, material and finish)* lath; —— lb. for horizontal positions and —— lb. for vertical positions.

Note: *See pages 8, 9 and 10. Select and specify weight for both horizontal and vertical positions.*

(17i) **Cornerite**—Red Top or YPS Cornerite, 3x3x96 in. with special selvage edge.

Note: *See pages 8 and 10.*

(17j) **Corner Beads**—Red Top Corner Bead No. *(specify).*

Note: *See page 8.*

(17k) **Base Screeds**—Rep Top Base Screed No. *(specify).*

Note: *See page 8.*

(17l) **Metal Picture Mould**—Red Top Picture Mould No. *(specify).*

Note: *See page 8.*

(17m) **Metal Expansion Casings**—Red Top Expansion Casing No. *(specify).*

Note: *See page 8.*

(17n) **Base Plaster (Scratch and Brown Coats)**—

Note: *Select type best adapted.*

(17n1) (Specify brand) ***Cement Plaster (Unsanded)***—

Note: *See page 12.*

(a) For scratch coat on gypsum lath, wood, wire and expanded metal lath, mix 2 parts by weight of dry sand with 1 part of plaster.

Continued on next page

(b) For brick, Pyrobar gypsum tile, clay tile and second or brown coat, mix 3 parts by weight of dry sand with 1 part of plaster.

(c) Do not mix sand and plaster until ready to add water.

(d) First put in the mixing box a layer of sand, then one of plaster in raised end of box. Hoe dry from one end of box to other and then back again, working sand and plaster thoroughly together to a uniform color. Put water in other end of box; hoe plaster into the water, mixing thoroughly. Mix thin with water at first, then bring to the proper consistence for application by addition of properly proportioned dry sand and plaster.

(17n2) (Specify brand) Wood Fiber Plaster—

Note: *See page 12.*

(a) *Neat*—Put the plaster in upper end of mixing box and water in lower end. Hoe plaster into water and allow to soak from 10 to 20 minutes. Then mix to proper consistence for application.

Note: *Used for wood lath and gypsum lath and scratch coat on wire and expanded metal lath. See "Application of Base Plaster," page 19.*

(b) *Sanded*—Mix equal parts by weight of plaster and dry sand. Mix as specified above in (a).

Note: *Used for brown coat on wire and expanded metal lath and for all plaster on brick, Pyrobar gypsum tile or clay tile.*

(17n3) (Specify brand) Prepared Plaster (Sanded)—

Note: *See page 12.*

(a) Add nothing to the material but water.

(b) Put the plaster in upper end of mixing box and water in lower end. Hoe plaster into water, mixing thoroughly. Mix thin at first, then add sufficient dry material to bring to the proper consistence for application.

(17n4) Bondcrete (For All Concrete Surfaces)—

Note: *See page 13.*

(a) For both scratch and brown coats.

(b) Add nothing to the material but water.

(c) Put the plaster in the upper end of mixing box and water in lower end. Hoe plaster into water. Allow the material to soak at least 10 minutes. Mix thoroughly and break down the mix to a smooth, even creamy consistence.

(17o) Trowel Finish—

Note: *Select type best adapted.*

(17o1) Red Top Trowel Finish—

Note: *See page 13.*

Put the finish in the upper end of mixing box and water in the lower end (8 to 8½ gals. to the 80-lb. bag). No soaking is necessary. Mix thoroughly. Add more water if necessary to bring to a light, creamy consistency.

(17o2) (Specify brand) Prepared Gypsum Finish—

Note: *See page 13.*

Put the finish in the upper end of mixing box and water in lower end. Hoe plaster into water (using approximately 1 part of water to 2 parts of plaster measured by volume). Allow the material to soak and draw in the water without hoeing for at least 10 minutes. When the material has soaked and shows no further signs of air bubbles, mix thoroughly and, with particular care, break down the mix to a smooth, even, creamy consistence. Bring the mix finally to a very thin consistence. Transport in buckets.

(17o3) (Specify brand) Finishing Lime and (Specify brand) Gauging Plaster—

Note: *See page 14.*

(a1) *(Hydrated Lime)* Fill watertight box one-half to two-thirds full of clean water. Add dry lime gradually, preferably sifting through a ¼-in. mesh screen, until all water is dried up. Allow lime to soak overnight to develop full plasticity. Do not hoe or screen after soaking unless lime is dirty or lumpy.

(a2) *(Quick Lime)* Add water and lime gradually while mixing, constantly agitating the mixture to prevent burning of the unslaked portion. Mix to a thin consistency and screen. Run into ageing box.

(b) Mix 3 parts of lime putty by measure with 1 part of dry Gauging Plaster (equal to 2 parts of dry hydrated lime and 1 part of dry gauging plaster by weight). Mix thoroughly.

(17p) Sand Float Finish—

Note: *Select type best adapted.*

(17p1) (Specify brand) Prepared Gypsum Sand Float Finish—

Note: *See page 13.*

Put the finish in the upper end of mixing box and water in lower end. Hoe finish into water. Allow the material to soak and draw in the water without hoeing for at least 10 minutes. When the material has soaked and shows no further signs of air bubbles, mix thoroughly and, with particular care, break down the mix to a smooth, even, creamy consistency. Transport in buckets.

(17p2) (Specify brand) Sand Float Finish (Job Sanded)—

Note: *See page 13.*

Screen sand through a No. 12 screen. Mix dry to a uniform color 1 part of Cement Plaster to 1 part of dry sand by weight (equal to from 4 to 6 shovels of sand to each 100-lb. bag). Put dry mix in upper end of box and water in lower end. Hoe material into water and mix thoroughly to a smooth creamy consistence. Transport in buckets. Keep tools and box clean.

(17q) Oriental Interior (Colored Float or Texture Finish)—

Note: *See page 13.*

(17q1) Color(s) shall be *(specify)* as subsequently determined upon.

(17q2) Put the Oriental Interior in upper end of box and water in lower end. Hoe material into water, using approximately 1 part water to 2 parts Oriental Interior, by volume. Let Oriental Interior soak overnight (not over 24 hours). After soaking, mix thoroughly and carefully hoe the mix to a smooth, creamy consistence. Transport in buckets.

(17r) Red Top Keene's Cement—

Note: *See page 15. Clauses below are for finish coats only.*

(17r1) Add water only, mix thoroughly and bring to a working consistence.

(17r2) Add 1 pail of lime putty to each 100-lb. bag of Keene's Cement where extra plasticity is required.

(17s) *(Specify brand)* **Aridize Moulding Plaster—**

Note: *See page 15.*

(I7s1) Add water only, mix thoroughly and bring to a working consistence.

(17s2) Add 50% lime putty to the moulding plaster where extra plasticity is required for run work.

(18) Furred or Suspended Ceilings

Where so indicated on plans *(or listed in schedules)* ceilings shall be furred or suspended with metal furring members.

Note: *Describe construction. Apply to the United States Gypsum Company for specifications for metal lath and gypsum lath systems.*

(19) Metal Stud Partitions

Where so indicated on plans, partitions shall be constructed of metal studding.

Note: *Describe construction. Apply to United States Gypsum Company for specifications and details.*

(20) Metal Wall Furring

Where so indicated on plans *(or listed in schedules)* exterior walls shall be furred with ¾-in. channels spaced *(specify)* on centers with flange to wall. Furring channels shall be secured to floors and ceilings in a substantial manner and shall be substantially secured to walls with special hook nails driven into the mortar joints. Provide rigid framing at all openings.

(21) Miscellaneous Metal Furring

Provide of ¾-in. channels, furring for all *(false beams) (ornamental plaster cornices) (stair soffits) (specify)*, etc., as shown on the plans and as detailed. Furring shall be set *(specify)* on centers and rigidly secured to the building construction.

Continued on next page

(22) Application of Wood Lath

(22a) All *(exterior stud walls) (wood furring) (interior stud partitions) (ceiling joists) (stair soffits) (specify)* shall be lathed with wood lath. Lath shall be spaced not less than ¼-in. nor more than ⅜-in. apart and shall be secured to each bearing with standard wood shingle nails, two (2) to each end and one (1) to intermediate bearings.

Lathing shall break joints every eight laths, all put on horizontally. Under no circumstances shall lathing stop and form a long, straight, vertical joint nor be put on vertically to finish out at angles or corners; neither shall any lath run through and behind studding from one room to another. All corners must be made solid before lath is applied.

(22b) All re-entrant angles shall be reinforced over the wood lath with Cornerite. Strips shall butt (not lap) at ends and shall be substantially secured.

(23) Application of Red Top Rocklath

All *(exterior stud walls) (wood furring) (interior stud partitions) (ceiling joists) (stair soffits) (furred or suspended ceiling) (metal stud partitions) (specify)* shall be lathed with Red Top Rocklath.

(23a) Cutting shall be done by scoring with a sharp hatchet or knife and then breaking down and up over a straight edge.

Nails shall be 1⅛ in., 13 gauge, ⅜-in. head, blued, long point, sterilized nails.

Red Top Rocklath boards shall butt with broken joints in each course. Stagger joints between walls and ceilings so the vertical joints on wall will not meet ceiling joints.

Fit Red Top Rocklath tight together at all re-entrant angles and corners. Cut accurately and fit Red Top Rocklath neatly around all electric outlet boxes, etc.

Space nails 4 in. apart at every support, nailing to center support first, then outer edges. Each nailing edge must have a firm bearing on studs, joists and furring. Drive nails home.

(23b) All re-entrant angles shall be reinforced over the Red Top Rocklath with Cornerite. Strips shall butt (not lap) at ends and shall be substantially secured.

(24) Application of Metal Lath

All *(exterior stud walls) (wood furring) (interior stud partitions) (ceiling joists) (stair soffits) (furred or suspended ceilings) (metal wall furring) (metal stud partitions) (miscellaneous metal furrings) (specify)* shall be lathed with metal lath.

Note: *Complete specifications will be sent by the company on request.*

(25) Corner Beads

All corners *(both vertical and horizontal)* shall be protected with corner beads for their full height *(or length)*.

Note: *If there are exceptions so note.*

Corner beads shall be substantially secured, accurately set, plumb, true and straight.

(26) Metal Base Screeds

The following rooms shall have base screeds:

Note: *List and locate either in schedules on plans or here.*

Screeds shall be substantially secured, accurately set, straight and true to line and parallel with the finished floor line.

(27) Metal Picture Moulds

The following rooms shall have metal picture moulds:

Note: *List and locate either in schedules on plans or here.*

Picture moulds shall be substantially secured, accurately set, straight and true to line and parallel with the ceiling line.

(28) Metal Expansion Casings

The following openings shall have metal expansion casings:

Note: *List and locate either in schedules on plans or here.*

Expansion casings shall be accurately set in line with jambs in accordance with details. Secure with screws and locking metal clips. Provide one-piece stamped casing miters.

(29) Application of Plaster—General

Keep plaster from freezing for 24 hours after application. Do not apply finish coat on a base coat which contains frost.

In hot, dry weather screen all openings while plastering to prevent material drying out before it has set. If plaster should dry out (showing soft, white spots or areas) sprinkle those portions so affected with clean water from a spray pump or a brush.

After plastering has set, open the windows and permit the wall to dry out as quickly as possible. Use judgment in procedure during freezing weather.

For grounds see "Grounds," page 23. Unless specially otherwise noted, all plaster shall be applied in three (3) coats—scratch, brown and finish. Scratch coat shall be applied and the surface well scratched. When scratch coat is set and nearly dry, follow with brown coat. Brown coat shall be brought to a true level plane with rod and darby flush with the grounds, ready to receive finish coat. Angles and corners shall be left straight, true and plumb.

(30) Application of Base Plaster (Scratch and Brown Coats)

(30a) Cement Plaster and Prepared Plaster—

(30a1) On Wood Lath—Soak lath thoroughly the day before and again an hour or so before applying the plaster. Apply in two (2) coats, scratch and brown, the scratch with sufficient pressure to obtain a good key. Darby the brown coat lightly, and use water sparingly.

(30a2) On Gypsum Lath—Do not wet lath. Apply in two (2) coats, scratch and brown. Scratch coat shall be well scratched in to fill all interstices between lath boards. Darby brown coat lightly and use water sparingly.

(30a3) On Wire or Expanded Metal Lath—Apply in two (2) coats, scratch and brown. Scratch coat shall be applied lightly covering the lath and filling meshes. Darby brown coat lightly and use water sparingly.

(30a4) On Brick, Pyrobar Gypsum Tile, or Clay Tile—*(Soak brick or tile walls thoroughly.) (If necessary, sprinkle Pyrobar lightly to reduce suction.)* Apply in two (2) coats, scratch and brown, and fill out to grounds. Darby lightly and use water sparingly.

(30b) Wood Fiber Plaster—

Note: *Neat Wood Fiber Plaster may be troweled down to a smooth finish omitting further finish coat. If desired, so specify.*

(30b1) On Wood Lath—Soak lath thoroughly the day before and again an hour or so before applying the plaster. Apply scratch coat with sufficient pressure to obtain a good key. Rake or scratch the surface. Apply brown coat using sufficient material to fill out to the grounds.

Before the plaster begins to set, broom the surface to receive the finish coat.

(30b2) On Gypsum Lath—Do not wet lath. Apply in two (2) coats, scratch and brown. Scratch coat shall be well scratched in to fill all interstices between lath boards. Before the plaster begins to set, broom the surface to receive the finish coat.

(30b3) On Wire or Expanded Metal Lath—Apply in two (2) coats, scratch and brown. Scratch coat shall be applied a little stiff, covering the lath and filling meshes. Brown coat shall be applied to fill out to the grounds. Before the plaster begins to set, broom the surface to receive the finish coat.

(30b4) On Brick, Pyrobar Gypsum Tile or Clay Tile—*(Except over dampproof paint.) (Soak brick or tile walls thoroughly.) (If necessary, sprinkle Pyrobar lightly to reduce suction.)* Apply in two (2) coats, scratch and brown, and fill out to the grounds. Before the plaster begins to set, broom the surface to receive the finish coat.

(30c) Bondcrete (For All Concrete Surfaces)—

Note: *See paragraph 12, page 17.*

Note: *Bondcrete may be troweled down to a smooth finish omitting further finish coat. If desired, so specify.*

Apply in two (2) coats, scratch and brown, and fill out to grounds. Before the plaster begins to set, broom the surface to receive the finish coat.

Continued on next page

(31) Application of Trowel Finish

(31a) Location—The following shall receive trowel finish:

Note: List and locate either in schedules on plans or here.

(31b) Prepared Gypsum Finish—

Base coat must be half green before finish is applied. If suction is too great, sprinkle lightly with clean water from a clean brush.

Apply in three (3) coats. The first time over, put on sufficient material to cover the surface completely, using material as thin as possible and grinding it thoroughly into the base coat. Allow this to draw a few moments to avoid blistering.

The second time over, lay the material on perfectly level.

The third time, make the material as thin as can be handled on the hawk and fill in cat faces and imperfections. After it has drawn a few moments, trowel to a smooth surface, applying water with a damp brush. Do not drench with water (drenching will kill the face of the material). Work top and bottom of the wall at the same time to avoid joinings.

(31c) Red Top Trowel Finish or Lime and Gauging Plaster—

Apply over *dry* walls, using more water if the walls are bone dry. Scratch in a thin coat, then go over a second time filling imperfections and cat faces. Trowel to a smooth finish applying water with a damp brush. Troweling should be completed before the finish has set. In cold, damp weather, provide heat and ventilation until the finish is dry.

(32) Application of Sand Float Finish

(32a) Location—The following shall receive sand float finish:

Note: List and locate either in schedules on plans or here.

(32b) Prepared Sand Float Finish or Cement Plaster Sanded—

Apply sand float finish after base coat has set firm and hard, but while still green—within twelve hours after base coat has been applied.

Lay on with a trowel and then use a *(cork) (carpet)* or *(felt)* float, working the material to a true, even surface, free from float marks and cat faces.

Note: Cork float preferred.

Use as little water as possible while working, so as to avoid killing the surface. Use damp brush only. Do not attempt to work after the material begins to or has set.

Work top and bottom of the wall at the same time to avoid joinings.

(33) Application of Oriental Interior (Colored Finish Coat)

(33a) Location—The following shall receive Oriental Interior Finish:

Note: List and locate either in schedules on plans or here.

(33b) General—Brown coat should be broomed or left rough under darby to insure a good bond. Remove all loose or projecting particles from base coat which may show through finish coat.

The base coat must be set firm and hard before the application of Oriental Interior. *On all types of masonry construction, such as gypsum tile, clay tile, etc., the base coat must be thoroughly dry.* On other types of lathing base, such as plaster board, wood or metal lath, Oriental Interior may be applied after the base coat is 90% dry. If the suction in the base coat is too great to permit ease of application, wet down lightly and uniformly with clean water.

To avoid cutting re-entrant angles, use a trowel with edges rounded to a curve approximately the circumference of a dime.

Use as little water as possible while working, so as to avoid killing the surface. Use damp brush only. Do not attempt to work material after it begins to or has set.

Work top and bottom of the wall at the same time to avoid joinings.

(33c) Float Finish—Apply in two (2) coats. First apply a thin coat, grinding this into base, thoroughly covering the surface, and allow to draw a few moments. The second time over lay the material on perfectly level and then use a *(cork) (carpet)* or *(felt)* float, working the material to a true, even surface, free from float marks and cat faces.

(33d) Texture Finish—Apply in two (2) coats. First apply a thin coat, grinding this into base, thoroughly covering the surface, and allow to draw a few moments. The second time over, lay the material on perfectly level, working it into the desired texture.

Proper drying conditions must be maintained in order to protect the color. During the late fall, winter and early spring months, the slow-drying periods of the year, artificial heat and proper ventilation must be arranged for. Failure to provide this protection may result in color difficulties.

Note: The UNITED STATES GYPSUM COMPANY *will furnish on application a Special Bulletin covering the execution of textured finishes.*

(33e) Tile or Masonry Effects—Mark off with a straightedge while the material is "green"—preferably from 4 to 5 hours after application. Units shall be rectangular and joints shall be clean cut and even.

(34) Application of Keene's Cement Finish

(34a) Location—The following shall receive Keene's Cement Finish:

Note: List and locate either in schedules on plans or here.

(34b) General—

Note: Specify same as (31c) in opposite column.

(34c) Marble Panels—Keene's Cement wainscots shall be divided into even vertical panels with V-joints while the material is "green"—preferably from 4 to 5 hours after application. First rake out plaster base at joints for a depth of ¼ and ½ in. wide, laid to a straightedge, plumb and true—clean of loose particles. Apply Keene's Cement as above and form clean cut, even vertical V-joints at panel divisions.

(34d) Tile Effects—

Note: Specify same as Oriental Interior—Tile Effect.

(34e) Polished Surfaces—After the cement is dry, polish with a cloth to a highly polished surface.

(35) Ornamental Work

(35a) Location—The following rooms require ornamental plaster in accordance with details.

Note: List and locate either in schedules on plans or here.

(35b) Models—

(35b1) All ornamental work shall be executed from models.

(35b2) Models shall be furnished at the contractor's expense for all ornamental work. These shall be made by a skilled modeler *(selected) (approved)* by the architect, preferably in *(name place)* so that they may be under the direct supervision of the architect while being prepared. Models must be submitted for approval while in the clay.

(35b3) The contractor shall allow the sum of *(specify)* to cover the cost of models prepared under the direction of the architects, delivered f.o.b. cars *(specify)*.

(35b4) The owner will furnish, without cost to the contractor, models prepared under the direction of the architect, delivered f.o.b. cars *(specify)*.

(35c) General—

(35c1) All curved work shall be *(run)* or *(cast)* to true radial lines.

(35c2) Leave all ornamental plaster work in perfect condition for decorating, true and smooth, with surfaces and intersections rubbed down with fine sandpaper, if necessary.

(35d) Run Work—All run work shall be executed in gauged Moulding Plaster.

Furnish clean cut, accurate templates made in strict accordance with the architect's *(full size)* details.

Run all mouldings straight and true with perfect arrises and miters.

(35e) Cast Work—All cast work shall be executed in Moulding Plaster.

Ornamental work shall be cast hollow or solid as best suited to conditions, thoroughly strengthened with fiber and braced where necessary.

All cast work shall be set accurately—true, plumb and straight.

If necessary, members shall be substantially fastened around furring; where nails are used, they shall be galvanized.

Continued on next page

ORIENTAL EXTERIOR STUCCO

(Base Coats and Colored Finish Coat)

Description

Oriental Exterior Stucco is a completely factory-mixed exterior stucco material of the highest quality. The finish coat is scientifically colored in a wide range of tints. It is the product of careful and thorough investigation and research by the United States Gypsum Company.

The chief limitation of stucco heretofore has been the difficulty of producing the desired texture and color to harmonize with the architectural design when the color has to be mixed in on the job, or of matching a certain color when the batches are mixed at different times or under different conditions.

Oriental Exterior Stucco is scientifically compounded and is water-resistive, non-staining, plastic, easy to apply, and permanent. Its use eliminates much of the uncertainty and defects inherent in both quality and appearance in the usual job-mixed stucco work.

Bases—Oriental Exterior Stucco may be applied over steel fabric, metal lath, wire lath, tile, brick or concrete. It is particularly adapted to use over Gyplap wall construction (see page 31). It is also adaptable for overcoating old cement stucco walls, masonry surfaces and walls of frame buildings.

Oriental Exterior Stucco contains no ingredient that will in any way weaken or corrode steel reinforcement.

Base Coat—Oriental Exterior Stucco Base Coat is a specially prepared, factory-mixed, permanent, water-resistive base for Oriental Exterior Stucco Finish, with the correct proportion of uniformly graded, selected sand, and other ingredients added to make it plastic.

Factory mixing prevents oversanding or improper proportioning of other ingredients on the job. Its uniformity assures perfect joinings of various mixes that will not show through the delicate coloring of the finish coat.

Being made ready for use by the addition of water only, it is economical of time and labor and assures a base of uniform suction and strength.

Finish Coat—Oriental Exterior Stucco Finish is mixed with mineral colors and prepared ingredients that make it water-resistive. The formula used is based upon methods used in producing the famous Old World stuccoes and one successfully used in America for 20 years.

Oriental Exterior Stucco Finish is furnished in white and eleven standard colors. All ingredients, including the mineral colors, are weighed and the charge thoroughly machine mixed. Water only needs to be added at the job. A uniform color and correct mixture are thus assured, entirely eliminating the unavoidable variations which occur when stucco is hand-mixed on the job.

Characteristics

Oriental Exterior Finish sets slowly enough to permit proper finishing, thus avoiding unsightly streaks or shading.

Proper manipulation by the workman will produce in Oriental Exterior Stucco the beautiful texture and color effects that mark the finest of both Old World and modern stucco work. Besides the period textures, it is easy to achieve the smooth trowel, stipple, sponge, rough cast or spatter-dash finishes.

Oriental Stucco Finish increases in hardness, strength and water resistive qualities with age.

Use

Use for base and finish coats of exterior white or colored stucco of the highest quality.

Note: *Oriental Exterior Stucco Finish may be applied over standard portland cement base coats.*

Package

Oriental Exterior Base Coat is shipped in 80-lb. paper bags, and Oriental Exterior Finish Coat is shipped in 100-lb. paper bags. Order Finish Coat by the number on color cards or samples.

Covering Capacity

Note: *See "Covering Capacity," page 11.*

Base Coat—The approximate covering capacity of one ton of Oriental Exterior Stucco Base Coat (scratch and brown coats) on the basis of the average job, is as follows:

Plastering surface	Brick and clay tile	Metal lath	Wire fabric	Cement and cinder tile	Concrete
Sq. yd. per ton	20 to 25	20 to 22	20 to 25	20 to 22	20 to 25

Finish Coat—One ton of Oriental Exterior Stucco Finish, not to exceed ¼ in. in thickness, will cover from 150 to 200 sq. yds., depending on the texture selected.

ORIENTAL EXTERIOR STUCCO—SPECIFICATIONS

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

(1) Work Included

The following surfaces shall be finished with Oriental Exterior Stucco:

Note: *Here list and locate all work included under this contract, together with the description of texture and color selected. If more than one texture or color is used on the work, list, locate and describe separately.*

(2) Examination

This contractor shall examine all base surfaces to receive stucco and shall report to the architect in writing any defects which will detrimentally affect the work under this contract. Commencement of work under this contract, without such notice, will be construed as acceptance of the base surfaces, and full responsibility for the perfect final condition of the finished work.

(3) Sample Panels

The contractor shall furnish on the site, where directed, three (3) sample panels one (1) square yard in area for the approval of the architect. Panels shall be executed on the base specified and in accordance with the architect's selection of textures and colors. The stucco work shall be finished in accordance with the approved panel or panels.

(4) General

All materials shall be as manufactured by the United States Gypsum Company. All work shall be performed by skilled workmen.

(5) Materials

(5a) Red Top Expanded Metal Stucco Mesh—1½-in. mesh, painted; weight *(1.8) (3.6)* lb. per sq. yd. Nails shall be special self-furring nails.

(5b) Woven Wire—Electrically welded, 2-in. mesh fabric of No. 14 gauge cold drawn steel wire, thoroughly galvanized and crimped for self-furring. Nails shall be special No. 10½ gauge, 1¾ in. long.

Note: *Furnished 48 in. wide, 112½ ft. long containing 50 sq. yds., especially for use over Gyplap sheathing. See page 31. It is equally adaptable for use over wood sheathing.*

Note: *Select either expanded metal or steel wire mesh for frame construction as desired.*

(5c) Base Coat—Oriental Exterior Stucco Base Coat.

(5d) Finish Coat—Oriental Exterior Stucco Finish, color No. *(specify).*

(6) Lathing

Note: *Include only for frame construction.*

(6a) Expanded Metal—Apply the expanded metal across the studs. Secure with self-furring nails in accordance with the manufacturer's directions approximately 6 in. apart on studs.

Continued on next page

Lap pieces of expanded metal 1 in. Carry metal around all corners to the first support. Thoroughly secure the metal at all openings.

(6b) Woven Wire—Apply reinforcement across the studs with the crimps against the *(Gyplap) (Sheathing)*. Nails 6 in. apart on studs. Lay pieces of reinforcement at all sides and ends so that cross-wires lap 1 in. Vertical joints shall be broken and shall come at supports. Carry reinforcement around all corners to the first support. An extra piece of reinforcement shall be nailed diagonally across corners of all openings.

(7) Mixing and Application of Stucco

(7a) General—

(1) Use a clean, tight mixing box, about 3½x7 ft., raised about 4 in. at one end. Mix with a hoe. Clean the mixing box after each gauging.

(2) Use only clean water, free from alkali and impurities; keep tools clean. Do not rinse tools in gauging water.

(3) Do not mix more material than can be applied in about one hour.

(4) Do not mix one gauging with another and do not retemper stucco after it has commenced to set.

(5) Do not apply during freezing, cold or wet weather, nor when rainstorms threaten.

Note: *Freezing will cause disintegration as well as color difficulty. Slow or sluggish drying or a rainstorm before hardening takes place, generally results in cloudy effects and color distortion. Careful treatment of this phase of stucco work is the greatest guarantee of uniformity in color. The material should not be applied to greasy surfaces. Integral waterproofing or anti-freeze solutions should not be used.*

(6) Keep stucco in a dry place. Do not store on the bare ground.

(7b) Base Coats—Add only clean water to Oriental Exterior Stucco Base Coat and mix to the proper consistency. Apply in two coats. The first coat shall be not less than ½ in. thick, scratched. After the first or scratch coat has thoroughly set but not dried, apply the second coat not less than ⅜ in. thick properly rodded and floated to a true plane. Rake or thoroughly scratch each coat to provide a key for the succeeding coat.

(7c) Finish Coat—Add only clean water to Oriental Exterior Stucco Finish and mix to the proper consistency. Allow finish coat to soak from 20 to 30 minutes. After the second base coat is completely dry, spray wall sufficiently to cut suction and apply finish coat not less than ⅛ in. or more than ¼ in. thick, as required for the finish selected.

The finish shall be:

Note: *Here specify or describe the finish selected. U.S.G. Bulletin OS-3 describes in detail the methods used to obtain various textures.*

SHEETROCK—THE FIREPROOF WALLBOARD

Description

Sheetrock is a fireproof wallboard. It is made of gypsum, moulded while in a plastic condition between two sheets of tough protective paper. In the finished product the gypsum has recrystallized and the board is strong, lasting, tough, durable and slightly flexible. The long edges are reinforced and protected by the same material with which the board is sheathed. These patented edges are square, uniform and true. The Sheetrock Reinforced Joint System described on next page provides a uniform, strong, jointless surface ideal for any finish.

U.S.G. Patented Reinforced Edges Provide Extra Nailing Strength and Insure Tight, Flush Joints

The following are recent developments in the *New Improved Sheetrock.*

A New Surface—New Improved Sheetrock has a close-grained, highly calendered surface of ivory color. It is tough and highly resistant to scuffing and abrasion. Light colored paints retain their original freshness and clarity. All paints spread farther.

The Improved Core—The new cellular structure makes New Improved Sheetrock more insulating. It also increases flexibility, reducing the chance of breakage in transport, handling and application. The gypsum at the ends is specially hardened.

Improved Nailing Edges—Nailing edges on the New Improved Sheetrock are square and uniformly thick. The paper enveloping the core has been chamfered so that the reinforced edges are of precisely the same thickness as the rest of the board, thus eliminating bowing in the piles. Panels join evenly and smoothly.

New Marking—On the back of each panel will be found a distinctive marking. This new marking will be recognized immediately as the sign of the New Improved Sheetrock.

Sizes

Sheetrock is made ⅜ in. thick; 32 and 48 in. wide and 4, 5, 6, 7, 8, 8½, 9 and 10 ft. long. The widths fit standard 16-in. centering of studding and joists and the lengths readily adapt it to average ceiling heights.

Sheetrock is also made ¼ in. thick and 6, 7, 8, 9 and 10 ft. long. Be sure to specify the thickness desired.

Advantages

Fireproof—Does not burn or readily transmit heat. It interposes a continuous fireproof sheet of substantial thickness over the wood frame construction.

Permanent—Does not disintegrate.

No Expansion or Contraction—Does not warp, shrink or crack, because it is unaffected by climatic conditions.

Substantial Thickness—⅜ in., almost twice as thick as ordinary fiber wallboard.

Strong Close Longitudinal Joints—The boards fit close and even. The tough paper covering of Sheetrock is folded square over the longitudinal edges, forming a patented feature which insures an extra strong nailing edge and tight, flush joints. When finished with Sheetrock Reinforced Joint System (see bottom of page 29), the joints are permanently hidden and are not apparent even under wallpaper.

Sound and Heat Insulation—Its greater thickness and permanently tight joints increase its insulating qualities materially over those of ordinary wallboard.

It is a non-conductor of sound to a surprising degree.

Easy to Install—It is sufficiently light in weight for easy, rapid handling. The tough sheets can be sawed and nailed like lumber.

Use

Because Sheetrock possesses so many high grade, practical features, it has a correspondingly wide field of usefulness.

Use for walls and ceilings in buildings of all types; building new rooms in old buildings; lining garages and attics; fireproofing over heating plants; factory dry rooms; exhibition booths; walls and ceilings of remodeling work. It is particularly adapted to office partition work in existing buildings, since it eliminates the time and dirt of plastering.

Sheetrock walls, particularly when finished with Metal "A" Joint System or Sheetrock Reinforced Joint System, take all types of painting and decorating, including wall paper.

Textone, the Plastic Paint described on page 37, is a particularly desirable decorative medium for Sheetrock.

SHEETROCK REINFORCED JOINT SYSTEMS

The United States Gypsum Company has developed two new systems of joint reinforcement, which add permanent joint concealment to the other advantages of Sheetrock. The joinings between the boards are "laced" by reinforcing (either the new Metal "A" System or the Fabric System) embedded in a perfected joint cement of unusual strength and adhesiveness. Sheetrock is applied as illustrated on page 23. This assures permanent concealment of board joinings and lessens the possibility of joint cracks showing through the decoration.

The Metal "A" System of reinforcing consists of a perforated metal tape packed in a box containing 250 lin. ft. 1⅞ in. wide with 15 lbs. of joint cement which is sufficient to treat the joints on 500 sq. ft. of board surface.

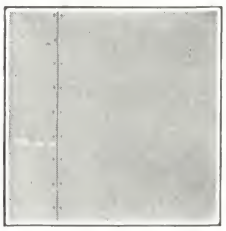
The Fabric System of reinforcing consists of a specially woven and processed cloth fabric, packed as above described for Metal "A" System, except the bag contains 10 lbs. of cement.

The Metal "A" System is somewhat more expensive, but is preferable. Select the system desired.

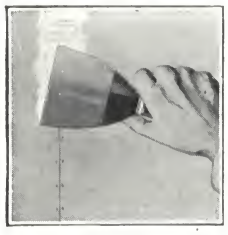
Sheetrock Finisher is a specially prepared material, far superior to so-called joint fillers, with none of the disadvantages of the old type of plaster filler. When mixed with water, Sheetrock Finisher forms a cement, which is easily, quickly and economically applied with a semiflexible scraping knife. It is used to conceal joints, spot nailheads and repair surface abrasions. Supplied in 5- 10- and 25-lb. packages. 5 lb. should finish joints and cover nailheads for 500 sq. ft. of Sheetrock.

Continued on next page

APPLICATION OF SHEETROCK REINFORCED JOINT SYSTEM



Sheetrock Joint Before Reinforcing



"Buttering"—Working the Cement Into the Joint

Putting Metal "A" or Cloth Fabric Reinforcing in Place

Forcing Cement Through Metal "A" or Fabric and Leveling Surface

SHEETROCK SPECIFICATION—SHORT FORM

(1) Work Included

Note: List and locate all walls and ceilings to be covered with Sheetrock.

(2) Framing

All studding and joists shall be spaced 16 in. on center. Provide 2x4-in. headers on ceilings to take all end joints of Sheetrock and where required to form nailing base for wood beams, cornices, etc. Cut in 2x4-in. headers on walls to form substantial nailing for baseboards, wainscot caps and similar interior woodwork trim.

(3) Materials

(3a) Wallboard—⅜-in. Sheetrock as manufactured by the United States Gypsum Company.

(3b) Nails—3d cement coated common nails *(flat head)* 1⅛ in. long.

Note: On buildings of two or more stories with a floor above Sheetrock ceiling, use 4d nails.

(4) Application

Apply Sheetrock direct to framing as per directions of the United States Gypsum Company, manufacturer.

Note: Specify joint system desired. Do not use plaster paris or ordinary joint filler.

(5) Decoration

Note: Specify type of decoration, to be applied according to the directions of the manufacturer of Sheetrock.

SHEETROCK TILE BOARD

Description

Sheetrock Tile Board is a fireproof, gypsum wallboard made to obtain conveniently and at low cost, beautiful tiled-wall effects.

Sheetrock Tile Board is a perfected product that makes possible lacquered and enameled surfaces that resemble the best ceramic tile in any shade of color desired, thus enabling the decorator to obtain complete color harmony.

After Sheetrock Tile Board has been erected and decorated, it can be washed clean when soiled.

The surfacing of Sheetrock Tile Board is of heavy fiber, which has a distinctive cream color, especially adapted for decorating.

Sizes

Sheetrock Tile Board is made in panels ⅜ in. thick, 48 in. wide and 6, 7, 8, 9 and 10 ft. long. The tile impressions are 4¼x4¼ in., a standard size for built-in fixtures. There is a selvage or trimming edge on each panel end outside the tile pattern. The panels are packed two in a bundle, with the tile face inside and edges reinforced.

Advantages

Because it is made from gypsum, Sheetrock Tile Board does not burn. Neither does it warp or buckle, nor does it harbor vermin, and, though it is made from gypsum rock, it is light enough for convenient erection and can be nailed, sawed and fitted with the ease of wood.

The material has all the advantages inherent in Sheetrock. See page 22.

Use

Use for tiled-wall effect in bathrooms, kitchens, lavatories, lunchrooms, dairies, doctors' offices, restaurants, delicatessens and barber shops.

Erection and Decorating

Complete directions for erection and decorating of Sheetrock Tile Board are on the back of each panel.

GYPLAP—FIREPROOF SHEATHING

Description

Gyplap is a solid sheet of gypsum encased in a tough fibrous covering, the outer surface of which is moistureproof. Its uniformity and strength make it an ideal material for sheathing on frame structures under siding, stucco and brick veneer. It also makes an excellent fire stop between floors.

Gyplap has the U.S.G. patented reinforced folded edge, which gives maximum strength. The large units, spanning across several studs, have been found by tests to support the building better than does wood sheathing laid horizontally.

Gyplap has an interlocking joint, and, as the sheets do not warp and separate at the joints, the wall is wind-tight. The use of building paper is unnecessary.

The material saws and nails as easily as lumber, and, because of the rapidity with which the large units can be applied and the elimination of building paper, this fireproof sheathing costs but little, if any, more than wood sheathing in the completed job.

Sizes

Gyplap is ½ in. thick, 24 in. wide, 6 ft. 8 in. and 8 ft. long.

THE FINISHING LIME ASSOCIATION OF OHIO

HEADQUARTERS OFFICE

508-509 Home Bank Building

TOLEDO, OHIO

MEMBERS

THE KELLEY ISLAND LIME & TRANSPORT CO.
NATIONAL MORTAR & SUPPLY CO.
THE NATIONAL LIME & STONE CO.
THE OHIO HYDRATE & SUPPLY CO.
THE WOODVILLE LIME PRODUCTS CO.
THE GIBSONBURG LIME PRODUCTS CO.

DISTRICT OFFICES

CHICAGO, ILL. ST. LOUIS, MO. ATLANTA, GA. DETROIT, MICH. PHILADELPHIA, PA. CINCINNATI, OHIO PITTSBURGH, PA. NEW YORK, N. Y.

What Finishing Hydrated Lime Is

Finishing Hydrated Lime is a high magnesium lime produced from Dolomitic rock having properties and characteristics found only in a small deposit of lime rock located in northwestern Ohio.

The lime produced from this section has a world wide acknowledgment of its superiority as to color, durability and workability or plasticity through which it has gained an international distribution.

Limes Have a Wide Classification

Limes have a wide classification based on their magnesium contents and for all plastering purposes a high magnesium lime is preferred. (Bureau of Standards.) Finishing Hydrated Lime, due to its high magnesium content and high plasticity is a true construction lime.

Lime Is Marketed in Two Forms

Lime is marketed in two forms—lump and hydrated.

Lump lime or quicklime is the unfinished product, the manufacturing process being completed at the mortar box, throughslaking or hydrating with subsequent screening to remove the impurities and core, and then aged.

Finishing Hydrated Lime is completely manufactured at plants, the slaking or hydrating taking place under chemical control and all impurities removed through careful selection after burning. It is delivered on the job in 50-lb. paper sacks and runs uniform in color and pureness.

Eaton Tower Building, Detroit, Mich.
Finishing Hydrated Lime used throughout for finish coat.
Completed 1927

Finishing Lime Association of Ohio

Organization—The Finishing Lime Association of Ohio is national in scope. It was organized in 1926 with offices in Toledo, Ohio, and is composed of the leading manufacturers of Finishing Hydrated Lime.

Purpose and Aims—The purpose and aims of the Association are educational. Information relative to the use of Finishing Hydrated Lime is disseminated, and the user is informed as to the correct method and means of preparing Finishing Hydrated Lime for use. Literature and specifications are prepared for distribution and work in the field is carried on by a force of trained engineers who carry on the educational work through personal contact.

Architectural Service

As plastering is one of the most important elements that enter into the construction of a building, we are continually endeavoring to get better plaster work, and are glad to advise through the field men, relative to plastering problems.

Acoustical Value of Finishing Hydrated Lime

Due to the type of construction developed within the past few years, where steel and concrete have been used in framing and flooring buildings, the problem of acoustics has reached an important place in the consideration and study of building materials.

It is recognized that plastering has a great bearing on the transmission of sound through the walls and

Continued on next page

Ceiling of Banking Room of Security Bank, Toledo, Ohio
Finishing Hydrated Lime plaster used for base coats and finish resulting in perfect acoustics

Interior of St. Ambrose Church, St. Louis, Mo.
Finishing Hydrated Lime plaster used for base coats and finish resulting in a perfect job of plaster and a structure acoustically correct

ceilings and the sound absorbing qualities of Finished Hydrated Lime give it an important acoustical value.

Plastering made from Finishing Hydrated Lime is cellular in structure and it is this characteristic which gives it an acoustical value, as the sound waves which are impinged against it are absorbed and deadened. This prevents not only the transmission of sound but also the reflection.

Uniform Color, Plasticity and Economy of Finishing Hydrated Lime

The use of Finishing Hydrated Lime can be considered as finish plaster insurance. It is a quality product, and has, besides uniformity, cool working properties and plasticity which are measures of the efficiency of a lime. It is economical, not only due to uniformity and workability, but in handling, especially on a multiple storied building. Sufficient Finishing Hydrated Lime may be stored on each floor to finish that floor and may be prepared where it is used. Putty is slaked, screened and aged on the ground. To raise 100 lb. of putty from the ground to the tenth floor of a building requires twice the amount of labor it would take to raise 50 lb. of Finishing Hydrated Lime to the tenth floor, which on being soaked would give 100 lb. of putty. Thus labor in handling Finishing Hydrated Lime is one-half as much as handling slaked putty.

Finishing Hydrated Lime on Suspended Ceilings

Finishing Hydrated Lime plaster acts as a preservative of metal and protects it from corrosion. This is very important where suspended ceilings are used, due to the fact that the factor of safety is considerably increased through the use of this material.

Textured Finishes

During the past few years there has been a great development in textured or period finishes for plastered surfaces. Their variety is only limited by the imagination of the architect and the ability of the workman. Finishing Hydrated Lime, due to its high plasticity and its ability to hold color, offers a perfect medium for the development of these finishes.

Ball Room of Senate and Congress Hotel, St. Louis, Mo.
Finishing Hydrated Lime plaster used. The uniform color and plasticity were used to good advantage in the ornamental as well as flat work. All surfaces are hard and white; perfectly smooth, without streaks or discoloration, and plastering is of the highest quality

Main Lobby in Scottish Rite Temple, St. Louis, Mo.
Finishing Hydrated Lime was used for the plaster work because only the highest quality material was permitted to be used. A very pleasing and satisfactory finish is the result

Continued on next page

Textures developed with the finish coat of plaster become an integral part of the wall and are permanent, economical and efficient.

These are easily mixed on the job, either with color or without. If the latter, the wall is painted in the usual manner or by spraying.

If color is included in the mixing, thus saving the cost of decoration, a colored finish is used, ready mixed or prepared.

If added at the time of mixing, care should be taken to see that only pure mineral pigments are used.

A mixture which has met with universal satisfaction and which is recommended is as follows:

Materials—
Lime shall be Finishing Hydrated Lime.
Keene's Cement shall be Best Bros'.
Color shall be pure mineral pigments.
Sand shall be white silica plastering sand.

Proportions—
Four (4) bags Finishing Hydrated Lime.
One (1) bag Best Bros'. Keene's Cement.
Five (5) cu. ft. of white silica sand.
Color in proportion to shade desired.

If an unsanded texture is desired, it may be mixed in same proportion as above without sand.

If it is desired to decorate after texture is applied, color is not included.

English Antique

Modified Spanish

Moorish Brocade

American Rough Cast

Italian Brocade

English

Textured Finishes Obtained with Finishing Hydrated Lime

Continued on next page

SPECIFICATIONS FOR INTERIOR PLASTER, USING FINISHING HYDRATED LIME

For the purpose of aiding you in obtaining a perfect, everlasting job of plaster and solving your problems in acoustics, we are submitting these specifications on the use of Finishing Hydrated Lime. These specifications are based on average conditions and will serve as a guide in carrying out your work.

The proportions of these specifications are based on the Finishing Limes of Ohio, which have physical characteristics peculiar to limestone found only in a small area in northwestern Ohio.

Preparation for Use—Finishing Hydrated Lime is delivered to the job in 50-lb. paper bags, and is prepared for finished coats as follows: the Finishing Hydrated Lime is sifted through a coarse screen into a box or tank containing clean water and allowed to settle and thoroughly unite with water to form a putty. This putty should be allowed to soak 24 hours undisturbed. (Do not agitate or stir or try to force hydrate into water.)

It is during this time that the plasticity develops and any stirring or agitating will destroy the collodial structure.

The following are specifications covering its use for base and finish coats:

Materials

Finishing Hydrated Lime—All lime shall be Dolomitic Finishing Hydrated Lime meeting the requirements of the American Society for Testing Materials, and THE FINISHING LIME ASSOCIATION OF OHIO, delivered at the job in original packages.

Sand—(a) Sand for scratch and brown coats shall meet the requirements of the tentative specifications for sand for lime plaster of the American Society for Testing Materials.

(b) Sand for sand finish shall be a clean, dry screened sand 100% passing a No. 10 mesh screen, unless otherwise specified for specific finishes.

(c) Colored screenings and marble dust may be used to obtain color shades.

Gauging Materials—(a) Plaster of paris shall be clean, fresh and fully calcined, meeting the specifications of the American Society for Testing Materials.

(b) When Keene's cement is used it shall be a standard brand meeting the specifications of the American Society for Testing Materials.

(c) When portland cement is used it shall be a standard brand meeting the specifications of the American Society for Testing Materials and the Portland Cement Association.

Hair—(a) Hair shall be long washed goat or cattle hair free from foreign matter.

(b) Vegetable fibre free from tannin may be used and shall be long, clean, and well washed out.

Water—Water shall be clean and fit for domestic consumption.

Metal Lath—All expanded and fabricated lath shall be of an approved brand, applied in accordance with recommendations of the manufacturers.

Wood Lath—Wood lath shall be No. 1 White Pine or equal and should be as damp as practicable when mortar is applied. Courses should be broken every eighth course, and all lath laid horizontally and in one direction on ceilings. They shall be nailed securely with 3d nails to each support, and shall cross and have butt joints over a support. Lath shall be spaced ⅜ in. apart. Provide and securely place metal corner beads and metal lath strips in all exterior and interior angles.

Ground Work—(a) Grounds shall be placed and secured prior to the application of plaster. Wood lath and metal lath shall have ¾-in. or ⅞-in. grounds. Solid backings shall have ⅝-in. grounds.

Plastering on Concrete Surfaces

Base Coats (Putty Mix)

Ceilings—*Proportions:* Stiff putty, 1 part by volume; fine plaster sand, 2½ parts by volume.

Prepare ceiling by brushing or washing free from scale dust, dirt, oil, etc., and then slush down with neat portland cement as a primer or by hacking and roughing surface prepare bond to receive plaster. When this is set, apply coat as thin as possible. (If plain surface is required, it should be obtained through good form work. Do not attempt to fill up uneven places with plaster.) Trowel to finish or texture desired. If white coat is desired, add finely screened sand to regular white coat.

Walls—⅝-in. grounds. *Proportions:* Stiff putty, 1 part by volume; plaster sand, 3 parts by volume.

Brush or wash surface free from all dirt scale, or foreign matter, and then slush down with neat cement, or by hacking and roughing surface prepare bond to receive plaster. When this is dry apply 1 coat of this mortar and by adding 1 more part of sand, apply a second coat, and bring out to grounds. Use rod and darby to bring to even surface. When firm but not dry, rub evenly with float to remove and prevent shrinkage cracks, and prepare surface to receive finish coat. When thoroughly dry apply finish coat.

Note: All interior surfaces of concrete basement walls below ground level should be furred and lathed before plastering.

Note: For first class work we recommend furring and lathing over concrete surfaces.

Base Coats (Dry Mix)

Ceilings—*Proportions:* Finishing Hydrated Lime, 2 sacks, 100 lb.; fine plastering sand, 300 lb.

Prepare ceiling by brushing or washing free from scale dust, dirt, oil, etc., and then slush down with neat portland cement as a primer, or hacking and roughing surface to prepare bond to receive plaster. When this is set, apply coat as thin as possible. (If plane surface is required, it should be obtained through good formwork. Do not attempt to fill up uneven places with plaster.) Trowel to finish or texture desired. If white coat is desired add finely screened sand to regular white coat.

Walls—⅝-in. grounds. *Proportions:* Finishing Hydrated Lime, 1 sack, 50 lb.; plaster sand, 300 lb.

Brush or wash surface free from all dirt scale, or foreign matter, and then slush down with neat cement. When this is dry apply 1 coat of this mortar and by adding 1 more part of sand, a second coat, and bring out to grounds. Use rod and darby to bring to even surface. When firm but not dry, rub evenly with float to remove and prevent shrinkage cracks, and prepare surface to receive finish coat. When thoroughly dry apply finish coat.

Note: All interior surface of concrete basement walls below ground level should be furred and lathed before plastering.

Three-coat Work on Metal Lath

Base Coats (Dry Mix)

Mortar—The mortar shall be a mixture of Finishing Hydrated Lime and sand mixed in the following proportions:

Proportions—Scratch coat shall be composed of: Finishing Hydrated Lime, 1 sack, 50 lb.; plastering sand dry, 200 lb.; hair or fibre, 6 lb. per cu. yd. mortar.

Brown coat shall be composed of: Finishing Hydrated Lime, 1 sack, 50 lb.; plastering sand dry, 250 lb.; hair or fibre, 2 lb. per cu. yd. mortar.

Application—(a) Plastering shall be to ⅞-in. grounds.

(b) Apply a coat of scratch mortar evenly and with sufficient force to insure a good clinch and key.

(c) As soon as this coat has become firm but not dry, scratch entire surface with broom or metal scratcher to insure bond for brown coat.

(d) When this coat has become dry apply brown coat and

Continued on next page

bring surface out to grounds. Rod and darby to true surface, and when this coat is firm, but not dry, rub evenly with float to eliminate and prevent shrinkage cracks and to prepare surface to receive finish coat.

Gauging—(a) If a harder set is desired, 15 to 20% of portland or Keene's cement by weight of lime may be gauged in the scratch coat.

Base Coats (Putty Mix)

Mortar—The mortar shall be a mixture of Finishing Hydrated Lime paste or putty, which has been allowed to age either neat or sanded for at least 24 hours, in the following proportions:

Proportions—Scratch coat shall be composed of: Stiff putty, 1 part by volume; plastering sand dry, 3 part by volume; hair or fibre, 6 lb. per cu. yd. mortar.

Brown coat shall be composed of: Stiff putty, 1 part by volume; plastering sand dry, 4 part by volume; hair or fibre, 3 lb. per cu. yd. mortar.

Application—(a) Plastering shall be to ⅞-in. grounds.

(b) Apply a coat of scratch mortar evenly and with sufficient force to insure clinch and key.

(c) As soon as this coat has become firm but not dry, scratch entire surface with broom or metal scratcher to insure bond for brown coat.

(d) When this coat has become dry apply brown coat, and bring surface out to grounds. Rod and darby to true surface and when this coat is firm but not dry, rub evenly with float to eliminate and prevent shrinkage cracks, and to prepare surface to receive finish coat.

Gauging—(a) If a harder set is desired, 15% to 20% of portland or Keene's cement by weight of lime may be gauged in the scratch coat.

Three-coat Work on Wood Lath

Scratch or Base Coats (Dry Mix)

Mortar—The mortar shall be a mixture of Finishing Hydrated Lime and sand mixed in the following proportions:

Proportions—Scratch coat shall be composed of: Finishing Hydrated Lime, 1 sack, 50 lb.; plastering sand dry, 200 lb.; hair or fibre, 6 lb. per cu. yd. mortar.

Brown coat shall be composed of: Finishing Hydrated Lime, 1 sack, 50 lb.; plastering sand dry, 250 lb.; hair or fibre, 2 lb. per cu. yd. mortar.

Application—(a) Plastering shall be to ⅞-in. grounds.

(b) Apply a coat of scratch mortar evenly and with sufficient force to insure good clinch and key.

(c) As soon as this coat has become firm but not dry, scratch entire surface with broom or metal scratcher to insure bond for brown coat.

(d) When this coat has become dry apply brown coat, and bring surface out to grounds. Rod and darby to true surface and when this coat is firm but not dry, rub evenly with float to eliminate and prevent shrinkage cracks, and to prepare surface to receive finish coat.

Gauging—(a) If a harder set is desired, 15% to 20% of Portland or Keene's cement by weight of lime may be gauged in the scratch coat.

Base Coats (Putty Mix)

Mortar—The mortar shall be a mixture of Finishing Hydrated Lime, paste or putty, which has been allowed to age either neat or sanded for at least 24 hours, in the following proportions:

Proportions—Scratch coat shall be composed of: Stiff putty, 1 part by volume; plastering sand dry, 3 part by volume; hair or fibre, 6 lb. per cu. yd. mortar.

Brown coat shall be composed of: Stiff putty, 1 part by volume; plastering sand dry, 4 part by volume; hair or fibre, 2 lb. per cu. yd. mortar.

Application—(a) Plastering shall be to ⅞-in. grounds.

(b) Apply a coat of scratch mortar evenly and with sufficient force to insure good clinch and key.

(c) As soon as this coat has become firm but not dry, scratch entire surface with broom or metal scratcher to insure bond for brown coat.

(d) When this coat has become dry apply brown coat, and bring surfaces out to grounds. Rod and darby to true surface and when this coat is firm but not dry, rub evenly with float to eliminate and prevent shrinkage cracks, and to prepare surface to receive finish coat.

Gauging—(a) If a harder set is desired, 15% to 20% of Portland or Keene's cement by weight of lime may be gauged in the scratch coat.

Two-coat Work on Wood Lath (Doubled-up Work)

Base Coats (Dry Mix)

Mortar—The mortar shall be a mixture of Finishing Hydrated Lime and sand, mixed in the following proportions:

Proportions—Scratch coat shall be composed of: Finishing Hydrated Lime, 1 sack, 50 lb.; plastering sand dry, 200 lb.; hair or fibre, 6 lb. per cu. yd. mortar.

Application—(a) Plastering shall be to ¾-in. grounds.

(b) Apply a coat of this mortar with sufficient pressure to insure a good clinch or key, then by adding one more part of sand to the above mortar double back on the first coat and bring out to grounds, rod and darby to true even surface.

(c) When this coat is firm but not dry, rub evenly with float to remove and prevent shrinkage cracks and to prepare the surface to receive the finishing coat.

(d) When plaster is thoroughly dry apply finish coat.

Base Coats (Putty Mix)

Mortar—The mortar shall be a mixture of Finishing Hydrated Lime or putty, which has been allowed to age either neat or sanded for at least 24 hours, in the following proportions:

Proportions—Scratch coat shall be composed of: Stiff putty, 1 part by volume; plastering sand dry 3 part by volume; hair or fibre, 6 lb. per cu. yd. mortar.

Application—(a) Plastering shall be to ¾-in. grounds.

(b) Apply a coat of this mortar with sufficient pressure to insure a good clinch or key, then by adding one more part of sand to the above mortar double back on the first coat and bring out to grounds, rod and darby to true even surface.

(c) When this coat is firm but not dry, rub evenly with float to remove and prevent shrinkage cracks and to prepare the surface to receive the finishing coat.

(d) When plaster is thoroughly dry apply finish coat.

Two-coat Work on Brick, Tile, Gypsum Block, Concrete Block, etc. (Doubled-up Work)

Base Coats (Dry Mix)

Mortar—The mortar shall be a mixture of Finishing Hydrated Lime and sand, mixed in the following proportions:

Proportions—Scratch coat shall be composed of: Finishing Hydrated Lime, 1 sack, 50 lb.; plastering sand dry, 225 lb.; hair or fibre, 6 lb. per cu. yd. mortar.

Application—(a) Plastering shall be to ⅞-in. grounds.

(b) All surfaces of tile, etc., shall be free from oil, dirt, dust or other foreign matter, and should be wet down before applying plaster.

(c) Apply a coat of this mortar with sufficient pressure to insure bond, and double back with the same mortar, bringing the coat out to grounds; rod and darby to true even surface.

(d) When surface is firm, but not dry, rub evenly with float to remove and prevent shrinkage cracks, and to prepare surface to receive finish coat.

(e) When plaster is thoroughly dry apply finish coat.

Continued on next page

Base Coats (Putty Mix)

Mortar—The mortar shall be a mixture of Finishing Hydrated Lime, paste or putty, which has been allowed to age, either neat or sanded for at least 24 hours, in the following proportions:

Proportions—Scratch coat shall be composed of: Stiff putty, 1 part by volume; plastering sand dry, 3½ parts by volume.

Application—(a) Plastering shall be to ⅝-in. grounds.

(b) All surfaces of tile, etc., shall be free from oil, dirt, dust or other foreign matter, and should be wet down before applying plaster.

(c) Apply a coat of this mortar with sufficient pressure to insure bond, and double back with the same mortar, bringing the coat out to grounds; rod and darby to true even surface.

(d) When surface is firm, but not dry, rub evenly with float to remove and prevent shrinkage cracks, and to prepare surface to receive finish coat.

(e) When plaster is thoroughly dry apply finish coat.

Finish Coats

Putty made from Finishing Hydrated Lime shall be soaked 24 hours. This is done by shifting Finishing Hydrated Lime into an equal part by volume of clear water.

White Smooth Finish—Thoroughly mix gauging and Finishing Hydrated Lime putty and apply evenly. Trowel to eliminate all checks, chip cracks and uneven points until a true and even surface is obtained.

Proportions—Finishing Hydrated Lime, 4 sacks, 200 lb.; plaster of paris, 50 lb.

Textured White Finish—Thoroughly mix gauging and Finishing Hydrated Lime putty and apply a very thin coat completely covering the brown coat. Follow this with heavier coat to form texture desired.

Proportions—Finishing Hydrated Lime, 3 sacks, 150 lb.; plaster of paris, 50 lb.

Sand Finish—Mix Finishing Hydrated Lime and sand dry and screen through No. 10 screen unless specified for specific finishes, and add water and mix to proper consistency.

Apply a thin coat to all mortar surfaces, and double back with same mixture and float to true plane surface.

Proportions—Finishing Hydrated Lime, 2 sacks, 100 lb.; plastering sand, 300 lb.

Keene's cement, portland cement or highly retarded gypsum may be added to sand finish as a hardener in proportions of 10% to 30% of entire mixture.

Textured Finish—Finish in same manner as sand finish, except second coat is applied heavier, and texture desired worked in with tools or hands.

Notes on Finishing Lime Plaster

Plastering work is only as good as its bond, and failures often occur through improper preparation of the backing to receive the plaster. A careful examination of the job is recommended before applying the plaster. Frame structures should have sufficient rigidity through proper bracing to withstand warping or distortion of frame and should be reinforced to take care of concentrated loads.

The solid partitions and masonry backings should be in alignment.

The best jobs of plaster are done with three-coat work.

Finishing Hydrated Lime plaster may be applied to metal lath without danger from corrosion, as lime acts as a preservative for metal.

Soaking Finishing Hydrated Lime increases its plasticity. This is done by sifting the lime into a box containing clean water and allowing it to settle and form a paste. Do not stir or agitate until the lime has soaked for at least 24 hours.

On three-coat work, allowance should be made for complete drying between coats.

On two-coat work, this allowance should be made between the brown and finish coats.

White Finish Should be Prepared as Follows—An amount of Finishing Hydrated Lime putty is circled on a board; water is poured in the circle and gauging plaster sifted into the water. The whole is then thoroughly mixed with a trowel and reduced to a workable condition. In applying hard white finish coats, the plasterer should watch carefully for the disappearance of the glaze when the surface becomes slightly dull. When this occurs, the coat shall be immediately troweled down to a smooth, true finish, free from trowel marks, streaks, and blotches.

One of the reason for cracks appearing is shrinkage or settling of the frame.

Ohio Finishing Lime plaster possesses a high degree of elasticity which will in a large measure eliminate cracking.

The curing of plaster is very important, and best results are obtained by closing windows and openings to prevent the too rapid drying out in hot weather, as it is necessary to retain a certain amount of moisture to complete the hardening process.

For winter work, when artificial heat is used, the windows should be lowered about an inch from the top to provide free circulation of air.

Plastered walls should stand until they are well cured before applying decoration.

Mixing the base coats is of great importance, and machine mixed mortar gives the best results.

During the past few years there has developed a popular demand for textured finishes, the number of which is only limited by the skill of the artisan and the originality of the architect.

There is this to be said in developing textures whose charm lies in the irregularities—care should be taken that the waves and depression should not follow any pattern and cause them to become regular irregularities which will tend to nullify the effect desired.

THE KELLEY ISLAND LIME & TRANSPORT CO.

World's Largest Producer of Lime

Leader Building

CLEVELAND, OHIO

Products

TIGER FINISH HYDRATED LIME; TIGER MASONS' HYDRATED LIME; QUICKLIMES—Ground, Pebble and Lump.

TRADE MARK

Facilities and Distribution

THE KELLEY ISLAND LIME & TRANSPORT CO. is the world's largest producer of lime and limestone products. From ten plants, strategically located, it serves all larger markets conveniently. The general offices, to which all correspondence should be addressed, are at Cleveland. The *famous* TIGER brands of lime are distributed through more than 4500 building supply dealers in all parts of the United States.

Tiger Finish

Manufacture—White Rock and Gibsonburg, Ohio, where TIGER FINISH is made, contain magnesium limestone deposits unequalled anywhere.

The uniform high quality of TIGER is based upon this raw material, plus a process of calcining and hydration scientifically performed under the strict supervision and control of expert chemists.

The direct result is a finishing hydrated lime which is world famous for its snowy whiteness and unusual working qualities.

TIGER FINISH excels requirements of A. S. T. M. and The Finishing Lime Association of Ohio. It is packed and delivered in 50-lb. paper valve bags which always bear the Tiger trade-mark and carry the slogan *"Spreads like warm butter."*

"Spreads Like Warm Butter"—TIGER FINISH, applied by skilled mechanics, produces exceptionally smooth surfaces, perfect corners and angles. Plasterers, in their enthusiasm for it, describe TIGER as the lime which "spreads like warm butter," and these four words briefly, yet comprehensively, tell the whole story.

Use—TIGER FINISH, properly proportioned with sand and hair, can be applied as scratch or brown coat to wood or metal lath, hollow tile, brick or gypsum block.

It produces a perfectly smooth white finish when mixed with a good grade of calcined plaster. When proportioned with a fine sand, it forms an unusually good sand finish. It also is used extensively to secure the increasingly popular antique or texture finishes.

Exterior Plastering—TIGER FINISH is widely used in portland cement stucco.

"Look for the Tiger on the Bag"

Tiger Masons'

Makes sand-lime and sand-lime-cement mortars, for laying brick, stone, marble, granite and tile setting.

Amount to Use for Concrete Work

Ten per cent of hydrated lime by weight of portland cement. Lime is an addition, not replacing any ingredient. The lime makes for water tightness, and enhances the appearance.

Quicklimes—Lump, Pebble and Ground

Our quicklimes are used for sand-lime and sand-lime-cement mortars. We ship in bulk, in barrels (steel and wood), and in paper sacks.

"Studies in Lime"—Specifications

An attractive book in colors. It illustrates and describes various interior plaster designs, including the texture finishes for different historical periods.

Specifications are given, also working details (to scale) to obtain desired plastering effects.

Sent free to architects upon request.

Co-operative Service

Through its Architectural Service and Information Department, this company will be glad to discuss with architects, contractors and builders any problem arising in connection with the use of lime.

NATIONAL LIME AND STONE COMPANY

Manufacturers of Finishing Lime and Lime Products

GENERAL OFFICES
FINDLAY, OHIO

PLANTS: CAREY, OHIO

Charter Member of The Finishing Lime Association of Ohio

Products

MONARCH FINISHING LIME; MONARCH FINISHING LIME FIBERED; MONARCH BRICKMORTAR; MONARCH MASON'S HYDRATE.

Also Monarch Agricultural Hydrate; Monarch Magnesium Lime; Crushed Stone; Railroad Ballast; Fluxing Stone.

Monarch Finishing Lime

A pioneer Ohio Finishing Hydrate nationally recognized for its superior purity, plasticity and uniformity. For white coats, sand finish and the newer textures.

Monarch Finishing Lime Fibered

Monarch Finishing Lime uniformly mixed at the factory with the proper amount of hair. For base coats of plaster or stucco. Can be gauged on the job to meet special specifications or conditions.

Monarch Brickmortar

Monarch Brickmortar is an especially processed mixture of Ohio Hydrated Finishing Lime and a standard brand of portland cement. The advantages of a lime-portland cement mortar are well known. Now the highest quality of lime produced is intimately mixed with the proper amount of portland cement *at the factory,* instead of on the job. Delivered to the job in a single *Trade-Marked* sack, Monarch Brickmortar is the ideal mortar, considering compressive and tensile strength, bonding and bedding properties and resistance to shear. It sets and dries white, giving a pleasing contrast with the color of the brick.

Monarch Mason's Hydrate

The superior qualities of mason's hydrate from the Ohio Finishing Lime District are due to the nature of these lime deposits. Nowhere else in the world is lime found of such high quality. Its plasticity, sand carrying capacity and strength are universally recognized.

Monarch Quality

Exacting laboratory control of the manufacture of Monarch Products insures unusual putty yield, uniformity and easy working qualities.

Each car must pass rigid tests, not only meeting, but actually exceeding the specifications of the American Society for Testing Materials.

Laboratory reports on shipments are mailed with bills of lading when requested.

Plants and Manufacturing Facilities

The plants of the NATIONAL LIME AND STONE COMPANY in Carey, Ohio, are among the largest and most modern finishing lime plants in the country. Here Monarch Lime products are manufactured, tested and shipped to all parts of the United States.

The capacity of the plants is such that orders of any size can be taken care of promptly.

Shipping Facilities

Monarch Products are stocked by building material dealers all over the United States—who will gladly furnish delivered prices—or inquiries addressed to our main office at Findlay, Ohio, will be promptly answered.

Monarch users have the advantage of an unexcelled shipping service. By strategic location, the Monarch Plants are situated right at the junction point of three important railroads.

An expert traffic manager is in charge and all shipments are routed by the quickest and most direct line and at the lowest obtainable freight rate.

Specifications

For complete specifications for Monarch Finishing Lime see those in this volume recommended by the Finishing Lime Association of Ohio of which the NATIONAL LIME AND STONE COMPANY is a charter member.

Specifications in detail for other Monarch Products will be furnished upon request.

NATIONAL MORTAR & SUPPLY COMPANY

Manufacturers of Lime and Limestone Products

GENERAL OFFICES
Federal Reserve Building, PITTSBURGH, PA.
PLANTS: GIBSONBURG AND COLD SPRINGS, OHIO

DISTRICT SALES AND SERVICE

WASHINGTON, D. C., 5112 Connecticut Avenue
CHICAGO, ILL., 914 Wrigley Building
DETROIT, MICH., 325 Merton Road
CLEVELAND, OHIO, P. O. Box 172
COLUMBUS, OHIO, 300 So. 18th Street
SPRINGFIELD, OHIO, 2111 Broadway

EASTERN REPRESENTATIVES: THE ABBEY CO., INC.
NEW YORK, N. Y., 2 Park Avenue at 33rd Street
NEWARK, N. J., 138 Roseville Avenue
PHILADELPHIA, PA., 809 Commercial Trust Building
WEST HAVEN, CONN., 41 Grove Place

Charter Member of the Finishing Lime Association of Ohio

Products

BANNER HYDRATED FINISHING LIME; SUPERIOR HYDRATED LIME.

Banner Hydrated Finishing Lime

Famous Ohio high magnesium (dolomitic) white lime for hard, smooth, white finishes and popular textured or period finishes; for complicated, artistic mouldings and ornamental work. Gas burned and continuous-process-hydrated for uniformity; air separated for purity. Its large yield when soaked into putty gives economy by large coverage. Has plasticity that encourages big yardage and perfect wall surfaces, angles, corners, and cornices by craftsmen. Apply in natural pure white color for later decorating. For texture finishes, painting with good grade oil paint after finishing coat is dry is recommended, but integral mineral colors may also be used.

Packed in 50-lb. heavy paper valve bags. Delivered to the job in original packages bearing above trade-mark printed in blue for easy identification. Product of world's largest single plant devoted to one brand.

Never packed under any other name or trade-mark.

(Reg. U. S. Pat. Off.)

Analysis—The purity of Banner Lime is proven by the following analysis, certified by the Pittsburgh Testing Laboratory. Results were calculated on non-volatile residue. The extra quality of Banner is indicated by the last column which gives the requirements of the American Society for Testing Materials, specification C-6-24 and United States Government Master Specification No. 249.

	Banner analysis per cent	Requirements A.S.T.M. Spec. C-6-24 U. S. Govt. Spec. 249
Carbon dioxide	.94	Max. permitted 5.0%
Calcium and magnesium oxides:	97.68	Min. required 95.0%
Sieve test:		
On 30-mesh	.004	Max. permitted 0.5%
On 200-mesh	3.32	Max. permitted 15.0%

Availability—Building material dealers in United States and Canada carry stocks of Banner Lime at all times for delivery in any wanted quantities. Consult local dealer for prices or communicate direct with Pittsburgh office or sales and service representatives listed above.

Facilities—Two modern plants located at Gibsonburg, Ohio, with 35 vertical gas-fired kilns. Duplication of all finishing processes insuring uninterrupted production. Quarry area over 20 acres, average depth 40 ft.

For twenty years rock analyses have shown absolutely no variation in chemical content. Reputation of Banner Lime built upon unusual rock deposit, plus modern processing. This latter includes mechanical sizing of kiln stone and gas-fired kilns with absolute heat regulation for uniform burning; continuous process hydration (instead of batch hydration) for uniformity; air separation (instead of screening and grinding) for purity. Daily production 350 tons.

Lime Plaster—Every architect knows the merits of "old-fashioned" lime plaster: durability without limitation; fire resistance; insulation against heat and cold, sight and *sound*. Lime plaster has greater sound-absorbing qualities.

Banner Lime offers architects and builders the highest grade of lime available. Its exceptional purity gives all above qualities in finished job; its high magnesium content gives great strength.

Standard brand for twenty-three years.

Specifications—Complete standard specifications are given in this catalogue by The Finishing Lime Association of Ohio. As charter members of this organization we recommend the use of Banner Lime according to these specifications for standard practice, varying only as local conditions dictate. We can put you in touch with reliable plastering contractors qualified to execute dependable lime plastering at no higher cost than hardwall work. Complete standard specifications for your A.I.A. File will be cheerfully furnished upon request.

For Every Building Purpose—Use Banner Lime for brick work, tile setting, stone mortar, waterproofing concrete. Quality work is more easily achieved with a quality product. Further information upon request.

Superior Hydrated Lime

A high magnesium mason's lime produced at Cold Springs, Ohio, in a modern 10-kiln plant with a daily capacity of 100 tons. Used for all building construction requirements except finishing or whitecoating. Extensively used by United States Government in concrete construction; in dam work under Government supervision; in public utility enterprises where specifications are stringent and rigidly enforced. Lime has merit dictating its use in preference to other cementitious materials. Superior Lime's claim to your favor is based on quality. Distributed by Building Material Dealers.

TRADE-MARK

THE OHIO HYDRATE & SUPPLY CO.

Manufacturers and Distributors of Hydrated Finishing Lime, Acoustical Plaster and Other Limestone Products

GENERAL OFFICE AND PLANTS
WOODVILLE, OHIO

Charter Member of The Finishing Lime Association of Ohio

Products

"Ohio" White Finish; "Woodville" White Finish; "Buckeye" White Finish; "Hawk Spread" White Finish —all of which are Hydrated Finishing Limes of equal quality.

Ohio Acoustico.

Ohio Masons Hydrated Lime.

Also Lump Lime and Crushed Limestone.

TRADE-MARKS

Facilities and Organizations

The Ohio Hydrate & Supply Co. was organized in 1916 and now has an annual plant capacity of over 300,000 tons of finishing lime and 1,000,000 tons of other limestone products.

Plant and quarries are located on the main line of the Pennsylvania Railroad.

Our products are sold by over 6500 retail building supply dealers conveniently located throughout the United States and Canada.

Guarantees

All Ohio Hydrate products are guaranteed to meet the standard specifications of the American Society for Testing Materials and also the rigid requirements of The Finishing Lime Association of Ohio of which we are charter members.

To make identification easy, our four brands of finishing lime—all of which are of equal quality—are packed in 50-lb. rope paper valve bags *distinctively marked at top, bottom and sides with Red Zig Zags.*

Use for Plastering

Ohio, Woodville, Buckeye and Hawk Spread White Finishing Lime are ideally adapted for scratch, brown and finish coat plastering.

Specifications—For complete and detailed specifications covering the use of our finishing limes for scratch, brown and finish coat plastering see pages of The Finishing Lime Association of Ohio, of which we are members.

Use for Masonry (Mortar)

Ohio Masons Hydrated Lime is ideally adapted for masonry mortar—brick, terra cotta tile, cinder block and tile, concrete brick, block and tile and other masonry units.

Specifications—The most popular and most frequently used mix is 1:3 lime mortar. This is composed of 1 part of lime putty and 3 parts of clean, sharp sand by volume. This mortar is suitable for practically all work above grade where loading is not excessive.

Specify as follows:

"Where lime mortar is called for it shall consist of 1 part of Ohio Masons Hydrated Lime putty and 3 parts well graded clean, sharp mortar sand. It shall be well mixed by hand or machine to a uniform color and consistency before use."

For brick work below grade, for cold weather construction and for all work carrying heavy loads the most satisfactory and most economical mix consists of 1 part of lime putty, 1 part of portland cement and 6 parts of clean sharp mortar sand by volume. This mix is frequently called a 50:50 lime-cement mortar.

Specify as follows:

"Where 1:1:6 mortar (50:50 lime cement) is called for it shall consist of 1 part of Ohio Masons Hydrated Lime Putty, 1 part portland cement and 6 parts well graded clean, sharp mortar sand, by volume. This mortar shall be mixed to a uniform color and consistency by machine or by hand in a watertight mixing box. Mortar to which cement has been added must be used within 2 hours."

Use for Stucco

The use of lime for stucco probably dates back as early as 3500 B. C. Modern examples of lime and lime-cement stucco as we know it today are dotted all over the United States. These structures clearly indicate the ability of lime and lime-cement stucco to successfully withstand every climatic and weather condition.

However, it should be borne in mind that success with lime or lime-cement stucco, as with any other kind, largely depends on the permanence, rigidity, and keying or bonding ability of the base to which it is applied.

Advantages—Its extreme plasticity offers architects unlimited possibilities for obtaining any texture desired. Through the use of crushed stones, colored sands and pigments any color effect can be secured. It is economical in that lime will carry an unusually large amount of sand. It *hardens slowly* allowing the base to adjust itself. The moisture leaves slowly, the stucco contracts slowly, thus preventing checking and cracks. It is easy to mix and apply.

Specifications—***For Scratch Coat***—Where stucco is called for it shall be 1 part of lime-cement (70% Ohio White Finish and 30% portland cement by weight) to 3 parts clean sharp mortar sand by volume.

The Ohio White Finish shall first be reduced to a putty. The portland cement and sand shall be thoroughly blended dry, then mixed with water to bring to proper consistency. The putty shall then be added and the whole thoroughly mixed to a uniform color and consistency.

All wet mixing operations shall be by machine or if by hand in a watertight mortar box and used within 2 hours.

For Brown Coat—1 part lime-cement to 4 parts sand by volume.

Thickness of Coat—

On Wood or Metal Lath:
- First coat, average ⅜ in. from face of lath.
- Second coat, average ⅜ in. thick.
- Third coat, average ⅛-⅜ in. according to finish.

Minimum total ⅞ in.

On Brick, Stone and Hollow Tile:
- First coat, average ⅜ in. beyond normal masonry line.
- Second coat, average ⅜ in.

Minimum total ¾ in. for 2-coat work with smooth stippled or troweled surface finish. Minimum total shall be ⅞ in. for 3-coat work with rough cast, pebble dash or applied aggregate.

On Concrete (block or poured):
Same as on brick, stone and hollow tile.

Use for Concrete

The use of Ohio, Woodville, Buckeye or Hawk Spread Hydrated Finishing Lime in concrete mixtures is good waterproofing insurance. They lubricate concrete mixtures, cut the cost of placing, secure better embedment of reinforcing, reduce the cost of finishing after removal of forms and produce some increase in compressive strength.

When hydrated lime is used to lubricate and improve the general workability of the concrete mixture, the following mentioned quantities should be used, the quantity shown being added to each 94-lb. bag of cement in a batch.

1:1½:3 mix 5 lb. hydrated lime.
1:2 :4 mix 8 lb. hydrated lime.
1:2½:5 mix 10 lb. hydrated lime.
1:3 :6 mix 12 lb. hydrated lime.

If watertightness is the important result desired the following quantities should be used.

1:1½:3 mix 7 lb. hydrated lime.
1:2 :4 mix 10 lb. hydrated lime.
1:2½:5 mix 12 lb. hydrated lime.
1:3 :6 mix 15 lb. hydrated lime.

Further information furnished on request.

THE WOODVILLE LIME PRODUCTS COMPANY

Hydrated Lime for White Finish Coat and All Building Uses

GENERAL OFFICES
TOLEDO, OHIO

FIELD OFFICES
NEW YORK, N. Y., 55 West 42nd Street—Telephone, Chickering 5223 CHICAGO, ILL., 220 South State Street—Telephone, Wabash 2020
DETROIT, MICH., 14414 Dexter Boulevard—Telephone, Arlington 3500

PLANT AND QUARRIES, WOODVILLE, OHIO
Charter Member of The Finishing Lime Association of Ohio

Products

"WHITE ENAMEL" FINISH LIME; "WHITE LILY" FINISH LIME; "GOLD MEDAL" FINISH LIME, all packed in distinctive packages labeled Blubag.

FIBERED LIME PLASTER, for base coats.

Also "Ace High" Mason's Lime; Lump Lime; Blubag Brick Cement.

Facilities and Distribution

Our plant and quarries are conveniently located at Woodville, Ohio, and our general offices at Toledo, Ohio. Our products are distributed through all principal building material dealers throughout the United States.

Quality of Lime Is of Greatest Importance

Eighty percent of the interior of a building visible to the eye is *wall*. Quality of the lime used is, therefore, of the greatest importance and should receive the architect's most careful consideration.

Blubag brands of hydrated finishing lime are guaranteed to meet the standard specifications of the American Society for Testing Materials as well as those of the Bureau of Standards.

Laboratory Tests Insure Uniform Quality

Nothing is taken for granted in the production of Blubag finishing hydrated lime. Every process of manufacture is under the supervision of seasoned and experienced men and skilled chemists.

A complete and modern research and testing laboratory is an important factor in preserving the natural qualities of Blubag lime—whiteness, plasticity and strength, which makes it the highest grade lime that may be obtained anywhere at any price.

Thousands of tons of finishing hydrated lime are constantly undergoing a *natural "Dyjestive" process* in our immense ageing tanks. It assimilates the raw and caustic tendencies of freshly hydrated lime, and leaves a pure, snow-white, bone-dry powder that is soft and safe as talcum.

As a result of this careful "Dyjestive" process, the tendency of the finish to blister or burn workmen is practically eliminated. Also, the finish has a greater degree of uniformity and improved working qualities. Yet not a single iota of the life and efficiency of the finishing hydrated lime has been sacrificed or impaired. It is better than ever.

This "Dyjestive" process is just an additional step taken in the course of manufacture to preserve and enhance the remarkable natural quality of our limestone which produces a hydrated lime that is "Quality from Stone to Finish."

The Blue Bag Assures Positive Identification

The Blubag brands of finishing hydrated lime manufactured by THE WOODVILLE LIME PRODUCTS COMPANY always sold by building supply dealers in the distinctive blue bag.

This makes it easy for the architect to distinguish Blubag brand on his job, and to know that when he specifies the highest quality of lime he is actually getting it.

Fibered Lime Plaster for Base Coats

This plaster is prepared from our finishing hydrated lime mixed with proper proportions of fiber, thoroughly distributed and ready for mixing with sand at the job. It can be applied to wood or metal lath, brick, gypsum tile or other masonry bases immediately after mixing. No soaking is necessary.

This fibered lime plaster develops excellent acoustical qualities and produces a hard, durable wall.

Specify Blubag Brands of Finish for Interior Work

Brands of Blubag finishing hydrated lime fulfill every requirement in the building trade for interior use.

Refer to the pages in this catalogue of The Finishing Lime Association of Ohio for full information regarding the use of hydrated lime.

How to Specify Our Lime

For a complete standard form of specification refer to the pages in this catalogue of The Finishing Lime Association of Ohio.

Select the particular specification to fit your requirements and insert the brand name "Blubag Brands of Finishing Hydrated Lime," together with "manufactured by THE WOODVILLE LIME PRODUCTS COMPANY, Toledo, Ohio."

Information

Complete information gladly sent upon request.

Plant and Quarry of the Woodville Lime Products Company

Here is superlative limestone and one of the most modern lime burning and hydrating plants in the country which combine to produce a finishing lime that may be proudly branded with a distinctive, easily identified blue sack—favorably known as Blubag

ARTSTONE PRODUCTS

INCORPORATED

Specialists in the Manufacture of Colored Finish Materials

EXECUTIVE SALES OFFICES
52 Vanderbilt Avenue, NEW YORK, N. Y.

The Products of Artstone

The products described here are TUCKAHOE, a Keene's cement interior finish for float and textural application; TINT-KOAT, a material for economically producing polychromes; CHINAWALL, a durable, Keene's cement plaster for smooth trowel application, and AUDICOUSTONE ACOUSTICAL PLASTER.

For Artstone Portland Cement Stucco, Stoneite Cement Paint, Decotex Textural Plastic, Mothite Moth Repelling Plaster, Artstone Brush-Koat Flooring and Mortar, see Manufacturers' Index under ARTSTONE PRODUCTS.

Tuckahoe Colored Interior Plaster

TUCKAHOE
Colored Interior
FINISH

ARTSTONE PRODUCTS

Tuckahoe is a colored interior wall finish that possesses a genuine Keene's cement base. It is extremely plastic and spreads like warm butter under the trowel. It is a complete product in itself requiring for use only the addition of clean water.

The Why of Tuckahoe

Tuckahoe produces a beautiful, colored, self-decorating, wear-resisting, sanitary surface that lasts indefinitely and can be readily cleaned. No paint, glaze or other wall treatment is required. Self-decorating, Tuckahoe is economical in first as well as last cost.

Tuckahoe has been in use for years in residences, housing developments, schools, churches, clubs and public buildings of all types. In the United States Military Academy at West Point, the Cuban Capitol at Havana and in hundreds of other prominent buildings, Tuckahoe has satisfied the most exacting demands.

Acoustical Properties

Tuckahoe possesses definite acoustical properties as compared to ordinary painted plasters. This, in itself, makes Tuckahoe a highly desirable material.

Color and Textural Advantages

Smoky Buff Caenstone, Italian Travertine and any marked-off stone or tile effect may be easily simulated with Tuckahoe. Colonial fine felt float and pleasing polychrome and textural effects are as easily obtained. The material is adapted to an almost limitless variety of textures and some unusual and striking effects are possible with very little effort.

A wide range of colors is always available in Tuckahoe and with Tint-Koat an almost endless combination of colors is possible.

Tuckahoe Color Range

STANDARD TUCKAHOE STOCK COLORS

303—Smoky Buff Caenstone	342—Florentine Pink Buff
304—Golden Yellow	347—Deep Cream
306—Golden Tan	356—Snow White
311—Coral Pink	359—Travertine Buff
331—Oyster Grey	395—Ivory

SPECIAL TUCKAHOE STOCK COLORS

308—Pale Brown	321—Light Orange
319—Vernal Green	323—Green Gold
335—Robin's Egg Blue	

Color Charts—A Tuckahoe Color and Textural Chart has been prepared for the use of the architect. It may be had upon request as may also details and specifications for the use of Tuckahoe for special purposes. Special materials to match colors selected are made for casting, running mouldings, etc.

Specifications for Tuckahoe Colored Interior Finish

Tuckahoe Colored Interior Finish shall be applied over gypsum (lime or Keene's cement) brown coat on the walls and ceilings of (indicate).

Preparation of Base Coats—A good quality, well-graded, sharp sand, free from loam and organic matter, shall be used in the scratch and brown coats. Base coats shall not be oversanded.

The brown coat shall be broomed, lightly scratched or left rough under darby to provide a mechanical key for the finish coat. All loose particles and projections shall be removed to prevent showing through finish.

Note: Application of Tuckahoe is not recommended over a green brown coat. However, while the wall need not be bone dry, it should be hard and set. Generally, one or two days are ample but in poor drying weather a longer time should elapse. Exterior masonry walls should be furred or waterproofed before base coats are applied. Tuckahoe is not designed for application over hard white. For such use, see Decotex Textural Plastic.

Finish Coat—The finish coat shall be Tuckahoe Colored Interior Finish as manufactured by ARTSTONE PRODUCTS, 52 Vanderbilt Avenue, New York, N. Y., color and texture to be selected by the architect.

Note: Small metal mixing boxes should be used. The box should be raised at one end, the water placed in the lower end and the material in the upper end. Hoe material into water and permit to stand for at least 20 minutes. Then mix throughly, adding more water until proper consistency is reached. Whenever possible, material should be permitted to soak for two or three hours before it is used.

Application—Tuckahoe shall be applied to an average thickness of not less than ⅛ in. A tight skim coat shall be first troweled on and permitted to stand for a few minutes before doubling up for texture. If excessive suction is encountered, it may be cut by uniformly dampening down the base coat with clean water. A thorough dampening down with a light fog spray from a garden attachment on hose gives best results.

Note: Drafts from uncovered open windows in hot weather cause dryouts. This tends to weaken the material and, in some cases, causes an uneven color. On important work, the good old-time practice of tacking muslin or cheese cloth over all openings should be included in the specifications. If this is done, proper ventilation is secured and the plaster sets in a normal manner, neither too quickly nor too slowly.
During late fall, winter and early spring proper ventilation and artificial heat must be provided for the proper drying and setting of Tuckahoe as well as gypsum base coats.

Coverage

Tuckahoe is shipped in 100-lb. bags and has a coverage of from 100 to 300 sq. yd. to the ton depending upon the texture desired and the skill of the plasterer. Tuckahoe should be applied to an average thickness of ⅛ in. On this basis, one bag of Tuckahoe will cover 12 sq. yd. If the brown coat is uneven or the texture heavier than average, it is suggested that 9 or 10 sq. yd. to each bag be used in taking off quantities.

Continued on next page

Notes on Textures

Float Finish—Trowel on skim coat—let stand for a few minutes, then double up. Use a felt, carpet or cork float. A smooth, even and attractive Colonial fine sand float is best obtained by the use of a felt float. Water floating should be avoided if possible; when necessary, it is best accomplished by letting the float follow a damp (not a dripping wet) brush.

Marked-off Effects—Use a straight edge to mark off while material is still green (within four or five hours after application). Joints should be cut clean and even. A marking blade or saw may be used for deeper impressions at any time after the material has become hard.

Travertine—Kill suction thoroughly, trowel on heavy body coat and double up within a few minutes. Press broom, twigs or travertine brush irregularly over wet plaster to form depressions. Permit to partially set, then trowel hard and mark off as directed above. Realistic results are obtained by lightly outlining blocks before depressions are made so that depressions will not run into one block from another. Permit wall to stand for several days, then apply Travertine Tint-Koat and wipe off surface immediately with sponge and water. The Tint-Koat will remain in depressions, and when surface becomes dry a very realistic simulation of Italian Travertine is obtained.

Tint-Koat for Polychromes

Striking effects can be obtained with the use of Tint-Koat washes. Tint-Koat is a specially prepared colored material for producing polychromes. It is mixed with clean water and applied very thin with sponge or calcimine brush after the Tuckahoe has set hard. All excess Tint-Koat is sponged off within a few minutes. After it has set, Tint-Koat becomes part of the wall and does not peel or flake off.

TINT-KOAT COLORS

T-1—Brown	T-5—Blue	T- 8—Buff
T-2—Travertine	T-6—Orange	T- 9—White
T-3—Green	T-7—Black	T-10—Red
T-4—Yellow		

Coverage of Tint-Koat—Tint-Koat comes in 1, 5 and 25-lb. packages; 1 lb. will cover from 10 to 30 sq. yd. depending upon the texture and the water content used to regulate depth of color.

Note: Tint-Koat cannot be used as a paint. The material is only designed to produce multi-tone effects and has very little hiding power. Water content has an important bearing on depth of color, and if darker tones are required, less water should be used. Material should be stirred constantly while in use and will not spoil, if left mixed overnight. Excess Tint-Koat should always be sponged off within a short time after application. Multi-tone effects are very easily produced with Tint-Koat and a little experimentation will produce the desired effect. Tint-Koat colors may be mixed with one another to produce other colors and white Tint-Koat may be used to lighten colors when necessary.

Chinawall Colored Interior Plaster

Chinawall is a Keene's cement product for smooth trowel application. Chinawall is especially suited for hospital interiors, and wherever a hard, durable, smooth-trowel, colored surface is required.

STANDARD CHINAWALL COLORS

20—Deep Cream	24—Golden Tan	27—Light Green
21—Light Orange	25—Golden Yellow	28—Light Buff
22—Ivory	26—Snow White	29—Pale Brown
23—Light Blue		

Color Charts—A Chinawall Color Chart will be sent upon request.

Specifications—Same general specifications as for Tuckahoe apply to Chinawall but textural effects cannot be obtained.

Chinawall Coverage—Chinawall is packed in 100-lb. bags. One bag will cover from 15 to 20 yd., depending upon the thickness to which it is applied.

Audicoustone Acoustical Plaster

Audicoustone is an acoustical material for trowel application. Owing to its high efficiency, it cannot be used indiscriminately.

A service department is maintained to assist the architect and the contractor in the use of Audicoustone. Each job is considered as an individual matter and no work is begun except under the supervision of our field men. Details and specifications may be had upon request.

Distribution

All Artstone products are distributed over a wide geographical field by leading building supply dealers.

Write us for the nearest source of supply, stating your requirements.

Entrance Hall of the East Islip High School, East Islip, L. I., N. Y.
MR. LEWIS INGLEE, Architect

The Cuban Capitol at Havana
Tuckahoe has been used in the corridors, legislative chambers, presidential chambers, presidential quarters and the interior of the dome
MR. EUGENE RAYNERI, Architect
PURDY & HENDERSON CO., General Contractors
WARING & GILLOW, LTD., Plastering Contractors

A Section of the Windsor Cafeteria in New York City
MESSRS. VISSCHER & BURLEY, Architects

ARTSTONE PRODUCTS

INCORPORATED

Specialists in the Manufacture of Colored Finish Coat Materials

EXECUTIVE SALES OFFICE

52 Vanderbilt Avenue, NEW YORK, N. Y.

The Company and Its Products

ARTSTONE PRODUCTS is the largest independent manufacturer of colored finish coat materials in the United States. Each bag of material manufactured and sold represents more than thirty years of patient, scientific study of building materials both in the laboratory and in the field. Only the very best ingredients are used, mixed to carefully tested formulæ by modern scientific machinery under rigid, expert supervision.

The Company, in addition to Artstone Portland Cement Stucco, manufactures a complete line of finish coat materials in color for both exteriors and interiors. Various other Artstone products are briefly described in the closing paragraphs.

ARTSTONE STUCCO

"Weatherproof Forever"

ARTSTONE PRODUCTS

Artstone Portland Cement Stucco

Artstone is a true portland cement stucco. It is a permanent material, beautiful in color and texture and forever weatherproof. Artstone is a complete material in itself, requiring only the addition of clean water for its application. Hazardous "home-mixing" of colors can be definitely eliminated with the use of Artstone, thus assuring the architect of absolute uniformity in color and in quality.

The Why of Artstone

Artstone has stood the test of time and of all sorts of climatic conditions. In the south, west, north and east, in foreign countries, even in far-away Siam, Artstone has been used and stands supreme. Artstone has been used economically and effectively on the exterior of thousands of important residences, churches, clubs, public buildings and on the interior walls and ceilings of swimming pool and shower rooms of hundreds of clubs and association buildings. Because of its highly water-repellent qualities, Artstone has been used for years as a surfacing material in color over poured concrete in public and private outdoor swimming pools.

American Concrete Institute Standards

Artstone is a quality product and, as such, has been consistently manufactured to even higher standards than those tentatively adopted by the American Concrete Institute. With Artstone, every effort is made to produce a stucco material of the utmost in quality. Its use is an insurance against the ravages of time and weather. Each Artstone job stands as a permanent testimonial of the architect's work and indicates forever his care in the selection of a lasting material.

Colors

There is animation to Artstone, its colors never fade or "die." The pigments used are absolutely permanent and are unaffected by weather, rain or the actinic rays of the sun.

The following list indicates the wide range of Artstone colors always available.

STANDARD ARTSTONE STOCK COLORS

53—Dark Buff	73—Pink Indiana Limestone
56—Snow White	95—Ivory Cream
58—Aligarh Buff Cream	99—Caenstone Color
59—Nepera Buff	102—Golden Yellow
60—Italian Travertine	106—Tappan Buff
62—Bedford Limestone Grey	114—Tawny Yellow
63—Old Rose	136—Fox Meadow Grey
64—Van Dyke Brown	142—Florentine Buff
67—Portland Stone	147—Norwalk Deep Cream
71—French Grey	246—Hollis Yellow

SPECIAL ARTSTONE STOCK COLORS

72—Yorkshire Stone	119—Raritan Brick Red
80—Boston Yellow	174—Parisian Blue
201—Vernon Green	

Color Charts—The Artstone Color and Textural Chart, specially prepared for the use of the architect, will be sent to architects requesting a copy. Physical samples and sample bags for textural experimentation will also be sent upon request.

Special colors at special prices will be matched to architectural specifications whenever required.

Specifications for Artstone Portland Cement Stucco

Base Coats—There shall be two base coats: scratch and brown. Each shall be composed of one part grey portland cement and three parts clean, sharp, well-graded sand to which may be added, if desired, not more than eight (8) pounds of hydrated lime to each sack of portland cement used. Only water that is fit to drink shall be used in mixing.

The scratch and brown coat shall each be applied approximately ⅜ in. thick, making a total thickness of not less than ¾ in. Each base coat shall be troweled on hard and tight and, before it has set, cross-scratched to provide a mechanical key for the next coat.

Each base coat shall be kept damp for two days before the next coat is applied and then permitted to dry out for at least five days and, before the next coat is applied, the wall shall be evenly wet down to cut suction. All wetting down shall be done by means of a fog spray such as is obtained by the use of a garden attachment.

Finish Coat—The finish coat shall be Artstone Portland Cement Stucco as manufactured by ARTSTONE PRODUCTS, 52 Vanderbilt Avenue, New York, N. Y., color and texture to be selected by the architect.

Nothing but clean, drinkable water shall be mixed with Artstone. The Artstone finish coat shall be applied to a total average thickness of not less than ¼ in. A tight skim coat of Artstone shall be troweled on, doubling up immediately for texture.

Curing—Twenty-four hours after the application of the finish coat the wall shall be dampened and shall then be kept damp for at least two days. A fog spray shall also be used for this work and the wall shall not be soaked down by means of an open hose at any time.

Note: During winter months, caution must be exercised in the application of the base coats and Artstone. Walls frozen or partially frozen are the cause of unsuccessful work—not the product. Close observation of weather conditions will insure uniformly perfect results. If perfect results are not obtained when application is made under bad weather conditions, it is solely because of improper selection of working days for which, of course, the manufacturer cannot assume responsibility. The use of a patent anti-freeze mixture is not recommended; responsibility for such use should be assumed by its manufacturer.

Coverage

Artstone is delivered to the job in 100-lb. bags ready for use after the addition of clean water. Each bag applied to an average thickness of ¼ in. over a true and level brown coat, lightly cross-scratched, will cover approximately 5 sq. yd. It is suggested that in taking off quantities, the total yardage be divided by 5 to give number of bags required. If texture is to be a spatter dash, or other light finish, divide by 6 or 7; if a bag rubbed or heavily torn trowel texture, divide by 4.

Special Uses

Specifications for the use of Artstone for swimming pools, casting, running moulds and for all special purposes, will be sent upon request.

Continued on next page

Distribution

Artstone products are distributed through reliable building material dealers over a wide geographical field. Please write for nearest source of supply, stating requirements.

Prehydration Specifications

Prehydration of portland cement mixtures will eliminate shrinkage to a very large degree and whenever possible the architect should include in his specifications the following paragraph:

"Only sufficient water shall be added to permit the material to reach the consistency of *damp earth.* Allow the mix to hydrate in this condition from one to two hours before tempering with additional water to reach the proper consistency for use or application."

Prehydration must not be confused with re-tempering. Re-tempering is the addition of more water to a material which already has had enough. Re-tempering weakens the material whereas prehydration, properly conducted, strengthens it. Plasticity is also increased and when the water is measured for each mix color is unaffected. Prehydration is recommended for Artstone Stucco, Handball Material, Flooring and Mortar.

Other Related Artstone Products for Specific Purposes

Artstone 700 Handball Material

Familiarly known as the Artstone "700 line," Artstone Handball Material is a portland cement product designed for application in a smooth trowel finish for the walls and ceilings of handball, fives and squash courts, for gymnasiums and so forth.

Specifications are the same as for Artstone Stucco but the use of Artstone Handball Material for all three coats is particularly recommended for championship courts.

STANDARD COLORS OF ARTSTONE 700 HANDBALL MATERIAL

701—Light Grey
702—White
703—Ivory
704—Deep Cream
705—Red (for Fives and Squash Tennis Courts)

Artstone Plastic Marble

Artstone Plastic Marble is similar in composition to Artstone Stucco but with a different gradation of aggregate. Colors and specifications are the same as for Artstone Stucco.

An excellent material for wainscots in public buildings, Artstone Plastic Marble should be used wherever smooth washable interior surfaces in portland cement are required.

Artstone Mill-Mixed Mortar

A prepared non-staining portland cement colored mortar for brick and stone. Like all other Artstone products, only the addition of clean water is required, eliminating all guesswork and hazardous job-mixing.

The use of Artstone Mill-Mixed Mortar assures the architect of waterproof, non-staining, non-efflorescent, uniformly colored mortar joints of maximum strength. Artstone Mill-Mixed Mortar is obtainable in the complete Artstone color range and in jet black and dark red.

Artstone Mill-Mixed Flooring

A waterproofed portland cement product of tremendous strength, Artstone Mill-Mixed Flooring comes in six standard colors of great depth and beauty: Red, Green, Blue, Black, Brown and Golden Yellow.

Specifications and complete information will be sent upon request.

The Artstone Quality Line

Complete specifications of the Artstone products briefly described here will be found in other sections of SWEET'S. See Manufacturers' Index under Artstone Products.

Tuckahoe—A Keene's cement interior finish plaster for Colonial sand float and all textural finishes. In twenty standard colors.

Tint-Koat—A material for use with Tuckahoe Interior Finish and Decotex to produce a wide variety of polychrome effects, travertine, etc. In ten colors.

Chinawall—An extremely hard and durable Keene's cement plaster for smooth trowel application in white and five colors.

Stoneite—A waterproofed portland cement paint for masonry surfaces. In ten colors.

Brush-Koat—A waterproofed portland cement paint for application over extremely rough surfaces. Color range is similar to Artstone Stucco and carries same color numbers.

Decotex—A textural plastic for application over almost any type of interior surface in old and new buildings. Decotex is scientifically adjusted for brush, sponge or trowel application.

Mothite—A scientific moth repellent plastic material for application in closets, storage rooms, etc. Mothite gains its effectiveness from the characteristic yet pleasant odor which in combination with other moth repellent factors is imprisoned in the material. (In cedar red color only.)

Audicoustone—An acoustical plastic of high efficiency combined with ease of application. In a very limited range of colors only.

Swimming Pool at the Belmont Manor, Bermuda
MR. GEORGE H. HUTCHINGS, Architect

Music Tower at Playland, Rye Beach, N. Y.
One of the several playgrounds under the jurisdiction of the Westchester County Park Commission on which Artstone has been used
MESSRS. WALKER & GILLETTE, Architects

The Famous Gingerbread House Erected by Wheatsworth, Inc., at Hamburg, N. J.
MR. JOSEPH URBAN, Architect

CALIFORNIA STUCCO PRODUCTS CORPORATION

LOS ANGELES PHILADELPHIA PITTSBURGH

LICENSED MANUFACTURING DISTRIBUTORS

ALLENTOWN, PA., Hollywood Building Supply Co., 1055 No. Plymouth St.
CAMBRIDGE, MASS., California Stucco Products Co., 4 Brattle St.
CARLSTADT, N. J., California Stucco Products Co., 11th and Division Sts.
CHICAGO, ILL., California Stucco Products Co. of Chicago, 74th Place and South Ashland Ave.
CINCINNATI, OHIO, California Stucco Products Co., 117 Sycamore St.
CLEVELAND, OHIO, Cleveland Gypsum Co., Builders Exchange Bldg.
COLUMBUS, OHIO, Columbus Builders Supply Co., 145 No. Front St.
HOUSTON, TEX., California Stucco Products Co., 903 Sampson St.
KANSAS CITY, MO., California Stucco Products Co., 2037 E. 19th St.
LOS ANGELES, CAL., California Stucco Products Co., 6135 So. Central Ave.
PHILADELPHIA, PA., California Stucco Products Co.
PITTSBURGH, PA., General Cement Products Corp., 930 Grant Bldg.
PORTLAND, ORE., California Stucco Co., 210 Thompson St.
POTTSVILLE, PA., Pottsville Building Block Co.
ROCHESTER, N. Y., California Stucco Products Co., Inc., 1344 University Ave.
ST. LOUIS, MO., St. Louis Material & Supply Co., 314 No. Fourth St.
SALT LAKE CITY, UTAH, Utah Stucco Products Co., 907 Continental Bank Building
SAN DIEGO, CAL., California Stucco Products Co., 536 L St.
SAN FRANCISCO, CAL., California Stucco Products Co., 340 Dore St.
SEATTLE, WASH., California Stucco Co., 4523 Shilshole Ave.
TOLEDO, OHIO, Toledo Plaster & Supply Co., Bancroft St. at Albion
VANCOUVER, B. C., Canadian Stucco Products, Ltd., Granville Island

CALIFORNIA STUCCO

A Material—a Method—and a Service

Products

Exterior (Portland Cement) Stucco.

Interior (Keene's Cement) Stucco.

Stucoustic (Acoustic) Plaster.

Travertine.

Caenstone.

Limestone.

California Stucco for exterior and interior use is manufactured *only* by our authorized licensees from our original formulae and is sold under our trade-marks registered in the United States Patent Office.

General Information

California Stucco Products are manufactured by the above licensed manufacturers and are distributed through regular retail material dealers. Communication with the nearest licensed manufacturer will put you in touch with a local retail dealer.

National Service

Our material, method and service greatly assist the architect or builder in securing uniformly good results with the use of either Exterior or Interior California Stucco. Our service is available upon communication with one of our licensed manufacturers.

We maintain a national service organization with trained expert mechanics available to render any advice or assistance necessary to insure proper execution of stucco work.

Our engineers and decorators assist the designer to secure all the economies in the proper use of stucco. The experience we have gained on thousands of jobs under all conceivable climatic conditions, enables us to render the architect, the contractor and the owner a unique service.

Material

California Stucco for exterior and interior use and Stucoustic Plaster comes to you complete in a sack, and requires only the addition of water before application.

Stone material for exterior and for interior use is packed in the same way as regular Exterior and Interior California Stucco, and is mixed only with water before application.

California Palace of the Legion of Honor, Finished in California Stucco, French Caenstone Texture. Erected 1922
George Applegarth, Architect

Continued on next page

EXTERIOR CALIFORNIA STUCCO

Materials and Mixes

Only materials and mixtures proven by years of successful use go into California Stucco.

Economy

Walls finished in a first class manner using a finish coat of California Stucco cost less than walls finished with many other standard building materials.

Sears, Roebuck Warehouse
NIMMONS, CARR & WRIGHT, Architects

Color

Assurance that color selected in advance will be furnished. Additional material of the original color always available for additions or alterations. Color card showing a few standard colors will be mailed or samples of actual material will be made on request without obligation.

Adaptability

Soft lines or clean cut detail, surfaces smooth or rugged, textures dignified or informal.

Permanence

All the permanence of superfine portland cement concrete *because* Exterior California Stucco *is* superfine portland cement concrete.

Combination of Colors

It is seldom desirable to use more than one color for exterior stucco. High lights and shadows generally produce two tones of a single color when the texture used is rugged or undulating. In special cases it may be desirable to blend two or more colors in the fresh plaster for accent.

Special treatments always require special consideration.

INTERIOR CALIFORNIA STUCCO

Materials

Interior California Stucco is colored plaster with a base of Keene's cement. It is applied as the third or finish coat of plaster over standard brands of hard wall brown coat, or a brown coat composed of a mixture of lime, sand and Keene's cement.

Economy

The cost of an interior finished with California Stucco is generally less than the cost of comparable finishes, such as plain plaster decorated to produce a similar effect.

Color

Practically any desired color from soft pastel tones to strong heavy colors for special use. All colors, of course, are permanent.

Beauty

All the beauty of individual hand rendering. Surface textures from glass-smooth to as rough as desired. Faithful reproduction of period plaster.

Maintenance

The surface is hard and resistant to abrasion. No painting required. Special treatments render California Stucco impervious to the penetration of dirt or grease.

Comparative Quality

Higher quality and more uniform materials are used than in ordinary white coat plaster finished with standard methods of finishing.

Carman Theater, Philadelphia, Pa.
W. ELLIS GROBEN, Architect

STUCOUSTIC (ACOUSTIC) PLASTER

Economy

Minimum cost per unit of sound absorbed.

Application

Applied to second (brown) coat of plaster by plaster contractor.

Color

Furnished in six standard colors or special colors.

Efficiency

Absorption coefficient .18 to .21 at 512 d.v. for coat ½ in. thick.

Continued on next page

EXTERIOR CALIFORNIA STUCCO SPECIFICATIONS

Exterior on Frame—Sheathed

Sheathing shall be covered with waterproof building paper weighing not less than 15 lb. per 100 sq. ft. and shall be applied in horizontal courses with each course overlapping the one below at least 4 in. Vertical joints shall overlap 16 in. The paper shall be held in place with large headed roofing nails. No wood strips shall be used in securing the building paper to the sheathing.

Metal Reinforcing—Metal for reinforcing of stucco shall be diamond mesh expanded metal cut from sheets not less than 18 gauge in thickness with openings not less than 1 in. x 2 in., nor greater than 1½ in. x 4 in. in size, and shall weigh not less than 1.8 lb. per sq. yd.; or welded wire fabric composed of wires not smaller than 18 gauge when used with openings not less than 1 in. square, nor greater than 1½ in. square, or with wires not smaller than 14 gauge, when used with openings not greater than 2 in. square.

First Church of Christ Scientist, Wellesley, Mass.
ERNEST W. DEARING, Architect

Furring—Wood furring strips shall not be used. A metal furring device shall be used which will accurately hold the reinforcing in position not nearer than ¼ in. to the backing. Furring devices shall be spaced on 8 in. centers both ways.

Base Coats—The first and second coats shall be mixed in the proportion of one 94-lb. bag of portland cement, 10 lb. of hydrated lime (one-fifth the volume of the portland cement), and *the equivalent of* 3 cu. ft. of *dry*, clean, sharp sand, graded from fine to coarse.

All space between metal and paper shall be thoroughly filled with mortar and the surface heavily cross-scratched for bond.

The second coat shall be applied to a thickness of not less than ½ in. over the first coat, rodded straight and true in every direction. The surface shall be left slightly rough for bond with the finish coat.

Before beginning the application of the second coat or the finish coat, the surface of the first coat or the second coat, as the case may be, shall be uniformly sprayed with a hose to which a nozzle is attached, or with some other device which will throw a uniform fog spray. Under no circumstances shall the first or second coat be saturated with water.

Curing and Drying—The first, second and finish coats shall be wet down at the close of the day for at least three successive days following application.

The second coat shall not be applied before the seventh day following the application of the first coat.

The finish coat shall not be applied before the fourteenth day following the application of the second coat, a total of 21 days.

Note: These provisions are absolutely essential if good stucco work is to be secured. The wetting down or curing is necessary to properly hydrate and harden the cement. The drying time is necessary to secure proper suction and prevent the appearance of efflorescence (alkali) on the surface of the finish coat.

Monolithic Concrete Construction

The surface of the concrete shall be cleaned of all loose particles, laitance or grease used on the forms. The surface shall be dashed, using a special dash brush with a mortar of a "soupy" consistency, composed of 1 part portland cement and 1½ parts of clean, sharp sand. This shall be allowed to set thoroughly before the application of the first coat of mortar.

Note: Due to the fact that different materials have different suctions (different rates at which they absorb water), walls composed of brick, clay tile, concrete tile, cinder block or stone, or a combination of these materials, should always be finished with three-coat work, in order to prevent differences in color appearing in the finished wall. Failure to follow these recommendations may take the form of being able to see the position of the individual units after the application of the finish coat. Properly following these recommendations will prevent such a condition.

Masonry Construction Reinforcing—Reinforcing is not always necessary over masonry construction, but its use should be carefully considered and a specification written for each individual case. When used, reinforcing shall be as specified under Exterior Frame.

Base Coats—The same recommendations for scratch and brown coats shall be followed as for wood frame construction. A masonry wall shall be wet down, but not saturated, before the application of the first coat.

Third or Finish Coat for All Exterior Construction

The finish coat shall be Exterior California Stucco, manufactured by a licensed California Stucco manufacturer, and shall be delivered to the job in the original package bearing the trade-mark "California Stucco."

Notes: (1) Color and texture should be selected before bids are asked for, in order that the contractors may have an intelligent idea of the labor and material cost for the production of the selected texture.

(2) The local California Stucco Plants are ready to cooperate in the production of textures and assist in the selection of colors. Samples for a specific job will be made and delivered to the architect or builder prior to the time bids are received.

(3) Too much emphasis cannot be given to the provisions regarding accurate proportions, proper curing between coats and proper drying out before the application of succeeding coats. Following the application of the finish coat, wetting down each day for a period of two weeks will greatly assist in curing the stucco and in the production of a dense, hard non-absorbent concrete exterior.

Continued on next page

INTERIOR CALIFORNIA STUCCO SPECIFICATIONS

Note: Interior California Stucco is a plastic material in color and takes the place of the skim or white coat, or the sand finish, in ordinary plastered work.

Interior California Stucco is applied over any base which would otherwise produce a satisfactory plaster job, properly applied metal lath of course being preferred.

Scratch and Brown Coats

The scratch and brown coats of plaster shall be, any recognized brand of hard wall (patent) plaster mixed and sanded in the manner and proportions recommended by the manufacturer, or a mixture of lime and sand gaged with Keene's cement. Before applying the finish coat of California Stucco, the brown shall be dry and show no wet spots.

Surface Preparation

The surface of the brown coat to which the finish coat of California Stucco is to be applied shall be true and straight in all directions and shall be free from all holes and depressions which will require the thickness of the finish coat to be more than $\frac{3}{32}$ inch.

Finish Coat

Finish coat shall be Interior California Stucco, manufactured by a licensed manufacturer, and shall be delivered to the job in the original package bearing the trade-mark "California Stucco."

Note: Interior California Stucco is an extremely plastic material and should be applied in a thin, uniform coat or a succession of thin, uniform coats. Any holes in the brown coat which would produce a thickness of the finish coat greater than $\frac{3}{32}$ in. must be filled with gauged mortar prior to the application of the finish coat of stucco.

Before commencing the application of the finish coat, the surface of the brown coat shall be uniformly sprayed with a hose to which is attached a nozzle set to throw a fine fog spray. In the production of a textured wall, it is absolutely essential that the suction of the brown coat be uniform in order that uniform plasticity in the finish coat may be maintained over all parts of the wall.

Note: Texture samples will be prepared for the architect or builder before the taking of bids so that the contractors may have adequate knowledge of the cost of production of the selected texture.

Representative Examples of California Stucco Structures

The center illustration is one of the twenty-five California Stucco plants covering the country from coast to coast

LOUISVILLE CEMENT COMPANY

INCORPORATED

GENERAL OFFICES

Speed Building, LOUISVILLE, KY.

DISTRICT SALES OFFICES

CHICAGO, ILL., 1610 Builders Building — DETROIT, MICH., 602 Murphy Building — NEW YORK, N. Y., 101 Park Avenue

Mills: Brixment, N. Y., and Speed, Ind.

BRIXMENT for *Stucco*

Product

BRIXMENT, a modern cement for stucco and masonry.

For our page on Mason's Cement, see Manufacturers' Index.

What Brixment Is

Brixment is a true hydraulic cement that combines the characteristics of portland cement and lime, having both strength and plasticity. When mixed with sand and water, it makes perfect mortar for exterior or interior stucco.

Brixment stucco is similar in appearance, strength and wearing qualities to portland cement stucco. It is mixed in the same way *except that no lime is required.* It is applied in the same manner and over the same backings.

Advantages

The same characteristics that make Brixment superior for masonry, make it equally superior for stucco.

Backings

Brixment stucco can be applied over any kind of masonry backing (brick, tile, concrete, etc.) or over any kind of metal lath or reinforcing. As with portland cement stucco, the best results cannot be obtained over wood lath.

How Mixed

Brixment is ready to mix and use at once. It can be mixed in any quantity either by hand or machine. No slaking or soaking is necessary. The proper mix for all coats is 1 part Brixment and 3 parts sand, measured by volume, with water added for proper consistency. Neither lime nor portland cement is necessary. The simple Brixment mix makes strong, smooth-working stucco.

When the stucco is applied over metal lath which is furred out from the sheathing more than ⅜ in., or over metal lath without any sheathing, hair or fibre is used in the scratch coat only. For such a scratch coat it is also advisable to use richer mortar (1 part Brixment, 2½ parts sand).

How Applied

Brixment stucco is applied just like portland cement stucco, preferably in three coats, and should be from ¾ to 1¼ in. in total thickness.

Curing

The stucco should be kept damp by spraying with water for several days after the final coat is applied. If any delay occurs between the application of the scratch and brown coats or between the brown and finish coats, the unfinished stucco should be cured in the same way.

Proper curing prevents stucco from being dried out too fast by the sun or wind. This eliminates dusting and shrinkage cracks and enables the stucco to develop its maximum strength and hardness.

Finishes

Because of plasticity of the mortar, all the various textured finishes obtainable with portland cement stuccos can be more easily produced by the same treatment with Brixment stucco.

Color

The natural color of Brixment stucco is an attractive, soft shade, warmer than the usual cement gray. If a tinted surface is desired, mortar colors can be used in the finish coat. Or, if preferred, any prepared cement or lime stucco or a white cement can be used for the finish coat over base coats of Brixment stucco.

How To Estimate

When mixed with 3 parts of sand, a barrel of Brixment will cover 15 sq. yds. of wall surface with stucco 1 in. thick; 100 sq. yds., therefore, require 26½ bags of Brixment. The following table shows the materials required for covering 100 sq. yds. of solid wall surface with stucco of varying thicknesses:

Thickness of stucco, in.....	¼	⅜	½	¾	1
Cubic yards of sand.....	.74	1.10	1.47	2.21	2.94
Bags of Brixment.....	6.6	9.9	13.3	19.9	26.5

Economy

Brixment costs less than an equal amount of cement and lime. It also saves material because with Brixment the required working plasticity can be obtained with leaner mixes. It saves labor because the unusual plasticity of Brixment permits faster, easier application of the stucco.

Soundness

Hair-checking, crazing and shrinkage cracks are due to rich mixes. Since Brixment is used in leaner mixes, these imperfections are avoided.

Resists Moisture

During the process of manufacture a small amount of mineral oil is intimately mixed with Brixment. This gives Brixment stucco a water-resisting quality essential to walls continuously exposed to the weather.

Convenient Setting Time

The manufacture of Brixment is controlled to give Brixment mortar a slower, more uniform hardening time than portland cement mortar. This gives the plasterer more time to make his joinings before the mortar hardens, thus reducing discoloration at these points.

Uniformity

With only two materials in the mix (1 part Brixment, 3 parts sand—no lime) more uniform batches are obtained. This assures uniform suction in the base coats and more uniform color of the finished job.

Specifications

The standard specifications for portland cement stucco apply in every respect to Brixment stucco, except that, with Brixment, no lime or portland cement is used in the mix.

BUILDING INSULATION
ACOUSTICS

Acoustical Corp. of America....B2650
American Hair & Felt Co....B2490–2491
Angier Corp....B2492
Armstrong Cork & Insulation Co.—
- Acoustic Corkboard....B2648–2649
- Building Insulation....B2527–2543
- Fiber Insulation....B2567
- Machinery Isolation....B2646

Atlantic Gypsum Products Co....B2640
Bar-Ray Products, Inc....B2645
Cabot, Samuel, Inc....B2493
Celotex Co....B2570–2578
Certain-teed Products Corp.—
- Fiber Wall Board....B2568–2569
- Gypsum Wall Board....B2642–2643

Chicago Mill and Lumber Corp....B2579–2606
Compound and Pyrono Door Co....B2680–2681
Cork Insulation Co., Inc.—
- Acoustic Corkboard....B2651
- Machinery Isolation....B2647

Creo-Dipt Co., Inc....B2494
Flax-li-num Insulating Co....B2496–2499
Garrett, C. S., & Son Corp....B2495
Guastavino, R., Co....B2652–2661
Hamlin, Irving....B2682–2683
Housing Co.—
- Acoustic Tile....B2662–2663
- Insulation....B2607

Insulite Co....B2610–2612
Johns-Manville—
- Acoustic Treatment....B2664–2668
- Insulating Board....B2608–2609
- Rock Wool....B2512

Korfund Co., Inc....B2669
Macoustic Engineering Co., Inc....B2670
Maizewood Products Corp....B2613–2615
Masonite Corp....B2617–2630
Mundet, L., & Son, Inc....B2545–2566
National Gypsum Co.—
- Gypsum Products....B2641
- Insulating Board....B2616

Sisalkraft Co....B2500–2501
Sprayo-Flake Co....B2513–2524
Stewart Inso Board Corp....B2634–2635
Torfoleum Corp....B2544
Union Fibre Sales Co....B2506
United States Gypsum Co.—
- Acoustic and Sound Deadening Materials and Systems....B2671–2679
- Insulation....B2525

United States Mineral Wool Co....B2526
Universal Gypsum & Lime Co....B2644
Upson Co.—
- Insulation....B2502–2505
- Wall Board....B2631–2633

Wood Conversion Co....B2507–2511
Wood-Fibre Board Corp....B2636–2639

AMERICAN HAIR & FELT CO.

Manufacturers of Blanket Insulation and Other Building Products

130 North Wells Street, CHICAGO, ILL.

PRINCIPAL BRANCH OFFICES

NEWARK, N. J. — MILWAUKEE, WIS.
DETROIT, MICH. — LOS ANGELES, CAL.
PITTSBURGH, PA. — ST. JOHNS, P. Q., CANADA

Products

SEALOFELT, a Blanket Insulation and Sound Deadener.

Also Ozite Building Blanket, Ozite Sound Deadener, Ozite Readi-cut Pipe Covering and Ozite Standard Hair Felt.

SEALOFELT

Seals Out the Weather

U. S. Patent No. 1368-920
Also Patent Applied For

Waterproof and Windproof

The heavy, black, flexible paper is waterproofed on all surfaces to prevent passage of wind and water. Stitching holes are sealed on "weather side" to keep out the wind.

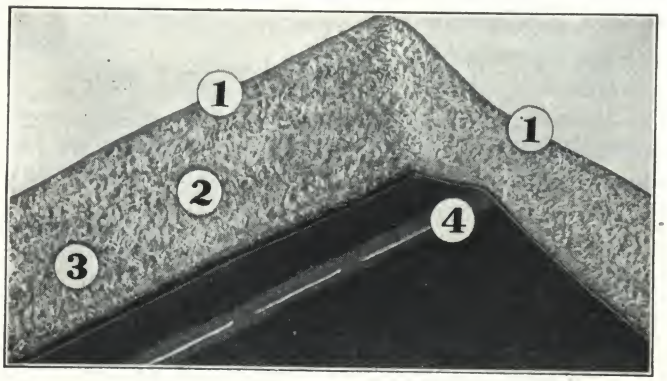
Description

Sealofelt, a blanket insulation, is a patented combination of vegetable fibres (jute) and clean animal hair forming a resilient mass containing millions of tiny "dead air" cells, thereby making a remarkably efficient insulating material.

This resilient mass is confined, by means of stitching, between layers of heavy, black flexible paper. The stitching is scientifically placed to insure maximum fluffing when installed and to prevent the settling or packing down of the filler.

The following items show conclusively that Sealofelt possesses all the qualities and advantages required of a highly efficient insulating material.

(1) On both sides, heavy black paper—waterproofed on all surfaces to stop wind and wet—protects your job if caught by rain during construction.



(2) A percentage of animal hair to add resiliency and help form those millions of tiny air spaces—the finest type of insulation. U. S. Pat. No. 1,368,920.

(3) Long vegetable fibres that give porosity and sound resistance.

(4) Strong stitching that holds the insulation in place—no litter or breaking apart of cover during installation—scientific location of stitching permits faster installation and proper fluffing—*stitch holes sealed on outside to keep out the wind.*

Thermal Conductivity

Placed between studs, Sealofelt fluffs out to one-half again its thickness. Nominal ½ in. thickness Sealofelt, due to fluffing, thus provides ¾ in. insulation. The average of many tests at Armour Institute of Technology on heat conductivity of Sealofelt is 0.241 to 0.255 per sq. ft. per inch per degree Fahrehneit. For instance, nominal half inch Sealofelt has a B.t.u. conductance of 0.496, when compressed to ½ inch thickness, and 0.325 when allowed to fluff out ¾ inch thickness. (See table of tests. All tests by standard hot plate method.)

HEAT CONDUCTIVITY TESTS ON COMMERCIAL ½-IN. THICKNESS SEALOFELT BUILDING INSULATION

Showing Effect of Fluffing to Greater Thickness Between Rows of Stitches

Thickness fluffed to, in.	Density, lb. cu. ft.	Heat conductivity per 1 in. thick	B.t.u.s per hr. per deg. F. for thickness tested
0.75	4.15	0.244	0.325
0.625	4.98	0.241	0.385
0.50	6.22	0.248	0.496

Verminproof—Flame Resisting

Sealofelt is specially treated with a glass-like compound which adheres to the fibres and prevents nesting by rats, mice or other vermin. This treatment also increases resistance to flame.

Insectproof

The clean, tarry odor of Sealofelt acts as a powerful repellent to moths, insects, etc.

Stitching

Strong stitching (scientifically placed) holds the insulation in place, gives proper fluffing and permits faster and better installation.

Sizes

Sealofelt is cut in 17, 25 and 33 in. widths to fit accurately between the studding and joists. There is no waste. Made in inch and one-half inch thicknesses.

Economy

Tests prove that half inch nominal size Sealofelt installed between studs in the manner recommended by us fluffs to an average thickness of three-quarters of an inch, *giving insulation equal to the average one inch board type insulation.*

Method of Packing and Distribution

Sealofelt is packed in rolls of 250 sq. ft. ready cut to width. It is carried in stock by high grade lumber dealers everywhere.

Sealofelt for Sound Deadening

(On the Pacific Coast this material, used for sound deadening, is locally known as Califelt).

Tests by the Riverbank Laboratories on materials of our manufacture comprising one-half inch fibrous filler sewed between two thicknesses of waterproof paper of the same weight used for Sealofelt show splendid sound deadening properties. The sound waves set up in the paper covering seem to be damped out by the pressure of the filler against the paper. This effect is further increased by the compression of the stitching.

	Average Reduction Factor in Threshold Units (Decibels)	Wt. of Wall per Sq. Ft.
1. Ordinary wood stud, wood lath, gypsum plaster wall *not* using sound deadener.	28.0	18.0
2. Ordinary wood stud, wood lath, gypsum plaster using ½-in. AMERICAN HAIR & FELT Co. blanket nailed to one side of studs, 1-in. furring strips nailed over blanket.	37.0	18.5

Inasmuch as a reduction of forty Threshold Units almost completely extinguishes the sound of a phonograph, it is seen that a single thickness of ½-in. Sealofelt should produce a most satisfactory reduction—all that can reasonably be expected in wood frame construction. It is important that careful construction methods be employed as the best sound deadeners fail of their purpose if carelessly installed.

Note: The Riverbank Laboratory tests quoted above relate to our materials that have the fibrous filler of a slightly different composition than the filler of Sealofelt. There is not the least indication that the formula of the filler substantially affects the sound deadening properties.

Continued on next page

Recommendations in the Use of Sealofelt Blanket Insulation

The skeleton specifications and details contained within these pages cover general methods and usual locations only and are primarily for the architect's guidance. Vital points and unusual conditions, requiring special mention, are left to the architect's discretion. However, the following items should be included in the architect's specification.

(1) Insulation should be applied between the floor joists and against the beam filling or wall at the first story joist level.

(2) Insulation should always be carried through the floor thickness at all floor levels and attic story joists in order to insulate the outside walls between the heads of all joists.

(3) Insulation should always be tightly nailed at the roof plate (when rafters join walls) and at the ridge. Special precaution should be taken here as the location is generally difficult to reach and is frequently neglected, resulting in a large amount of heat loss.

(4) Around window and door frames, caulk or pack with Sealofelt all open spaces accessible from the inside and wherever possible continue the wall insulation around the frame when built into walls of solid masonry.

(5) Particular attention should be given to the insulation of all roof areas including decks over heated rooms (such as sun rooms, etc.) and floors of heated rooms which have unheated spaces below them.

Location of Roof Insulation—The location of roof insulation for homes is determined by the use to be made of the attic space and is left to the discretion of the architect. If the attic contains living quarters it is always advisable to place the insulation on the underside of the rafters or between them. If the attic is designed for storage space only, the insulation should be placed on the ceiling line. This method reduces the volume to be heated and permits a minimum amount of insulation.

Economy of Additional Insulation—Insulation is not a luxury and it can be easily provided for in most building budgets for moderate cost homes as its cost will be quickly paid for by the reduction of fuel costs.

Insulation is generally installed during the construction of the building and should be considered for the following locations in addition to those where it is usually installed.

Basement Ceiling—The basement always has a lower temperature than the habitable portions of the house and it is advisable to insulate the basement ceiling or first-story floor, thus preventing cold floors, draughts, and thereby reducing the amount of heat loss. This insulation should cover the underside of stairways to second floor and partition walls enclosing the basement stairs.

Bedroom Floors and Walls—Comparatively speaking, bedrooms are cold rooms during the hours used for sleeping. By insulating the bedroom floors it is possible to maintain a uniform temperature night and day for the first story, and at the same time permit a lower temperature for the bedrooms as required by hygienic rules and general custom, without any loss in the economy of fuel consumption.

It is also advisable to insulate partitions surrounding bedrooms that are kept at low temperatures during the night, thereby insuring warm, comfortable bathrooms and dressing rooms.

Recommended Specification for Installation of Sealofelt Blanket Heat Insulation

Materials—Heat insulation shall be Sealofelt blanket insulation, manufactured by the American Hair & Felt Co., Chicago, Ill.

All Sealofelt shall be the ½ in. (or 1 in.) thickness unless noted or specified otherwise. Widths shall be as hereinafter specified. (Stock widths 17, 25 and 33 in.)

Heat Insulation—General—The continuity of the insulation must be maintained. Insulate the outside walls between joist and rafter ends where floors, ceilings or roofs and outside walls are insulated.

Insulation strips, without exception, shall run in the same direction as the studding, joists or rafters and must be applied to permit fluffing and provide air spaces.

All joints throughout shall be made airtight, especially at door, window or other openings.

Use only full length strips of insulation. End joints, where necessary, shall be lapped and covered with wood lath or strips, nailed through insulation to boarding or header.

Specification No. 1—Frame, Frame Stucco—Frame Brick Veneer
Sealofelt Applied Between Studs, Rafters and Joists

Sidewall Insulation—Place 17-in. width Sealofelt, vertically, between studs on all outside walls in proper manner to produce fluffing and to leave air space between sheathing and the insulation. The edges of insulation strips are to be turned at right angles and continuously fastened by means of wood lath or strips nailed securely through the insulation to the sides of studs, and at top and bottom of sills, plates or headers.

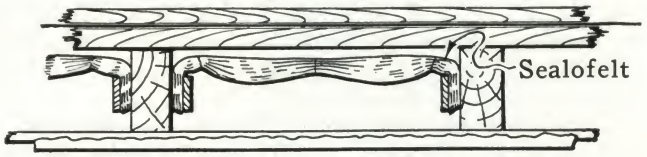
Roof or Ceiling Joist Insulation—(A) *Between Rafters*—Place 17-in. width Sealofelt between all rafters in proper manner to produce fluffing and to leave air space between the roof boards and the insulation. The edges of insulation strips are to be turned at right angles and continuously fastened by means of wood lath or strips nailed securely through insulation to the sides of rafters, plates, ridges, etc.

(B) *Between Ceiling Joists*—Place 17-in. width Sealofelt between all top floor ceiling joists in proper manner to produce fluffing.

(Architect should specify here whether insulation is to be placed before installation of cross bridging or whether access can be had from attic side.)

Note: In the above specification substitute the words 25-in. width Sealofelt in case the rafters or ceiling joists are spaced 24 in. on centers.

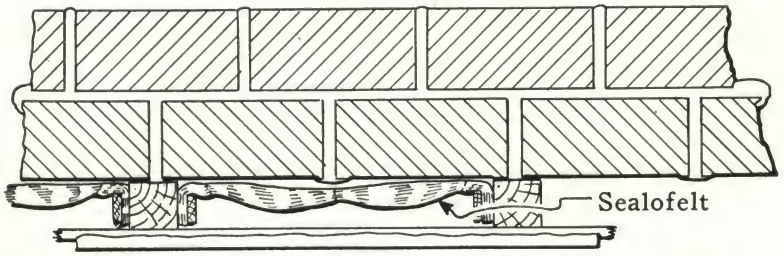
The edges of all insulation are to be turned at right angles and continuously fastened by means of wood lath or strips nailed securely through insulation to the sides of joists, plates, headers, etc.



17-in. Strip Placed Vertically Between Studs

Specification No. 2—Solid Brick, Hollow Tile, Stone, Concrete or Cinder Block Construction
Sealofelt Applied to Masonry Walls

Fur the walls with 2x2-in. furring strips, placed 16 in. on centers and securely fastened plumb and true. Place 17-in. width Sealofelt between all furring strips in proper manner to produce fluffing and to leave air space between insulation and wall surface. The edges of insulation to be turned at right angles and continuously fastened by means of wood lath or strips nailed securely through insulation to sides of furring strips.



17-in. Strips Placed Vertically Between 2x2-in. Furring

COMPARISON OF METHODS OF MAKING WOOD FRAME WALL

	Without Sealofelt uninsulated construction	With Sealofelt as the only insulation
Finish siding	½-in. wood	½-in. wood
Building paper	1/20 in.	1/20 in.
Sheathing	⅞-in. wood	⅞-in. wood
Studs	2x4 in. 16 in. cc	2x4 in. 16 in. cc
Blanket insulation	None	½-in. Sealofelt
Lath	Wood	Wood
Plaster	3 coat	3 coat
B.t.u. transmitted per hr. per sq. ft. per deg. dif. of air temp. on sides of wall	0.229	0.117

ANGIER CORPORATION

Manufacturers of Resilient Waterproof Building Papers

FRAMINGHAM, MASS.

PACIFIC COAST OFFICE, 4814 Loma Vista Avenue, LOS ANGELES, CALIF.

Product

BROWNSKIN: a resilient Waterproof Building Paper, plain or reinforced.

Angier BROWNSKIN Resilient Building Paper

Description

Brownskin is a patented, resilient, moisture-resisting and waterproof building paper that adapts itself to meet the varying conditions of temperature, weather and building strains, without splitting, tearing or pulling away from nails, presenting thereby an unbroken, impassable barrier at all times to these destructive agents during the life of the building.

Brownskin is composed of 2 sheets of kraft paper—thoroughly impregnated with a special asphaltic compound to protect the fibrous surfaces against deterioration, then creped to make them resilient. The two sheets are then cemented together with asphalt, thus forming a single resilient waterproof sheet of greater protective value than any non-resilient type of building paper.

Brownskin is also obtainable reinforced with strong yarns for use where an exceptionally strong paper is necessary.

Specifications

All building paper hereinafter specified for various parts of the construction shall be Brownskin, as manufactured by ANGIER CORPORATION of Framingham, Mass., or equal resilient paper, and must be strong, waterproof, moistureproof, durable and resilient.

Samples

Samples and further information on Brownskin Building Papers will be sent gladly on request.

OUTSTANDING FEATURES OF BROWNSKIN

The creped and impregnated construction of Brownskin constitute those patented exclusive features which cannot be found in any non-resilient type of building paper.

Resilience—The resilience of Brownskin permits it to stretch 11% to 15% without breaking, and overcomes all difficulties experienced with single, duplex or reinforced non-resilient papers, which actually split and tear under weather changes, shrinkage and settling strains, which occur after work is covered in.

Resistance—Brownskin is not only resilient, and waterproof, but even its outer surface is thoroughly impregnated to protect it from chemical action of moisture.

Because Brownskin is resilient and does not pull away from nails it positively stops infiltration of air and provides an effective insulating blanket against winter cold and summer heat.

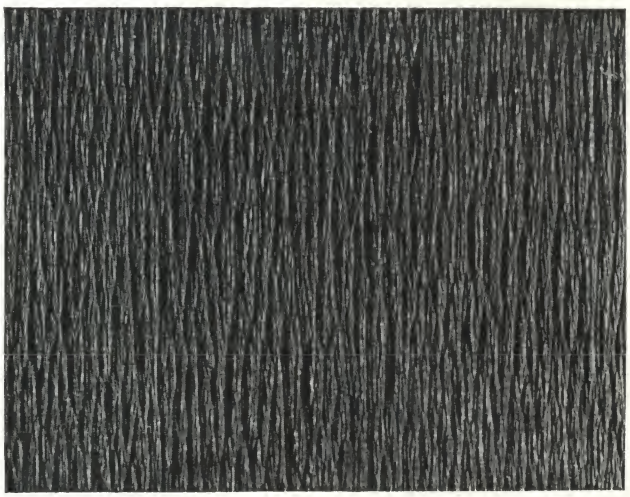
Brownskin is a tough paper, hard to puncture or tear. It remains resilient and pliable in cold weather and may be creased and folded without cracking, breaking or destroying its waterproof qualities. It is easy to handle, withstands abuse without tearing, requires no cleats to hold it in place—one man can apply it. It is clean and will not stain hands or materials.

Uses—For insulating and making leakproof all types of building construction; for general sheathing purposes under clapboards, siding, stucco, brick veneer, wood or slate surfaced shingles, tile, slate and roll roofings. Also used under wood floors to prevent infiltration of air or moisture from underneath, the usual cause of warping.

It is especially efficient when used under metal lath in stucco, concrete and plaster work, as its creped surface forms a perfect bond with the material used and, in addition, presents a waterproof barrier to all moisture.

The reinforced types of Brownskin are used as a temporary protective covering for open trenches, for materials and work under construction, and as a windbreak for men working on scaffolding, or where an unusually strong insulating material in construction work is required.

Brownskin is obtainable from stock in 36, 48 and 60-in. widths.



Typical Appearance of Brownskin

SAMUEL CABOT, INC.

Building Insulation

141 Milk Street, BOSTON, MASS.

For Branch Offices and Agencies, see our pages on Stains and Preservatives

Products

HEAT-INSULATING and SOUND-DEADENING QUILT.

For Stained Shingles and for Paints, Stains and Wood Preservatives, see Manufacturers' Index.

Cabot's

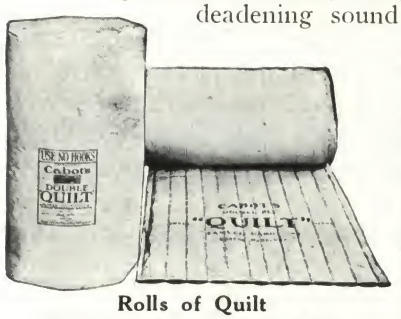
Heat-Insulating Sound-Deadening

Quilt

Samuel Cabot Inc.

Cabot's Heat-insulating and Sound-deadening Quilt

Purposes—For insulating houses and other buildings to make them warm in winter and cool in summer; for insulating cold storage and ice houses, refrigerators, etc., and for deadening sound in floors and partitions of apartments, schools, hospitals, etc.



Rolls of Quilt

Rolls of 250 sq. ft., 1 yd. wide
Divides into 18 in. strips

Description—Quilt is a felted matting of *zostera marina*, a marine plant, stitched between two layers of very strong Kraft paper.

Grades—Quilt is regularly made in 6 grades, as follows:

Grade	Thickness, in.	Weight, lb. (per roll of 250 sq. ft.)
Single-ply	About 1/8	About 40
Single-ply waterproof	About 1/8	About 45
Double-ply	About 1/2	About 65
Double-ply waterproof	About 1/2	About 70
Triple-ply	About 3/8	About 90
One-inch	About 1	(Per. roll of 125 sq. ft.) 65

Cabot's INCH Quilt—New stitching machinery enables us to offer Cabot's Quilt in this new thickness for maximum results, or special service work for either heat insulating or sound deadening. Installation is cheaper and quicker.

Efficiency—Tests made at the U. S. Bureau of Standards, Washington, show that there are only two other insulators, irrespective of cost, which equal or exceed Cabot's Quilt in insulating value. The Bureau of Standards' tests, made by the plate method, show a transmission coefficient of .25 for 1 in. of Quilt. By the air-to-air method, ½ in. of Quilt has a coefficient of .26, this being with Double-ply Quilt.

Tests made by Prof. G. B. Wilkes at the Massachusetts Institute of Technology, 1926-1927, give the following results:

RELATIVE HEAT CONDUCTIVITY OF STANDARD WALL AND ROOF CONSTRUCTIONS—WITH AND WITHOUT CABOT'S QUILT INSULATION—SINGLE-PLY

Construction	Conductivities		Heat saving, per cent
	Not insulated	Insulated	
Standard Wall Construction			
Clapboard, sheathing, studding, lath, plaster	0.28	0.16	43
8-in. brick, furring, lath, plaster	0.27	0.16	41
4-in. tile, stucco outside, plaster inside	0.40	0.20	50
Stucco, studding, plaster	0.45	0.21	53
Standard Roof Construction			
Tar and gravel on 4-in. concrete	0.60	0.24	60
Tar and gravel on 2-in. wood plank	0.26	0.16	39
Tile or slate on wood sheathing	0.82	0.27	67

One layer of Double-ply Quilt is a better insulator than 12 in. of solid brickwork and far better than 12 in. of stone or concrete.

Sound Deadening

Thousands of apartments, schoolhouses, hospitals, etc., have been successfully deadened in partitions and floors with Cabot's Quilt. It breaks up and absorbs sound waves. Most exhaustive practical tests made at the Massachusetts Institute of Technology (1930), show the efficiency of Quilt for this purpose.

Permanency

Insulators and sound deadeners should be as permanent as the building itself.

Cabot's Quilt will not get foul or rot, nor harbor insects or vermin. (See old Pierce House at right.) Quilt has been in use over 35 years without deterioration. It has no odor when installed.

Old Pierce House, Dorchester, Mass. Built About 1635

The walls of the old Pierce House, Dorchester, Mass., were stuffed with *zostera marina* (eel grass) when the house was built about 1635, and the grass is still in a perfect state of preservation. We have a sample of this 295-year-old eel grass in our office

Fire Resistance

Quilt is highly fire resistant. This has been proved in many buildings.

Flexibility

Quilt is flexible and will fit any surfaces, corners, projections or jogs.

Application

Cabot's Quilt can be applied at the lowest labor cost like any common felt or paper. It is preferable to apply it between studs and rafters inside a house rather than directly under shingles, slate or clapboards. It goes around corners without cracking, it can be cut easily with an ordinary knife or shears and requires no skill in application.

Adaptability

Single-ply is for lining houses and for all other ordinary heat insulation.

Double-ply is for house insulation and sound deadening.

Triple-ply is used for cold storage and for sound deadening.

INCH Quilt is designed for maximum heat or cold insulation, or for most effective sound-deadening. There is a considerable saving with INCH Quilt as compared to two layers of Double-ply.

Specifications

Roof and walls of the building are to be insulated with Cabot's Quilt (state grade to be used).

Interior partitions and floors are to be sound insulated (sound deadened) with Cabot's Quilt (state thickness).

Co-operation and Samples

Sound-deadening problems frequently require special investigation. SAMUEL CABOT, INC. is always ready to co-operate with architects on sound-deadening problems.

Samples of all materials, with full information, promptly furnished on request.

CREO-DIPT WEATHERPROOFED BUILDING PAPER

CREO-DIPT COMPANY, INC.

GENERAL OFFICES

NORTH TONAWANDA, N. Y.

SALES OFFICES IN PRINCIPAL CITIES

FACTORIES

NORTH TONAWANDA, N. Y.
KANSAS CITY, MO.
CLEVELAND, OHIO
SEATTLE, WASH.
MINNEAPOLIS, MINN.
VANCOUVER, B. C.

CANADA: Creo-Dipt Company of Canada, Ltd., General Office, TORONTO, ONT.

The Product

Creo-Dipt Weatherproofed Building Paper is a new and different kind of sheathing. It has a base of strong, pure kraft paper (not ordinary "screenings" or "bogus" paper) infused with a special compound.

The infusion process is conducted in such a way that the original qualities of the base (kraft) paper are unimpaired—retaining all of kraft paper's resistance to tear and punch, and all its flexible toughness. And the infusion preserves these qualities indefinitely, so that Creo-Dipt Weatherproofed Building Paper actually improves in all its qualities with age.

Creo-Dipt Weatherproofed Building Paper is available in rolls 36 in. wide, containing 500 sq. ft. and in three weights—standard, medium and heavy.

Sold Everywhere by Leading Lumber Dealers

Like all other Creo-Dipt products, Creo-Dipt Weatherproofed Building Paper is sold everywhere by leading lumber dealers.

Other Creo-Dipt products include Creo-Dipt Stained Shingles, Creo-Dipt Brushcoat Stains, Creo-Dipt Dixie White and the Handi-Ironing Cabinet—for these see Manufacturers' Index.

There is a Creo-Dipt representative near you—ask him for further information on these products, or, if you do not find Creo-Dipt listed in your telephone book, write to the plant (listed at top of this page) nearest you.

Characteristics of Creo-Dipt Weatherproofed Building Paper

Creo-Dipt Weatherproofed Building Paper is waterproof and moistureproof; practically airtight. It is proof also against vermin and insects; nothing in it that attracts rats or mice. It cannot develop mildew, will not support spore-growth of any kind, and is absolutely odorless.

It is remarkably free from effect by temperature changes, for it is secure against melting or any breakdown whatever up to 350° F., and withstands intense cold without developing flaws or cracks.

The base-paper being preserved in its original state, and the infusion compound being so ductile, Creo-Dipt Weatherproofed Building Paper possesses not only great tensile strength in proportion to bulk and weight, but is also amazingly flexible, almost impossible to crack by folding.

Creo-Dipt Weatherproofed Building Paper is highly resistant to both acids and alkalis; and is a remarkably effective insulator against heat or cold.

It presents a clean, glossy surface, with no tendency toward stickiness or tackiness.

Uses As a Building Paper

The sum total of the qualities noted above characterize Creo-Dipt Weatherproofed Building Paper as an ideal material for a wide variety of uses. Five outstanding applications will be noted by any one experienced in construction.

(1) For sheathing sidewalls, in either heavy or light forms of construction.

(2) Sheathing roofs of any kind.

(3) Sheathing floors and ceilings, particularly where heat retention is a considerable factor. Creo-Dipt Weatherproofed Building Paper has a high insulating efficiency.

(4) As a windbreaker around door and window casings. Creo-Dipt Weatherproofed Building Paper's flexibility scores heavily here.

(5) Many general uses—protecting and seasoning newly laid concrete; covering supplies and equipment on exposed jobs, etc.

Refrigerator Construction

Technical experts are now recommending Creo-Dipt Weatherproofed Building Paper in refrigerator and cold-storage work.

Its high insulating value assists the main insulating material. And its moistureproofing qualities enable it to keep moisture-content of walls down to a minimum, despite the natural local tendencies toward early saturation. Its integrity in the presence of low temperatures, moreover, is a feature of practical and lasting value.

C. S. GARRETT & SON CORP.

Roofing, Building, Sheathing and Insulating Papers

TELEPHONES
BELL, LOMBARD 6895
KEYSTONE, MAIN 8567

PHILADELPHIA, PA.

Products

"RAWHIDE" WATERPROOF BUILDING, SHEATHING and INSULATING PAPERS; "LIBERTY BLACK" INSULATING PAPERS; ASPHALT SHINGLES; SOUND DEADENING FELT.

TRADE-MARK

"Rawhide" Waterproof Building Paper

The C. S. Garrett "Rawhide" is a high grade rope paper made of old manila rope stock, drawn out with a long fiber to give the best strength to the paper. The paper is treated with the "Rawhide" secret process to procure its waterproof qualities. It is odorless. "Rawhide" is put up in 36-in. rolls.

Made in two weights: No. 200 Buff, weighing 50 lb. per roll, and No. 215 Red, weighing 60 lb. per roll of 500 sq. ft. The No. 200 is the grade generally used for ordinary insulation. It has sufficient body to produce satisfactory results under ordinary conditions; but if the test is exceptionally severe the No. 215 is recommended.

Roll of "Rawhide"

For Use on Frame and Stucco Houses—When used under slate, clapboards, shingles and stucco, "Rawhide" waterproof building paper is equal to a course of sheathing boards in protecting from cold and dampness.

In the accompanying illustration two types of stucco construction are shown. Type A has been given the only perfect permanency rating in the progress report of the United States Bureau of Standards. No sheathing boards are used in this construction, the windproofing and weatherproofing being provided by waterproof building paper tacked in between the studs. For this purpose there is no better paper made than No. 215 "Rawhide" waterproof building paper.

Type B has furring and lath applied over sheathing, covered with waterproof paper. Either No. 200 or No. 215 "Rawhide" waterproof paper will give satisfactory results for this purpose.

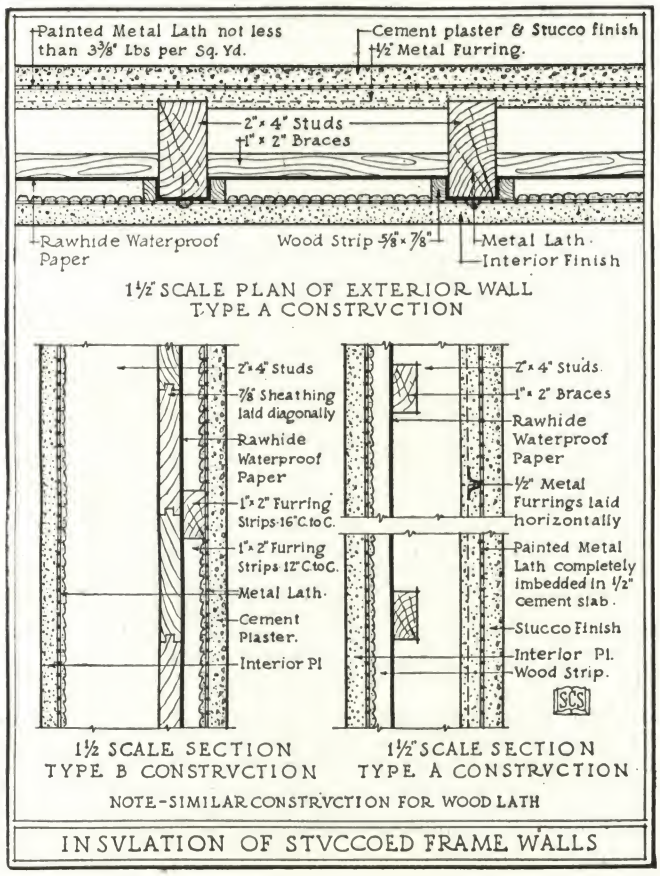
Specifications—*Building or Insulating Paper*—All material for insulating exterior walls and roofs shall be C. S. GARRETT & SON CORP. "Rawhide" Waterproof Building Paper. All sloping roof and deck surfaces and all sheathing on exterior walls shall be covered with No. 200 "Rawhide" Waterproof Paper.

Note: Where shingle strips are specified, building or insulating paper should be omitted.

All surfaces shall be completely covered in such manner as to make the building windproof and weatherproof subject to the approval of the architect. All joints of the paper shall be lapped not less than 2 in. and nailed with tin capped nails set not over 6 in. center to center. Carry paper into all window and door openings and under all window sills and exterior trim.

***Type A Construction*—**The interior of all exterior studs shall have No. 215 "Rawhide" Waterproof Paper applied as follows: The paper shall be nailed with tin capped nails, spaced not over 6 in. center to center, to the inside face of the studs and secured to sides of the studs with vertical strips securely nailed to the studs after paper is applied. The paper shall be applied to the interior of all exterior wall surfaces in such manner as to make the building windproof and weatherproof subject to the approval of the architect.

For Cold Storage Insulation—"Rawhide" waterproof papers, on account of being odorless and impervious to dampness and moisture, are especially adapted for the insulation of cold storage houses, refrigerators, refrigerator cars and for all other purposes where a dependable waterproof paper is required. Samples will be sent on request.



"Liberty Black" Insulating Papers

Fiber stock, thoroughly waterproofed and evenly coated on both sides of the sheet. The heavy weighs 35 lb., and extra heavy 50 lb. per roll of 500 sq. ft. Recommended for good service where cheaper material than "Rawhide" is desired.

"Garrettite" Slate Surface Strip Shingles

If the architect, contractor, or builder is uncertain as to the type and quality of shingle for the best service, our literature and samples may be of service to him. Write for them.

Garrett's Wool Sound Deadening Felt

No. 20 Deadening Felt is made of a specially selected wool waste, and it is unsurpassed for deadening sound between floors of lodge, school or church buildings, and private dwellings. Its spongy nature makes it so resilient that a floor underlined with No. 20 is a joy to walk on, as it effectively eliminates noise and jar. The nature of this felt is such that it will never become dead, as is often the case with some other so-called sound deadening felts, and no material put in a house pays better returns. Made in 36-in. rolls, 50 sq. yd., on a basis of 2 lb. per sq. yd.

FLAX-LI-NUM INSULATING COMPANY

GENERAL OFFICES AND FACTORY
ST. PAUL, MINN.

DISTRICT OFFICES

ALBANY, N. Y.	DENVER, COLO.	HARTFORD, CONN.	MINOT, N. D.	ST. LOUIS, MO.
BALTIMORE, MD.	DES MOINES, IOWA	INDIANAPOLIS, IND.	NEW YORK, N. Y.	ST. PAUL, MINN.
BOSTON, MASS.	DETROIT, MICH.	KANSAS CITY, MO.	OKLAHOMA CITY, OKLA.	SAN FRANCISCO, CALIF.
BUFFALO, N. Y.	DULUTH, MINN.	LOS ANGELES, CALIF.	OMAHA, NEB.	SIOUX CITY, IOWA
CHICAGO, ILL.	FORT WAYNE, IND.	MADISON, WIS.	PEORIA, ILL.	SIOUX FALLS, S. D.
CLEVELAND, OHIO	GRAND RAPIDS, MICH.	MILWAUKEE, WIS.	PROVIDENCE, R. I.	SYRACUSE, N. Y.
DALLAS, TEX.	GREEN BAY, WIS.	MINNEAPOLIS, MINN.	ROCHESTER, N. Y.	TOLEDO, OHIO
		TULSA, OKLA.		

Products

BI-FLAX—an Insulating Plaster Base of Steel.

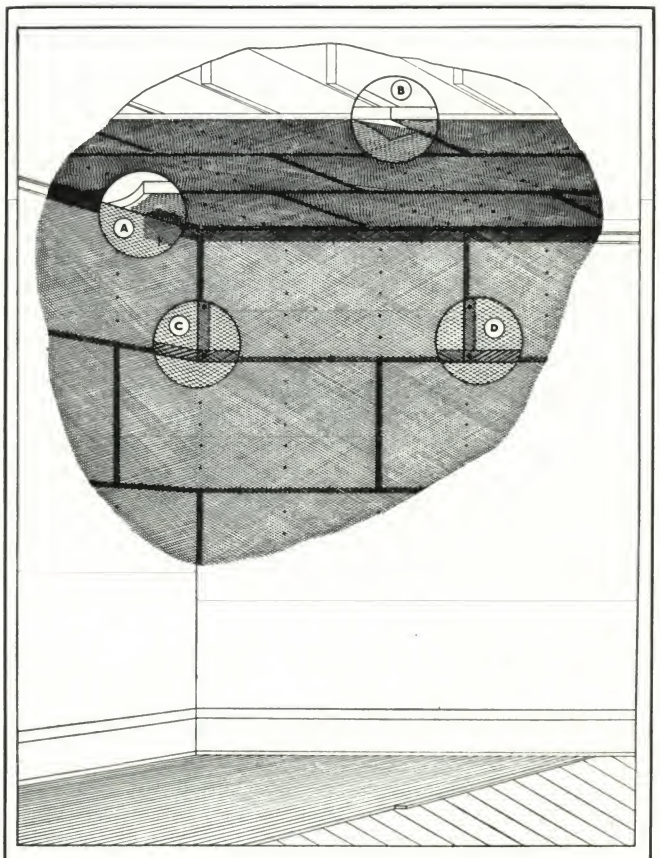
FLAX-LI-NUM THERMAL INSULATION—for reducing heat losses or heat penetration through walls, floors, ceilings, and roofs; for thermal insulation of refrigerators, railway refrigerator cars, trucks, refrigerating and cooling rooms, iceless shipping containers, etc.

FLAX-LI-NUM for Sound Control—for reducing the transmission of sound through floors and party walls, FLAX-LI-NUM—for Acoustical Treatment.

Bi-Flax

Flax-li-num Insulation combined with expanded metal lath. The metal lath extends 1 in. beyond the Flax-li-num at top and one side, providing an overlap at joints when applied. Waterproof paper separates the two materials. Thus the insulation becomes a separate unit. It does not come in contact with the plaster. Under these conditions insulation functions more efficiently.

Thickness and Size—Bi-Flax is made in ½ and 1-in. thicknesses and in sheets 24x48 in.



(a) The enlargement shows the use of cornerites where the metal lath of the sidewall joins that of the ceiling.
(b) This illustration shows how the metal lath overlaps when the sheets of insulation are butted tightly together.
(c) This illustration shows two sheets of Bi-Flax jointed at corner with horizontal and vertical overlapping of metal lath. It also shows a continuous sheet around corner.
(d) This view shows overlapping of metal lath at vertical and horizontal joints.

Bi-Flax for Frame and Masonry Walls, Partitions and Ceilings—Standard Specifications No. 20-A

(1) Material—Insulating plaster base shall be [1-in.] [½-in.] Bi-Flax (Patent No. 1,126,186) as manufactured by the FLAX-LI-NUM INSULATING COMPANY, St. Paul, Minnesota.

(2) Application—Bi-Flax shall be applied with the long dimension of the sheet across the supports. Bi-Flax shall be applied first to ceiling, carrying the insulation tightly into corners. Then, beginning at ceiling line, the Bi-Flax shall be applied to sidewalls so that the metal lath of the lower sheet laps over the metal lath of the upper sheet. The sheets of insulation shall be butted tightly together and all vertical joints shall be broken. Nails shall be so placed that a nail occurs where the metal lath overlaps at supports.

(3) Attachments—A 2-in. blued nail with $\frac{7}{16}$-in. head shall be used to attach 1-in. Bi-Flax and a 1½-in. blued nail with $\frac{7}{16}$-in. head shall be used to attach ½-in. Bi-Flax. Nails shall be driven to a penetration of not less than 1 in. into the wood, spaced not to exceed 4 in. on center.

(4) Tying—Bi-Flax shall be tied once between joists and studs where the metal lath overlaps. Tie wire shall be not less than No. 18 gauge soft annealed.

Flax-li-num

Made solely from the long, tough fibres of flax, felted into uniform sheets. Fibres are interwoven and interlocked giving to Flax-li-num its strength and durability. Flax-li-num was developed to give the greatest possible insulation value by correct application.

Form—Flax-li-num is semirigid in form. It is readily fitted to odd-shaped construction—easily handled.

Thickness and Size of Sheets—Flax-li-num is made in ½, ¾ and 1-in. thickness. The ½-in. thickness is made 16½ in. wide, 8, 9 and 10 ft. long, flanged on each side, to fit between the studs. The ¾ and 1-in. thicknesses are supplied in flat sheets 4 ft. wide and 4½ ft. long. ½-in. Flax-li-num can also be furnished in flat sheets, either 4 ft. wide and 4½ ft. long or 4 ft. wide and 8, 9 and 10 ft. long. Roof insulation is furnished in ½, ¾, and 1-in. thickness, 2 ft. wide by 4 ft. 6 in. long. Special sizes are made for "headers," to be set between floor joists, pads for placing under partition walls at floor and ceiling levels and for joist pads.

Principal Uses—(A) ***Building Insulation***—Flax-li-num has a very high thermal insulating value. Through the two-air-space method of application, which is the standard specification, it increases its own insulating efficiency 50% after it is built into the walls. Heat losses are so materially reduced through the correct use of Flax-li-num that fuel savings of 25% to 30% result. A smaller heating plant or less radiation also adds to the saving. "Flax-lined" homes are warmer in winter and cooler in summer.

(B) ***Roof Insulation***—A very important use of Flax-li-num is for insulating roofs—either industrial, public, semi-public or apartment buildings. It prevents heat loss—heat penetration and condensation. The semirigid form of Flax-li-num is especially fitted to roof insulation. It assures a perfect bond between the material and the roof deck and it will not warp, curl, crack or break.

Continued on next page

(C) ***Correcting Condensation***—In factories, mills and warehouses where excessive condensation is encountered. See specifications 2-A and 14-A.

(D) ***Refrigeration***—Flax-li-num has many advantages which recommend it for use in the construction of refrigerators and refrigeration equipment. It is used in a number of well-known refrigerators.

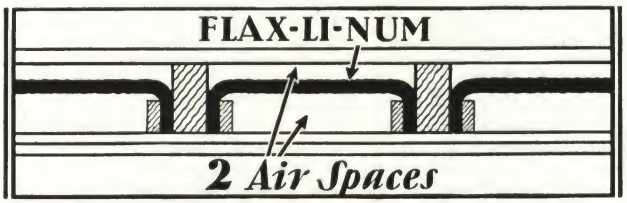
Hundreds of refrigerating and cooling rooms built with Flax-li-num bear out the claims that Flax-li-num is the correct insulating material for this purpose. Work of this type requires special treatment. The services of the Flax-li-num Engineering Department are available to architects and engineers, interested in this phase of Flax-li-num application.

(E) ***Sound Control***—When used for sound control and applied according to recommended specifications, Flax-li-num effectively prevents the transmission of sound through floors and walls. Flax-li-num is also unexcelled for correcting acoustical difficulties in theatres, lecture or music halls, churches, broadcasting stations and talking motion picture studios.

Physical Characteristics of Flax-li-num Efficiency—The thermal conductivity of Flax-li-num has been determined by the U. S. Bureau of Standards, Armour Institute of Technology and others. It has proved itself very efficient. In addition, there is an increase of about 50% in the insulating value when installed according to Flax-li-num two-air-space method. This increase is proven by the U. S. Bureau of Standards' test.

Undiminishing Efficiency—Flax-li-num is guaranteed to stay in place during the entire life of the structure in which it is installed. In refrigerator cars, in service so long that the car sills had rotted away, Flax-li-num was found to be so well preserved that it was used over again. Flax-li-num is standard insulation on many refrigerator cars of the leading American railways.

Fits All Shapes—Flax-li-num is sufficiently flexible to easily fit around uneven or oddly-shaped places, making tight joints.



The Flax-li-num Two-Air-Space Method of Application

A fundamental principle of thermal insulation approved by the U. S. Bureau of Standards and making possible maximum insulating value from an economical thickness of material:

The Flax-li-num method of application, as recommended in our specifications for more than fifteen years, calls for the installation of Flax-li-num in the middle of the air space in sidewalls, and furred down on the ceilings, thus giving an adequate air space on *each side* of the material.

These specifications add two heat resisting surfaces, resulting in greater insulating efficiency. When correctly installed in the wall, the insulating value of Flax-li-num is increased more than 50%.

The United States Bureau of Standards, in its recently published letter, Circular No. 227, says:

"If a layer of material (insulation) is placed in the middle of a wide air space, such as that between the studs in a frame wall, greater insulating value is obtained than if the material is placed in contact with the sheathing, or as a plaster base—*the addition of a half-inch layer of insulation in the middle of the air space in a frame wall, is therefore the equivalent of adding about ¾ in. layer at some other place in the wall.*"

Specification Suggestions

Specify the exact places where Flax-li-num is to be used, bearing in mind that heat insulation is most effective when placed half-way between inner and outer surfaces of exterior walls, and between studs from sill to top plate. For sidewalls use ½-in. Flax-li-num. Sheets should be notched and flanged top and bottom, and form continuous contact all around. Nail lath over flanged edges at top, bottom and sides. In gables, blocks of studding dimension should be inserted between studding, flush with bottom edge of ceiling joists. Insulation should be run to these headers and fastened to them with lath.

Below top story ceiling joists, 1-in. Flax-li-num sheets should parallel the joists so that edges are backed by joists on both sides. Below the Flax-li-num place 1x2-in. furring strips, to receive the lath and plaster.

Where top story is an attic, and it is desired to make this space easily usable, 1-in. Flax-li-num should be applied to underside of rafters and collar beams. At intersection of rafters and collar beams wood headers should be placed between rafters, and Flax-li-num nailed to headers. At all end joints of insulation insert wood headers and nail both sheets to these headers to assure tight joints.

Insulation for a One or Two-story House—Specification No. 13-A

Sidewall Insulation (Detail 3) Materials—Heat insulation for all outside walls shall be ½-in. Flanged Flax-li-num, manufactured by the Flax-li-num Insulating Company, St. Paul, Minn.

Application—½-in. Flanged Flax-li-num sheets shall be applied between studding from lower to top plate. Top and bottom of sheets shall be notched and flanged into place. Binding strips (lath) shall be securely nailed through flanged edges and top and bottom of Flax-li-num sheets to studdings and plates (to insure tight joints). In gables, blocks of studding dimension shall be inserted between studding flush with bottom edge of ceiling joists. Insulation shall be run to these headers and fastened to them with lath.

Roof Insulation (Detail 4) Materials—Heat insulation for roof shall be 1-in. Flax-li-num flat sheets, manufactured by the Flax-li-num Insulating Company, St. Paul, Minn.

Application—1-in. Flax-li-num flat sheets shall be applied to the underside of top story ceiling joists. Insulation shall be furred out with 1x2's under joists to receive lath and plaster. At all end joints of Flax-li-num insert wood headers and nail both sheets to these headers to insure tight joints.

Insulation for Story and One-half Semi-bungalow—Specification No. 4-A (Details 3 and 4)

Sidewall Insulation—Same as Specification No. 13-A.

Roof Insulation Application—1-in. Flax-li-num flat sheets shall be applied to the underside of rafters and collar beams. At intersection of rafters and collar beams wood headers shall be placed between rafters and insulation fastened to these headers (to provide tight joints). Insulation shall be furred out with 1x2's over rafters and collar beams to receive lath and plaster. At all end joints of insulation insert wood headers and nail both sheets to these headers to insure tight joints.

Heat Insulation for Brick Veneer Houses—Specification No. 8-A

Application for sidewalls and ceilings, same as in Specification No. 13-A, preceding. (See Details 3 and 4.)

Sound Control, Sidewall and Roof Insulation Where Studding Is Broken at Ceiling—Specification No. 3-A

Sound Control (Detail 2) Materials—Shall be 1-in. Flax-li-num flat sheets, and ½-in. Flax-li-num Joist and Plate Pads, manufactured by the Flax-li-num Insulating Company, St. Paul, Minn.

Floor Sound Control Application—Before placing joists all top plates shall be covered with ½-in. Flax-li-num Plate Pads (width of plates). Flax-li-num Joist Pads ½ x 3 in. x 3 ft. are to be placed on top edge of all joists and headers to receive underflooring, which is to be laid diagonally and tight.

All lower plates are to be placed on ½-in. Flax-li-num Plate Pads, which will project ¾ in. on each side of the plates on partition walls, and ¾ in. on the inside of outside walls, to receive grounds for lath and plaster.

Before lathing, ceiling of lower floors shall be covered with 1-in. Flax-li-num flat sheets applied to bottom edge of ceiling joists, all joints to be well fitted and butted tight (to receive end joists 1x2-in. headers shall be placed between the joists).

Headers, joist dimensions, shall be placed between the joists over all bearing sound controlled partitions. Extra joist shall be placed directly over and below where sound controlled partitions parallel the joists.

For Party Wall Application—See Specification No. 7-A, following (Detail 2).

Roof Insulation Material—Shall be 1-in. Flax-li-num flat sheets, manufactured by the Flax-li-num Insulating Company, St. Paul, Minn.

Application—Before placing partitions, 1-in. Flax-li-num flat sheets shall be applied to the underside of the top floor ceiling joists, to be butted tight against plate and ribbon board and furred out over joists with 1x2's for lath and plaster. At top floor ceiling line, headers, stud dimension, shall be placed between studs.

Sidewall Insulation Material—Shall be ½-in. Flax-li-num flanged sheets, manufactured by the Flax-li-num Insulating Company, St. Paul, Minn.

Application—See specification No. 13-A.

For Fireproof Construction—Application details for deadening are shown in Detail No. 1 on second following page.

Continued on next page

Sound Control, Sidewall and Roof Insulation Where Studding Is Not Broken at Ceiling Line—Specification No. 7-A

Sound Control Materials—Shall be 1-in. Flax-li-num flat sheets, ½-in. Flax-li-num Joist and Plate Pads, manufactured by the Flax-li-num Insulating Company, St. Paul, Minn.

Floor Sound Control Application—Flax-li-num Joist Pads ½ x 3 in. x 3 ft., to be placed on top edge of all joists to receive underflooring which is to be laid diagonally and tight. At ceiling line and at floor line above, on all floors, headers of stud dimensions are to be fitted tightly between studdings in such manner as to completely close openings. Flanged Flax-li-num to be nailed to these headers same as plates. Before lathing, ceiling of lower floors shall be covered with a continuous layer of 1-in. Flax-li-num flat sheets nailed to underside of joists. All joints shall be fitted and butted tight. On ceilings fur out over Flax-li-num with 1x2-in. strips to receive lath and plaster.

Party Wall Control Application—Lay ½x4-in. Flax-li-num pads on sleepers below partitions before placing floor joists. Cut off corners of joists so that joists from one side of partition will not touch floor on the other side. Place ½x6-in. Flax-li-num pads between joists that support floor on one side of partition and joists that support floor on the other side. Insert wood headers, joist dimension, between joists directly under partition, separating headers from the joist with ½x3-in. Flax-li-num pads. Lay ½x4-in. Flax-li-num pads over these headers and intersections of joists and lay plate directly on pads. Apply ½-in. Flax-li-num sheets to partition on both sides, running Flax-li-num down to and butting against Flax-li-num pads under plate.

For Sidewall and Roof Applications—See Specification No. 13-A for sidewall and 3-A for roof.

For Fireproof Construction—Application Details for Deadening are shown in Detail No. 1 on following page.

Sound Control and Roof Insulation Where Outside Walls Are of Brick or Hollow Tile—Specification No. 5-A

Sound Control Materials—Shall be 1-in. Flax-li-num flat sheets, and ½-in. Flax-li-num Joist and Plate Pads, manufactured by the Flax-li-num Insulating Company, St. Paul, Minn.

Floor Sound Control Application—At ceiling line build wall offset 2 in. in from wall line and height of joists, making top of offset full and plumb with top of joist.

Place Flax-li-num Joist Pads ½ x 3 in. x 3 ft. on top edge of ceiling joists, also over the wall projections, to receive underflooring which shall be laid diagonally and tight.

Before lathing, ceiling of lower floor shall be covered with 1-in. Flax-li-num flat sheets applied to the bottom edge of the ceiling joists, all joints to be well fitted and butted tight (to receive end joints, 2x4-in. headers shall be placed between the joists).

Party Wall Control Application—Lay ½x4-in. Flax-li-num pads on sleepers below partitions before placing floor joists. Cut off corners of joists so that joists from one side of partition will not touch floor on the other side. Place ½x6-in. Flax-li-num pads between joists that support floor on one side of partition and joists that support floor on the other side. Insert wood headers, joist dimension, between joists directly under partition, separating headers from the joist with ½x3-in. Flax-li-num pad. Lay ½x4-in. Flax-li-num pads over these headers and intersections of joists and lay plate directly on pads. Apply ½-in. Flax-li-num sheets to partition on both sides, running Flax-li-num down to and butting against Flax-li-num pads under plate.

Roof Insulation Materials—Shall be 1-in. Flax-li-num flat sheets, manufactured by the Flax-li-num Insulating Company, St. Paul, Minn.

Application—Before placing partitions, cover ceiling of top floor with 1-in. Flax-li-num in flat sheets applied to the underside of the ceiling joists. Flax-li-num to be run under wall offset and butted tight to outside walls. Fur out over Flax-li-num with 1x2-in. strips to receive lath and plaster.

Sidewall Insulation—See Specification 11-A on preceding page. For details of sound control in Fireproof construction for floors and party walls see Detail 2 on following page.

Heat Insulation for Flat Roof Decks—Specification No. 2-A

Concrete Deck—(Detail 7)—*Roof Deck (Concrete)*—Shall be finished smooth, without depressions that could hold water, properly graded to drains, and thoroughly dry and clean.

Materials—Shall be 1-in. Flax-li-num, manufactured by the Flax-li-num Insulating Company, St. Paul, Minn. A good grade roofing composition or cement shall be used for all moppings. Roofing as specified elsewhere.

Application—Where asphalt roofing composition is used, prime concrete surface, using at least 1 gal. of priming per 100 sq. ft. Where coal tar pitch roofing composition is used, priming is not necessary. Mop thoroughly over deck and lay Flax-li-num into hot mopping, pressing down into mopping in workmanlike manner. Butt all ends tightly together to insure proper insulation at joints. Mop over Flax-li-num thoroughly and lay roof over hot mopping.

Important: Flax-li-num must be laid into roofing composition immediately after mopping or composition will become hard before sheets are laid. Do not lay more Flax-li-num than can be covered in a day. All edges or exposed parts of Flax-li-num to be covered with cap sheet mopped to deck, and reopened when work is resumed.

Run insulation tight to all walls and butt tightly at all openings in roof, flashing as specified elsewhere.

Wood Deck Where Excessive Condensation Is a Factor—*Roof Deck (Wood)*—Shall be well seasoned, narrow width lumber, properly nailed and free from wide cracks, knots and imperfections. Roof surface shall be smooth, clean and properly graded to outlets, without depressions which could hold water. Cant strips shall be applied at fire walls and elevations.

Materials—Shall be 1-in. Flax-li-num, manufactured by the Flax-li-num Insulating Company, St. Paul, Minn. An approved roofing composition shall be used for all moppings. A thoroughly saturated waterproof felt shall be used under the Flax-li-num.

Application—Lay one thickness of waterproof felt, overlapping joints at least 4 in. Lay Flax-li-num sheets over waterproof felt, butting ends and sides carefully to insure a continuous sheet of insulation. Run Flax-li-num to all walls and fit tightly around all openings in roof, nailing Flax-li-num every 12 in. along edges with large head roofing nails. Mop entire surface thoroughly, using sufficient roofing composition to waterproof insulation. Lay roof while mopping is hot. Do not lay more Flax-li-num than can be covered in a day. All edges and exposed parts of Flax-li-num to be covered with cap sheet mopped to deck and reopened when work is resumed.

Wood Deck Under Normal Humidity Conditions—*Roof Deck*—Same as above.

Materials—Flax-li-num mopping and roofing same as preceding roof. Omit waterproof paper under Flax-li-num.

Application—Same as above, except that waterproof paper under Flax-li-num may be eliminated.

Heat Insulation for Steel Deck Roofs—Specification 14-A

Steel Deck—Detail 8—*Roof Deck (Steel)*—Properly graded to drains, and thoroughly dry and clean.

Insulating Material—Shall be 1-in. Flax-li-num manufactured by the Flax-li-num Insulating Company, St. Paul, Minn. A good grade roofing cement shall be used for all moppings. Roofing as specified elsewhere.

Application—Mop thoroughly over steel deck with standard grade roof composition and lay Flax-li-num into hot mopping, pressing down into mopping in workmanlike manner. Butt all ends tightly together to insure proper insulation at joints. Run Flax-li-num tight to all walls and butt tightly at all openings in roof. Mop over Flax-li-num thoroughly and lay roof into hot mopping.

Important: See paragraph 4 in Specification 2-A.

Technical Information and Engineering Service

The foregoing specifications briefly review the various applications recommended by the Flax-li-num Insulating Company. Each of these specifications is completely covered with full and complete detail drawings in our *"American Institute of Architects File No. 37b1."* In addition, this file contains a treatise on *"Heat Insulation for Houses,"* which is a compilation of the information gathered by the Flax-li-num Insulating Company over a period of nineteen years and covers not only laboratory tests, but the observation of complete practical applications in the field of building insulation.

These files will be gladly sent to architects and engineers on request.

Many jobs, particularly in the refrigeration field and in the field of sound control and acoustics, demand special handling. Here the experience of our own Engineering Department, in applying data and information collected by us, correlated with the best information procurable from noted refrigeration and acoustical engineers, is put at the disposal of architects and engineers who wish to make use of it.

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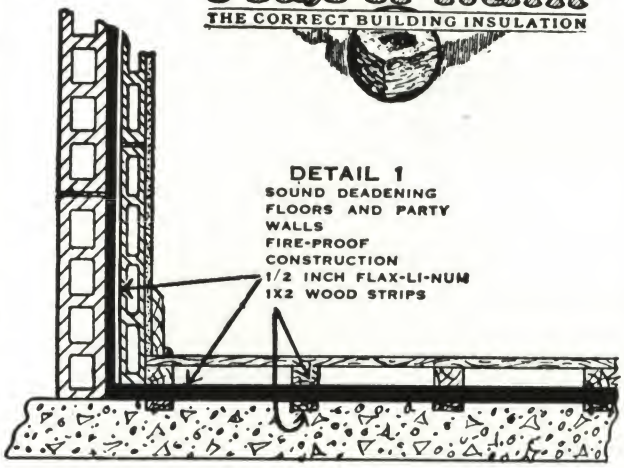
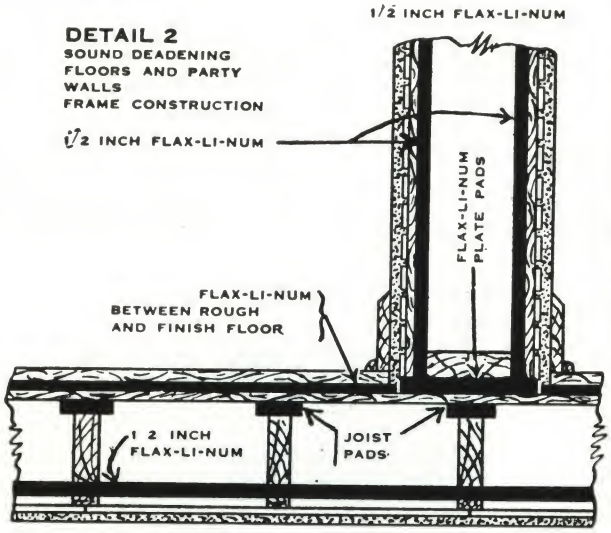
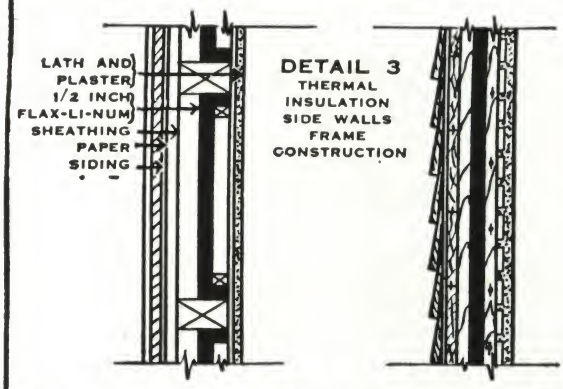
Flax-li-num
THE CORRECT BUILDING INSULATION



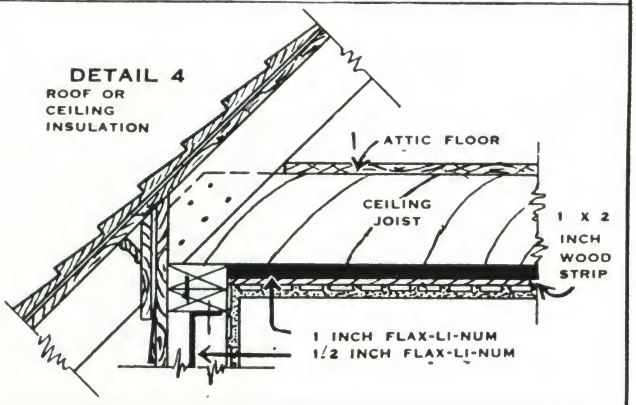
DETAIL 1
SOUND DEADENING
FLOORS AND PARTY
WALLS
FIRE-PROOF
CONSTRUCTION
1/2 INCH FLAX-LI-NUM
1X2 WOOD STRIPS



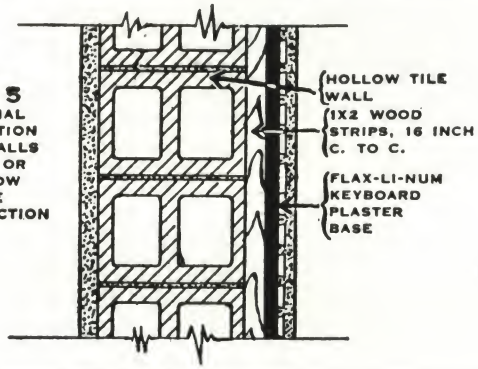
DETAIL 2
SOUND DEADENING
FLOORS AND PARTY
WALLS
FRAME CONSTRUCTION
1/2 INCH FLAX-LI-NUM



DETAIL 3
THERMAL
INSULATION
SIDE WALLS
FRAME
CONSTRUCTION

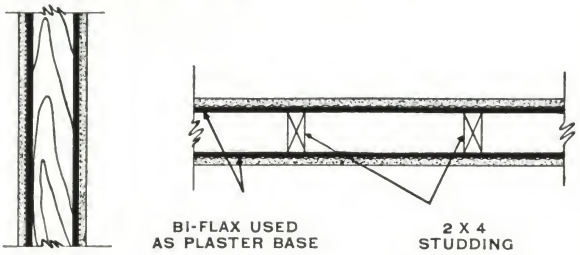


DETAIL 4
ROOF OR
CEILING
INSULATION

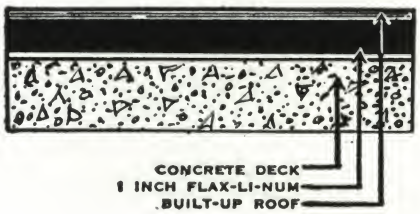


DETAIL 5
THERMAL
INSULATION
SIDE WALLS
BRICK OR
HOLLOW
TILE
CONSTRUCTION

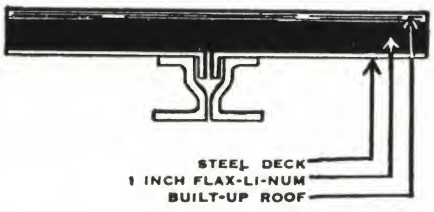
DETAIL 6
BI-FLAX USED AS PLASTER BASE



DETAIL 7
ROOF INSULATION—CONCRETE, TILE AND
WOOD DECKS



DETAIL 8
ROOF INSULATION—STEEL DECKS



THE SISALKRAFT CO.

205 West Wacker Drive, CHICAGO, ILL.

NEW YORK, N. Y., 55 West 42nd Street SAN FRANCISCO, CAL., 55 New Montgomery Street
IN CANADA: Alexander Murray & Company, Limited—Montreal, Toronto, Saint John, N. B., Halifax, Winnipeg and Vancouver

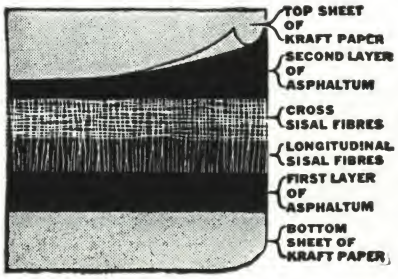
SISALKRAFT

REG. U. S. PAT. OFF.

Product

Sisalkraft, a waterproof building paper reinforced with non-elastic, untwisted sisal fibres.

SISALKRAFT IS 6-PLY



Its Architectural Importance

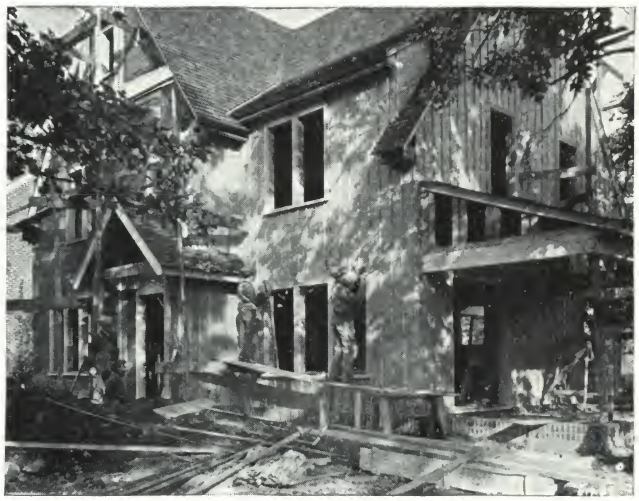
A complete departure from the conventional saturated or sized building paper, Sisalkraft enables the architect to furnish building paper protection that is positive. Building paper is only specified when it is needed for particular cases of excluding air, wind, moisture, dust, smoke, etc. Realizing the importance of these functions architects have been quick to see the advantage of specifying Sisalkraft. It has the strength and permanence to assure the designer that his object will be accomplished.

Construction of Sisalkraft

As the cross-section sketch shows, Sisalkraft is composed of crossed layers of untwisted Java sisal fibres, entirely embedded in finest quality asphalt, between covers of heavy kraft paper.

The whole is rolled together while hot, under heavy pressure, to produce a membrane sheet that does not deteriorate under weather conditions.

Since both the sisal fibres and the kraft paper are non-elastic, any strain is uniformly resisted.



Sisalkraft Provides Effective Protection Over Any Type of Wall Construction

Building Applications

Curing and Protecting Concrete Floors—Sisalkraft being waterproof, airtight, and strong enough to stand the abuse of traffic over floors, it is effectively used to cure and protect concrete floors. The curing is automatic. As soon as the floors have set so they may be safely walked upon they are given a light sprinkling of water to restore the moisture that escaped during the setting period. They are then completely blanketed with Sisalkraft, thereby retarding the moisture evaporation until the maximum density and hardness of the concrete has developed. While the cure is going on the floors at the same time are being protected from dust, scratches, and the usual construction stains, making it possible to deliver floors to the client in presentable condition. The construction of Sisalkraft prevents bleeding of the asphalt on the fresh concrete which may happen if inferior sheets are used. Sisalkraft provides the cure and protection at one cost, much lower, according to construction authorities, than the cost of using proper amounts of loose materials, such as sawdust or sand.

Characteristic Advantages

Imperviousness—Air and moisture cannot penetrate it even in a heavy wind.

Strength—It does not tear or puncture in application. No battens are necessary where paper is to be covered promptly as by siding.

Flexibility—It will not crack in cold weather, can be bent and tucked into corners without damage.

Smoothness—It does not bunch or creep during nailing of hardwood floors.

Resilience—The asphalt is always elastic; it grips nailheads, thereby preventing leakage.

Cleanliness—Workmen like to handle it. It will not stain other material with which it comes in contact.

Economical—Its cost is low—in fact lower than paper sometimes specified. And the savings in labor which it effects makes its applied cost little, if any, more than for ordinary paper. Due to its strength it is quickly and easily applied even in a high wind without rips or tears.

Distribution—Handled by 12,000 leading lumber dealers throughout the United States and Canada.

Sisalkraft Floor Lining Over Concrete Subfloor

Continued on next page

Sheathing—It fills a long-felt need, since it can be applied without holes, tears, or breaks—accomplishing a positive insulation against the infiltration of air and moisture. Air infiltration is one of the primary causes of heat loss. Sisalkraft has been tested under pressure equivalent to a wind velocity of 133 miles per hour without penetration. Its cost is one of the smallest items in the buildings, and the labor savings make it actually less expensive than many inferior papers.

Under Roofs—Its nail-hug and absolutely waterproof qualities give protection against leakage. When used as a dry sheet under roofing Sisalkraft should be applied in step with the roofing.

Under Hardwood Floors—Sisalkraft provides a permanent dust-stop and prevents moisture reaching the finished floor from below—the most common cause of cupping, warping, and creaking.

Under Terrazzo Floors—Sisalkraft insures a complete breaking of the bond between the concrete slab and the terrazzo. It is pliable and will not tear when installed over pipes and conduits. Its toughness allows workmen to wheel material over it without perforation which would allow the terrazzo fill to reach the concrete slab beneath with resulting transmission of cracks from the slab to the finished terrazzo.

Protecting Floors—Laid over finished floors, Sisalkraft maintains them in beautiful condition, free from the abrasions and stains so often experienced.

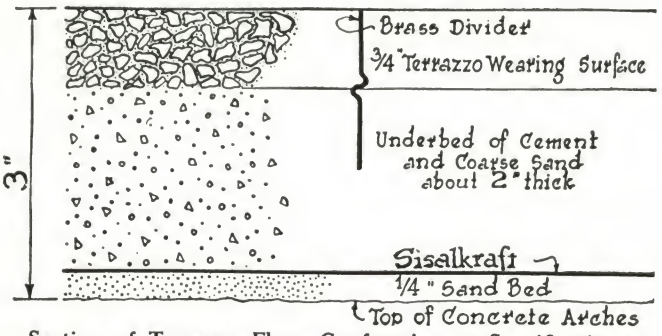
In Bathrooms—Sisalkraft over the sleepers and studs prevents the wood from absorbing moisture from the tile floor base coat and the consequent breaking of joints and of tile when the wood dries and shrinks.

Dead Air Spacing—One inch of dead air space equals ¼ in. of flexible insulation. Sisalkraft applied vertically between exterior wall studs provides two spaces and establishes a permanently effective insulation against undue conduction of heat and cold.

Sidewalls—In sidewalls, the interior is ideally protected by Sisalkraft whether the building is finished with shingles, clapboards, stucco, brick veneer, stone veneer, or solid brick. The air infiltration through a solid brick wall 13 in. thick has been found to be about 5 cu. ft. per sq. ft. per hour, and the dampness of such walls is well known. Sisalkraft applied back of the furring strips in solid brick or solid stone construction covers all of the joints—a difficult and expensive thing to accomplish in any other manner.

Over Sheathing Under Stucco

Wood Floors Over Concrete Arches—Sisalkraft prevents any moisture in the arches at the time the floor is laid from penetrating to the finished floor. Sisalkraft may be applied either over the sleepers or over the wooden subfloor if one is used. English basement floors are similarly protected from moisture in the ground by applying the Sisalkraft directly under the finished flooring.



Section of Terrazzo Floor Conforming to Specifications Recommended by Leading Terrazzo Companies

A Typical Installation of Sisalkraft for Curing and Protecting a Concrete Floor

Schools and Churches

Sisalkraft is specified in some cases for roofs and walls in schools and churches. It is particularly important under large hardwood floors, such as gymnasiums, assembly rooms, etc., to prevent moisture from basements or unexcavated ground from reaching the finished flooring and producing warping, cupping, or buckling. Church organs may be advantageously protected from dampness by lining the walls and floors of the organ compartments.

Panels

Many architects find Sisalkraft efficient to use behind wood panels as a moisture stop. As a further precaution they specify that the laps shall be sealed.

Alterations

For temporary partitions and other protective purposes, Sisalkraft affords an effective medium for shutting out dampness and dust. In this work it effects a considerable economy due to the rapidity with which it may be installed and to its low cost per square foot in comparison to alternate materials.

Standard Sizes

Sisalkraft is furnished in rolls of various widths as follows:

6 in. wide..... 150 sq. ft.	48 in. wide.....1200 sq. ft.
36 in. wide..... 500 sq. ft.	60 in. wide.....1500 sq. ft.
36 in. wide..... 900 sq. ft.	72 in. wide.....1800 sq. ft.
48 in. wide..... 666 sq. ft.	84 in. wide.....2100 sq. ft.

The wider widths are especially recommended where floor areas are large as they materially reduce the cost of application.

Samples and Information

File size samples which readily demonstrate the strength, toughness and complete waterproof protection of Sisalkraft will be sent on request.

We shall be glad to promptly answer any inquiry with respect to any contemplated use of Sisalkraft.

New uses are developing through architects all the time.

THE UPSON COMPANY

Upson *Blue*-Stripe* Insulation

10 Upson Point, LOCKPORT, N. Y.

For Upson Processed Board, Fibre-Tile, etc., see Manufacturers' Index

Upson *Blue*-Stripe—The New and More Efficient Flexible Insulation

This new insulation for buildings is made like an old-fashioned bed quilt. It consists of a thick layer of soft, fluffy, non-decaying vegetable fibres between two protecting layers of heavy kraft paper waterproofed on the outside. It insulates in a natural way by means of the millions of dead-air spaces contained in the body of soft fibre, just as in the fur of animals.

It is light and flexible so that it can be wedged or fitted into all cracks and crevices with a minimum amount of labor. It can be looped or fitted around pipes or openings more tightly than any rigid material and without the necessity of tedious sawing.

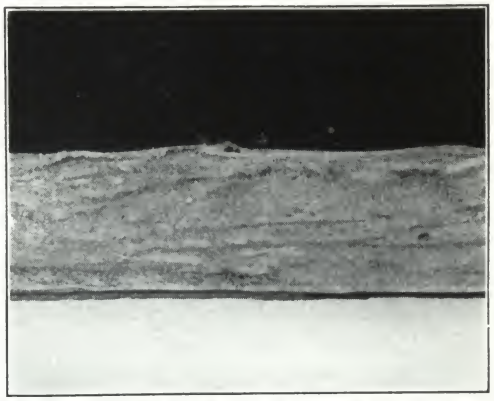
UPSON
BLUE STRIPE
INSULATION

Trade Marks Registered U. S. Patent Office

Not a Substitute for Any Structural Material

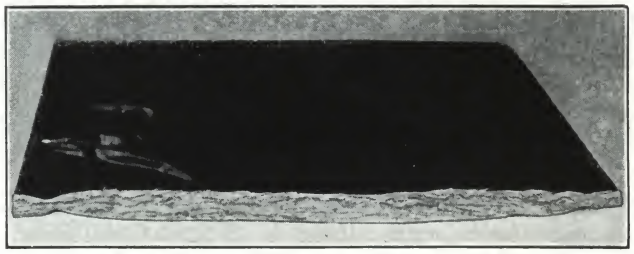
Upson *Blue*-Stripe Insulation has just one mission—to provide the utmost insulation at the most economical price. It is not a wallboard, stucco base, sheathing or a structural material.

Upson *Blue*-Stripe Insulation fulfills every important specification of insulation as science knows it today. It is flexible. It is thick. It is made of light, fluffy material. It can be applied on or within the wall. It is stitched, compressed at the edges and scored so that it is easily flanged and quickly applied.



Close-up, Full-size Photographic Reproduction of a Section of Upson *Blue*-Stripe Insulation

Note the ¾-in. thickness—the fabrication of the specially selected vegetable fibres—and the "dead-air" spaces



Cross Section View of the 17-in. Width

Showing the edges which are especially compressed and scored for easy flanging

Reinforced Edges Give Added Strength

Each edge is reinforced on the inside of the liners. Heavy kraft tape is sewed each side of the filler and then securely stuck to the liners which are of extra strong paper. Thus the stitching does not puncture the liners. Thus strength is added without punctures which would permit infiltration of air, wind or moisture.

Section with Kraft Paper Lifted Showing Construction

The method of stitching the kraft paper tape *to the filler* is clearly shown. As the waterproof kraft paper liner is stuck to this tape (not stitched through from side to side) there are no punctures and a perfect airtight union is assured

Waterproofed on the Outside

Each surface is effectively waterproofed on the outside with a heavy coat of asphaltum to bar the passage of air and moisture. The insulating filler is thus thoroughly protected and dampness kept out of the walls.

**Patents applied for*

Light and Fleecy—Easy to Handle

The filler of Upson *Blue*-Stripe Insulation is made of a special combination of light, elastic vegetable fibres especially selected for their insulating efficiency. While ¾ in. thick, this insulation weighs less than 5 oz. per sq. ft. The fibre seems to comply with the findings of the U. S. Bureau of Standards expressed in Bulletin No. 227:

". . . In general, the lighter the material per unit of total volume the better is its insulating value per inch of thickness . . ."

More Fire Resistant Because Chemically Treated

Upson *Blue*-Stripe Insulation does *not* flame easily as do many insulations. It does not even smolder or burn readily. It is highly fire resistant. Since insulation goes within the wall, where it is difficult to fight fire, it is important that the insulation be fire-resistant—Upson *Blue*-Stripe is.

Verminproofed and Will Not Mold or Decay

Contains no undestroyed vegetable matter—an important consideration when selecting insulation. It is repellant to rats, mice and vermin, since it is chemically treated.

Homogeneous — Does Not Easily Separate

Fibres in Upson *Blue*-Stripe Insulation are interlocked and felted so that they cannot easily shift or settle. Moreover, the edges are reinforced and sewed.

Made in 3 Standard Widths

Upson *Blue*-Stripe is made in three standard widths which meet all ordinary building requirements.

(1) 17-in. for use where studs or joists are on 16-in. centers. This width may be looped, or nailed with cleats midway of the depth of the studs or joists.

(2) 25½-in. for use where studs or joists are on 24-in. centers. Applied the same as is No. 1.

(3) 34-in. to loop between alternate studs, joists or rafters on 16-in. centers.

The *blue stripe* in the center of each width speeds the time of application. It is easy to center the insulation between studs or joists, while the dot-every-foot makes it easy to measure off desired lengths.

Continued on next page

INSULATION VALUE OF UPSON *BLUE*-STRIPE

Value of Air Voids

It is a well-known fact that the air voids are the most efficient and practical insulator. A downy, fleecy material, loose enough in texture to hold countless small air voids, is the finest sort of insulation, because it prevents the circulation of air, acting thereby as an efficient check to the passage of heat.

Upson *Blue*-Stripe Insulation is of this type. It is light, fleecy and contains myriads of air voids.

Flexible Insulation Is More Efficient

This is so because it can be applied midway within the wall to provide two air spaces.

Bulletin 227 of the U. S. Bureau of Standards says:

> "If a layer of material is placed in the middle of a wide air space, such as that between the studs in a frame wall, *greater insulating value is obtained than if the material is placed in contact with the sheathing, or as a plaster base.*
>
> "The insulating layer not only furnishes its own insulating value, but in addition divides the air space into two parts, each of which has about the same insulating value as the original air space.
>
> "The insulating value of an ordinary air space more than about 1 in. in width *is equivalent to about ¼ in. of insulating material.*"

To increase the ease of folding the edges, as well as decrease the cost of application, the edges of Upson *Blue*-Stripe Insulation are purposely compressed and sewed. They fold almost automatically. Some materials are so stiff and bulky that the edges cannot be easily folded to permit application midway within the wall. Such materials must be tucked against the outer wall, thereby losing the effect of the efficient two-air spaces.

With Upson *Blue*-Stripe Insulation, the carpenter can effectively seal up every crack or crevice and thus secure real insulation.

Being nailed within the wall, Upson *Blue*-Stripe Insulation cannot settle, warp or fall down with the course of time or the vibration of buildings.

Insulating Value of Insulators in Commercial Thickness

Since thickness is an important measuring stick of good insulation—Upson engineers sought to find what thickness would give the greatest fuel saving and comfort to the buyer, per dollar of cost.

Using the highly efficient filler that we do, we found that a thickness of ¾ in. gave the buyer the maximum value, per dollar of purchase price.

The insulating value of any insulation might well determine its selling price. Since Upson *Blue*-Stripe Insulation has about twice the "insulating value" of materials of the board or rigid type, there would be justification to ask twice the price. But Upson *Blue*-Stripe Insulation sells at much the same price—proving economical for the buyer.

Following is a report of the test on Upson *Blue*-Stripe Insulation made by the Engineering Experiment Station of the Pennsylvania State College on February 14, 1930.

A	E	B	D
		Heat transmission	
Material Sample 1 sq. ft. in area	Thickness of sample tested with liners, in.	B.t.u. per hour per sq. ft. with 1° F. temperature difference between faces of sample under test	B.t.u. per hour per sq. ft. with 1° F. temperature difference between faces for each inch of thickness of sample under test
Upson *Blue*-Stripe Insulation	0.875	0.324—77.5° F. (M.T.) 0.330—93.5° F. (M.T.)	0.283—77.5° F. (M.T.) 0.288—93.5° F. (M.T.)

F	G	H	I	
			Temperature under test—Fahrenheit	
Weight of sample under test	Volume of sample under test	Density of sample under test	Cold face	Hot face
0.3 lb. per sq. ft.	0.0729 cu. ft. for 1 sq. ft. of sample	4.11 lb. per cu. ft.	56.1 64.3	98.9 122.8

SUMMARY OF TESTS MADE AT PENNSYLVANIA STATE COLLEGE AND OTHER RECOGNIZED LABORATORIES

Flexible	Resistance or Insulating Value*
Upson Blue-Stripe Insulation	3.03
The following figures, published by the U. S. Bureau of Standards in Circular 227, show the insulation values of the principal materials on the market, ½-in. thickness. In fairness, trade-names have been omitted and descriptions inserted by us.	
Quilt of eel grass, double ply	1.85
Shredded wood fibre between paper liners (½-in. thickness)	2.10
Insulation of hair and jute	2.05
Hair-felt between asbestos paper	2.19
Jute and asbestos	1.39
Hair-felt between cheese cloth	1.21
Flax within Kraft covers (½-in. thickness)	2.40
Hair-felt between cheese cloth	1.30
Semi-flexible	
Felted flax fibres	1.80
Felted vegetable fibres	1.80
Stiff, Fibrous	
Ground wood fibre in board form	1.46
Sugar cane fibre in board form	1.38
Plaster Wall Boards	
Gypsum between layers of heavy paper	0.38
Gypsum mixed with sawdust between layers of heavy paper	0.27

*Higher figures represent the most efficient insulation materials.

Following is a summary of the report of test on Upson *Blue*-Stripe Insulation by Doctors McKee and Sevringhaus of Columbia University:

A	B	C (Bx50)	D (BxE)
Material	Heat Transmission		
Sample 1 sq. ft. in area (with liner)	B.t.u. per hour per sq. ft. with 1° F. temp. diff. between faces of sample under test	B.t.u. per hour per sq. ft. with 50° F. temp. diff. between faces of sample under test	B.t.u. per hour per sq. ft. with 1° F. temp. diff. between faces of sample for each inch of thickness
	0.37 (.369)	18.	0.32 (.317)

E	F	G	H	I	
				Temperature of sample under test, deg. F.	
Thickness of sample under test, in.	Weight of sample under test, lb.	Volume of 1 sq. ft. of sample under test, cu. ft.	Density of sample under test, lb. per cu. ft.	Cold face	Hot face
0.859	0.329	0.0716	4.60	77	122

Continued on next page

UPSON *BLUE*-STRIPE INSULATION IS QUICK AND EASY TO APPLY

In new construction, carpenters can thoroughly insulate a house without delay at time of building. In homes already built, Upson *Blue*-Stripe Insulation can be placed under the roof rafters—where it is most needed. There is not the muss and delay so often associated with remodeling.

Comes in Neat, Dustproof Cartons

Upson *Blue*-Stripe Insulation is packed in cartons that are convenient to handle. Each carton of the 17 and 34-in. widths contains 166⅔ sq. ft. The 25½-in. width comes in cartons containing 250 sq. ft. This footage comes in laps or folds—making it easier and quicker to handle.

How to Apply in Walls

See Figures 1 to 3, on next page.

How to Apply in Roofs

See Figures 4 to 6, on next page.

How to Apply in Floors

See Figures 7 to 8, on next page.

How to Apply as a Sound Deadener

See Figures 9 to 12, on next page.

Specifications for Application of Upson *Blue*-Stripe Insulation

The insulating material shall be Upson *Blue*-Stripe Insulation, manufactured by THE UPSON COMPANY, Lockport, N. Y.

The standard thickness shall be approximately ¾ in., which thickness shall be used for sidewalls and roof or floor insulation. Widths to be used shall be 17, 25½ or 34 in. in accordance with job specifications.

(a) All work of insulation shall be continuous. All joints and sides shall be airtight.

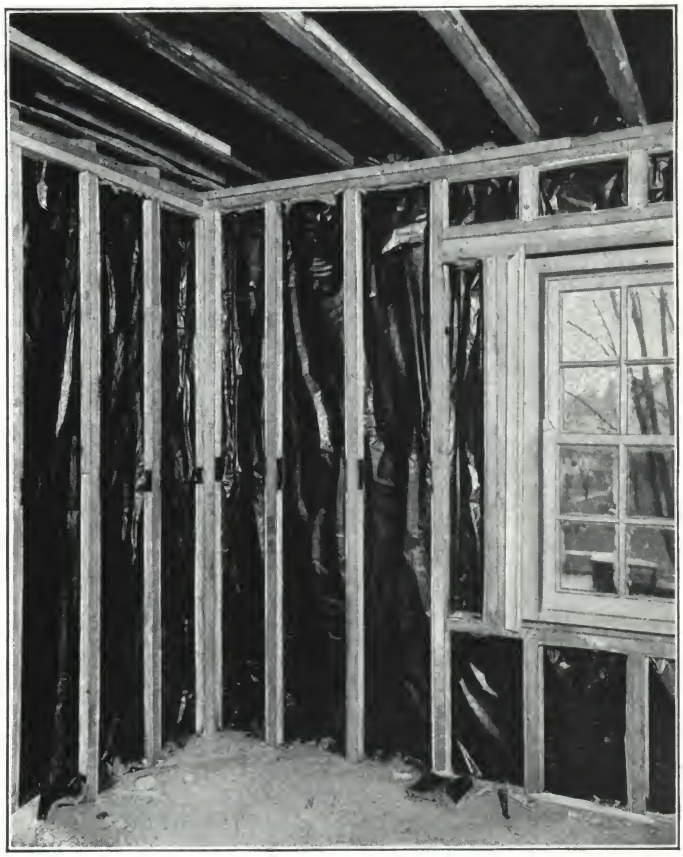
(b) Full widths of insulation shall be used and they shall *run in the same direction* as studs, joists or rafters.

(c) All insulation applied midway the depth of studs, joists, or rafters shall be fastened on all four sides with plaster lath securely nailed.

(d) All open spaces, such as between joists and rafter ends, shall be thoroughly insulated.

(e) Where the attic is used, roof insulation will be substituted for insulation of the top floor.

(f) All odd spaces to be filled to avoid air leakage or infiltration.



Interior of New Building Showing Upson Blue-Stripe Insulation in Place Between Studs and Floor Joists

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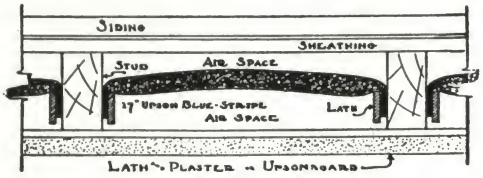


Fig. 1

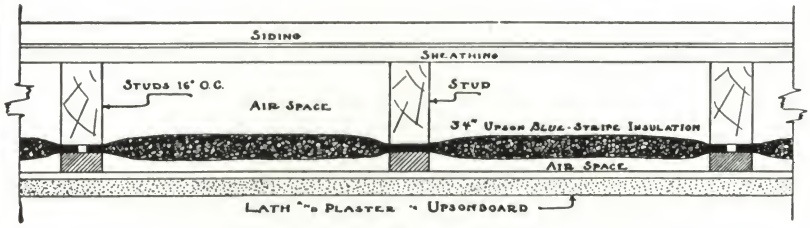


Fig. 2

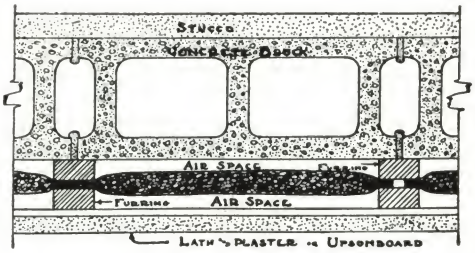


Fig. 3

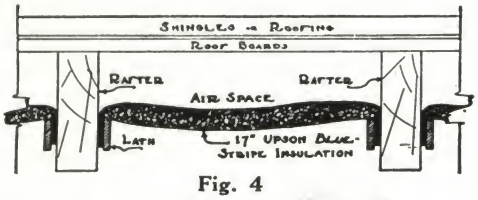


Fig. 4

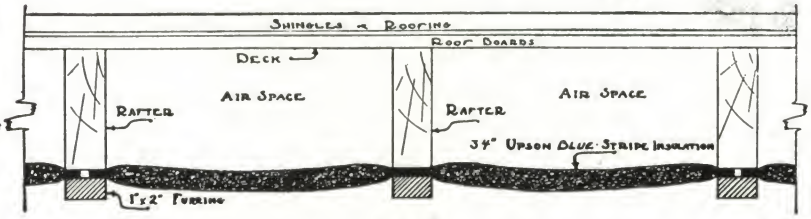


Fig. 5

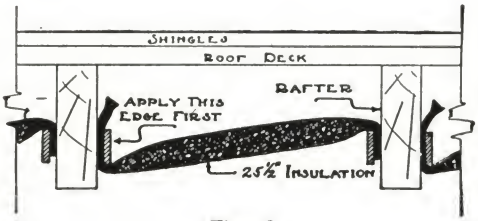


Fig. 6

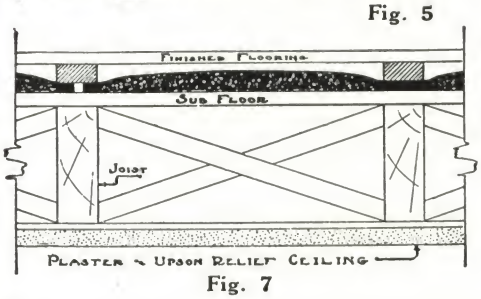


Fig. 7

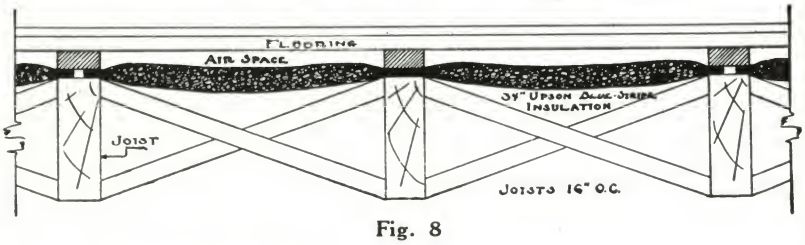


Fig. 8

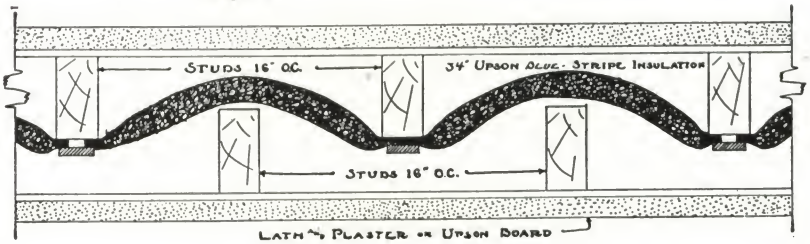


Fig. 9

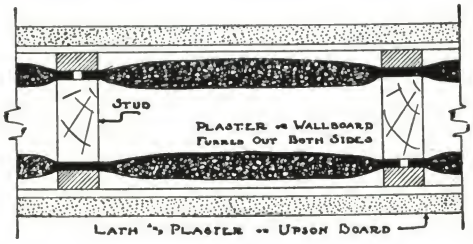


Fig. 10

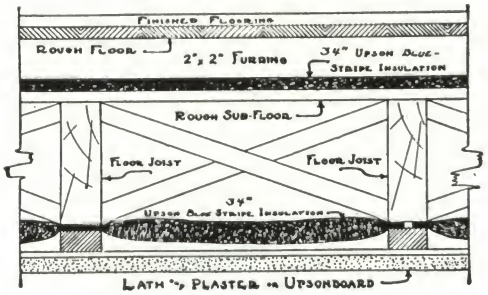


Fig. 11

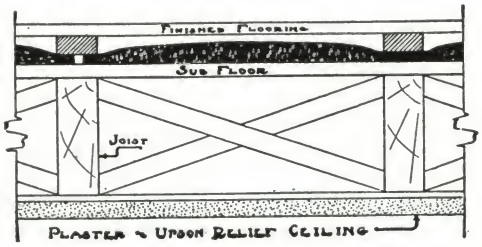


Fig. 12

APPLICATION OF UPSON "*BLUE*-STRIPE" INSULATION

UNION FIBRE SALES CO.

All Forms of Insulation for Cold, Heat, Sound, Mechanical Vibrations, Condensation and Acoustical Corrections

WINONA, MINN.

DISTRIBUTOR OF PRODUCTS MANUFACTURED BY
UNION FIBRE CO., INCORPORATED
Engineers and Manufacturers, WINONA, MINN.
AGENTS IN ALL LARGE CITIES

Union Fibre Co., Incorporated Products—the Result of Thirty Years' Service and Experience

Materials to absorb as well as to prevent transmission of heat and sound:

LINOFELT.	ROCK WOOL.
FIBROFELT.	ACOUSTICAL LINOFELT.
LITH.	ACOUSTIFIBROBLOCK.
PIPE COVERING.	ANTI-VIBRO-BLOC.

Note: Rock Wool will stand 1500° F.

Safe temperature for our other materials is 280° F. and 35 lb. pressure.

Standard Specifications, Bulletins and Service

Standard drawings and specifications for the use of our products will be mailed gratis.

We cheerfully furnish without charge bulletins and engineering advice concerning the use of our products.

Linofelt

A quilt, of highest efficiency, of selected flax fibre batt between tough Kraft or Waterproof paper. In rolls of varying widths and thicknesses.

Approximate Thickness—$\frac{5}{16}$ in.; ½ in.; ¾ in.

Standard Widths—18, 24, 26, 32, 36, 48, and 54 in.; also any other special widths up to, and including, 108 in.

Approximate Weights per 100 Sq. Ft.—$\frac{5}{16}$-in. Kraft, 17 lb.; ½-in. Kraft, 28 lb.; ¾-in. Kraft, 39 lb.; $\frac{5}{16}$-in. waterproof, 23 lb.; ½-in. waterproof, 32 lb.; ¾-in. waterproof, 43 lb.

Fibrofelt

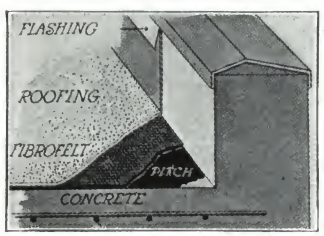
A pressed, flexible felt board of highest efficiency, of selected flax and rye straw fibres. In boards of varying widths, lengths, and thicknesses ($\frac{5}{16}$ to 1 in.), and especially adapted for roof insulation.

Approximate Thickness—$\frac{5}{16}$ in.; ½ in.; ¾ in.; 1 in.

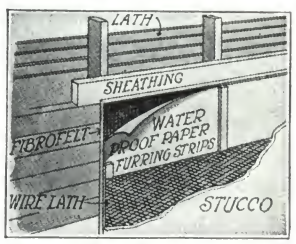
Widths—$\frac{5}{16}$ and ½-in. thicknesses are flanged for 16 and 24 in. on center. Also furnished flat in 32 and 36-in. widths; ¾ and 1-in. thicknesses furnished only in 32 and 36-in. widths.

Lengths—8, 8½, 9, 9½, and 10 ft.

Approximate Weights per 100 Sq. Ft.—$\frac{5}{16}$ in., 50 lb. uncrated, 60 lb. crated; ½ in., 60 lb. uncrated, 70 lb. crated; ¾ in., 100 lb. uncrated, 110 lb. crated; 1 in., 115 lb. uncrated, 125 lb. crated.



On Concrete Roof



On Exterior Walls Finished in Stucco

Plans for Application of Fibrofelt

Lith

A pressed board and prepared water repellent, 18x48 in., of selected flax fibre of highest efficiency. Especially adapted for cold storage and roof insulation.

Thicknesses—1, 1½, 2 and 3 in.

Approximate Weights per Square Foot—1 in., 1.25 lb. uncrated, 1.39 lb. crated; 1½ in., 1.88 lb. uncrated, 2.09 lb. crated; 2 in., 2.50 lb. uncrated, 2.79 lb. crated; 3 in., 3.75 lb. uncrated, 4.18 lb. crated.

Pipe Covering

Pressed and truly shaped from selected flax fibres. Used for cold pipes and sound deadening. Highest efficiency. Three thicknesses.

Brine Thickness—For brine and ammonia pipes with refrigerant from zero to 25° F. Also used for sound deadening. Thickness of covering from 2 to 3 in.

Special Thick Brine—For brine and ammonia pipes with refrigerant at a temperature below zero. Thickness of covering from 3 to 4 in.

Ice Water—For pipes carrying cold liquids, such as ice water, where temperatures are between 25 and 50° F. Thickness of covering from 1½ to 1¾ in.

Rock Wool

Highest quality, no dust, and is not objectionable to handle when prepared by our patented process, which anneals and makes the fibres more pliable and tough, and prevents fibres from breaking up again into dust form. Packed in burlap bags of approximately 50 lb. each.

Grades—No. 5, unoiled; No. 10, light oiled.

Note: The oil anneals and waterproofs the wool fibres to a greater or lesser degree, depending upon the grade. The oiled wool is not greasy, as the oil is absorbed in the annealing process.

Acoustical Linofelt

Gives highest tests for sound absorption. Made from our best grade flax batt, burlap covered.

Made in standard rolls, 36 in. wide, 33⅓ ft. long, and 1 in. thick. Weighs, approximately, 60 lb. per square.

Acoustifibroblock

Highest grade and efficiency applied directly to surfaces. Its outer surface is the finished wall surface, in plain or tile effect. No surface membrane needed.

Made in slabs 18x48x1⅜ in. Weights, approximately, 1.80 lb. uncrated. 2 lb. crated.

Anti-vibro-bloc

A super-insulation for elimination and deadening of severe vibrations and noises. Placed under machinery, in floors, walls, etc.

Made in slabs 18x48 in. and in thicknesses of 1, 1½, 2 and 3 in.

Approximate Weights per Square Foot—1 in., 1.33 lb. uncrated, 1.47 lb. crated; 1½ in., 2 lb. uncrated, 2.21 lb. crated; 2 in., 2⅔ lb. uncrated, 2.96 lb. crated; 3 in., 4 lb. uncrated, 4.43 lb. crated.

WOOD CONVERSION COMPANY

Makers of Balsam-Wool, the Flexible Insulating Blanket for Heat Insulation and Sound Deadening

CLOQUET, MINN.

DISTRICT SALES OFFICES

CHICAGO, ILL., 360 N. Michigan Avenue
DETROIT, MICH., 515 Stephenson Building
KANSAS CITY, MO., 231 W. 47th Street
MINNEAPOLIS, MINN., 414 Baker Building
NEW YORK, N. Y., 3107 Chanin Building
SEATTLE, WASH., 621 Liggett Building
WASHINGTON, D. C., 531 14th Street, N. W.

RETAIL DISTRIBUTION BY LUMBER DEALERS EVERYWHERE

Products

BALSAM-WOOL STANDARD INSULATION for preventing heat losses through walls, roofs, floors and ceilings; for insulating commercial and domestic refrigerators, etc.; and for the sound deadening of floors and walls.

TRADE-MARK

Balsam-Wool Refrigerator Car Insulation.

Balsam-Wool Steel Passenger Car Insulation.

Balsam-Wool Airplane Insulation.

Balsam-Wool Sealed Slabs for insulation of refrigerators.

Balsam-Wool Acoustical Blanket for acoustical treatment in offices, banks, auditoriums, churches, hospitals, schools, broadcasting studios, talking picture theaters and studios, etc.

Note: While Balsam-Wool Acoustical Blanket is used in acoustical correction, the material in these pages deals with sound *insulation* or the prevention of the transmission of sound through walls and floors. Complete information relative to Balsam-Wool Acoustical Blanket, its use and application in acoustical work will be furnished on request.

Nu-Wood Insulating Board.

Nu-Wood Lath.

Balsam-Wool Standard Building Insulation

A Wood Product—Balsam-Wool is made from pure wood fibers in fleecy wool form, permanently matted together and treated chemically to resist fire. For building purposes it is furnished ½ and 1 in. thick between two sheets of asphalt-coated, tough, creped kraft paper.

Highly Efficient as a Heat Insulator—In Balsam-Wool the natural heat resistance of the wood is multiplied many times by a rearrangement of the cellular wood fibers into a "wool" form which retards the circulation of air. The still air space in Balsam-Wool is approximately 92%, while its density in pounds per cubic foot is only 3.62. The fact that the paper liners of Balsam-Wool are not stitched or punctured in any way adds further to its heat, moisture and wind-resisting qualities.

An Effective Sound Deadener—The ability of the wool to absorb sound, and the tendency of the paper covering to reflect sound waves, account for the remarkable efficiency of Balsam-Wool as a sound deadener.

Balsam-Wool Is Easily Handled and Applied

A blanket of fluffy wood fiber that looks and feels like sheep's wool and is its practical equivalent in insulating efficiency. Balsam-Wool is windproof, waterproof, fire-resistant, sanitary and durable

Puncture-proof—The creped paper liners on Balsam-Wool are capable of 25% stretch rendering it virtually puncture-proof. By reason of this new, patented feature, Balsam-Wool is stronger, tougher, more flexible than ever before.

Waterproof—The film of asphalt which lines the paper coverings protects the wool from moisture, and at the same time keeps dampness out of the building.

Fire Resistant—The wool is chemically treated against fire. It will char while exposed to flame, but will not smolder or burn after the flame is removed. Balsam-Wool in itself will not support combustion.

Verminproof and Sanitary—Balsam-Wool contains no animal matter. It does not attract or harbor rats, mice or vermin. It is clean, odorless and sanitary.

Permanent—The wool can not sift or settle because each fiber is coated with an adhesive which cements it to adjoining fibers. The asphalt coating provides a permanent bond between wool and paper. Balsam-Wool is as permanent as the walls which hold it.

Uniform in Quality—During the process of manufacture, Balsam-Wool is under constant laboratory supervision for uniformity.

Low Cost of Installation—Three standard widths meet all average construction requirements. Thus, the carpenter cuts only to length. Being flexible, Balsam-Wool can be fitted easily into corners and around projections without waste of material. Being light and easily installed, it speeds up the work and keeps down installation costs.

Widths and Thicknesses—The standard widths are 17, 25 and 33 in. The standard thicknesses are ½ and 1 in. The ½-in. thickness weighs 240 lb. per 1000 sq. ft., and the 1-in. thickness 370 lb. per 1000 sq. ft.

How Distributed — Balsam-Wool Standard Building Insulation is distributed through retail lumber dealers. Stocks are carried by dealers in all sections, and any retail lumber dealer can promptly obtain a supply.

A Weyerhaeuser Product

Balsam-Wool bears the name of an organization which for more than 70 years has been known for the high standard of quality maintained in all its products. On every roll of genuine Balsam-Wool will be found the Weyerhaeuser Forest Products trade-mark, the maker's pledge of personal responsibility.

Continued on next page

HEAT TRANSMISSION COEFFICIENTS FOR THE CALCULATION OF RADIATION REQUIREMENTS AND FUEL SAVING

Radiation Reduction

Standard Practice—It is now a generally accepted practice to reduce the amount of radiation in a heat insulated house as compared to one uninsulated. Both in laboratory tests and actual practice it has been proved beyond question of doubt that the house properly insulated with Balsam-Wool can be comfortably heated with 20% to 30% less radiation and a smaller boiler than the same house unprotected against loss of heat.

Savings—Since heating equipment is one of the costly items in house construction it is evident that a reduction of 20% to 30% in radiation together with a smaller boiler means a substantial and worth-while saving to the builder. In most cases this initial saving is enough to pay all or at least a large part of the cost of the Balsam-Wool.

More Wall Space—Radiation reduction has another important advantage in the additional wall space it provides. Frequently the cutting off of a few coils from the radiator in the living room or bedrooms means just enough extra wall space to take care of an additional piece of furniture.

Test Data

To assist heating engineers and architects in figuring the radiation required for houses insulated with Balsam-Wool, coefficients for various types of wall, ceiling and roof sections are shown below.

The value for Balsam-Wool used in computing these coefficients is the result of tests made by unbiased authorities and in accordance with standard testing methods.

HEAT TRANSMISSION COEFFICIENTS FOR VARIOUS TYPES OF BUILDING CONSTRUCTION
U = B.t.u. transmitted per hour per square foot per degree difference in air temperature on either side of the section

Section No.	Type of construction	Plastered direct	Furred wood lath and plaster	½-in. Balsam-Wool single furring	½-in. Balsam-Wool double furring	1-in. Balsam-Wool single furring	1-in. Balsam-Wool double furring
	Walls, Masonry						
1	9-in. brick	.332	.209	.141	.116	.112	.096
2	13-in. brick	.263	.179	.127	.107	.103	.089
3	18-in. brick	.208	.152	.113	.097	.093	.082
4	6-in. hollow tile, stucco	.299	.196	.135	.112	.108	.093
5	8-in. hollow tile, stucco	.273	.184	.129	.108	.104	.090
6	12-in. hollow tile, stucco	.193	.144	.108	.093	.090	.079
7	4-in. brick veneer, 4-in. hollow tile	.277	.186	.130	.109	.105	.091
8	4-in. brick veneer, 6-in. hollow tile	.246	.171	.122	.104	.100	.087
9	4-in. brick veneer, 8-in. hollow tile	.228	.162	.118	.100	.097	.084
10	4-in. brick veneer, 12-in. hollow tile	.169	.130	.100	.087	.084	.075
11	12-in. stone	.415	.239	.154	.125	.120	.102
12	16-in. stone	.356	.218	.145	.119	.114	.098
13	20-in. stone	.311	.200	.136	.113	.109	.094
14	8-in. concrete, stucco	.437	.246	.157	.127	.121	.103
15	10-in. concrete, stucco	.395	.232	.151	.123	.118	.100
16	12-in. concrete, stucco	.361	.220	.146	.120	.115	.098
17	16-in. concrete, stucco	.308	.199	.136	.113	.109	.094
18	8-in. concrete block	.348	.215	.144	.119	.114	.097
19	12-in. concrete block	.271	.183	.128	.108	.104	.090
20	6-in. cinder block. stucco	.328	.207	.140	.116	.111	.095
21	8-in. cinder block, stucco	.276	.185	.129	.108	.104	.090
22	12-in. cinder block, stucco	.210	.153	.113	.097	.093	.082
23	4-in. cut stone veneer, 9-in. brick	.300	.196	.134	.112	.108	.093
24	4-in. cut stone veneer, 13-in. brick	.234	.165	.119	.101	.098	.085

Section No.	Type of construction	Not insulated	½-in. Balsam-Wool	1-in. Balsam-Wool
	Walls, Frame			
25	Siding or wood shingles, paper, sheathing, wood lath and plaster	.227	.122	.099
26	Brick veneer, paper, sheathing, wood lath and plaster	.216	.118	.097
27	Stucco, paper, sheathing, wood lath and plaster	.257	.130	.105
	Ceilings			
28	Wood lath and plaster, no floor above	.502	.172	.131
29	Wood lath and plaster, 1-in. pine flooring above	.234	.124	.101
30	Wood lath and plaster, 1-in. pine, 13/16-in. oak or maple flooring above	.202	.114	.094
	Partitions			
31	Studding, wood lath and plaster one side	.502	.172	.131
32	Studding, wood lath and plaster both sides	.251	.128	.104
33	4-in. hollow tile, plaster one side	.31 *	.181**	.135**
	Roofs			
34	Built-up roofing on 1-in. roof boards, wood lath and plaster inside	.258	.130	.105
35	Same as 34, with 2-in. roof boards	.213	.117	.097
36	Wood shingles on roof boards, no inside finish	.483	.170	.129
37	Same as 36, wood lath and plaster inside	.246	.127	.103
38	Asphalt or asbestos shingles on roof boards, no inside finish	.515	.174	.131
39	Same as 38, wood lath and plaster inside	.259	.130	.105
40	Slate or tile on roof boards, no inside finish	.549	.177	.134
41	Same as 40, wood lath and plaster inside	.262	.131	.105
	†Roof and Ceiling Combined (Use Ceiling Area)			
42	Wood shingles, wood lath and plaster ceiling, no attic floor	.289	.137	.110
43	Same as 42, with single floor	.174	.105	.088
44	Asphalt or asbestos shingles, wood lath and plaster ceiling, no attic floor	.297	.139	.111
45	Same as 44, with single floor	.177	.106	.089
46	Slate or tile, wood lath and plaster ceiling, no attic floor	.305	.141	.112
47	Same as 46, with single floor	.180	.107	.089
	Floors			
48	1-in. yellow pine on joists	.440	.164	.126
49	13/16-in. maple or oak flooring on 1-in. yellow pine on joists	.339	.148	.116
50	Same as 49 with ¾-in. matched ceiling boards below	.270	.133	.107
51	4-in. concrete on 3-in. cinder concrete on ground	.556		
52	Same as 51 with 1-in. tile flooring on concrete	.526		
53	Same as 51 with 1-in. pine on wood sleepers embedded in concrete	.388		
54	Same as 53 with 13/16-in. oak or maple flooring	.308		

*Plastered direct. **One furring strip. †Figured on basis of ½ pitch roof; sufficiently accurate for roofs of ¼ pitch or more.

Continued on next page

GENERAL DATA ON THE APPLICATION OF BALSAM-WOOL

How to Obtain Greatest Efficiency

To obtain the greatest efficiency and maintain continuity there are certain parts of the construction in the walls and roof which need special conscientious care. The properly insulated structure is heat-tight throughout. Any break in the insulating blanket leaks heat, just as a hole in a pan leaks water. Every effective means should be employed to conserve fuel and at the same time maintain a uniform, comfortable, healthful temperature.

The specifications and details given on the following pages are for roof and sidewall construction. They have purposely been made as brief as possible to avoid confusion and complication. For that reason vital points where insulation should be used have not been included, the insertion of these additional specifications being left to the discretion of the architect. Special attention of the designer and supervising architect is called to the following vital points:

(1) Insulation should be applied between the floor joists against the beam filling or wall at the first story joist level.

(2) Always carry the wall insulation continuously through the floor thickness at the second and attic story joists—that is, be sure to insulate the outside walls between the heads of all joists.

(3) Be sure the insulation is tightly nailed at the roof plate (where the rafters join walls) and at the ridge. Great care should be taken here since, usually, it is difficult to reach and is often neglected, causing much heat loss.

(4) Window and door frames should be given special attention. Calk or pack with Balsam-Wool all open spaces accessible from the inside and wherever possible continue the wall insulation around the frames. In brick veneer construction with double hung windows, pulley pockets should be insulated on the outside by applying a strip of insulation over the sheathing and running around the frame.

(5) Pay special attention to insulation of all roof areas or decks over heated rooms, as in the case of sunrooms, and to floors of heated rooms which project out over open porches or other unheated areas.

Where to Insulate the Roof

In specifying insulation for homes there is sometimes a question as to where to put the insulation for the roof. If the attic space is to be used for living quarters it is always advisable to place the insulation on or between the roof rafters. If the attic is to be used for storage space only, place the insulation on the ceiling line. This reduces the number of cubic feet necessary to heat and requires the minimum amount of insulation.

For this reason, the standard specifications cover the application of the roof insulation placed in both the roof line and ceiling line. The location of the insulation is left entirely to the specification writer after determining the use to which the attic space is to be devoted.

Due to the fact that heat naturally rises, the greatest heat loss per square foot of surface is through the roof. In the summer most of the heat comes in the same way. For these reasons it is always advisable to use 1-in. thickness Balsam-Wool for roof insulation.

Condensation—In the northern climates where extreme low temperatures prevail, the problem of condensation of moisture under the roof boards will have a bearing on the placing of the insulation. Condensation difficulties are the result of warm, moisture-laden air coming in contact with extremely cold roof surfaces. While there are many factors which may affect a condensation problem, generally speaking, difficulties of this kind can be avoided by placing the insulation between the roof rafters or, if the insulation is placed in the attic floor, by providing ventilation openings in the attic to carry off the warm, moist air.

The Engineering Department of the Wood Conversion Company, Cloquet, Minnesota, will be glad to submit their recommendations on any specific condensation problem.

Added Insulation Is an Economy

Were insulation a luxury—were the cost prohibitive in the house of moderate cost, it would be logical to install it only in the most vital parts of a building. The cost of insulation is, however, well within the reach of all and will pay for itself many times over during the life of a house in fuel savings. Care and attention given to the insulation and sound deadening of certain rooms ordinarily overlooked add but little to the original cost of the house, but add much to the comfort and liveableness of the home.

Since insulation can only, in most instances, be installed during the construction of the building, insulation should be considered in the following places in addition to those where it is customarily installed.

Basement Ceiling—The basement is always at much lower temperature than the living portions of the house. This usually results in cold floors, draughts, and greater heat loss. Therefore, it is advisable to insulate the first story floor or the basement ceiling. This must include the underside of the stairway to the second story and the partition walls enclosing the basement stairs.

Bedroom Floors and Walls—General custom and hygienic rules dictate that we sleep in cold bedrooms. At night, when the bedroom heat is turned off and the windows opened, we immediately create over the first story the equivalent of an unheated attic space for a period of at least one-third of each day. During this period there is a large loss of heat from the first story ceiling to the second story. By insulating the bedroom floors the temperature of the first story can be maintained uniformly day and night with resulting fuel economy, in addition to which there is the satisfaction of finding all, except the sleeping rooms, warm and comfortable in the morning.

To carry this further and add to the economy and maintain an even temperature throughout the house it is well to insulate the inside partition walls surrounding bedrooms which are kept at low temperatures during the night. This will insure warm, cozy bathrooms and dressing rooms. It is suggested that the doors be weather-stripped to further insure absolute temperature control.

The insulating of floors and partitions will also serve to sound deaden them, which is always a desirable feature. For this reason it is also advisable to insulate bathroom partition walls and wrap the soil pipe.

Continued on next page

STANDARD SPECIFICATIONS FOR HEAT INSULATION OF BUILDINGS WITH BALSAM-WOOL

Materials

Heat insulation shall be standard Balsam-Wool, manufactured by the Wood Conversion Company, Cloquet, Minnesota. The ½-in.* thickness shall be used for sidewalls and the 1-in. thickness for top floor ceiling or roof insulation. Widths shall be as specified hereinafter. (Stock widths are 17, 25, and 33 in.)

**Note:* Additional thickness is advisable where the more expensive fuels are to be used.

Heat Insulation—General

Continuity of insulation shall be maintained. Where floors, ceilings or roofs are insulated, as well as outside walls, insulate walls thoroughly between joist and rafter ends.

Throughout, all joints shall be made airtight, especially at door and window openings.

Use full length strips of insulation. End joints, where necessary, shall be lapped and covered with lath, nailed through insulation to boarding or header.

Insulation strips shall in all cases run in the same direction as studding, joists and rafters.

Specification No. 1—Frame, Brick Veneer or Frame Stucco

Balsam-Wool Flanged Between Studdings, Rafters and Joists

Sidewall Insulation

Apply 17-in. width Balsam-Wool, vertically, between studding on all outside walls leaving an air space between sheathing and insulation. The flanges or turnouts shall be continuously fastened by means of lath or strips nailed securely through insulation to the studdings on the sides, and to sills, plates, or headers at top and bottom.

Roof or Ceiling Joist Insulation

(A) Between Rafters—Apply 17-in. width Balsam-Wool between all rafters leaving an air space between roof boards and insulation. The flanges or turnouts shall be continuously fastened by means of lath or strips nailed securely through insulation to the sides of rafters, plates, ridges, etc.

(B) Between Ceiling Joists—Apply 17-in. width Balsam-Wool between all top floor ceiling joists. The flanges or turnouts shall be continuously fastened by means of lath or strips nailed through insulation to sides of joists, plates, headers, etc.

Specification No. 2—Frame, Brick Veneer or Frame Stucco

Balsam-Wool Applied to Face of Studding, Rafters and Ceiling Joists

Sidewall Insulation

Apply 33-in. width Balsam-Wool, vertically, on inside face of studding, edges butted together on every other stud. Fur over insulation with 1x2-in. furring strips on each stud to receive the lath and plaster.

Where heating or plumbing pipes are installed in space between studs of outside walls insulate back of all such pipes with 17-in. Balsam-Wool flanged between studding, in addition to insulation as above.

Note: This method requires special width door and window frames.

Roof or Ceiling Joist Insulation

(A) On Face of Rafters—Apply 33-in. width Balsam-Wool on the inside face of rafters, edges butted together on every other rafter. Fur over insulation with 1x2-in. furring strips on each rafter to receive lath and plaster.

(B) On Ceiling Joists—Apply 33-in. width Balsam-Wool on the bottom of top floor ceiling joists, edges butted together on every other joist. Fur over insulation with 1x2-in. strips on each joist to receive lath and plaster for ceiling.

Specification No. 3—Solid Brick, Hollow Tile, Stone, Concrete or Cinder Block Construction

Balsam-Wool Applied on Masonry Walls

Sidewall Insulation—Method A

Fur the wall with 1x2-in. furring strips, 16-in. on centers shimmed plumb and true. Apply 33-in. width Balsam-Wool, vertically, on the inside face of furring, edges butted together on every other strip. Insulation strips shall in all cases run in same direction as furring strips. Fur over insulation with 1x2-in. furring strips on each wall strip, to receive lath and plaster.

Sidewall Insulation—Method B

Instead of the usual nailing course of brick into which the furring strips are nailed, 1x2-in. furring strips shall be embedded into the masonry wall every 16 to 24 in., depending on size units used in constructing the wall. These strips should project not over ¼ in. from the surface of the wall. Plumb and true these strips to receive the insulation.

Apply 33-in. width Balsam-Wool, vertically, on the inside wall, edges butted together. Fur over insulation with 1x2-in. furring strips 16-in. on centers nailed through insulation to the horizontal furring strips in walls to receive lath and plaster. Vertical furring strips shall be so spaced as to cover joints in insulation.

Roof or Ceiling Joist Insulation

For specifications covering roof or ceiling joist insulation in connection with masonry wall construction see Specification No. 2.

SOUND INSULATION FOR BUILDINGS

Recommendations

The following recommendations are based on actual experience in hundreds of sound-deadened buildings throughout the country.

(1) To secure the greatest degree of sound insulation in buildings it is recommended that the suspended ceiling type of floor construction and the staggered studding type of partition wall structure with Balsam-Wool woven between the two sets of joists or studding be used.

(2) For a more economical installation in apartments, hotels, and other multiple dwellings Balsam-Wool can be applied directly on the subfloor and on one or both sides of single partition walls.

(3) All partitions in fireproof construction should contain sound insulation. In gypsum block walls the Balsam-Wool should be suspended vertically with joints lapped 3 in., and the insulation extending from ceiling to floor line. The 1-in. thickness is recommended for this purpose. Due to its flexibility, Balsam-Wool adapts itself readily to this type of construction. Unlike a rigid material, Balsam-Wool can be lapped to make a tight joint between the strips.

(4) In the application of sound insulation it is recommended to lap all strips of material 3 in. Practical use has proved the impossibility of good sound insulation with the edges of the material merely butted together. With Balsam-Wool, not only is the possibil-

Continued on next page

SOUND INSULATION FOR BUILDINGS (Continued)

ity of a gap or opening eliminated, but the lapped edge gives an exposed surface of wool that acts as an additional sound-absorbing unit.

No sound insulating material can produce an effective result unless properly applied. Application costs for a quality material are no higher than for those less efficient. Specify a quality product and insist on its proper application.

STANDARD SPECIFICATIONS FOR SOUND DEADENING FLOORS AND WALLS WITH BALSAM-WOOL

Material

Sound deadening material (insulation) shall be standard ½ or 1 in. thick Balsam-Wool, 33 in. wide, manufactured by the Wood Conversion Company, Cloquet, Minnesota.

Sound Insulation—General

Continuity of the sound deadening material shall be maintained—all joints shall be lapped at least 3 in.

Use full length strips of insulation. End joints where necessary shall be lapped 3 in. and covered with lath nailed through insulation to subfloor, joist or header.

Specification No. 1

Balsam-Wool Applied with Suspended Ceiling Construction

Over the entire surface of the ceiling of the.....and .....floors there shall be constructed a false ceiling, the joists supporting the floor and those carrying the ceiling being independent. The ceiling joists shall be set midway between the floor joists with the under faces at least 1½ in. below those of the floor joists. Weave Balsam-Wool between the two sets of joists and secure to the bottom of each floor joist with lath or strips (or tin discs), nailed through insulation. Insulation strips shall run at right angles to the joists with edges lapped at least 3 in. Tension on all strips shall be as nearly equal as possible to guard against open joints at each lap.

Balsam-Wool trimmings shall be packed and calked on each side of false ceiling joists at point of suspension on plate.

Specification No. 2

Balsam-Wool Applied Between Rough and Finish Floors—Wood Joist Construction

Apply Balsam-Wool over the entire surface of the subfloor, strips running parallel to joists. Lap all strips at least 3 in. Around all sides of room the insulation shall be turned up to the plaster ground. Continuity of sound deadening shall be maintained. Use trimmings to thoroughly pack and calk all pipe and conduit outlets. Over the surface of sound insulation there shall be applied 1 x 2-in. furring strips placed 16 in. on centers, spacing so that the laps of sound insulation come between the furring strips. Furring strips shall be nailed securely through insulation to subfloor.

When electric conduit pipe is used lay 2 x 2-in. furring strips parallel to and on both sides of all pipe or conduit, spacing strips 1 in. from conduit. Over the balance of the sound deadening there shall be applied 2 x 2-in. furring strips as specified above.

Specification No. 3

Balsam-Wool Applied on Concrete Floors

Apply Balsam-Wool over the entire surface of the floor, strips running parallel to the beveled sleepers which have been embedded in concrete. Lap all strips of sound insulation at least 3 in. and space so that laps are between the sleepers in the concrete. Around all sides of room the insulation shall be turned up to meet the plaster ground. Continuity of sound deadening shall be maintained. Use trimmings of sound deadening to thoroughly pack and calk all pipes and conduit outlets. Apply 1 x 2-in. strips directly over every sleeper, nailing same through insulation into sleeper.

Specification No. 4

Balsam-Wool Applied in Frame Walls and Partitions

Method A—

All partition walls where specified shall be built of staggered studding construction, each set of studding set 16 in. on centers, one set centering between the other. On the same side of the partition there shall be at least 1 in. from the face of one set of studding to the face of the other. Weave Balsam-Wool between the two sets of studding and secure it to the face of one set with lath or strips (or tin discs), nailed through insulation. Lap all joints at least 3 in. Tension on all of the strips shall be as nearly equal as possible to guard against open joints at each lap.

Method B—

Apply one layer of 33-in. width Balsam-Wool, vertically, on each of the two faces of studding, butting edges together on every other stud. Continuity of sound deadening shall be maintained. All joints shall be sealed. Use full length strips of insulation. End joints, where necessary, shall be butted and covered with lath nailed through insulation to stud or header. Fur over insulation with 1 x 2-in. furring strips over each stud to receive lath and plaster.

Method C—

Apply 33-in. width Balsam-Wool, vertically, on one face of partition studding, butting edges together on every other stud. Continuity of sound deadening shall be maintained. All joints shall be sealed. Use full length strips of insulation. End joints, where necessary, shall be butted and covered with lath nailed through insulation to stud or header. Fur over insulation with 1 x 2-in. furring strips over each stud to receive lath and plaster.

Specification No. 5

Balsam-Wool Applied on Gypsum Block Partition Walls

Double Gypsum Block Partition Walls—

Erect one side of partition walls of gypsum blocks from floor to ceiling as elsewhere specified and directed. Apply 33-in. width Balsam-Wool, vertically, covering the entire surface of partition and lapping joints not less than 3 in. Nail to gypsum blocks with large headed nails. Particular care should be taken to bring Balsam-Wool tightly to ceiling, floor and wall lines of partition. Then erect the other side of partition wall, with the inside face of gypsum blocks flush with surface of sound insulation.

Single Gypsum Block Partition Walls—

Erect gypsum block partition as elsewhere specified and directed. Apply 33-in. width Balsam-Wool, vertically, covering the entire surface of partition, lapping joints not less than 3 in. Nail to gypsum block with large headed nails. Particular care should be taken to bring Balsam-Wool tightly to ceiling, floor and wall lines of partition. Apply 1 x 2-in. furring strips, vertically, 16 in. on centers, nailing through the sound insulation to gypsum block. Furring strips should be so placed that laps in sound insulation will come between them. All furring strips shall be plumb and true. Apply plaster base as specified to furring strips.

Note: If building code demands steel furring strips and metal lath apply Balsam-Wool in the same manner and substitute specifications covering this particular construction.

JOHNS-MANVILLE

EXECUTIVE OFFICES
292 Madison Avenue, NEW YORK, N. Y.

For Branch Offices, see section on Wall Tile

Products

JOHNS-MANVILLE HOME INSULATION.

Also Packings for all purposes; Refractory Cements; Waterproofing and Dampproofing; Asbestos Ebony; Asbestos and Asphalt Roll Roofing; Rotproof Roofs; Asbestos products of all kinds.

For the following Johns-Manville products, see Manufacturers' Index: Acoustical Treatment and Sound Isolation; Shingles; Built-up Roofing; Celite for concrete and mortar; Insulating Board and Plaster Lath; Insulations; Tile Flooring; Transite, Flat and Corrugated; Wall Tile.

JOHNS-MANVILLE HOME INSULATION

A New Method

Johns-Manville Home Insulation is a new and unique method of insulating residential and other buildings, unsurpassed by any other method in efficiency, economy, and convenience of application.

By this method a fireproof insulating material of wool-like structure made from natural rock is installed pneumatically.

Description

The insulating material employed is a refined granulated rock wool. It is designed especially for application by a blowing machine, the action of which drives the insulation into the spaces between studs, sheathing and plaster, filling them uniformly with a blanket approximately 4 in. thick.

This method is applicable either to new houses during construction or old houses after occupancy, in both cases without serious disturbance, respectively to other work or the convenience of occupants. (See Method of Application.)

Generally, Home Insulation is installed in all exterior wall spaces above the foundations and between the roof rafters or attic floor beams, thereby providing complete insulation surrounding all occupied portions of the building above the foundations.

Merits

The outstanding and distinguishing merits of this form of insulation are as follows:

Being made of natural rock spun into a strong, light, fibrous granular wool, J-M Home Insulation is both fireproof and verminproof.

Minute cellular spaces give the maximum insulating efficiency as dead air containers, permitting no air circulation, an essential condition proven by authoritative scientific tests.

J-M Home Insulation does not sag or settle down and open up uninsulated areas in which air can circulate with consequent heat conduction. Herein it differs markedly from other loose insulations having this tendency.

The pneumatic method of application is new and distinctive with the J-M product and gives an evenly distributed blanket of uniform density and insulating value. It is the only method which can be applied to old houses from the outside without disturbing occupancy to any degree.

Method of Application

The blowing is done from a machine mounted on a truck outside the building, the insulating material being conveyed to the point of application through a hose.

In the case of new houses, the insulation is applied from inside after the sheathing, lathing and scratch coat have been placed but before the finished plaster coat is put on. It may also be applied before the lathing and scratch coat have been placed by securing reinforced paper to the studs, to act as a retainer. Similarly, to attic rafters when attics are to be left unfinished and the attic floor is not to be insulated.

In old houses, openings are made in the outer walls close up under the eaves and fire-stops sufficient to admit the hose nozzle. In brick veneer houses this is done by the removal of single bricks, joints after replacing being restored to match the adjacent old mortar; in shingled or clapboarded houses, by removal of a shingle or clapboard at necessary points; in stuccoed walls, by drilling.

Advantages of Insulation

In its general effects insulation is a subject sufficiently familiar to architects to enable dispensing with extended explanation. A few facts only are given in relation to the advantages offered by J-M Home Insulation.

A survey, covering a large number of individual cases, indicates that for an average insulated house of six to eight rooms, an annual saving of at least 3 tons of coal or its equivalent in other fuels may be expected, amounting to approximately $50 per annum. This figure may safely be taken as a fair average one, although numerous examples of much larger savings have been recorded.

At the Armour Institute of Technology in Chicago, Professor J. C. Peebles conducted a series of practical tests on the economies to be effected by insulation as applied to the walls and roofs of several frame and brick bungalows, 26x32x10 ft. He found that with *thick* insulation an average annual saving of 6 tons of fuel was possible, as well as an initial economy of $375 and $225, respectively, in the cost of hot water or steam heating plants for such bungalows.

The late L. B. McMillan, former Consulting Engineer to Johns-Manville and Chairman of the Heat Insulation Committee of the National Research Council, in his paper on "Heat Insulation Facts" read before the American Society of Heating and Ventilating Engineers, summed this up as follows.

> "Next to perfect vacuum the most effective insulation against the flow of heat is minute and confined air space. To be most effective the air space must be absolutely enclosed and so small that circulation cannot take place within it, nor heat radiate across it to any appreciable extent. Even perfect vacuum would be ineffective for anything except very low temperature, unless it were broken up into small units or unless the surfaces were mirrored to prevent radiation. Therefore, the material which contains the greatest number of small confined air spaces per unit volume is the best insulator."

It is obvious that the most practical method of home insulation is to fill every void and crevice of a house with a material containing these minute air spaces. Johns-Manville Home Insulation provides this necessary combination of requirements.

SPECIFICATION FOR FURNISHING AND APPLYING HOME INSULATION

Work Included—The work contemplated under this specification shall include all materials, labor, equipment and services necessary for and reasonably incidental to the installation of Home Insulation by the pneumatic method to all exterior walls above the foundation wall and where necessary, roofs, ceilings, attics, garages, and other areas to completely insulate the portion of the building as shown on the drawings or herein specified.

This contractor shall make all openings required to install his work and shall do all patching of such openings after his materials have been placed. He shall furnish and set all work not included by other contractors which may be required in connection with the installation of his materials.

Work Not Included—There is no special or additional work or materials required of other contractors in connection with the installation of Home Insulation.

Materials and Workmanship—All insulating materials placed under this specification and contract shall be those manufactured by JOHNS-MANVILLE and shall bear the manufacturer's label. The insulation material shall be installed by the pneumatic method, except in areas where this method is impracticable or impossible. In such areas the insulation material shall be placed by hand. All insulation material shall be installed by the Home Insulation Company of.....
(Name and address)

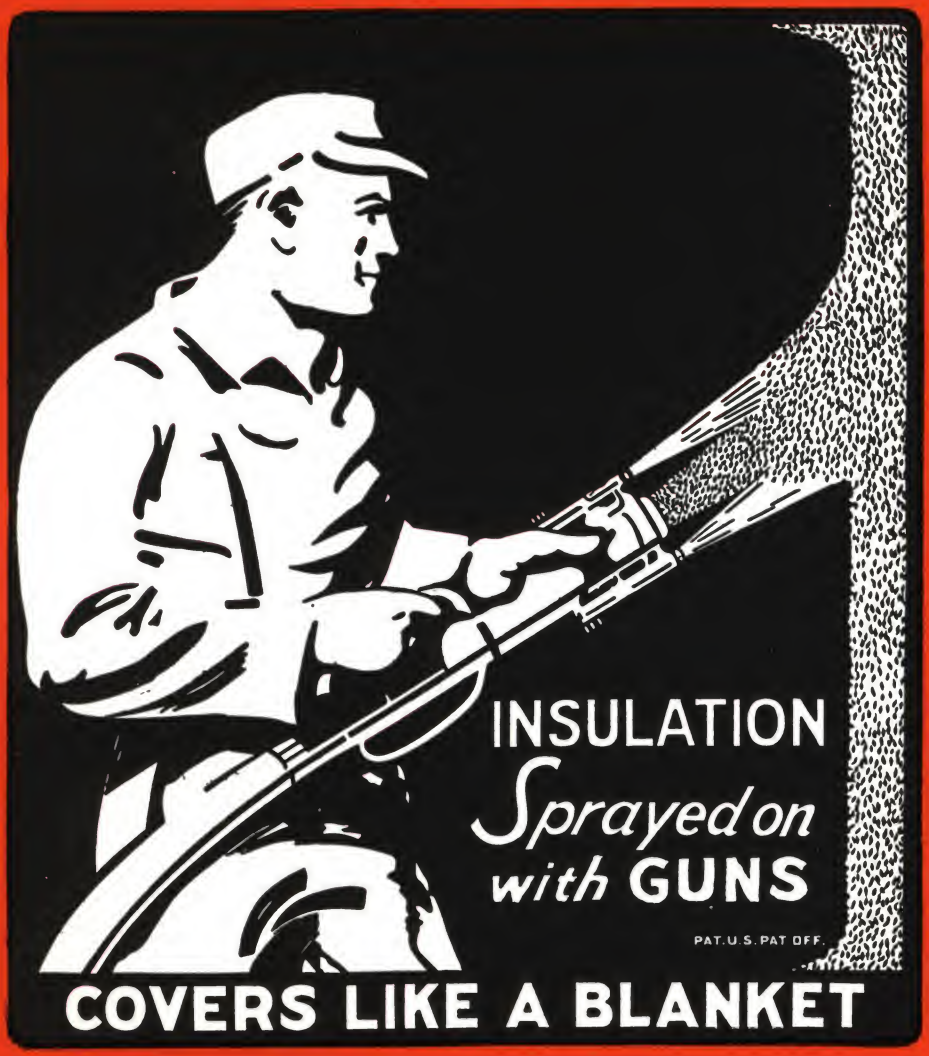
The material forming Home Insulation having been found by the U.S. Bureau of Standards to have a conductivity of 0.27 B.t.u. per sq. ft. per hour per inch thickness per degree Fahrenheit difference between surface temperatures at a density of 10 lb. per cu. ft., the contractor shall so install this insulation that the density when in place shall not exceed 10 lb. per cu. ft. The insulating material shall be applied uniformly and to a thickness of not less than 3⅝ in. unless the space to receive the material is less than this, in which case the insulation shall fill the space.

INSULATION

Sprayed On Process

HEAT-SOUND AND ACCOUSTICAL CORRECTION

TECHNICAL DATA and SPECIFICATIONS



LOCAL REPRESENTATIVE ~

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SPRAYO-FLAKE COMPANY

ADMINISTRATIVE OFFICES

56 SO. BAY STREET, MILWAUKEE, WISCONSIN

SPRAYO-FLAKE COMPANY

Manufacturers of Sprayo-Flake Insulating Materials and Equipment

ADMINISTRATIVE OFFICES
56 South Bay Street, MILWAUKEE, WIS.

LICENSED OPERATORS

NEW YORK, N. Y.	HARTFORD, CONN.	DAYTON, OHIO	INDIANAPOLIS, IND.	LINCOLN, NEB.
ROCHESTER, N. Y.	NEW HAVEN, CONN.	CINCINNATI, OHIO	CHICAGO, ILL.	OMAHA, NEB.
BUFFALO, N. Y.	BRIDGEPORT, CONN.	DETROIT, MICH.	MILWAUKEE, WIS.	DENVER, COLO.
BOSTON, MASS.	PROVIDENCE, R. I.	MINNEAPOLIS, MINN.	ST. LOUIS, MO.	LOS ANGELES, CAL.
WORCESTER, MASS.	CLEVELAND, OHIO	FORT WAYNE, IND.	SIOUX CITY, IOWA	SAN FRANCISCO, CAL.
	PITTSBURGH, PA.		KANSAS CITY, MO.	

Process

Sprayo-Flake insulating process consists of forcing dry flakes of fibrous material, previously impregnated with a fire resisting agent, by air through a specially constructed gun. As the fibrous flakes leave the gun they are coated with a spray of atomized adhesive agent or binder and projected to the surface to be insulated. The coated fibrous flakes form a thick blanket of insulation covering the surface and sealing all cracks and crevices. It can be applied to practically any surface in any desired thickness.

Development

Sprayo-Flake was conceived by a layman while observing the installation of insulating material in his own home under course of construction. Prompted by a desire to overcome the difficulties involved in installing other types of insulating materials, the spray gun method was evolved. Further development proved the soundness of this theory. Sprayo-Flake method in one operation does a most thorough job, it eliminates entirely the labor of cutting, fitting, and nailing.

Further development of the original idea dates back to the year of 1924 when specially designed equipment was perfected for applying Sprayo-Flake. The next step was adoption of an adhesive agent, addition of fire resisting qualities, and verminproofing which was perfected in laboratories and through practical usage in the building field.

Sprayo-Flake Insulation is available for insulating homes, factories or public buildings against heat, cold or sound.

Distribution and Service

To assure the highest return per dollar invested in insulation the SPRAYO-FLAKE COMPANY has adopted a modern economically sound plan of merchandising and distribution. Sprayo-Flake is supplied direct from factory to job through licensed operators. These licensed operators located in principal building centers are insulation specialists, financially responsible, and work on an exclusive franchise basis. Each installation is made by expertly trained mechanics under exacting supervision.

This advanced plan of distribution enables the architect, builder, or owner to know the exact cost of insulation. Sprayo-Flake is always quoted on a basis of unit price per square foot, or lump sum bid, installed including labor and material.

PHYSICAL CHARACTERISTICS OF SPRAYO-FLAKE

The fibrous cellular structure and method of application give Sprayo-Flake the desired characteristics of the ideal insulation material:

Note: *The binder or vehicle is emulsified asphalt. It is important that the inherent difference in quality and composition of this material is differentiated from ordinary or petroleum cut-back asphalt.*

(1) Low Thermal Conductivity—

.246 B.t.u. per hour per square foot per inch thickness per degree temperature differential.

(2) Practicability—

Can be applied to practically any surface in any desired thickness. Seals all cracks and crevices, calks around window and door frames.

(3) Fire Resistant—

Chemically pre-treated fibrous materials, plus the emulsified asphalt binder produce a highly fire resisting insulation.

(4) Verminproof—

Emulsified asphalt binder in conjunction with mineral admixtures render Sprayo-Flake insulation repellant to vermin.

(5) Light Weight—

Flakes of fibrous air cell structure weigh only 4.6 pounds per cubic foot installed.

(6) Permanency—

The fabricated blanket of Sprayo-Flake insulation is held in place permanently by employing an emulsified asphalt binder. This binder also preserves the fibrous flakes from deterioration.

The adhesive properties of emulsified asphalt have long been recognized. It does not deteriorate with age.

(7) Low Cost—

Sprayo-Flake insulation is manufactured and applied mechanically in one operation, eliminating costly labor involved in cutting and fitting prepared types of materials.

(8) Flexibility—

Sprayo-Flake is sufficiently flexible to allow for usual expansion and contraction of structural members to which it is applied without impairing its efficiency. This is emphasized by its excellent resistance to distortion by impact as installed on ceilings of box cars tested over a considerable period of time.

(9) Sound Absorbent—

The cellular structure and resiliency of Sprayo-Flake render it a highly sound absorbent material. It is ideal for sound deadening or accoustical treatments.

Continued on next page

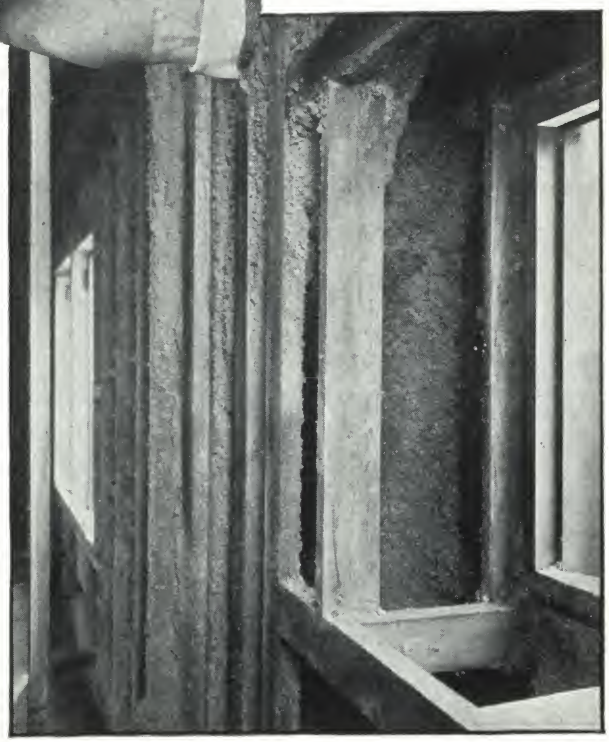
TYPICAL CONSTRUCTION SHOWING APPLICATION OF SPRAYO-FLAKE HEAT INSULATION

Air Gun Application of Sprayo-Flake Assures Thorough Calking of Windows and Complete Covering of Walls and Ceiling

Insulated and Uninsulated Section of Wall, Showing How Thoroughly Sprayo-Flake Covers All Surfaces

Right:
Section of Sprayo-Flake, Showing Cellular Structure

Roof Slopes and Attics Are Efficiently Insulated with Sprayo-Flake—No Nails, Seams or Laps

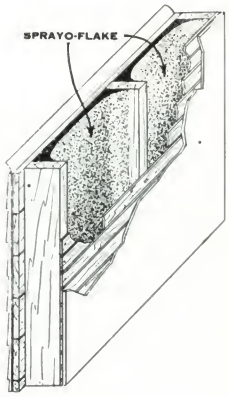


All Cracks, Crevices, Nooks and Inaccessible Places Are Easily Insulated by Air Gun Method

Continued on next page

SPRAYO-FLAKE HEAT INSULATION WALL COEFFICIENTS

Construction
- 4-in. lap siding
- Building paper
- ¾-in. sheathing
- Sprayo-Flake
- ⅜-in. lath
- ⅜-in. plaster



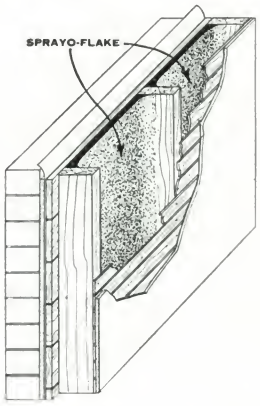
FRAME CONSTRUCTION

S-F thickness	Insulated with Sprayo-Flake 1 in.	1½ in.	2 in.	2½ in.	Uninsulated
U_s*	.119	.096	.081	.069	.227
Steam F	29	36	42	50	15
Hot water F	18	22	26	31	8

*See note Sprayo-Flake Page 4.

Note: In actual installations, a specified 1-in. thickness averages fully 1¼ in. thick.

Construction
- 4-in. brick
- ½-in. mortar
- Building paper
- ¾-in sheathing
- 2x4-in. studs
- Sprayo-Flake
- ⅜-in. lath
- ⅜-in. plaster



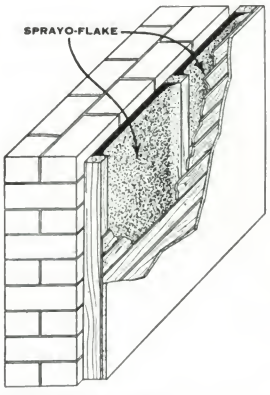
BRICK VENEER CONSTRUCTION

S-F thickness	Insulated with Sprayo-Flake 1 in.	1½ in.	2 in.	2½ in.	Uninsulated
U_s*	.116	.094	.079	.069	.216
Steam F	30	37	43	50	16
Hot water F	18	23	27	31	10

*See note Sprayo-Flake Page 4.

Note: In actual installations, a specified 1-in. thickness averages fully 1¼ in. thick.

Construction
- 8½-in. brick
- Waterproofing
- 2x2-in. furring
- Sprayo-Flake
- ⅜-in. lath
- ⅜-in. plaster



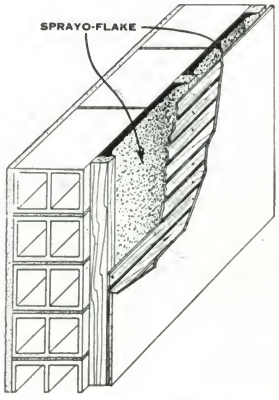
SOLID BRICK CONSTRUCTION

S-F thickness	Insulated with Sprayo-Flake ¾ in.	1 in.	Uninsulated
U_s*	128	.114	.209
Steam F	26	30	16
Hot water F	16	18	10

*See note Sprayo-Flake Page 4.

Note: In actual installations, a specified 1-in. thickness averages fully 1¼ in. thick.

Construction
- ¾-in. stucco
- 8-in. hollow tile
- Waterproofing
- 2x2-in. furring
- Sprayo-Flake
- ⅜-in. lath
- ⅜-in. plaster



TILE CONSTRUCTION

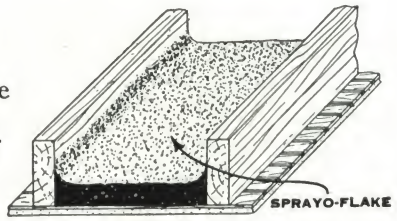
S-F thickness	Insulated with Sprayo-Flake 1 in.	1½ in.	Uninsulated
U_s	.108	.089	.191
Steam F	32	38	18
Hot water F	20	24	11

Note: In actual installations, a specified 1-in. thickness averages fully 1¼ in. thick.

Continued on next page

CEILING AND ROOF COEFFICIENTS (Heat Insulation)

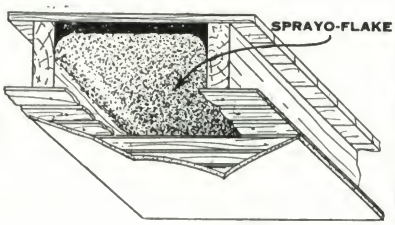
Construction
Joists
Sprayo-Flake
⅜-in. lath
⅜-in. plaster



CEILING WITH NO FLOORING

	Insulated with Sprayo-Flake				Uninsulated
S-F thickness	1½ in.	2 in.	2½ in.	3 in.	
U_s	.125	.10	.083	.07	.502
Steam F	38	44	53	62	14
Hot water F	24	27	33	40	9

Construction
¾-in. floor
Joists
Sprayo-Flake
⅜-in. lath
⅜-in. plaster

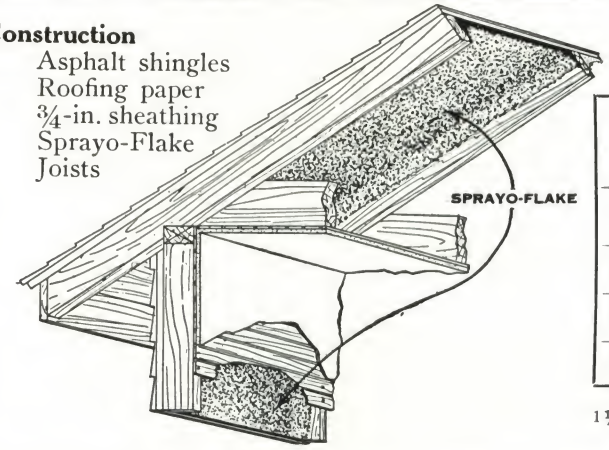


CEILING WITH FLOORING

	Insulated with Sprayo-Flake		Uninsulated
S-F thickness	1 in.	1½ in.	
U_s	.126	.097	.234
Steam F	38	46	23
Hot water F	24	29	14

Note: In actual installations, a specified 1-in. thickness averages fully 1¼ in. thick.

Construction
Asphalt shingles
Roofing paper
¾-in. sheathing
Sprayo-Flake
Joists



ROOF (Pitch 1 in 3)
Attic Unheated

	Insulated with Sprayo-Flake		No floor
	No flooring	¾ in. flooring	
S-F thickness	1 in.	1 in.	Uninsulated
U_s	.12	.09	.231
Steam F	28	38	21
Hot water F	18	24	15

Note: In actual installations, a specified 1-in. thickness averages fully 1¼ in. thick.

CALCULATION OF COEFFICIENT (U_s) FACTORS FOR SPRAYO-FLAKE HEAT INSULATION

The coefficient factors (U_s) for various thicknesses of Sprayo-Flake, shown in detail above, are calculated by using the overall heat transmission (U) factors as given in the 1929 Guide, A. S. H. & V. E. for the various types of wall, ceiling and roof constructions, uninsulated and adding to these factors the resistance of Sprayo-Flake ($R=\frac{X}{C}$).

Example: Wall, frame construction:
U—Uninsulated. =.227 B.t.u.
U_s—Insulated with 1-in. Sprayo-Flake =.119 B.t.u.
Calculated from the following accepted formula:

$$U_s=\frac{1}{\frac{1}{U}+\frac{X}{C}}=\frac{1}{\frac{1}{.227}+\frac{1.0}{.25}}=\frac{1}{4.4+4.0}=\frac{1}{8.4}=.119$$

X=thickness of Sprayo-Flake Insulation.
k=conductivity of Sprayo-Flake .25 B.t.u. per inch.

**Note:* In order to have a definite check for Sprayo-Flake calculated factors the three typical walls of standard construction insulated with Sprayo-Flake were tested by Professor Frank B. Rowley of the University of Minnesota. His large "Hot Box" method for testing over all-wall transmission, as approved by A. S. H. & V. E. code was utilized.*

Professor Rowley's Tests (copies gladly furnished upon request) prove the calculated coefficients correspond so closely with the actual test coefficients that the above factors are safe for estimating heat losses, radiation and fuel requirements for all ordinary construction. Use the above coefficients when estimating heat losses for Sprayo-Flake construction.

Industrial work or larger buildings requiring special engineering data will be analyzed upon request to the nearest Sprayo-Flake office.

Steam (F)$=\frac{240}{70°\times U}$ Hot water (F)$=\frac{150}{70°\times U}$

Continued on next page

MASTER SPECIFICATIONS FOR SPRAYO-FLAKE HEAT INSULATION

A. Preliminary Provisions

Note: Sprayo-Flake Insulation is always installed on a contract basis (labor and material included), by responsible operators employing trained mechanics. This assures thorough insulation under exacting supervision. No deviation from good standard construction practice is necessary when Sprayo-Flake Insulation is specified. The air-gun method of application permits applying the material to any surface in any desired thickness. All cracks, crevices and inaccessible places are automatically sealed.

The following specification suggestions are made to assure proper installation of Sprayo-Flake on the most satisfactory and economical basis:

A-1 Frame Construction—

A-1a—Follow ordinary standard construction practice.

A-2 Brick Veneer Construction—

A-2a—Follow ordinary standard construction practice.

A-3 Masonry Construction—

A-3a—Follow ordinary standard construction practice.

A-3b Waterproofing—All exterior walls shall be waterproofed on the inside with a good grade of waterproofing, Flintkote C-13 or equal.

A-3c Carpentry Work—Wall furring strips. When Sprayo-Flake Insulation is installed on the inside of exterior, waterproofed masonry walls, furnish and apply 2x2-in. furring strips spaced 16 in. on centers for receiving lath and plaster, or Sprayo-Flake Plaster-base (with asphalt binder) shall be applied directly to waterproofed masonry walls.

B. Work Included

The work included under this heading shall be the furnishing and installation of all Sprayo-Flake Insulation as follows:

B-1 Exterior Walls—

Note: *Where ceiling or roof is insulated, wall insulation shall be carried through to ceiling or roof insulation, so as to form continuous or unbroken insulation from foundation to roof peak or across ceiling. All dormer walls and other openings to or through roofs shall be insulated.*

B-2 Ceilings—

Top story ceilings shall be insulated when roof is not insulated. Insulation to be applied over lath and plaster when ceiling is not floored or to underside of rough flooring and between joists when ceiling is floored. Insulation shall continue to the wall sheathing and shall be applied between the ribbon, between joist ends and elsewhere to make a complete job.

B-3 Roofs—

When ceilings are not insulated or when attic is to be utilized for living quarters, the insulation shall be applied to the entire underside of the roof sheathing, between rafters, from peak to eaves, joining with the insulation in the sidewall construction.

B-4 Floors—

When specified, floors shall be insulated where and as indicated. (See page 8.)

B-5 Window and Door Frames—

All exterior window and door frames as well as all other cracks, crevices or inaccessible places shall be thoroughly sealed or calked with insulation.

C. Materials

C-1 Insulation—

Insulation shall be Sprayo-Flake Insulation as manufactured by the SPRAYO-FLAKE COMPANY of Milwaukee, Wisconsin.

C-2 Thickness—

Note: *Sprayo-Flake may be installed any desired thickness to any surface. Because of the economy and speed of applying Sprayo-Flake, plus the fact that efficient insulation should be applied reasonably thick, it is recommended that Sprayo-Flake be installed not less than 1 inch in thickness and thicker when or where required.*

C-2a Walls—(1) Frame construction: Insulation shall be installed [*1 inch*] [*1½ inches*] [*2 inches*] [*2½ inches*] thick between studding.

(2) Masonry construction: Insulation to be installed [*¾ inch*] [*1 inch*] thick between furring strips, leaving slight air space between finished surface of insulation and lathing.

Note: *Sprayo-Flake must not come in contact with wet plaster, unless Sprayo-Flake Plaster-base (with asphalt binder) is installed.*

C-2b Ceilings—Insulation shall be installed [*1½ inches*] [*2 inches*] [*2½ inches*] thick in ceilings when applied over the lath and plaster and [*1 inch*] [*1½ inches*] thick when applied to the underside of the rough flooring between joists.

C-2c Roofs—Insulation shall be installed 1 inch thick.

C-2d Floors—Insulation shall be installed [*1 inch*] [*1½ inches*] thick. (See page 8.)

C-2e Window and Door Frames—Insulation shall be installed around all door and window frames as calking. Sprayo-Flake shall be sprayed into all weight pockets allowing space for the proper operation of the weights.

D. Installation

All Sprayo-Flake Insulation shall be installed by licensed operators utilizing the Sprayo-Flake air-gun application method. Work to be done in a workmanlike manner by experienced mechanics.

Continued on next page

REPRESENTATIVE SPRAYO-FLAKE INSTALLATIONS

Apartment, Kew Gardens, L. I., N. Y.
EUGENE DEROSA, Architect,
New York, N. Y.
Sound insulation throughout

Apartment, Hartford, Conn.
BURNS & MOAES, Architects
Sound insulation—all floors

Left:
Lillian Oppa Residence, Kenilworth, L. I., N. Y.
THOMAS C. ROGERS, Architect
Great Neck, L. I.
Heat insulation

Center:
County Hospital, Milwaukee, Wis.
VANRYN & DEGELLEKE and ARMSTRONG & DEGELLEKE, Associated
Heat and sound insulation

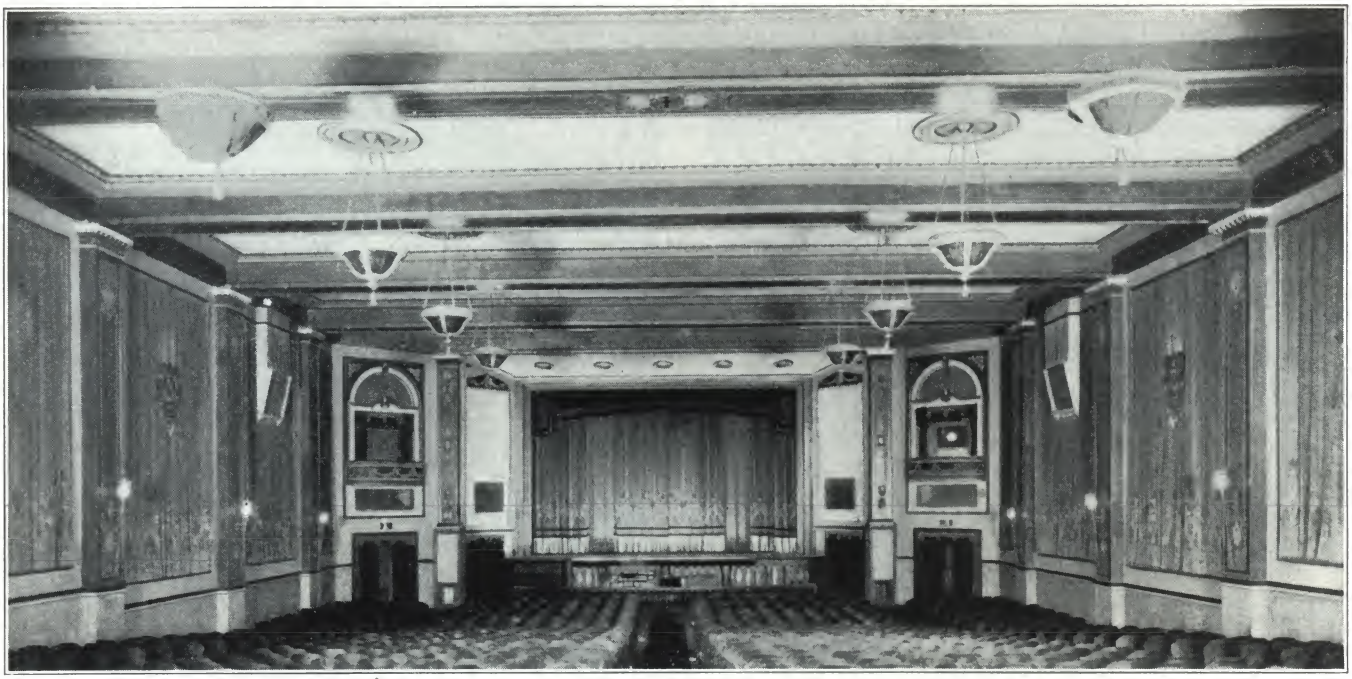
Left:
City Auditorium, Minneapolis, Minn.
CROFT & BOERNER, Architects
Entire roof insulation

Below:
St. Mary's College, Milwaukee, Wis.
HERBST & KUENZLI, Architects
Acoustical correction

Below:
Richard H. Grant Residence, Dayton, Ohio
PEABODY, WILSON & BROWN, Architects, New York, N. Y.
EDWIN F. SIMPSON, Associate Architects, Dayton, Ohio
Heat and sound insulation

Continued on next page

SPRAY-ACOUSTIC FOR ACOUSTICAL TREATMENT



Theatre Ceiling Treated with Spray-Acoustic

Adaptability

Subjugation of architecture to acoustics has at last been overcome by the SPRAYO-FLAKE COMPANY in submitting a material which does not in any way conflict with any architectural design. This particular factor has been a constant source of irritation to the profession, due to the fact that factory produced treatment will not readily lend itself to the various types or influences in architecture.

The church auditorium, like that of the school and theatre, needs a treatment whose color tones and versatility will enhance rather than detract from the intended effect.

Neutral tones of the same absorptive material should be used in school music and band practice rooms, not neglecting the library, cafeteria, natatorium, gymnasium and ventilating system.

It is well to note that fan rooms and ventilation ducts should be treated so that a shut-down of equipment is not necessary to enjoy the entertainment or instruction.

Banks and hotels find that Spray-Acoustic promotes the growth of business by its ability to kill those unnecessary and distracting reverberatory noises.

For hospital corridors, dining rooms, diet kitchens, labor and delivery rooms, the Spray-Acoustic treatment gives an ideal condition for the comfort of the patients.

Description

Spray-Acoustic, like Sprayo-Flake, is manufactured on the job utilizing the spray gun method described on page one under "Process." The same flexible material is applied for a base coat, but the firm absorbing surface is achieved by the introduction of pastel colors in the binder which tint the last fraction of an inch of the material to suit the general decorative scheme. Spray-Acoustic adheres to any surface and will positively conform to the angles and curves intended by the architect.

Test

Spray-Acoustic is figured on the following factors based on the standard frequency of 512.

Thickness	Coefficient
½" Spray-Acoustic	.45
¾" Spray-Acoustic	.61
1" Spray-Acoustic	.70

It is further to be noted that Spray-Acoustic maintains an unusually even absorption value over the other pitch frequencies, which is important for the reception of various tone qualities.

Engineering Service

Due to the wide difference in acoustical problems, it is important to utilize the very efficient engineering service that may be found in the Sprayo-Flake offices in the principal cities. We deem it a privilege as well as a necessity to render an analysis on each problem.

SPECIFICATIONS FOR SPRAY-ACOUSTIC TREATMENT

(A) Treatment

Spray-Acoustic shall be applied over the surface to be treated to *(specify)* thickness.

Note: *Job analysis will be submitted by Spray-Acoustic engineers to establish thickness.*

(B) Tinting

The entire surface shall be tinted to the color selected by architect.

(C) Installation

The installation shall be made by a licensed Sprayo-Flake operator in accordance with the standard Sprayo-Flake Air Gun Method.

(D) Protection

Suitable protection shall be provided for existing construction, furniture, etc., and all refuse shall be removed and the premises left in suitable condition.

Continued on next page

SPRAYO-FLAKE SOUND INSULATION

WHY SOUND INSULATION

This increasingly noisy life of ours demands architectural and structural consideration for the stoppage of noise in the buildings in which we live and work.

Air-borne sounds from radios, musical instruments, conversation, etc., passing through walls or partitions in apartments, hotels and hospitals, cause the greatest amount of annoyance. Next in importance from the standpoint of retarding the passage of sound through partitions is stopping both air-borne sounds and impact sounds through floors.

Thus, we have two distinct problems:

(1) Stopping air-borne sounds through walls and partitions.

(2) Stopping air-borne and impact sounds through floors.

Sound is transmitted by the molecular vibration and the structural vibration of the partition (or floor) which acts like a drum head. This sound transmission can be retarded by mass, structural independence, breaks in density and the use of sound absorptive materials. To obtain sufficient mass for satisfactory sound insulation is excessively expensive and takes up too much valuable space.

It has been thought for some time that to secure sound-proofness which would be satisfactory for apartment purposes, a heavy and rigid wall was necessary. Recent tests have proved that this is not the case. By carefully following construction principles, using proper materials and treating pipes, conduits and ducts, it is possible to build comparatively inexpensive light partitions which are satisfactorily sound-proof for apartment house work.

Practical Test Data

Actual test data on sound insulation is today very limited. There are laboratory tests on various insulation materials in terms of sound absorption and transmission for such materials in themselves but the architect or builder is interested in knowing the final results when these materials are used in combination with practical wall or floor construction.

In order to obtain practical construction test data the SPRAYO-FLAKE COMPANY utilized the services of The C. F. Burgess Laboratories (under the personal supervision of Mr. R. F. Norris), recognized as authorities on this subject throughout the country. These scientific sound transmission tests of sound insulation methods in modern completed and occupied buildings are the most advanced data we are able to locate to date.

A summary of these tests, showing partition and floor constructions, with logarithmic reduction factors and comments are shown on the following pages. We quote as follows from the Burgess Laboratories' reports:

"A series of tests were made for the SPRAYO-FLAKE COMPANY on the dividing walls or partition walls in the Le Claire Apartments in Milwaukee, Wisconsin, and on the floors in the Milwaukee County Hospital.

"Note: All of the partition walls were exactly the same size and in the same location but on different floors, so that our tests on them may be strictly comparable. The terrazzo-concrete floors were typical one above the other and of the same construction, differing only in that one floor had ¾ in. of Sprayo-Flake Sound Insulation applied to the underside of the floor section and to the sides of the metal joists.

Method of Tests

"The apparatus used in making the tests consisted of an electric horn which generated a sound of definite intensity, the pitch varied continually between 500 and 525 cycles per second, this range being chosen because it is the average range of speech sounds. In conjunction with this instrument a second instrument which registered the sound intensity directly on a scale was employed. The method of testing was as follows:

"The sound producing instrument was set up in a room on one side of the wall to be tested. The sound was started and a measurement was taken of the intensity on that side of the test wall. The sound was allowed to continue at the same intensity and the measuring instrument was placed on the other side of the wall under test, care being taken to close off all direct passages through which the sound might travel from one room to the other. A measurement was then taken of the sound intensity on this side of the wall. The ratio of the sound intensity in the two rooms was obtained from a ratio of readings and from this value the sound reduction of the wall was determined. This reduction is reported in both logarithmic reduction factor and reduction in sensation units. An explanation of these units follows:

"When sound of a certain intensity is heard, its apparent loudness is roughly the logarithm to the base ten of the intensity of the sound. This logarithmic unit is called the audibility. Bell Telephone Company engineers have found that the least sound that could be detected by the average ear was approximately one-tenth of this logarithmic unit. This amount of sound was called by them one 'sensation unit.' Consequently ten sensation units equal one audibility unit.

Discussion

"It has been the experience of the B. F. Burgess Laboratories that a wall or floor section with the logarithm of reduction of between 4.1 and 4.2 is satisfactory for apartment house work since, while it does not make ordinary speech sounds absolutely inaudible, it makes them unintelligible and of such low intensity that they are easily masked by the occupational noises in the apartment. The higher the logarithm of reduction above 4.1 the greater the sound deadening efficiency. It will be noted in partition test series No. 1 that the walls in test A and test B were considerably above this value and that wall C dropped below considerably. The conclusion is that the construction in walls A and B is more suitable for apartment house work than that in wall C. Wall A is the most sound-proof partition wall that I have measured. Wall D had a logarithm of reduction which was slightly below the accepted value.

"In the Floor test, series No. 2, the wood constructed floor No. 1 had a logarithm of 4.08 which approaches very closely the ideal range. This same floor uninsulated has a logarithm of approximately 2.0. It is interesting and encouraging to find that with proper insulation it is possible to make a floor of standard wood construction which will be for all practical purposes, sound-proof.

"In floors No. 2 and No. 3, air-borne sounds did not register transmission through the concrete floors but the physical intensity of the sound being transmitted through the floor (impact sound) is reduced to about one-fifth by the addition of the sound absorbent material to the undersides of the concrete floor slab and to the sides of metal floor joists.

Conclusions

"The above tests indicate that it is possible to build a light and satisfactory sound-proof wall (or floor) for apartment work. It has been thought for some time that to secure sound-proofness which would be satisfactory for apartment purposes a rather heavy and rigid wall was necessary. The above tests, however, indicate that this is not the case and that with careful construction and proper application a light wall can be made which will be entirely satisfactory as a sound-proof dividing partition."

Continued on next page

SPRAYO-FLAKE SOUND INSULATION TEST DATA

ON WALLS OF LE CLAIRE APARTMENTS, MILWAUKEE BY C. F. BURGESS LABORATORIES, INC.

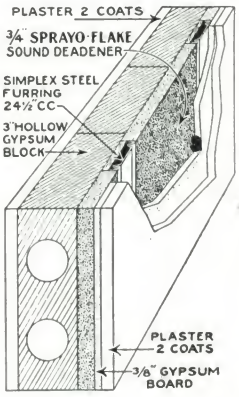
WALL—"A"

3" HOLLOW GYPSUM BLOCK SIMPLEX STEEL FURRING WITH SPRAYO-FLAKE INSULATION

LOGARITHM OF REDUCTION—6.27

REDUCTION IN SENSATION UNITS—62.7

Most Sound-proof



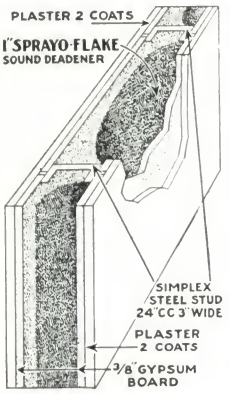
WALL—"B"

SIMPLEX STEEL STUD PARTITION INSULATED WITH 1" SPRAYO-FLAKE

LOGARITHM OF REDUCTION—4.75

REDUCTION IN SENSATION UNITS—47.5

Above Required Value



WALL—"C"

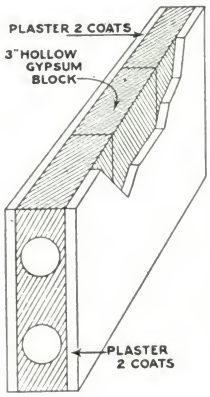
3" GYPSUM BLOCK

No Insulation

LOGARITHM OF REDUCTION—3.15

REDUCTION IN SENSATION UNITS—31.5

Considerably Below Value



WALL—"D"

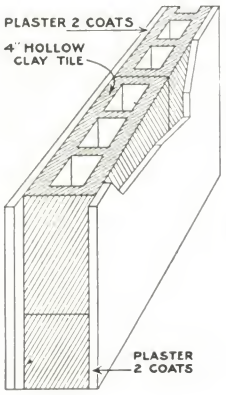
4" CLAY TILE

No Insulation

LOGARITHM OF REDUCTION—3.95

REDUCTION IN SENSATION UNITS—39.5

Slightly Below Value



SPECIFICATIONS—SOUND INSULATION WITH SPRAYO-FLAKE

SOUND INSULATION OF 3" GYPSUM HOLLOW PARTITION TILE

Furred One Side with Simplex Steel Furring

(A) Partition Construction

(A1) Gypsum Partition Tile—The gypsum tile partitions shall be built in accordance with the manufactured standard specifications.

(A2) Simplex Steel Furring—Fur one side of the gypsum tile partition with Simplex Steel Furring Channels. Channels shall be blocked out from the tile with ¾x2x2 in. wood blocking spaced not to exceed 36 in. on centers. After the insulation has been installed as in (B) apply the Gypsum Board to the Simplex Furring in accordance with the manufacturer's standard specifications and plaster both sides of the partition in the customary manner.

(B) Insulation

Sprayo-Flake Insulation shall be applied to the exposed furred surface of the gypsum tile to a minimum thickness of ¾ in. Carry insulation back of furring channels between blocking and feather insulation on the sides of the channels to the exposed front edges.

(C) Installation

Installation shall be by Licensed Sprayo-Flake Operators in accordance with the standard Sprayo-Flake air-gun method.

SOUND INSULATION OF SIMPLEX STEEL STUD PARTITION

(A) Partition Construction

Simplex Steel Stud Partitions shall be constructed in accordance with the manufacturer's standard specifications. After the Gypsum Board has been applied to one side of the partition the insulation shall be applied as in (B). After the insulation has been installed apply the Gypsum Board to the remaining side of the partition and plaster both sides of the partition in the customary manner.

(B) Insulation

Sprayo-Flake Insulation shall be applied to the exposed inner surface of the Gypsum Board to a minimum thickness of 1 in. Cover the exposed sides of the steel studs feathered to the exposed front edge.

(C) Installation

Installation shall be by Licensed Sprayo-Flake Operators in accordance with the standard Sprayo-Flake air-gun method.

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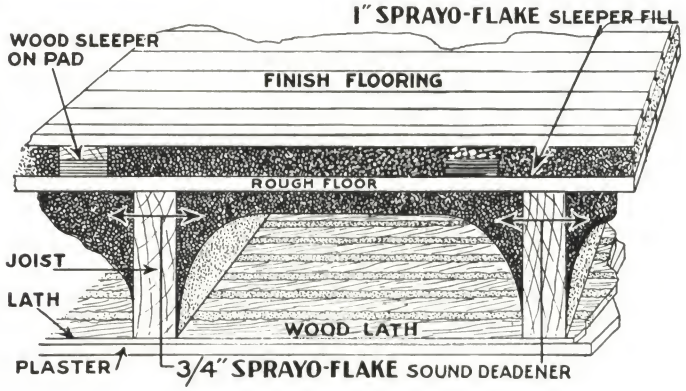
SPRAYO-FLAKE SOUND INSULATION TEST DATA ON FLOORS

BY C. F. BURGESS LABORATORIES, INC.



FLOOR "NO. 1"

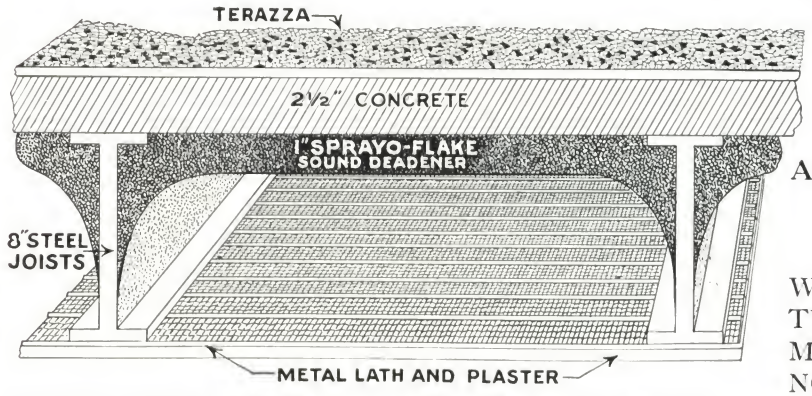
DUPLEX BUILDING, MILWAUKEE

WOOD JOIST CONSTRUCTION WITH SPRAYO-FLAKE

LOGARITHM OF REDUCTION—4.08

ACCEPTABLE FOR APARTMENT OR DUPLEX FLOORS MILL CONSTRUCTION

FLOORS "NO. 2 AND NO. 3"



MILWAUKEE COUNTY HOSPITAL STEEL LUMBER FLOOR CONSTRUCTION WITH AND WITHOUT SPRAYO-FLAKE

AIR-BORNE SOUNDS DID NOT REGISTER

NOTE: WHEN IMPACT TESTS WERE MADE ON THESE TWO TYPICAL FLOORS IT WAS DETERMINED THAT 5½ TIMES AS MUCH NOISE IN PHYSICAL UNITS PASSED THROUGH THE FLOOR IN WHICH THE SPRAYO-FLAKE HAD NOT BEEN APPLIED.

SPECIFICATIONS—SOUND INSULATION WITH SPRAYO-FLAKE

SOUND INSULATION OF WOOD JOIST FLOOR CONSTRUCTION

(A) Preliminary Carpentry Provisions

(A1) Joists—Joists shall be of proper dimensions to support floor loads without deflection, spaced 16 inches on centers framed and bridged in accordance with the standard practice.

(A2) Rough Flooring—Rough flooring shall be laid diagonally. Over the rough flooring apply continuous felt or fibre pads ½ in. thick x 2 in. wide laid parallel with and 3 in. off center of joists (16 in. on centers). Nail pads to rough floor.

(A3) Wood Nailing Strips—Over the felt pads apply wood nailing strips ⅝ in. thick x 2 in. wide secured through the pads to the rough flooring.

(B) Insulation

(B1) Application Under Rough Floor—Sprayo-Flake Insulation shall be applied under the rough floor to a minimum thickness of ¾ in. and shall extend down the sides of the joists to a feather edge.

(B2) Application on Top of Rough Floor—Sprayo-Flake shall be applied on top of rough floor between stripping to the full thickness of felt pads and wood strips, slightly crowned at center.

(C) Installation

Installation shall be by Licensed Sprayo-Flake Operators in accordance with the standard Sprayo-Flake air-gun method.

SOUND INSULATION OF STEEL LUMBER FLOOR CONSTRUCTION

(A) Floor Construction

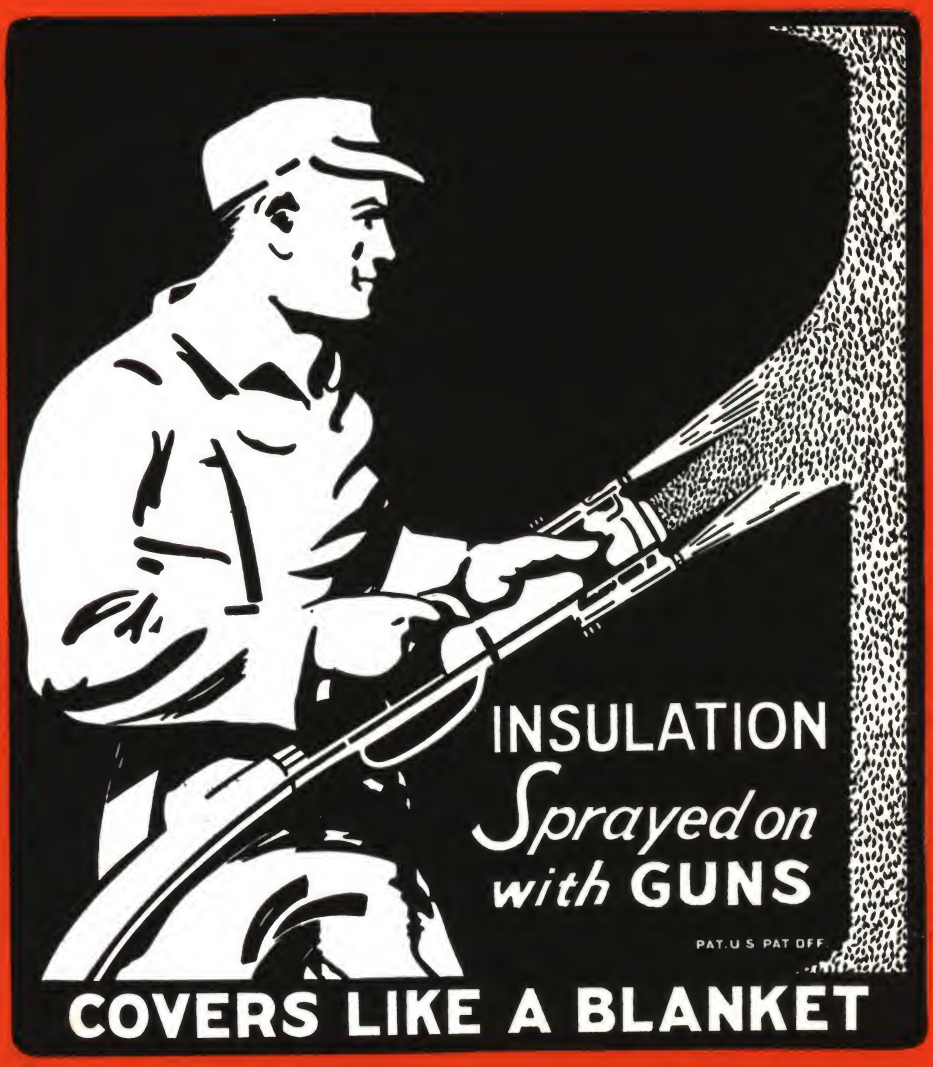
Floor Construction shall be in strict accordance with the steel joist manufacturer's standard specifications.

(B) Insulation

Sprayo-Flake Insulation shall be applied under the floor slab, before lathing, to a minimum thickness of 1 in. and shall extend down the sides of the steel joists to a feather edge.

(C) Installation

Installation shall be by Licensed Sprayo-Flake Operators in accordance with the standard Sprayo-Flake air-gun method.


INSULATION
Sprayed on
with GUNS
PAT. U S PAT OFF.
COVERS LIKE A BLANKET

UNITED STATES GYPSUM COMPANY

Insulation Products

300 West Adams Street, CHICAGO, ILL.

For Sales Offices, see Sweet's Manufacturers' Index for U.S.G. Catalogue on Gypsum Lathing and Plaster Products

Products in Other Catalogues

See Sweet's Index for Locations.
(1) Econo Expanded Metal.
(2) Architectural Acoustics, Noise.
(3) Abatement and Sound Control.
(4) U.S.G. Red Book, "Gypsum Fireproof Products," for complete information on Reinforced Roof Tile; Monolithic Floors and Roofs; Marks T System of Roof Construction; Pyrobar Partition and Furring Tile; Pyrobar Beam and Column Fireproofing.
(5) U.S.G. Red Book, "Gypsum—General Commodities," for complete information on Standard X Plastering System; Metal Laths and Accessories; Red Top Rocklath; Complete line of Gypsum Plasters; Finishing Lime; Oriental Exterior Stucco; Sheetrock (Wallboard); Sheetrock Tile Board; Gyplap Sheathing.
(6) U.S.G. Paint Products.
(7) Chromite—Sheet Metal Wall Tile.

THERMOFILL—DRY INSULATION

Description

Thermofill is a flaky gypsum material which gives a high degree of heat, cold and sound insulation when employed in the walls, ceilings, floors and roofs of residences, apartments and commercial buildings.

The material is light in weight; clean and easy to handle; and is packed in 50-lb. paper sacks.

Method of Installation

Ease of installation is one of the many desirable features of Thermofill, the Dry Fill Insulation, and a feature that makes the use of the material practical in buildings already built, as well as in new construction.

Thermofill is installed simply by pouring (dry) into the space that is to be insulated. The economy of this application is at once apparent.

In residences already built, or in new residences, a large reduction of heat loss in winter and a more comfortable interior in summer can be secured by pouring Thermofill (dry) between the floor joists in the attic, directly upon the ceilings of the top floor rooms.

Complete details for Thermofill insulation in other locations will be sent upon request.

Advantages

Thermofill provides an extremely high degree of heat and cold insulation because of the form and composition of the material. Gypsum is an excellent natural insulator, and this quality is increased many fold due to the myriads of confined air cells assured by the fluffy nature of the material and the method of installation. When installed in the walls and between floors and ceilings, Thermofill prevents air circulation and the resulting passage of heat and sound.

Because it is made of gypsum, Thermofill does not burn and it thus provides valuable protection to inflammable wood framework.

Thermofill, because of its mineral nature, cannot decompose and it will not harbor vermin.

Because of its low initial cost and the saving in labor due to simplicity of application, Thermofill offers the builder a most economical as well as a most effective insulator.

THERMAL CONDUCTIVITY OF THERMOFILL

Density per cu. ft., lb.	B.t.u. per sq. ft. per hour per 1° F. per in. thick	Authority
19.8	.35	Bureau of Standards

Conductivity slightly higher when used in walls.

EFFICIENCY OF TYPICAL CONSTRUCTION, UNINSULATED AND INSULATED

Walls	Uninsulated	Insulated with 3⅝-in. Thermofill
Clapboard, paper, sheathing, stud, lath and plaster	0.227	0.094
Brick veneer, paper, sheathing, stud, lath and plaster	0.165	0.082
Stucco, paper, sheathing, stud, lath and plaster.	0.257	0.099
Ceilings		
Lath and plaster—no floor	0.502	....
Lath and plaster—single floor	0.234	....
Lath and plaster—no floor—(insulated with 2 in. of Thermofill)	....	0.127
Lath and plaster—no floor—(insulated with 3 in. of Thermofill)	....	0.092
Lath and plaster—no floor—(insulated with 4 in. of Thermofill)	....	0.073

Covering Capacity

The covering capacity is indicated in the following table:

Position of use	Per 50-lb. bag		Per ton	
	Sq. ft. 1-in. thick	Number cu. ft.	Sq. ft. 1-in. thick	Number cu. ft.
Walls	25	2	1000	83
Ceilings and floors	30	2½	1200	100

Thermofill is made in one weight only and is packed in 50-lb. paper bags with complete directions printed on back.

Pouring Thermofill (Dry) Between Floor Joists in Attic Directly Upon Ceilings of Upstairs Rooms

Reduces heat loss in winter and insures cooler room temperature in summer

Leveling Thermofill with a Board Notched at the Ends to Allow Proper Clearance at the Bottom

2 in. is the minimum thickness recommended

RED TOP INSULATING BOARD

This is a wood fiber board manufactured for the UNITED STATES GYPSUM COMPANY by the Insulite Co. Being ½ in. thick, it has from 12½ to 16% more insulation value than a $\frac{7}{16}$-in. insulation board.

Red Top Insulating Board is 4 ft. wide and 8, 9, 10 and 12 ft. long.

Red Top Insulating Lath is 18 in. wide and 48 in. long. The long edges are shiplapped and beveled. It is also made 1 in. thick.

For further information, see Sweet's Manufacturers' Index for the Insulite Co.'s data.

FLAX-LI-NUM

Flax-li-num, an excellent insulation material of the semi-rigid type, is stocked at all U.S.G. plant-warehouses. It is made by compressing pure flax fiber into a uniform sheet. The sheets are flanged to fit between the studs midway between the walls, providing a double air space. On ceilings 1-in. Flax-li-num is nailed to the bottom of the joists and furred out.

For further information, see Sweet's Manufacturers' Index for the Flax-li-num Co.'s data.

UNITED STATES MINERAL WOOL COMPANY

TELEPHONE CONNECTION

280 Madison Avenue
NEW YORK, N. Y.

FACTORY: STANHOPE, N. J. (Railroad Station, Netcong, N. J.)

WESTERN CONNECTION: COLUMBIA MINERAL WOOL COMPANY, SOUTH MILWAUKEE, WISCONSIN

Product

MINERAL WOOL, a Non-combustible Insulator and Sound Deadener.

Character of Mineral Wool

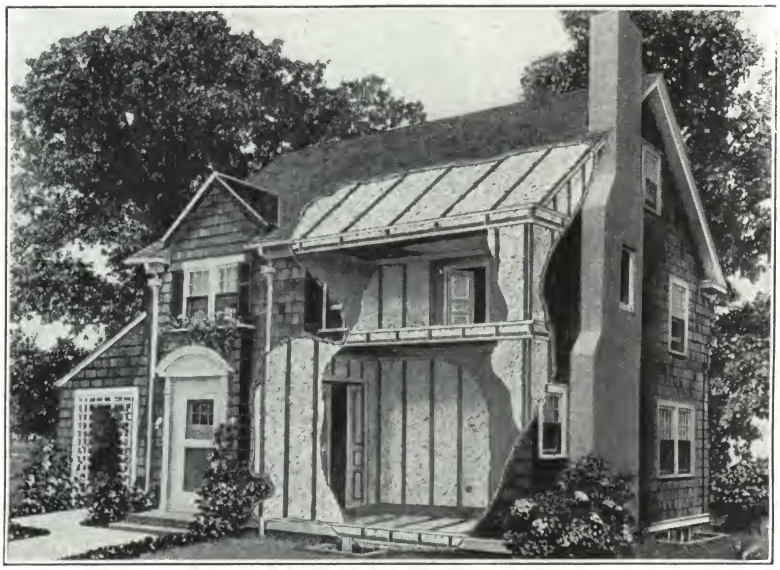
A mineral substance, made by converting melted scoria into a fibrous state.

It holds from 92% to 96% of air in suspension, which is more than any other non-combustible substance.

Uses

In residences, Mineral Wool is used for lining walls, floors, roofs and ceilings, as partly shown in the accompanying illustration. It is cheap and easily applied.

A house lined with Mineral Wool is warm in winter, cool in summer, and is thoroughly deafened. The lining is verminproof, checks the spread of fire and keeps out dampness.



A Few Applications of Mineral Wool

Mineral Wool is extensively used for insulating ovens and heat treating furnaces; and by leading manufacturers of refrigerators, ice and refrigerating machinery, as well as for filtering acids and the packing of carboys.

How to Estimate

To find the quantity of Ordinary Mineral Wool required to fill the outside walls the full thickness of studding:

Rule—1 lb. per sq. ft. for each inch in thickness.

Take the entire distance around the building on a horizontal line and multiply by the height of the studding, which will give the square feet of outside surface. Deduct, ordinarily, one-third to one-half for space occupied by doors, windows, chimneys, studding, bracing, etc. Multiply the remainder by the thickness of the studding; the result will be the number of pounds of Mineral Wool required to fill the space.

Grades and Cost

The Ordinary grade of Mineral Wool (the quality invariably used in building construction) weighs about 1 lb. per sq. ft., 1 in. thick, or 12 lbs. per cu. ft.

It costs $32.00 (subject to change) per ton at factory. Within a radius of 200 miles from New York, N. Y., $10.00 per ton will usually cover freight charges. A laborer can apply from ½ to ¾ of a ton a day.

The Selected grade of Mineral Wool, which is used in chemical plants, is rarely called for in buildings.

Package

The material is packed in 3-bushel burlap bags, for which a charge of 15¢ (subject to change) each is made; if returned in good condition within 30 days, and free of all freight charges, they are credited at 10¢.

How to Specify

"Insulation of Mineral Wool (UNITED STATES MINERAL WOOL COMPANY, 280 Madison Avenue, New York) shall be provided for ..... For floors, it shall be [4 in.] thick and set upon boards placed between beams on cleats. For walls it shall fill the spaces between studs and be placed in position as the lathing is being proceeded with. For roofs, it shall fill the space between rafters from eaves to [collar beams]. The Wool shall be pressed compactly but lightly."

Samples

Samples and descriptive pamphlets will be gladly supplied, on application.

Also, list of tests made by the United States Bureau of Standards in which Mineral Wool is rated one of the highest in comparison with forty-two other insulating materials, as an insulator of heat and cold, will be sent on request.

ARMSTRONG CORK & INSULATION COMPANY

Manufacturers of and Contractors for Insulation for All Classes of Buildings

935 Concord Street, LANCASTER PA.

BRANCHES

ALBANY, N. Y.	CHARLOTTE, N. C.	*DENVER, COLO.	*KANSAS CITY, MO.	OMAHA, NEB.
*ATLANTA, GA.	*CHICAGO, ILL.	*DETROIT, MICH.	MEMPHIS, TENN.	*PITTSBURGH, PA.
BIRMINGHAM, ALA.	*CINCINNATI, OHIO	GRAND RAPIDS, MICH.	MILWAUKEE, WIS.	ROCHESTER, N. Y.
*BOSTON, MASS.	*CLEVELAND, OHIO	HARTFORD, CONN.	*MINNEAPOLIS, MINN.	*ST. LOUIS, MO.
BUFFALO, N. Y.	*DALLAS, TEX.	*HOUSTON, TEX.	*NEW YORK, N. Y.	SYRACUSE, N. Y.
		JACKSONVILLE, FLA.		

MONTREAL, QUE. *TORONTO, ONT. WINNIPEG, MAN. *LONDON, ENGLAND

AGENTS

*BALTIMORE, MD., JOHN R. LIVEZEY, 526-530 St. Paul Street

*LOS ANGELES, CAL., GAY ENGINEERING CORP., 2650 Santa Fe Avenue

*NEW ORLEANS, LA., H. T. STEFFEE, 928-930 Tchoupitoulas Street

*PHILADELPHIA, PA., JOHN R. LIVEZEY, Glenwood Avenue, West of 22nd Street

*SPOKANE, WASH., D. E. FRYER & CO., 1111 Paulsen Building

*SAN FRANCISCO, CAL., VAN FLEET-FREEAR CO., 557 Howard Street

*SEATTLE, WASH., D. E. FRYER & CO., 1233 Utah Street

WASHINGTON, D. C., JOHN R. LIVEZEY, 902 Woodward Building

*These maintain ample warehouse stocks of Armstrong's Corkboard

THE COMPANY—ITS RESPONSIBILITY

Products

ARMSTRONG'S CORKBOARD for the insulation of walls and roofs of all classes of buildings; retains heat for the building in winter and excludes heat in summer; prevents condensation. Armstrong's Corkboard also is used for enclosure of air washers, process tanks, and similar equipment.

Armstrong's Cork Covering for insulation of refrigerator lines and for lagging of brine coolers and other special low temperature apparatus; Corkoustic for sound-quieting and acoustical treatment for churches, schools, hospitals, and all classes of buildings; Armstrong's Temlok for house and roof insulation; Armstrong's Cork Machinery Isolation for absorbing vibration and reducing noise in connection with fans, pumps, motors, printing machinery, and to completely isolate floor slabs from steel framing members. See Manufacturers' Index.

The Company

The ARMSTRONG CORK & INSULATION COMPANY is a subsidiary of the Armstrong Cork Company—a concern long established in its special field and with a financial standing and reputation sufficient to guarantee its integrity and responsibility and to assure efficient, dependable service.

During the years corkboard insulation has been on the market, it has been used in many thousands of installations under practically all conditions. Long practical experience has built thorough familiarity with the material and its uses and has established dependable data and statistics.

Sales and Service Organization

The ARMSTRONG CORK & INSULATION COMPANY'S main offices are at Lancaster, Pa. Complete testing laboratories, under the direction of a corps of specially trained and experienced insulation engineers, also are maintained at Lancaster, Pa. Here, any special insulation problem may be referred for prompt and thorough investigation and solution. The factories are located at Camden, N. J., and Beaver Falls, Pa., in the United States, and at Algeciras, Palamos, and Seville, Spain.

In addition to the main office, branch offices are maintained in the principal cities of the United States, each in charge of a district manager immediately responsible to the general sales manager of the Company. Under many branch offices are sub-branch offices located in the larger cities in the district territory.

Each branch office carries one or more men with engineering education and training who are competent to advise on insulation design and installation. Each branch also carries a corps of trained erection superintendents and foremen.

The Company offers a complete service—from manufacturer to consumer—with one responsibility.

Architects, engineers, builders, and owners are invited to avail themselves of the Company's facilities for information and service.

Stripping Cork Trees in Algeria

Cork is the outer bark of the cork oak tree which flourishes in the Spanish peninsula and in Northern Africa

Contracts and Supervision

The erection of Armstrong's Corkboard for the insulation of walls and roofs (other than cold storage buildings) is generally done by the building contractor or by his subcontractors. When desired, however, the ARMSTRONG CORK & INSULATION COMPANY will contract to furnish and erect corkboard insulation ready to receive interior plastering or laid ready to receive finished roofing materials.

Continued on next page

(A) WHY ALL CLASSES OF BUILDINGS NEED INSULATION

(A1) What Insulation Accomplishes

(A1a) Heat Loss Occurs in All Classes of Buildings—Authentic engineering data show enormous heat losses from buildings. These losses are due primarily to the building construction and are independent of heating equipment efficiency. They occur through the more or less rapid transmission of the heat that is generated in the building through the enclosing walls, ceilings and roofs of buildings of good construction *but which are not insulated.* This preventable heat loss occurs in all *uninsulated* buildings whether used for domestic, public, semipublic, commercial, or industrial purposes.

(A1b) Insulated Buildings Save Fuel and Promote Comfort—With present-day fuel costs, heating is a major item of building operating expense. In insulated buildings, *the conservation of heat,* reflected in fuel savings, *is an obvious economy* added to which are the equal, though less tangible, benefits of greater comfort, better health, and increased efficiency of human endeavor.

(A1c) Insulated Buildings Are Cool in Summer—*Insulated buildings* not only conserve heat in winter, but in addition they *keep out the heat in summer,* vitally important in the maintenance of maximum comfort, health, and efficiency. Efficient roof insulation in commercial and industrial buildings effects noticeable efficiency increases during the hot summer period, and every one admits the personal benefits of comfortable, cool, upper story sleeping rooms in the home.

(A1d) Insulation Prevents Condensation—Many industrial plants, such as textile mills, tobacco factories, and paper mills, require or produce in their manufacturing processes high temperatures with high relative humidity. In cold weather, the high moisture content of the heated air is condensed to such an extent on the underside of *uninsulated chilled roofs* (or ceilings immediately beneath roofs) as to drip quantities of water, discoloring, if not materially injuring, the manufactured product; damaging costly machine equipment, and producing difficult and unpleasant working conditions. *Insulation of walls and roofs (or ceilings) is the most practical and economical method of preventing condensation.*

(A2) Where Heat Losses Occur

(A2a) 33% Heat Conservation Possible—In the average uninsulated residence, it is estimated that approximately 45% of the heat loss is through and about the exterior doors and windows and that approximately 55% escapes through the walls and roof. *Of the heat loss through walls and roofs an average saving of 60% may be effected through the use of efficient insulation—i. e., 60% of 55% equals 33% net heat saving reflected in an equivalent fuel saving.*

(A2b) Heat Losses at Windows and Doors—Heat loss through doors and windows cannot be eliminated, though material savings may be made by the use of well-constructed frames, thoroughly wind-flashed and insulated in frame construction and calked in masonry construction; or storm sash and efficient metal weatherstrips. Heat losses due to infiltration (wind driven air) in and about door and window openings, have been established and have been proved preventable to a large degree.

(A2c) Wall Infiltration—Heat losses due to infiltration through solid masonry walls have been proved, by careful laboratory tests, to exist.

(A2d) Greatest Heat Loss Through Roofs—Of the heat escaping through walls and roofs, by far the greater loss is obviously through the roof or the top floor ceiling and roof combined, not only because the materials of which they are ordinarily constructed are relatively good heat conductors, but because the heat in the rooms naturally tends to rise to the ceiling or roof.

The best evidence of the enormous quantities of heat which pass through roofs is to observe what occurs after a heavy fall of snow. In a comparatively short time most roofs are bare. Some snow may blow off, but most of it melts off, though the outside temperature may be far below freezing. The melting is accomplished by the heat from within the building escaping through the roof construction. Could anything be more illogical than to equip heating plants with fuel-saving devices, insulate steam lines and in other ways, through engineering design and scientific operation, attempt to conserve heat, and then permit this same heat to escape through the roof in a sufficient volume to melt snow?

(A2e) Summer Heat Is Transmitted Through Roof—Conversely, during the summer, since the roof is exposed to the direct rays of the sun, it is through the roof, as ordinarily constructed, that the greatest amount of summer heat is transmitted into the top story or that portion of the building immediately below the roof. Until recently, the main function of the roof was assumed to be its protection against the elements, and to that end it was built strong, fire resisting, and weathertight. But today architects and engineers recognize the *necessity that the roof,* especially, *must also be heattight.*

(A3) All Commonly Used Building Materials Are Heat Conductors

(A3a) Building Materials Transmit Heat Readily—*All commonly used building materials*—metal, concrete, stone, brick, hollow tile, stucco, plaster, lumber, etc., *are, relatively speaking, heat conductors,* rather than insulators, since in the thicknesses used and as assembled in modern building construction, the *heat flow through them is rapid.*

The degree to which a building material is a heat conductor depends on its structure and its density. *Heavy, dense materials transmit heat* more readily and rapidly than do light, less dense materials.

The absorption of a material (its proclivity to take up moisture by capillary attraction under various climatic or weather conditions) plays an important part in its conductivity of heat. *Moisture destroys insulating efficiency. Any material, even those which are insulators when dry, will conduct heat readily when moist or saturated with water.*

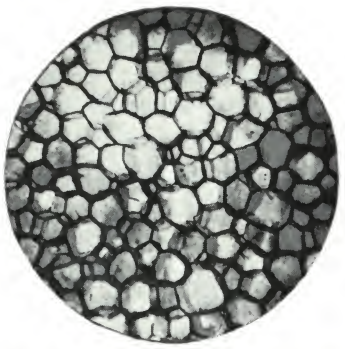
A comparison shows that 1 in. of Armstrong's Corkboard has the same conductivity as 10 in. of hollow tile, 15 in. of brick, or 22 in. of concrete.

Continued on next page

(B) ARMSTRONG'S CORKBOARD—PHYSICAL CHARACTERISTICS

(B1) Why Cork Is an Efficient Insulator

Scientists and engineers agree that the most effective hindrance or barrier to the transmission of heat is a homogeneous mass of minutely divided motionless air particles. *Cork is made up entirely of minute cells, each having imprisoned within it a tiny particle of air,* too small to circulate inside the cell walls and so well sealed in that it cannot pass from one cell to another. (See microscopic section enlarged 180 diameters.)



Armstrong's Corkboard Under the Microscope, Showing the Cellular Structure
Enlarged 180 diameters

(B2) How Corkboard Fulfills All Insulating Requirements

That Armstrong's Corkboard does fulfill all of the essential insulating requirements to a very marked degree is proved by the analysis which follows:

(B2a) Low Thermal Conductivity—

(1) ***Ideal Physical Structure***—Armstrong's Corkboard is made up entirely of microscopic air-containing cells, hermetically sealed off one from another—the ideal scientific insulating structure.

(2) ***Low Density***—Relatively, the less dense a material the better its insulating value (See A3a Armstrong Page 2). Armstrong's Corkboard weighs but .85 (average) pounds per board foot (1 in. thick, 1 ft. sq. area).

(3) ***Thermal Conductivity***—The thermal conductivity of Armstrong's Corkboard is .304 B.t.u. per hr.; per sq. ft.; per 1-in. thickness; per degree temperature difference between the two sides. (U. S. Bureau of Standards.)

(4) ***Supporting Evidence***—The transmission of heat through *uninsulated* and *insulated* construction is illustrated in the engineering data assembled on Armstrong Pages 6 to 9, inclusive. The construction of walls, roofs, and ceilings is typical of the average found in good construction. The marked savings in heat loss through insulating with Armstrong's Corkboard are clearly shown.

(B2b) Nonabsorbent—

(1) ***An Essential Quality—Water Is an Excellent Heat Conductor***—Since the average building is not moisture-tight, it is most important that an insulating material shall be permanently nonabsorbent. (See A3a Armstrong Page 2.)

(2) ***Permanently Waterproof***—The cellular structure of *cork has no capillary attraction* and will not absorb moisture either from a damp material with which it is in contact or from the air.

This is proved by its long use in industries for the severest insulating conditions. For years, cork insulation has been the standard for cold storage warehouses, ice plants, refrigerators, cold piping, etc., because in addition to its unexcelled insulating qualities, it has demonstrated its resistance to moisture. *Nonabsorption is essential to sanitation.*

(B2c) Fire Retarding—

(1) ***A Necessary Quality***—In consequence of the present enormous annual fire loss, public sentiment demands the use of materials and constructions which, if not fireproof, are at least fire retarding. To gain the benefits of insulation, it is illogical to add to the fire hazard. *An insulating material, to be wholly satisfactory, must be actually fire retarding.*

(2) ***Armstrong's Corkboard Is a Fire Retardant***—*Corkboard will not support combustion and does not smolder or carry fire.* It is an exceedingly slow burning material. Flame in contact with Armstrong's Corkboard produces surface charring, which serves effectively to check the spread of fire. Furthermore, the compact structure of Armstrong's Corkboard prevents fire from creeping through the material to smolder and break out afresh in a new spot.

(3) ***Its Structural Strength a Fire Barrier***—Armstrong's Corkboard is structurally strong and in the thicknesses recommended for use, it is sufficiently sturdy to withstand the force of a fire-hose stream.

(4) ***Authentic Examples of Fire Resisting Qualities***—Armstrong's Corkboard has been *approved by the National Board of Fire Underwriters* for use in cold storage construction. Its performance in fires in cold storage plants, packing houses, and other industrial buildings in all parts of the country has justified this approval many times over. In many instances the corkboard on walls, floors, and ceilings of plants of this kind has confined the flames and prevented complete destruction of the entire building. (Authentic reports furnished upon application.)

(5) ***Supporting Evidence***—The fire retarding, slow burning characteristics of Armstrong's Corkboard Insulation are demonstrated on Armstrong Page 5.

(B2d) Permanence—

(1) ***Does Not Shrink or Swell***—Armstrong's Corkboard does not shrink or swell and will not buckle, due particularly to its thoroughly moistureproof qualities. Joints are laid tight, without any allowance for change of shape or size of the boards. *Changes of temperature or humidity in the ordinary ranges have positively no effect on the stability of the material—a salient feature of corkboard over all other insulating materials, especially where used as a plaster base.* (See B2g.)

(2) ***Does Not Disintegrate***—Armstrong's Corkboard is entirely free from mold and decay and will not disintegrate in service.

Continued on next page

(3) ***Structural Stability***—Its structural strength and compactness assure its permanence. It will not tear or break under ordinary strains and will always remain in the same position and condition as when originally installed—a continuous, permanently efficient insulation.

(B2e) Sanitary—

Armstrong's Corkboard is structurally nonabsorbent; consequently it does not mold or decay and will remain indefinitely in its original clean, sanitary condition. It will not attract rodents or insects. It has no offensive odor.

(B2f) Practicability—

(1) ***Convenient Size, Thickness, and Weight***—Armstrong's Corkboard for insulation is made in two (2) convenient sizes, 12 in. wide by 32 in. long, and 12 in. wide by 36 in. long, both sizes in several thicknesses, 1, 1½, 2, and 3 in. Hence the thickness of Armstrong's Corkboard which will prove most effective for any condition can always be *installed in a single layer.*

The light weight (.85 lbs. per board foot) combined with the convenient size makes Armstrong's Corkboard *easy to handle and erect.*

(2) ***Structural Strength***—Armstrong's Corkboard is not fragile. It may be cut, sawed, and nailed in place as easily as lumber. It is quickly erected against masonry walls in a backing of portland cement mortar with which it forms a secure bond. When nailed against studs and joists in frame construction its structural spanning strength assures a rigid, practical plaster base—no intermediate stiffening or bracing members are required.

(3) ***A Firm Roof Insulation***—In roof insulation, where applied over the roof construction under the finished roofing material, Armstrong's Corkboard remains permanently *firm and compact.* It will not expand or contract or loosen from the base to which it is applied. There is but little danger of puncturing the finished roofing material when walked upon or when tools or other hard substances are accidentally dropped upon it. *The most particular and conscientious roofing material manufacturers can guarantee their finished roofings without qualifying reservations where applied over Armstrong's Corkboard.*

(B2g) A Good Base for Plaster—

(1) ***Interior Plastering***—The ideal position for insulation is on the inside face of walls, ceilings, etc., immediately back of the plaster. Where Armstrong's Corkboard is applied in this position (either frame or masonry construction) no lath is required since *corkboard is an excellent plaster base.* (This economy will offset a portion of the insulation cost.) Its structural strength is vouched for. (See B2f-2).

The depressions in the surface produced by the small interstices between the cork granules provide ample "key" for firm and permanent adherence or bonding of the plaster finish.

All commercial, interior plastering materials such as gypsum, lime, etc., may be as satisfactorily and easily applied upon Armstrong's Corkboard as upon any standard plaster base—wood or metal lath, brick, hollow tile, gypsum block, etc.

(2) ***Supporting Evidence***—For years portland cement interior plaster has been applied to corkboard in cold storage rooms with highly satisfactory results, even in buildings where there is considerable vibration.

Authentic test data on the strength of plaster bond are given on Armstrong Page 5.

(3) ***Exterior Stucco***—Where Armstrong's Corkboard is applied over the outside of the building (as in alterations and additions to existing buildings) any standard magnesite stucco may be used, applied directly to the corkboard surface.

Where portland cement stucco is used, either self-furring metal lath or metal lath on furring strips applied over the corkboard is recommended to compensate for the expansion and contraction of the portland cement mortar under the various climatic conditions.

(B2h) Reasonable in Cost—

(1) ***Initial Cost Reasonable***—In comparing the cost of Armstrong's Corkboard with the cost of other commercial insulating materials, it must be particularly borne in mind that few, if any, compare in thickness (see B4g-1) and that heat flow varies inversely as the thickness. The added net cost of Armstrong's Corkboard Insulation installed in the average residence is generally 3% to 5% of the cost of the building—and in the northern latitudes the amount is such that it will be entirely repaid by the fuel savings in four or five years. In other classes of buildings, such as apartments, hotels, etc., the increased cubical contents, as compared to the wall and roof areas requiring insulation, will materially decrease the initial percentage cost increase.

(2) ***Low Labor Installation Cost***—Armstrong's Corkboard is not expensive to install. It is easily and rapidly erected by the ordinary mechanic without special training.

Except in cold storage work, Armstrong's Corkboard is generally *applied in a single layer* of the thickness required to assure the greatest economy and effectiveness. (See B2f.) In insulating roofs, this effects a considerable saving in labor cost and materials, such as pitch or asphalt, as compared with the installation of insulation built up of thin layers to the required thickness.

Plastering is easily accomplished with better results than on ordinary plaster bases, due to the nonabsorbent quality of Armstrong's Corkboard which assures slower setting of the plaster.

(3) ***Initial Savings*** — *No lath is required where corkboard is used*—an initial saving in construction cost.

Due to the high insulating efficiency of Armstrong's Corkboard, there is an initial saving of from 20% to 40% in the amount of radiation which would otherwise be required, and this is reflected in reduced boiler plant and pipe sizes—a considerable first cost saving assisting materially to reduce the initial cost of the corkboard insulation.

Continued on next page

(B2i) Investment Return—

On an average, from 20% to 40% fuel savings may be assured in the building completely insulated with Armstrong's Corkboard. The actual return in reduced fuel bills is naturally dependent on a number of factors, such as climatic conditions, cost of fuel, construction of the building and thickness of the insulation, but in practically all cases the initial cost of insulation will be entirely paid for out of actual fuel saving within a comparatively few years, *and thereafter the annual fuel savings may be applied as cash return on the original building investment.*

(C) ENGINEERING AND TEST DATA

Note: *Under this division are included engineering and test data on the physical characteristics and efficiency of Armstrong's Corkboard Insulation.*

Unless otherwise specially mentioned, the tests have been conducted and the data assembled by the Company's own Engineering Department. All evidence and data are vouched for.

(C1) Armstrong's Corkboard Is a Fire Retardant

(C1a) Results of the Fire Tests—Reprints of authentic fire tests will be gladly furnished on request.

To demonstrate the slow burning, fire retarding charactertistics of Armstrong's Corkboard and its superiority in this respect, the following test may be conducted:

A piece of Armstrong's Corkboard 1 in. thick and 12x16 in. in size should be secured to wooden uprights attached to feet to keep the frame in a vertical position.

A gas blast should be used to supply the heat, with sufficient air introduced to produce a hot, nonluminous flame approximately 6 in. long when burning free.

The burner tip should be placed 2½ in. from the face of the test sample with the burner somewhat elevated.

In making the test the burner flame should be allowed to play against the surface of the panel until the flame has burned through the 1-in. thickness of the insulating material when the flame should be immediately removed and the further performance of the sample (whether it burns, smolders, or combustion ceases) should be noted.

Arrangement of Apparatus for Making Test

Armstrong's Corkboard 1 Inch Thick at Conclusion of Test

The results of this test as here given made many times in our own laboratories show that it requires approximately 55 minutes for the flame to burn through and that combustion ceased when the flame was removed.

(C2) Corkboard Is an Excellent Plaster Base

(C2a) Tests of Plaster Bond—For many years Armstrong's Corkboard Insulation in cold storage and similar industrial plants has been finished *successfully* with ½ in. of portland cement plaster. To demonstrate definitely the strength of the plaster bond developed where commercial gypsum interior plaster is applied over corkboard insulation, the following tests were made:

Pieces of Armstrong's Corkboard, 6 in. square and 1 in. thick, were bonded together with gypsum plaster and with portland cement mortar. When the plaster and mortar had thoroughly dried, the strength of the bond was determined by pulling the pieces of corkboard apart in an Olsen testing machine with the results given in the table below.

GYPSUM PLASTER

Gypsum plaster mixed in the proportions of 1 part of plaster to 2 parts of sand, *by volume.*

Sample No.	Pounds pull required to break bond
1	210.0
2	208.0
3	220.0
Average	212.66

Gypsum plaster mixed in the proportions of 1 part of plaster to 2 parts of sand, *by weight.*

Sample No.	Pounds pull required to break bond
1	370

PORTLAND CEMENT PLASTER

Portland cement plaster mixed in the proportions of 1 part of cement to 2 parts of sand, *by volume.*

Sample No.	Pounds pull required to break bond
1	145.0
2	130.0
3	135.0
Average	136.66

Portland cement plaster mixed in the proportions of 1 part of cement to 2 parts of sand, *by weight.*

Sample No.	Pounds pull required to break bond
1	297

Continued on next page

(C3) HEAT TRANSMISSION

thru Insulated and Uninsulated Construction

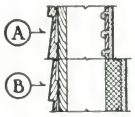
Expressed in B. t. u. per hour, per square foot, per degree difference in temperature

The following sections and their accompanying tables show the heat losses through various commonly used thicknesses of both uninsulated and insulated constructions. All transmissions conform to the figures for heat flow as given in the 1928 Guide of the American Society of Heating and Ventilating Engineers.

The types, materials and methods of construction illustrated for walls, floors, ceilings, and roofs have been carefully chosen to provide data which will actually apply to the average building irrespective of class or size. Similar data on any special construction not included will be promptly furnished by the nearest branch office of the Armstrong Cork & Insulation Company (see Armstrong Page 1) or through the main office at Lancaster, Pa.

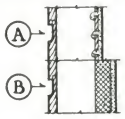
The purpose of the data is twofold: First, to show at a glance the efficiency of Armstrong's Corkboard Insulation as applied to actual building construction. Second, to provide definite engineering data for use in calculating the thickness of insulation which will prove effective under various conditions and the investment return that is assured where Armstrong's Corkboard Insulation is installed.

Specification: (A) BEVELED SIDING—WATERPROOF PAPER—SHEATHING—STUDDING—LATH AND PLASTER (B) BEVELED SIDING—WATERPROOF PAPER—SHEATHING—STUDDING—CORKBOARD—PLASTER



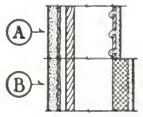
Not Insulated	B-INSULATED with Corkboard	
A	1½ inches	2 inches
.262	.117	.098

Specification: (A) DROP SIDING—WATERPROOF PAPER—STUDDING—LATH AND PLASTER (B) DROP SIDING—WATERPROOF PAPER—STUDDING—CORKBOARD—PLASTER



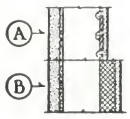
Not Insulated	B-INSULATED with Corkboard	
A	1½ inches	2 inches
.313	.126	.104

Specification. (A) STUCCO ON METAL LATH—FURRING—WATERPROOF PAPER—SHEATHING—STUDDING—LATH AND PLASTER (B) STUCCO ON METAL LATH—FURRING—WATERPROOF PAPER—SHEATHING—STUDDING—CORKBOARD—PLASTER



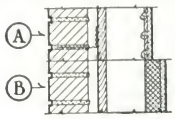
Not Insulated	B-INSULATED with Corkboard	
A	1½ in.	2 in.
.236	.112	.094

Specification. (A) STUCCO ON SELF FURRING METAL LATH—WATERPROOF PAPER—STUDDING—LATH AND PLASTER (B) STUCCO ON SELF FURRING METAL LATH—WATERPROOF PAPER—STUDDING—CORKBOARD—PLASTER



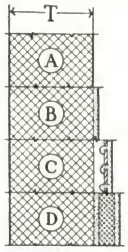
Not Insulated	B-INSULATED with Corkboard	
A	1½ in.	2 in.
.214	.107	.091

Specification: (A) BRICK VENEER—WATERPROOF PAPER—SHEATHING—STUDDING—LATH AND PLASTER (B) BRICK VENEER—WATERPROOF PAPER—SHEATHING—STUDDING—CORKBOARD—PLASTER



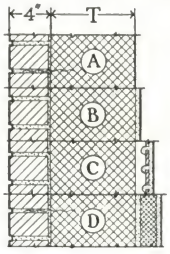
Not Insulated	B-INSULATED with Corkboard	
A	1½ in.	2 in.
.204	.104	.089

Specification: (A) CONCRETE (1 TO 3 TO 5 MIX) (B) CONCRETE—PLASTER (C) CONCRETE—FURRING—LATH AND PLASTER (D) CONCRETE—PORTLAND CEMENT MORTAR BACKING—CORKBOARD—PLASTER



THICKNESS T	NOT INSULATED A	B	C	D-INSULATED with Corkboard 1½ inches	2 inches
4 in.	.675	.592	.346	.148	.119
6 in.	.580	.518	.319	.143	.116
8 in.	.512	.461	.297	.138	.113
10 in.	.455	.416	.277	.134	.109
12 in.	.411	.378	.260	.131	.106
16 in.	.343	.320	.231	.122	.101
18 in.	.315	.296	.218	.119	.099
20 in.	.294	.277	.208	.116	.097

Specification: (A) FACE BRICK—CONCRETE (1 TO 3 TO 5 MIX) (B) BRICK—CONCRETE—PLASTER (C) BRICK—CONCRETE—FURRING—LATH AND PLASTER (D) BRICK—CONCRETE—PORTLAND CEMENT MORTAR BACKING—CORKBOARD—PLASTER



THICKNESS T	NOT INSULATED A	B	C	D-INSULATED with Corkboard 1½ inches	2 inches
4 in.	.427	.392	.266	.131	.108
6 in.	.387	.358	.250	.127	.105
8 in.	.355	.330	.237	.123	.102
10 in.	.327	.305	.224	.120	.100
12 in.	.303	.285	.213	.116	.098

ENGINEERING AND TEST DATA

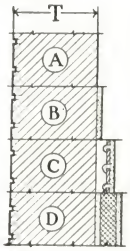
Continued on next page

(C3) HEAT TRANSMISSION

thru Insulated and Uninsulated Construction

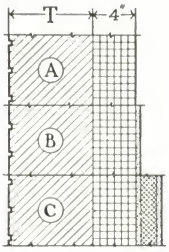
Expressed in B. t. u. per hour, per square foot, per degree difference in temperature

Specification: (A) BRICK (4" FACE AND COMMON BACKING) (B) BRICK—PLASTER (C) BRICK—FURRING—LATH AND PLASTER (D) BRICK—PORTLAND CEMENT MORTAR BACKING—CORKBOARD—PLASTER



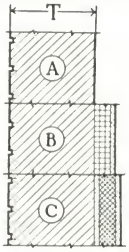
THICKNESS T	NOT INSULATED A	B	C	D-INSULATED with Corkboard 1½ inches	2 inches
8 in.	.385	.356	.250	**.127**	**.105**
12 in.	.295	.277	.208	**.115**	**.097**
16 in.	.238	.227	.178	**.104**	**.090**
20 in.	.200	.191	.156	**.098**	**.084**
24 in.	.172	.166	.139	**.090**	**.078**

Specification: (A) BRICK—HOLLOW BRICK OR TILE (4") (B) BRICK—HOLLOW BRICK OR TILE—PLASTER (C) BRICK—HOLLOW BRICK OR TILE—PORTLAND CEMENT MORTAR BACKING—CORKBOARD—PLASTER



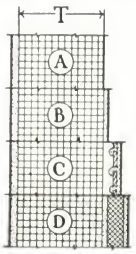
THICKNESS T	NOT INSULATED A	B	C-INSULATED with Corkboard 1½ inches	2 inches
8 in.	.268	.254	**.111**	**.094**
12 in.	.221	.211	**.102**	**.087**
16 in.	.187	.180	**.094**	**.081**
20 in.	.163	.158	**.088**	**.076**
24 in.	.144	.140	**.082**	**.072**

Specification. (A) BRICK (COMMON) (B) BRICK—FURRING TILE (1⅜")—PLASTER (C) BRICK—PORTLAND CEMENT MORTAR BACKING—CORKBOARD—PLASTER



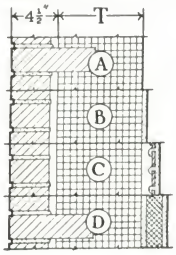
THICKNESS T	NOT INSULATED A	B	C-INSULATED with Corkboard 1½ inches	2 inches
8 in.	.385	.284	**.127**	**.105**
12 in.	.294	.232	**.115**	**.092**
16 in.	.238	.195	**.106**	**.090**
20 in.	.200	.169	**.097**	**.084**
24 in.	.172	.149	**.090**	**.079**

Specification (A) STUCCO (1⅜")—HOLLOW TILE (LOAD BEARING) (B) STUCCO—HOLLOW TILE—PLASTER (C) STUCCO—HOLLOW TILE—FURRING—LATH AND PLASTER (D) STUCCO—HOLLOW TILE—PORTLAND CEMENT MORTAR BACKING—CORKBOARD—PLASTER



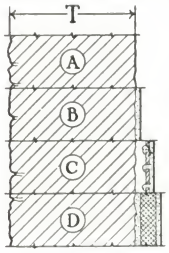
THICKNESS T	NOT INSULATED A	B	C	D-INSULATED with Corkboard 1½ inches	2 inches
4 in.	.452	.413	.276	**.134**	**.110**
6 in.	.334	.313	.227	**.121**	**.101**
8 in.	.317	.296	.219	**.119**	**.099**
10 in.	.304	.285	.213	**.117**	**.098**
12 in.	.241	.229	.180	**.106**	**.090**
16 in.	.195	.188	.153	**.096**	**.083**
20 in.	.182	.175	.145	**.093**	**.080**

Specification. (A) FACE BRICK—HOLLOW TILE (LOAD BEARING) (B) BRICK—HOLLOW TILE—PLASTER (C) BRICK—HOLLOW TILE—FURRING—LATH AND PLASTER (D) BRICK—HOLLOW TILE—PORTLAND CEMENT MORTAR BACKING—CORKBOARD—PLASTER



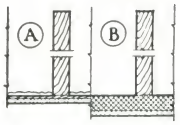
THICKNESS T	NOT INSULATED A	B	C	D-INSULATED with Corkboard 1½ inches	2 inches
4 in.	.341	.318	.231	**.122**	**.101**
6 in.	.270	.254	.195	**.112**	**.094**
8 in.	.257	.243	.188	**.110**	**.092**
10 in.	.248	.235	.184	**.107**	**.091**
12 in.	.205	.196	.159	**.098**	**.085**
16 in.	.170	.164	.137	**.090**	**.078**
20 in.	.161	.156	.131	**.087**	**.076**

Specification: (A) STONE (LIMESTONE RUBBLE) (B) STONE—PLASTER (C) STONE—FURRING—LATH AND PLASTER (D) STONE—PORTLAND CEMENT MORTAR BACKING—CORKBOARD—PLASTER



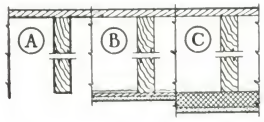
THICKNESS T	NOT INSULATED A	B	C	D-INSULATED with Corkboard 1½ inches	2 inches
12 in.	.457	.415	.277	**.134**	**.109**
16 in.	.385	.356	.250	**.127**	**.105**
18 in.	.357	.332	.238	**.124**	**.103**
20 in.	.334	.311	.227	**.121**	**.101**
24 in.	.295	.277	.208	**.115**	**.098**

Specification (A) JOISTS—LATH AND PLASTER (B) JOISTS—CORKBOARD—PLASTER



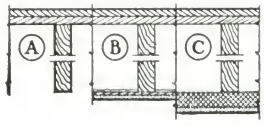
Not Insulated A	B-INSULATED with Corkboard 1½ inches	2 inches
.502	**.149**	**.119**

Specification: (A) SINGLE WOOD FLOOR—JOISTS (B) SINGLE WOOD FLOOR—JOISTS—LATH AND PLASTER (C) SINGLE WOOD FLOOR—JOISTS—CORKBOARD—PLASTER



NOT INSULATED A	B	C-INSULATED with Corkboard 1½ inches	2 inches
.440	.272	**.119**	**.100**

Specification. (A) DOUBLE WOOD FLOOR—JOISTS (B)—DOUBLE WOOD FLOOR—JOISTS—LATH AND PLASTER (C) DOUBLE WOOD FLOOR—JOISTS—CORKBOARD—PLASTER



NOT INSULATED A	B	C-INSULATED with Corkboard 1½ inches	2 inches
.327	.224	**.109**	**.092**

ENGINEERING AND TEST DATA

Continued on next page

(C3) HEAT TRANSMISSION

thru Insulated and Uninsulated Construction

Expressed in B. t. u. per hour, per square foot, per degree difference in temperature

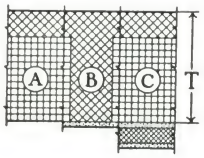
Specification: (A) MILL CONSTRUCTION PLANK FLOOR (B) MILL CONSTRUCTION PLANK FLOOR—CORKBOARD—PLASTER

Not Insulated	B-INSULATED with Corkboard	
A	1½ inches	2 inches
.307	.118	.096

Specification (A) FINISHED WOOD FLOOR—MILL CONSTRUCTION PLANK FLOOR (B) FINISHED WOOD FLOOR—MILL CONSTRUCTION PLANK FLOOR—CORKBOARD—PLASTER

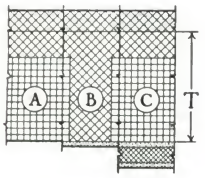
Not Insulated	B-INSULATED with Corkboard	
A	1½ inches	2 inches
.248	.108	.092

Specification: (A) REINFORCED CONCRETE JOIST AND TILE SLAB (Monolithic or no Finish) (B) REINFORCED CONCRETE JOIST AND TILE SLAB—PLASTER (C) REINFORCED CONCRETE JOIST AND TILE SLAB—PORTLAND CEMENT MORTAR BACKING—CORKBOARD—PLASTER



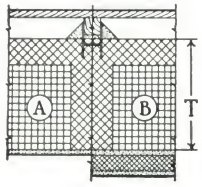
THICKNESS T	NOT INSULATED A	NOT INSULATED B	C-INSULATED with Corkboard 1½ inches	C-INSULATED with Corkboard 2 inches
5½ in.	.372	.346	.125	.103
8 in.	.348	.327	.122	.102
10½ in.	.276	.261	.112	.094
13 in.	.258	.245	.109	.092
15½ in.	.215	.205	.100	.086

Specification: (A) FINISHED CONCRETE (OR TERRAZZO) FLOOR (2")—REINFORCED CONCRETE JOIST AND TILE SLAB (B) FINISHED CONCRETE FLOOR—REINFORCED CONCRETE JOIST AND TILE SLAB—PLASTER (C) FINISHED CONCRETE FLOOR—REINFORCED CONCRETE JOIST AND TILE SLAB—PORTLAND CEMENT MORTAR BACKING—CORKBOARD—PLASTER



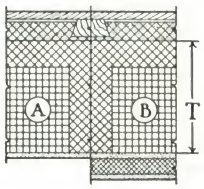
THICKNESS T	NOT INSULATED A	NOT INSULATED B	C-INSULATED with Corkboard 1½ inches	C-INSULATED with Corkboard 2 inches
5½ in.	.347	.323	.123	.102
8 in.	.325	.305	.120	.099
10½ in.	.261	.247	.109	.092
13 in.	.245	.233	.106	.090
15½ in.	.206	.197	.097	.085

Specification: (A) WOOD FLOOR—SLEEPERS (No Fill)—REINFORCED CONCRETE JOIST AND TILE SLAB—PLASTER (B) WOOD FLOOR—SLEEPERS (No Fill)—REINFORCED CONCRETE JOIST AND TILE SLAB—PORTLAND CEMENT MORTAR BACKING—CORKBOARD—PLASTER



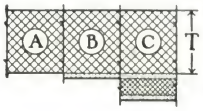
THICKNESS T	Not Insulated A	B-INSULATED with Corkboard 1½ inches	B-INSULATED with Corkboard 2 inches
5½ in.	.217	.103	.088
8 in.	.209	.102	.087
10½ in.	.180	.094	.082
13 in.	.172	.091	.079
15½ in.	.152	.084	.075

Specification: (A) WOOD FLOOR—SLEEPERS (In Fill)—REINFORCED CONCRETE JOIST AND TILE SLAB—PLASTER (B) WOOD FLOOR—SLEEPERS (In Fill)—REINFORCED CONCRETE JOIST AND TILE SLAB—PORTLAND CEMENT MORTAR BACKING—CORKBOARD—PLASTER



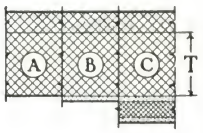
THICKNESS T	Not Insulated A	B-INSULATED with Corkboard 1½ inches	B-INSULATED with Corkboard 2 inches
5½ in.	.256	.110	.093
8 in.	.244	.109	.092
10½ in.	.206	.100	.085
13 in.	.195	.098	.084
15½ in.	.170	.091	.079

Specification: (A) REINFORCED CONCRETE SLAB (Monolithic or no Finish) (B) REINFORCED CONCRETE SLAB—PLASTER (C) REINFORCED CONCRETE SLAB—PORTLAND CEMENT MORTAR BACKING—CORKBOARD—PLASTER



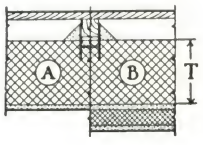
THICKNESS T	NOT INSULATED A	NOT INSULATED B	C-INSULATED with Corkboard 1½ inches	C-INSULATED with Corkboard 2 inches
4 in.	.504	.456	.137	.112
5 in.	.476	.433	.135	.111
6 in.	.450	.411	.134	.109
7 in.	.427	.391	.132	.108
8 in.	.404	.373	.129	.106
10 in.	.370	.344	.126	.104
12 in.	.339	.317	.122	.102

Specification: (A) FINISHED CONCRETE (OR TERRAZZO) FLOOR (2-in.)—REINFORCED CONCRETE SLAB (B) FINISHED CONCRETE FLOOR—REINFORCED CONCRETE SLAB—PLASTER (C) FINISHED CONCRETE FLOOR—REINFORCED CONCRETE SLAB—PORTLAND CEMENT MORTAR BACKING—CORKBOARD—PLASTER



THICKNESS T	NOT INSULATED A	NOT INSULATED B	C-INSULATED with Corkboard 1½ inches	C-INSULATED with Corkboard 2 inches
4 in.	.459	.418	.134	.110
5 in.	.435	.398	.132	.108
6 in.	.413	.380	.131	.107
7 in.	.394	.364	.128	.106
8 in.	.374	.347	.126	.104
10 in.	.345	.322	.122	.102
12 in.	.318	.297	.119	.099

Specification: (A) WOOD FLOOR—SLEEPERS (No Fill)—REINFORCED CONCRETE SLAB—PLASTER (B) WOOD FLOOR—SLEEPERS (No Fill)—REINFORCED CONCRETE SLAB—PORTLAND CEMENT MORTAR BACKING—CORKBOARD—PLASTER



THICKNESS T	Not Insulated A	B-INSULATED with Corkboard 1½ inches	B-INSULATED with Corkboard 2 inches
4 in.	.258	.112	.094
5 in.	.250	.110	.093
6 in.	.243	.109	.092
7 in.	.236	.108	.091
8 in.	.229	.106	.090
10 in.	.217	.104	.088
12 in.	.207	.101	.086

ENGINEERING AND TEST DATA

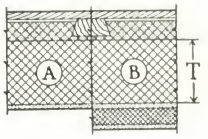
Continued on next page

(C3) HEAT TRANSMISSION

thru Insulated and Uninsulated Construction

Expressed in B. t. u. per hour, per square foot, per degree difference in temperature

Specification: (A) WOOD FLOOR—SLEEPERS (In Fill)—REINFORCED CONCRETE SLAB—PLASTER (B) WOOD FLOOR—SLEEPERS (In Fill)—REINFORCED CONCRETE SLAB—PORTLAND CEMENT MORTAR BACKING—CORKBOARD—PLASTER

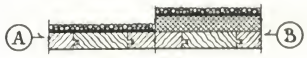


THICKNESS T	Not Insulated A	B-INSULATED with Corkboard 1½ inches	B-INSULATED with Corkboard 2 inches
4 in.	.311	.121	.101
5 in.	.300	.119	.100
6 in.	.290	.117	.098
7 in.	.280	.116	.097
8 in.	.270	.114	.096
10 in.	.254	.111	.094
12 in.	.239	.108	.092

Specification: (A) STANDARD BUILT UP ROOFING—STEEL ROOF DECK (B) STANDARD BUILT UP ROOFING—CORKBOARD—STEEL ROOF DECK

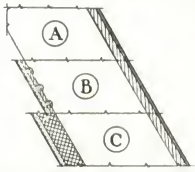
Not Insulated A	B-INSULATED with Corkboard 1½ inches	B-INSULATED with Corkboard 2 inches
.781	.160	.126

Specification: (A) STANDARD BUILT UP ROOFING—MILL CONSTRUCTION PLANK ROOF (B) STANDARD BUILT UP ROOFING—CORKBOARD—MILL CONSTRUCTION PLANK ROOF



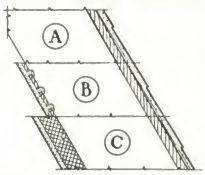
Not Insulated A	B-INSULATED with Corkboard 1½ inches	B-INSULATED with Corkboard 2 inches
.345	.126	.104

Specification: (A) METAL ROOFING—WATERPROOF PAPER—ROOF BOARDS—RAFTERS (B) METAL ROOFING—WATERPROOF PAPER—ROOF BOARDS—RAFTERS—LATH AND PLASTER (C) METAL ROOFING—WATERPROOF PAPER—ROOF BOARDS—RAFTERS—CORKBOARD—PLASTER



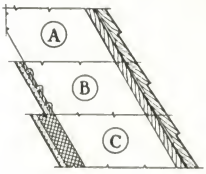
NOT INSULATED A	NOT INSULATED B	C-INSULATED with Corkboard 1½ inches	C-INSULATED with Corkboard 2 inches
.562	.313	.127	.105

Specification: (A) SLATE—WATERPROOF PAPER—ROOF BOARDS—RAFTERS (B) SLATE—WATERPROOF PAPER—ROOF BOARDS—RAFTERS—LATH AND PLASTER (C) SLATE—WATERPROOF PAPER—ROOF BOARDS—RAFTERS—CORKBOARD—PLASTER



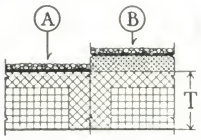
NOT INSULATED A	NOT INSULATED B	C-INSULATED with Corkboard 1½ inches	C-INSULATED with Corkboard 2 inches
.548	.309	.126	.104

Specification: (A) WOOD SHINGLES—WATERPROOF PAPER—ROOF BOARDS—RAFTERS (B) WOOD SHINGLES—WATERPROOF PAPER—ROOF BOARDS—RAFTERS—LATH AND PLASTER (C) WOOD SHINGLES—WATERPROOF PAPER—ROOF BOARDS—RAFTERS—CORKBOARD—PLASTER



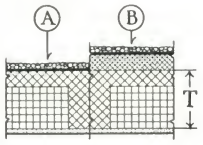
NOT INSULATED A	NOT INSULATED B	C-INSULATED with Corkboard 1½ inches	C-INSULATED with Corkboard 2 inches
.483	.288	.122	.102

Specification: (A) STANDARD BUILT UP ROOFING—REINFORCED CONCRETE JOIST AND TILE SLAB (B) STANDARD BUILT UP ROOFING—CORKBOARD—REINFORCED CONCRETE JOIST AND TILE SLAB



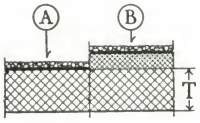
THICKNESS T	Not Insulated A	B-INSULATED with Corkboard 1½ inches	B-INSULATED with Corkboard 2 inches
5½ in.	.408	.134	.109
8 in.	.379	.131	.108
10½ in.	.294	.119	.099
13 in.	.273	.115	.096

Specification: (A) STANDARD BUILT UP ROOFING—REINFORCED CONCRETE JOIST AND TILE SLAB—PLASTER (B) STANDARD BUILT UP ROOFING—CORKBOARD—REINFORCED CONCRETE JOIST AND TILE SLAB—PLASTER



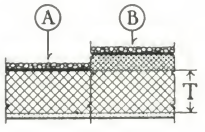
THICKNESS T	Not Insulated A	B-INSULATED with Corkboard 1½ inches	B-INSULATED with Corkboard 2 inches
5½ in.	.375	.130	.107
8 in.	.351	.127	.105
10½ in.	.277	.115	.096
13 in.	.259	.113	.094

Specification: (A) STANDARD BUILT UP ROOFING—REINFORCED CONCRETE SLAB (B) STANDARD BUILT UP ROOFING—CORKBOARD—REINFORCED CONCRETE SLAB



THICKNESS T	Not Insulated A	B-INSULATED with Corkboard 1½ inches	B-INSULATED with Corkboard 2 inches
2 in.	.658	153	.122
3 in.	.610	.151	.120
4 in.	.568	.148	.119
5 in.	.532	.145	.117
6 in.	.500	.143	.115
7 in.	.472	.141	.114
8 in.	.448	.138	.111

Specification: (A) STANDARD BUILT UP ROOFING—REINFORCED CONCRETE SLAB—PLASTER (B) STANDARD BUILT UP ROOFING—CORKBOARD—REINFORCED CONCRETE SLAB—PLASTER



THICKNESS T	Not Insulated A	B-INSULATED with Corkboard 1½ inches	B-INSULATED with Corkboard 2 inches
2 in.	.582	.149	.119
3 in.	.544	.146	.118
4 in.	.510	.144	.116
5 in.	.481	.141	.114
6 in.	.454	.139	.113
7 in.	.431	.136	.111
8 in.	.410	.134	.110

ENGINEERING AND TEST DATA

Continued on next page

(D) THE INSULATION OF DETACHED DWELLINGS

See details on following page

(D1) Why Dwellings Particularly Need Insulation

Of all classes of buildings, the detached dwelling has the greatest area of exposed exterior wall and roof surface compared to its occupied space. This fact, coupled with the proof (see C3 Armstrong Pages 6 to 9, inclusive) that the average dwelling wall and roof construction quite readily and rapidly transmits heat, makes these buildings particularly responsive to the benefits of insulation (see Section A Armstrong Pages 2 and 3).

In dwellings, efficient insulation will show the greatest investment return (see B2i Armstrong Page 5) in the shortest time. In no other class of buildings do cool insulated rooms (especially sleeping rooms) prove so great and constant a source of comfort and health in summer.

(D2) Armstrong's Corkboard Is Highly Efficient

(D2a) Thickness of Insulation a Prime Factor—An axiom of insulation efficiency is: *To obtain the maximum permanent benefits a sufficient thickness of insulating material must be used.*

One of the outstanding advantages of corkboard over all other commonly used insulating materials is the *greater thickness* in which this material is economically made and marketed for insulating dwellings. (See B2f-1 Armstrong Page 4.)

The *least thickness* in which Armstrong's Corkboard is supplied is *1 in.* and this is *efficient* and entirely *practical* for dwellings (see B2f Armstrong Page 4) *where the initial cost must be the governing factor. The 1½-in. thickness is recommended for dwelling insulation,* since its cost over the 1-in. thickness is not in proportion to its increased efficiency; the installation labor cost is practically the same and the investment return is much greater and quicker. For the better class of work, the 2-in. thickness is *recommended for roofs or upper story ceilings.*

(D2b) Physical Characteristics Are Superior—A fair analysis and comparison will show conclusively that the physical characteristics of Armstrong's Corkboard prove this material to be particularly adapted to use in dwellings. (See Section B Armstrong Pages 3, 4, and 5.)

(E) THE INSULATION OF LARGE BUILDINGS

See details on following page

(E1) Omission of Insulation No Longer Justified

Armstrong's Corkboard Insulation has proved itself economical in first cost and thoroughly practical for use in all types and kinds of buildings. *Since Armstrong's Corkboard adds no fire hazard* (see C1 Armstrong Page 5), it is especially well adapted to use in skeleton steel or concrete fireproof construction, with its moderately thin heat-conducting exterior curtain walls.

(E2) Why Armstrong's Corkboard Is Well Adapted to Masonry Construction

Corkboard, unlike other commercial insulating materials in general use, is made in thicknesses of 1, 1½, 2, and 3 in., so that a single thickness of insulation may be economically applied in one operation to provide the requisite efficiency for a definite investment return. In most instances the 1½-in. thickness is that recommended for walls and 1½ or 2-in. for roofs.

Again, corkboard insulation may be applied in a backing of portland cement mortar directly to masonry construction and becomes quite as permanently an integral part of the wall as the units of the masonry itself. As a substitute for wall furring it is ideal. It is an excellent plaster base.

(E3) The Insulation of Roofs

(E3a) Every Roof Needs Insulation—It has already been pointed out that the greatest preventable winter heat loss in buildings is through the uninsulated roof, and again, that through the uninsulated roof is the greatest transmission of summer heat with all its consequent discomforts. (See A2d and A2e Armstrong Page 2.) Attics or enclosed spaces between the roof and top story ceiling do not materially lessen the heat flow; consequently, the roof is a vital point particularly in need of insulation.

(E3b) How Corkboard Is Applied on Roofs—

(1) *Flat Roofs*—The roofs of the larger buildings are in the majority of cases flat. Whether of timber or fireproof construction Armstrong's Corkboard Insulation is best laid directly over the roof, secured with nails to the wood construction and cemented in pitch or asphalt over the fireproof construction. Over the corkboard, the finished roofing material is applied exactly as it would be laid over a standard concrete roof slab. On existing buildings, corkboard may be cemented in pitch or asphalt directly over old built-up roofing (gravel, if any, removed) and covered with new roofing.

(2) *Pitched Roofs*--Where the finished roof is of metal or standard built-up roofing, the corkboard insulation on pitched roofs may be applied as described above in (1) for flat roofs.

Where the finished roof is of shingles, slate, or tile, the corkboard is best applied to the underside of the roof construction, nailed to timber construction or put up in a ½-in. portland cement backing to fireproof construction. The forms of poured concrete construction may be lined with the corkboard which adheres to the concrete when this is poured.

Where it is impractical to apply corkboard beneath the roof construction for shingle, slate, or tile pitched roofs, the insulation may be applied on top of the roof as described in (1) and 1x2-in. wood strips secured *through the corkboard* to the roof construction, spaced to take the nails of the finished roofing material. Cover the corkboard with heavy waterproof building paper or felt laid beneath the strips, as would be required were there no corkboard.

(E4) The Insulation of Masonry Walls

(E4a) Masonry Walls Are Heat Conductors—Much heat loss may be prevented by insulating exterior masonry walls, and especially the comparatively light curtain walls in fireproof construction. (See A2 Armstrong Page 2.)

Masonry walls, whether built of concrete, brick or hollow tile, are, in the thicknesses ordinarily used, heat conductors rather than insulators. (See Section C3 Armstrong Pages 6 and 7.) Again, these masonry walls actually leak wind-driven air.

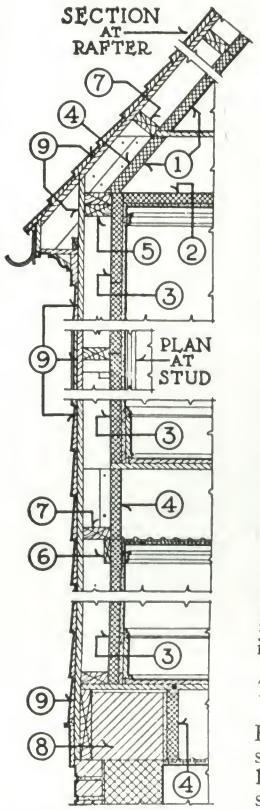
In the best work (if not insulated) it is customary to fur the interior surface of exterior walls, on the theory that the added air spaces increase the resistance to heat flow through the wall. The efficiency of wall furring, however, has been quite generally discredited. Armstrong's Corkboard Insulation may be substituted for wall furring, at little added cost, with all its advantages as a nonconductor of heat. It will prove as substantial and permanent a plaster base as the wall itself or the furring it displaces. (See C2 Armstrong Page 5.)

(E4b) How Corkboard Is Applied to Masonry Walls— The ideal position for insulation on exterior masonry walls is directly against the interior wall surface. Armstrong's Corkboard is applied in a ½-in. portland cement mortar backing against the inside of the wall and the finished plaster applied to the exposed corkboard surface.

Continued on next page

SECTIONS—WALLS AND ROOFS OF RESIDENCES

(D) Frame Construction Details and Methods



Corkboard Applied on Inside Face of Studs and Rafters

(1) Roof Insulation—*Armstrong's Corkboard* nailed to under side of rafters—plaster may be omitted in unfinished attic spaces. This insulation may be omitted if attic is unfinished and top story is insulated as at 2.

(2) Top Story Ceiling Insulation—*Armstrong's Corkboard* nailed to ceiling joists forming plaster base. This insulation may be omitted if roof and attic ceiling are insulated as at 1 and 10.

(3) Wall Insulation—*Armstrong's Corkboard* nailed to inside face of studs forming plaster base. Plaster grounds for interior wood trim are nailed through the corkboard with nails sufficiently long to penetrate 1 in. into studs.

(4) *Corkboard* cut in and fitted tight between joist and rafters to maintain continuity of insulation—vital points often neglected.

(5) Rafter plate.

(6) Ribbon.

(7) Fire stops.

(8) Masonry beam fill above basement wall—assists materially in reducing heat loss.

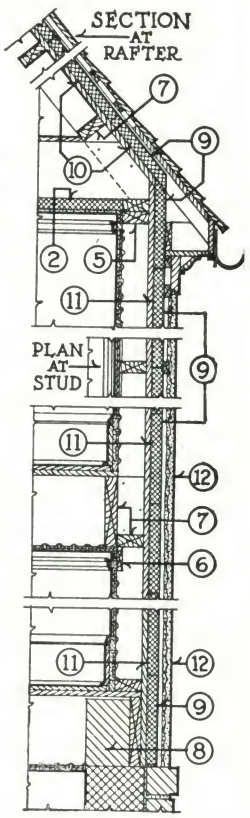
(9) Continuous sheet of waterproof building paper over sheathing, roof boarding and corkboard—prevents wind-driven air leakage. Flash thoroughly with paper around window and door openings.

(10) Roof Insulation—*Corkboard* nailed over roof boards. Tack a lath over each rafter (approximately 16 in. on centers) to the corkboard (over waterproof paper). Over the lath, nail 1x2-in. furring strips spaced to take the nails of wood shingles, slate or tile—the nails securing furring strips must be of sufficient length to pass through the lath and cork and penetrate into the roof boards 1 in. The lath prevents decay of furring strips. *This method is adapted to alteration work.* Omit roof insulation if attic is unfinished and top story ceiling is insulated as at 2.

(11) Wall Insulation—*Armstrong's Corkboard* nailed over sheathing. *This method is adapted to alteration work.*

(12) Portland cement stucco on metal lath applied over furring. Furring strips, 1x2 in., are applied over corkboard and paper with nails sufficiently long to pass through the corkboard and penetrate the sheathing 1 in. Furring may be omitted and self-centering metal lath substituted, secured as specified for the furring strips. *Magnesite stucco may be applied directly to the corkboard surface.*

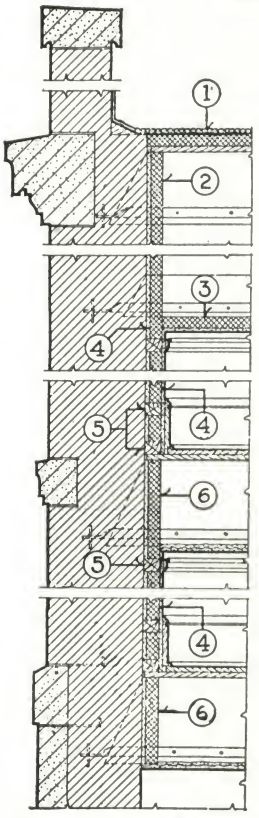
Note: Window and door frames must be designed to fit the wall thicknesses imposed by the added thickness of the corkboard.



Corkboard Applied on Outside Over Sheathing and Roof Boards

SECTIONS—WALLS AND ROOFS OF PUBLIC BUILDINGS

(E) Masonry Construction Details and Methods



Wood Joist Construction

(1) Roof Insulation—*Armstrong's Corkboard* nailed over roof boards. Any standard built-up roofing may be applied directly to the corkboard under the same specification as required over a concrete slab. This insulation may be omitted if top story ceiling is insulated as at 3.

(2) Attic or Roof Space Wall Insulation—*Armstrong's Corkboard* applied to masonry in a ½-in. backing of portland cement mortar. Required if roof is insulated—may be omitted if roof is not insulated and top-story ceiling is insulated as at 3. No plaster is required over the corkboard in unfinished portions of the building.

(3) Top-Story Ceiling Insulation—*Armstrong's Corkboard* nailed to ceiling joists forming plaster base. This insulation may be omitted if roof is insulated.

(4) Wall Insulation—*Armstrong's Corkboard* applied to masonry in a ½-in. backing of portland cement mortar. The corkboard forms a plaster base.

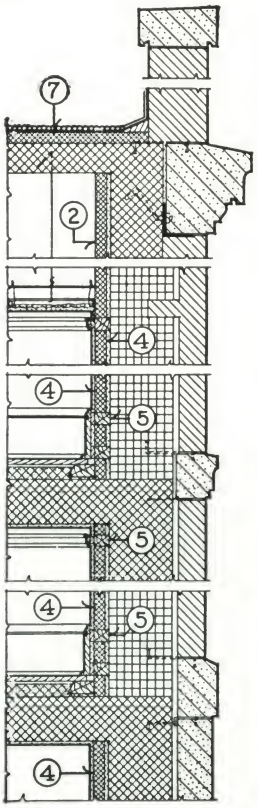
(5) Rough grounds secured to masonry with face flush with interior corkboard surface. These form nailing for plaster grounds to receive wood trim. Wood soldiers or blocks should not be built into exterior masonry walls to form nailing members. Rough grounds should be substantially and permanently secured to the masonry in any of the standard methods of attachment best adapted to the construction (expansion or toggle bolts, metal wall plugs, etc.).

(6) Corkboard cut in and fitted tight between joists—vital points often neglected.

(7) Roof Insulation—*Armstrong's Corkboard* applied over concrete slab in hot pitch or asphalt mopping. Finished roofing over corkboard applied as described in 1. (Corkboard may be applied in similar manner over any type of fireproof construction.)

Note: Use special care to maintain continuity of insulation at exterior window reveals and at doors.

Note: For fireproof pitched roofs covered with slate or tile, apply corkboard and roofing as at 10, assuming the same provisions for nailing of finished roofing as would exist were corkboard not installed.



Fireproof Construction

Continued on next page

(F) THE PREVENTION OF CONDENSATION

(F1) Insulation the Simplest Method

In addition to the general need for insulation in all classes of buildings (see Section A Armstrong Pages 2 and 3) for the retention of heat in winter and the exclusion of heat in summer, *insulation as a preventive of condensation is a positive necessity in many industries.*

Condensation results from the contact of warm, humid air with a cold surface. Of the methods which may be employed to correct this condition, insulation will prove the simplest, most practical, and economical, since it in no way disturbs the humidity condition, which is frequently essential to the manufacturing process.

(F2) How Condensation Affects Industrial Processes

Condensation affects a great variety of industries in varying degrees, from a troublesome moisture film on ceilings and walls to an actual dripping of water in such quantities as to cause serious damage or nuisance.

In textile mills, it is necessary for the proper handling of yarns and fabrics to maintain a comparatively high degree of humidity (70° F. temperature and 75% humidity for example). This can be easily accomplished when the inside and outside temperatures are substantially the same. However, when the weather turns cold the cooling of the exterior walls and roof quickly lowers the temperature of their exposed surfaces inside the building to or below the dewpoint, causing the moisture of the air to condense upon them and resulting in damage to materials and machinery.

Condensation with its resultant evils is by no means limited to the textile industry, however. It must be reckoned with in any plant where it is necessary in a manufacturing process to maintain a high relative humidity or where the processes themselves expose large quantities of water to evaporation or give off steam or water vapor. In many industries so much steam and water are used that the humidity is almost constantly near the saturation point, needing only a slight temperature drop to induce condensation.

While incomplete, the following list will serve to indicate the types of buildings subject to and most seriously affected by condensation:

Bakeries	Powerhouses
Creameries	Swimming pools
Laundries	Textile mills—cotton, wool, silk
Lumber drying rooms and kilns	Tobacco factories
Packing houses—Killing rooms	Turkish baths
Paper mills	Twine mills

Armstrong's Corkboard Insulation Being Applied to Roof of Adler Planetarium, Chicago, Ill.

Armstrong's Corkboard Insulation Being Applied to Roof of Factory of Mars, Inc. (Nationally Known Candy Manufacturer), Chicago, Ill.

(F3) Causes of Condensation

(F3a) Humidity—The capacity of air to absorb and hold moisture (water vapor) in suspension varies with its temperature. Warm air is capable of holding more moisture than cold air. When warm, humid air is cooled, its moisture capacity is lowered until a temperature is reached at which the air can no longer hold all of its moisture in suspension. This is known *as the point of saturation or dewpoint.* Any diminution of temperature to or below the saturation or dewpoint causes the moisture to condense. A familiar example is the "sweating" of a cold water pipe—when the moisture content is such that the temperature of the air in contact with the colder surface of the pipe is cooled to or below the dewpoint, its vapor condenses as water on the pipe surface.

Relative humidity is the term used to express the percentage of moisture in the air, 100% being saturation. The point of saturation varies with the temperature and means the percentage of moisture content of the air at a given temperature.

(F3b) Surface Temperature—When considering the causes of condensation, it is the interior surface temperatures of exterior walls, roofs, or ceilings with which we are concerned. The air temperature in a room may be 70° F. or over, while if it is cold outside, the temperature of the inside surface of the exterior walls and roofs of the building may be many degrees lower and at or below the dewpoint.

Armstrong's Corkboard is an efficient insulator, and loses or transmits heat so slowly that it retains practically all of the warmth on the high temperature side.

Continued on next page

(F4) Armstrong's Corkboard Is the Ideal Insulation to Prevent Condensation

Section B Armstrong Pages 3 and 4 clearly demonstrates that Armstrong's Corkboard combines, to a greater degree than any other insulating material, those physical characteristics which are most essential to the permanent and practical solution of problems of condensation.

A review of the references below particularly discloses its peculiar adaptability—great stress is laid on its thorough practicability.

(1) Low Thermal Conductivity.....See (B2a) page 3
(2) Nonabsorbent .....See (B2b) page 3
(3) Fire Retarding.....See (B2c) page 3
(4) Permanence .....See (B2d) page 3
(5) Practicability .....See (B2f) page 4

(F5) How the Insulation Thickness Is Determined

The thickness of insulation required to prevent condensation under all conditions cannot be determined by haphazard methods or conjecture. Exact data on humidity, wall and roof construction, and maximum temperature difference are prime factors and must all be given consideration.

To eliminate the otherwise intricate calculations that would be required to determine effective thicknesses of Armstrong's Corkboard Insulation under varying conditions, there is included under this Section (see Armstrong Page 15) a special chart which will greatly simplify the method of selection. Through use of this chart the exact *resistance to heat flow* required to prevent condensation under all varying conditions may easily be determined for both wall and roof construction and this obviously is the determining factor for selection of the insulation thickness.

The *resistance to heat flow* of any material is the reciprocal of its conductivity. (The conductivity of an uninsulated 8 in. thick concrete wall is .512 (see page 6), its resistance is therefore $.\frac{1}{512} = 1.95$.)

The resistance for uninsulated walls may be determined from the wall sections given on pages 6 to 9, inclusive, or, if not given, definite information may be obtained on the specific problem from the Engineering Service Department of the nearest branch office (see Armstrong Page 1).

To illustrate the method of using the chart the following typical example is given:

A manufacturing plant requires for its processes a relative humidity of 78% and an inside temperature of 70° F. in a locality where the minimum outside temperature is —10° F. The building is of reinforced concrete with 13 in. thick brick curtain walls and a 4 in. thick concrete roof slab covered with a standard built-up roofing. The essential data are therefore:

Inside temperature	70°
Minimum outside temperature	-10°
Maximum temperature difference	80° (70°—(-10°))
Inside humidity	78%

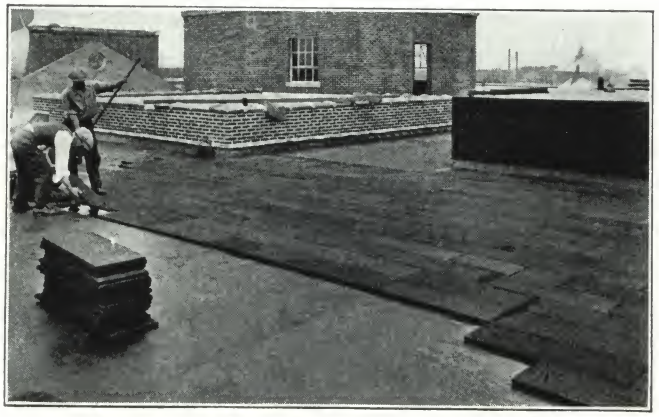
On the chart page 15 locate on the lower left-hand line 70° (room temperature); follow this upward vertically to its intersection with a diagonal which will represent 78% humidity; from this intersecting point project a line horizontally to the right to a point forming an intersection with a vertical line which will pass through 80° (maximum difference in temperature) on the lower right-hand line; this point of intersection gives the heat resistance necessary to prevent condensation, which in this case is 7.6.

Since the roof is the vital point of consideration for condensation a table is included on page 14 of roof construction resistances. Turning to this table it will be seen that the resistance of the roof construction of the building under consideration (a 4 in. concrete slab covered with standard roofing) is 1.76. To raise the total resistance to 7.6 it is necessary to add Armstrong's Corkboard in a thickness sufficient to add 5.84 (7.6 — 1.76 = 5.84). The resistance of 1 in. of Armstrong's Corkboard is 3.285 ($.\frac{1}{3.04} = 3.285$), and the thickness required will be 1.78 in. (5.84 ÷ 3.285 = 1.78). The nearest standard thickness of Armstrong's Corkboard is 2 in. Or by further use of the table on page 14 the thickness of corkboard may be determined by merely choosing the resistance nearest that required (7.6), opposite the roof construction considered—this will be found to be 8.40 resistance, requiring 2 in. of Armstrong's Corkboard.

To determine the thickness of cork required on the walls to prevent condensation turn to the data given on page 7 (Heat Transmission Through Insulated and Uninsulated Construction) and it will be seen that the heat transmission through a 13 in. uninsulated brick wall is .278—its resistance is therefore 3.60 ($.\frac{1}{.278} = 3.60$). The resistance required is 7.6 and that lacking in the wall is 4.00 (7.6 — 3.60 = 4.0). The thickness of Armstrong's Corkboard required is therefore 1.22 in. (4.00 ÷ 3.285 = 1.22) and the thickness to use is 1 in., the nearest standard thickness.

(F6) Results Confirmed by Actual Examples

That solutions of condensation problems as illustrated in the typical example in (F5) are not academic or theoretical, but are actually workable and effective, is evidenced by actual results as disclosed by many authentic reports, which will gladly be furnished on request.



Applying Armstrong's Corkboard to Insulate the Roof of the Thomas Jefferson High School at Indianapolis, Ind.

Continued on next page

ROOF RESISTANCE TABLE

Construction	*Resistance factor	Transmission in B.t.u. per sq. ft. per ° diff. per hr.
2″ Concrete Slab and Roofing, no insulation	1.52	.66
2″ " " " " with 1″ Armstrong's Corkboard	4.86	.21
2″ " " " " " 1½″ " "	6.54	.15
2″ " " " " " 2″ " "	8.19	.12
2″ " " " " " 3″ " "	11.52	.09
2″ " " " " " 4″ " "	14.86	.07
3″ Concrete Slab and Roofing, no insulation	1.64	.61
3″ " " " " with 1″ Armstrong's Corkboard	4.97	.20
3″ " " " " " 1½″ " "	6.62	.15
3″ " " " " " 2″ " "	8.34	.12
3″ " " " " " 3″ " "	11.67	.09
3″ " " " " " 4″ " "	15.00	.07
4″ Concrete Slab and Roofing, no insulation	1.76	.57
4″ " " " " with 1″ Armstrong's Corkboard	5.10	.20
4″ " " " " " 1½″ " "	6.75	.15
4″ " " " " " 2″ " "	8.40	.12
4″ " " " " " 3″ " "	11.73	.09
4″ " " " " " 4″ " "	15.07	.07
6″ Concrete Slab and Roofing, no insulation	2.00	.50
6″ " " " " with 1″ Armstrong's Corkboard	5.32	.19
6″ " " " " " 1½″ " "	6.99	.14
6″ " " " " " 2″ " "	8.68	.12
6″ " " " " " 3″ " "	12.00	.08
6″ " " " " " 4″ " "	15.35	.06
1¾″ Yellow Pine and Roofing, no insulation	2.90	.34
1¾″ " " " " with 1″ Armstrong's Corkboard	6.25	.16
1¾″ " " " " " 1½″ " "	7.93	.13
1¾″ " " " " " 2″ " "	9.51	.10
1¾″ " " " " " 3″ " "	12.84	.08
1¾″ " " " " " 4″ " "	16.17	.06
2¾″ Yellow Pine and Roofing, no insulation	3.91	.26
2¾″ " " " " with 1″ Armstrong's Corkboard	7.25	.14
2¾″ " " " " " 1½″ " "	8.06	.12
2¾″ " " " " " 2″ " "	10.52	.10
2¾″ " " " " " 3″ " "	13.85	.07
2¾″ " " " " " 4″ " "	17.19	.06
Sheet Steel Deck and Roofing, no insulation	1.28	.78
" " " " " with 1″ Armstrong's Corkboard	4.61	.22
" " " " " " 1½″ " "	6.25	.16
" " " " " " 2″ " "	7.94	.13
" " " " " " 3″ " "	11.27	.09
" " " " " " 4″ " "	14.61	.08
4″ Hollow Tile, ⅝″ Roofing, no insulation	3.00	.33
4″ " " ⅝″ " with 1″ Armstrong's Corkboard	6.00	.17
4″ " " ⅝″ " " 1½″ " "	7.67	.13
4″ " " ⅝″ " " 2″ " "	9.34	.11
4″ " " ⅝″ " " 3″ " "	12.67	.08
4″ " " ⅝″ " " 4″ " "	16.00	.06
6″ Hollow Tile, ⅝″ Roofing, no insulation	3.47	.29
6″ " " ⅝″ " with 1″ Armstrong's Corkboard	6.80	.15
6″ " " ⅝″ " " 1½″ " "	8.47	.11
6″ " " ⅝″ " " 2″ " "	10.13	.10
6″ " " ⅝″ " " 3″ " "	13.47	.08
6″ " " ⅝″ " " 4″ " "	16.80	.06

*Total resistance is the reciprocal of transmission.

INSTRUCTIONS for Use of ROOF RESISTANCE CHART

for Determining the Thickness of Armstrong's Corkboard Necessary to Prevent Condensation

❖

This chart, in conjunction with the roof resistance table, affords a simple means of determining the thickness of Armstrong's Corkboard required in addition to the structure of the roof itself to give the roof resistance to the transmission of heat that will prevent condensation. It provides for all requisite factors. When these have been established, their relations can be quickly determined on the chart and the final point is the factor sought.

Method

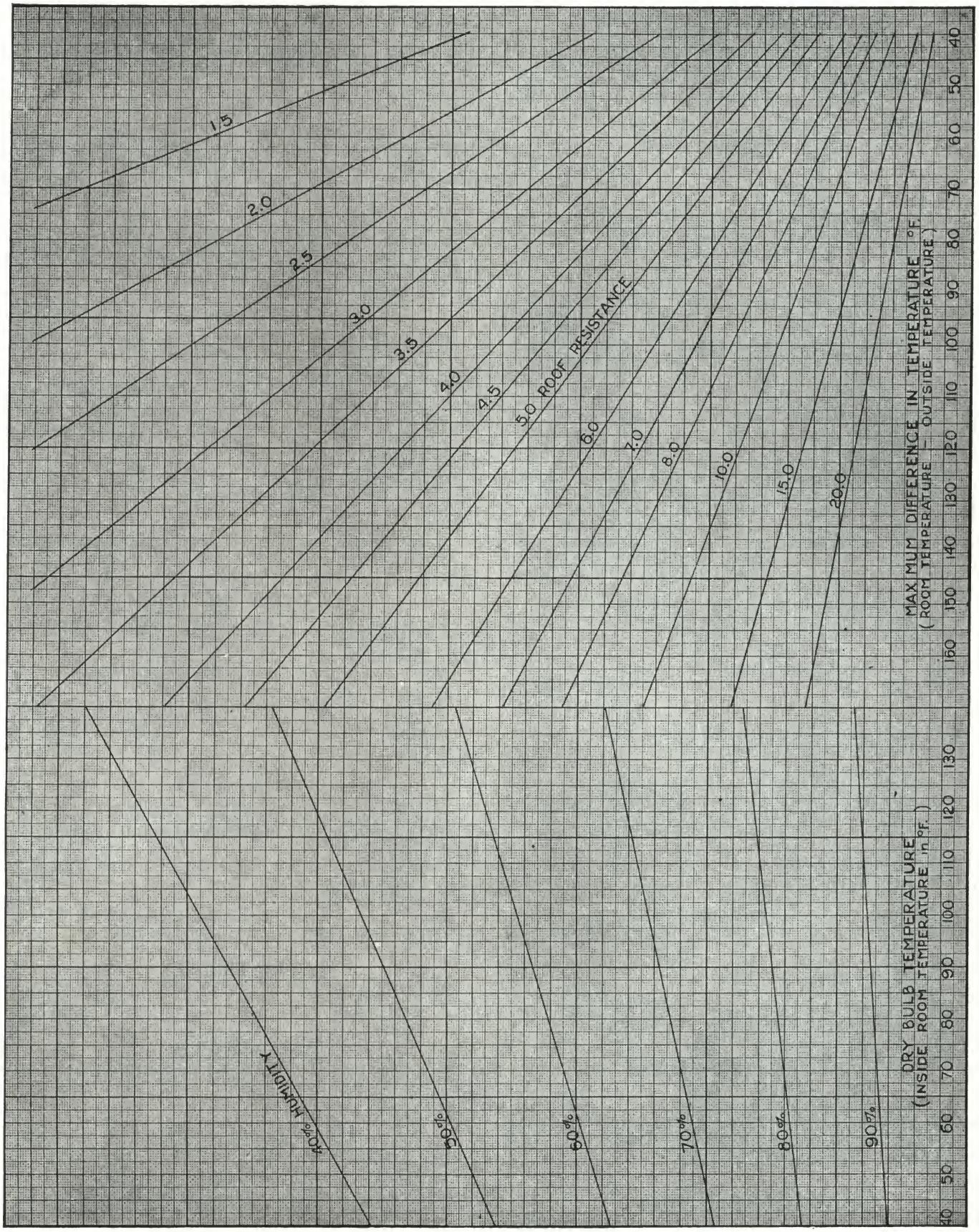
First, locate at the bottom, left, of the chart the inside room temperature in degrees Fahrenheit. Follow upward until this line intersects the line of humidity percentage. From the point of intersection follow the horizontal line to the right to its intersection with the line of maximum temperature difference. The point of intersection is then read as the roof resistance required for the total roof structure including insulation. Reference is then made to the Roof Resistance Table for the construction and insulation.

For a specific working out of this operation, see Armstrong Page 13.

This chart may also be used in a similar manner for determining the thickness of Armstrong's Corkboard required for walls. The roof resistance table does not, however, include wall construction. Similar data for this will be supplied on request or the thickness may be determined as suggested in the typical example given on Armstrong Page 13, where use is made of the Heat Transmission Tables given on Armstrong Pages 6 to 9.

Continued on next page

ROOF RESISTANCE CHART



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MASTER SPECIFICATION

for the Installation of Armstrong's Corkboard Insulation (for Other Than Cold Storage Purposes)

(G) PRELIMINARY PROVISIONS

Note: That Armstrong's Corkboard Insulation may be installed with the greatest ease and economy of labor, the following suggestive provisions should be included under other specification headings where and when they apply.

(G1) Carpentry Work

(G1a) Framing—Studs, joists and rafters shall, where possible, be framed to space 16 in. on center to fit the 32-in. length of corkboard sheet. Spacing of 12 or 18 in. on center will fit the 36-in. sheet. Where conditions require spacing other than 12, 16 and 18 in., 2x4-in. pieces shall be cut in between and at right angles to the framing members, spaced 18 in. on center to fit the 12x36-in. corkboard sheets applied parallel with the main framing members.

(G1b) Rough Grounds—Where corkboard is applied directly against the interior of masonry walls in a ½-in. backing of portland cement mortar, rough grounds shall first be installed to form nailing base for finish grounds for plaster and trim. (See detail Armstrong Page 11.) Grounds shall be of sufficient thickness to finish flush with the exposed corkboard surface and shall be securely attached in a manner best suited to the type and kind of masonry.

(G1c) Nails—Wherever (except where rough grounds are installed) finish grounds or furring strips are required over corkboard, these shall be secured with casing or common nails of sufficient length to pass through the corkboard and penetrate the wood beneath the corkboard at least 1 in., the final hammer blow to countersink beneath the corkboard surface.

(G1d) Finish Grounds—Furnish and set accurately ½ in. thick wood plaster grounds to form nailing for all interior trim. In frame construction grounds shall be secured with long nails (see G1c) to wood base beneath the corkboard. In masonry construction, finish grounds shall be secured in the usual manner to the exposed face of rough grounds. (See G1b.)

(G1e) Waterproof Paper—Where corkboard is installed on the exterior of frame walls or over pitched roofs under shingles, slate or tile (see detail Page 11), the corkboard shall be covered as soon as laid with heavy waterproof building paper (same quality and weight as customarily used over sheathing and roof boards) well lapped at joints and secured to corkboard with large headed galvanized wire felt nails.

Note: Omit paper if magnesite stucco is used—see G4b.

(G1f) Wall Furring Strips—Where corkboard is applied on the exterior of frame buildings over sheathing, furnish and apply 1x2-in. furring strips applied over waterproof paper (see G1e) spaced to receive the nails for exterior wall finish (metal lath and portland cement stucco—wood siding—shingles and all exterior trim, etc.). Furring strips shall be thoroughly secured with nails to the wood beneath the corkboard. (See G1c.)

Note: Applicable particularly to alteration work.
Note: Omit if magnesite stucco is used—see G4b.

(G1g) Roof Furring Strips—Where corkboard is applied on the exterior of frame buildings over roof boarding under shingles, slate or tile, lay lath, tacked to the corkboard over waterproof paper (see G1e), parallel with and centering over each rafter (approximately 16 in. on center). Over and at right angles to the laths (and rafters), lay 1x2-in. furring strips accurately spaced to take the nails of the finished roofing (shingles, slate or tile) and secured with nails passing through the lath and corkboard and into the wood beneath (see G1e). Secure boarding over corkboard at eaves, valleys, ridges, etc., to take metal flashing, gutter aprons, valley linings, ridges, etc., as may be required.

Note: Applicable particularly to alteration work.
Note: May be used over fireproof construction—see K3b.

(G1h) Door and Window Frames—Door and window frames shall be so designed for frame construction, that width of pulley stiles, jambs, etc., shall fit the wall thickness necessitated by the added corkboard thickness.

(G2) Masonry Work

(G2a) Metal Wall Plugs—Where rough grounds (see G1b) are best secured by nails driven into metal wall plugs, these shall be accurately spaced and built into the masonry work.

(G2b) Concrete Forms—Where corkboard insulation is laid in and on floor, ceiling and roof slab forms (see K3f), the contractor for the reinforced concrete forms shall construct these to allow for the lining of corkboard of thickness specified.

(G3) Roofing

(G3a) Laying—The first layer of felt over the corkboard to be laid in asphalt or pitch, using 45 to 50 lbs. per square. Roofing contractor to completely cover all insulation laid in one day

(G3b) Built-up Roofing—Any type of built-up roofing may be applied directly over the corkboard surface under the same specification adapted to its application over a concrete or similar fireproof roof surface.

(G3c) Shingles, Slate, or Tile—Shingles, slate, or tile shall be applied in the usual manner, except that they shall be attached to furring strips as provided in G1g.

(G4) Plastering

Note: Armstrong's Corkboard is an excellent plaster base. No lath is required over corkboard on walls or ceiling.

(G4a) Interior Plastering—Any standard type of interior plaster may be applied directly to the corkboard under the same specification as would be required on masonry, gypsum, or clay tile. Interior plaster shall be laid to ½-in. grounds (see G1d).

No interior plaster is required over corkboard in unfinished or unexposed portions of the building.

(G4b) Exterior Stucco—Where corkboard is installed over exterior sheathing, portland cement stucco shall be applied on metal lath over furring strips (see G1e and G1f) or on self-centering metal lath secured with nails passing through corkboard into wood beneath.

Magnesite stucco may be applied directly to the corkboard surface where this is installed over exterior sheathing.

(H) WORK INCLUDED

Note: Include such clauses as apply to the particular work or construction.

(H1) Exterior Walls—
Note: Locate definitely. Where roof is insulated, wall insulation shall be carried through attic or roof space, if any, to roof slab or roof insulation. All dormer walls, skylight curbs and similar openings through roofs shall be insulated.

(H2) Ceilings—
Note: Locate definitely. This applies particularly to top story ceilings (where roof is not insulated) and shall include soffits and cheek walls of stairways leading from top story to roof space or attic, ceiling breaks (where roof breaks through ceilings) and similar construction irregularities.

(H3) Floors—
Note: Locate definitely. This applies particularly to floors over unheated areas.

(H4) Miscellaneous—
Note: List any miscellaneous insulating not included in H1, H2, and H3.

(J) MATERIALS

Note: Include such clauses as apply to the particular work or construction.

(J1) Insulation

Insulation shall be Armstrong's Corkboard manufactured by Armstrong Cork & Insulation Company, Lancaster, Pa.

(J2) Size and Thickness

Note: Armstrong's Corkboard is made in two sizes—12 in. wide x 32 in. long and 12 in. wide x 36 in. long. Each size may be obtained in the following thicknesses: 1, 1½, 2, 3 in. In frame construction where framing members are 16 in. on centers, use 12 x 32-in. size; where 12 or 18 in. on centers, use 12 x 36-in. size (see G1a). In masonry construction or where insulation is applied over flat frame or concrete roof surfaces use 12 x 36-in. size.

Continued on next page

(J2a) Wall Insulation—Insulation for walls shall be 12x.. in. (give size) and .. in. thick (give thickness).

Note: Under average conditions, 1½-in. thickness is recommended.

(J2b) Roof Insulation—Insulation for roofs shall be 12x.. in. (give size) and .. in. thick (give thickness).

Note: Under average conditions, 1½ or 2-in. thickness is recommended.

(J2c) Ceiling Insulation—Insulation for ceilings shall be 12x.. in. (give size) and .. in. thick (give thickness).

Note: Under average conditions, 1½ or 2-in. thickness is recommended.

(J2d) Miscellaneous—

Note: Give size and thickness of any miscellaneous insulation required.

(J3) Nails

Nails for attaching corkboard insulation in frame construction shall be common galvanized or casing wire nails of sufficient length to pass through the corkboard and penetrate the wood 1 in. (2 in. for 1-in. corkboard, 2½ in. for 1½-in. corkboard, 3 in. for 2-in. corkboard, etc.). Countersink with extra blow of hammer.

(J4) Portland Cement Mortar

Note: For corkboard backing where insulation is applied to masonry.

(J4a) Portland Cement—Cement shall be "American Portland" fulfilling the requirements of the current specification for portland cement of the American Society for Testing Materials.

(J4b) Sand—Sand shall be composed of grains graded from coarse to fine, clean and free from loam, dust, and dirt and passing a satisfactory colorimetric test.

(J4c) Mixtures—

(1) ***For Masonry Wall Insulation***—Mortar for backing shall be mixed in the proportions of 1 part of portland cement to 2 parts of sand.

(2) ***For Underside of Fireproof Roofs, Floors, and Ceilings***—Mortar for backing shall be mixed in the proportions of 1 part of portland cement to 1½ parts of sand.

Note: Corkboard may be applied to suspended metal lath ceilings in this backing—on special applications consult nearest Armstrong office.

(K) INSTALLATION

Note: Include such clauses as apply to the particular work or construction.

(K1) General

(K1a) The corkboard insulation shall be applied in a *continuous* sheet covering completely the surfaces to be insulated.

(K1b) Corkboard shall be laid with all joints driven tight, each successive course breaking joints over those below.

(K1c) Corkboard shall be accurately sawed with a sharp saw to fit snugly into all spaces not covered by the full sized sheet.

(K1d) The length of the corkboard sheets shall run at right angles to the structural wood members with end joints centering over the studs, joists, or rafters.

Note: For frame construction, standard spacing.

(K1e) The length of the corkboard sheets shall run parallel with the wood structural members with end joints centering over special nailing strips spaced 18 in. on centers.

Note: For frame construction, not standard spacing.

(K1f) Where corkboard is applied to masonry walls or under fireproof ceiling or roof construction in a backing of portland cement mortar and forms the plaster base, the surfaces of the corkboard shall be carefully set level, plumb, true and allowing for a uniform ½-in. plaster thickness.

(K1g) Special care shall be exercised to install corkboard insulation tight around all window and door openings in exterior walls.

(K1h) All masonry surfaces to be insulated shall be thoroughly cleaned of all loose materials and dirt.

(K1i) Where roofs are insulated over the roof construction, they shall be free from moisture and clean.

(K2) Frame Construction

Corkboard insulation of size and thickness previously specified shall be installed where required as follows:

(K2a) On Inside Face of Studs, Joists, or Rafters—Corkboard shall be attached to the wood structural members with 9 nails to each sheet (3 to each bearing).

(K2b) Under Mill Construction Floors, Ceilings, or Roofs—Carefully cut and fit the corkboard *tight* between structural members. Sheets shall run at right angles to planking. Corkboard shall be attached to the underside of mill construction planking with 9 nails to each sheet.

(K2c) Over Sheathing on Outside of Stud Walls—Corkboard shall be attached over the wood sheathing with 6 nails to each sheet (2 to each bearing). Cover with waterproof paper as soon as laid.

Note: Use 9 nails to each sheet (3 to each bearing) and omit paper if magnesite stucco is used.

(K2d) Over Roof Boarding Under Shingles, Slate, or Tile—Corkboard shall be attached over roof boarding with 6 nails to each sheet (2 to each bearing). Cover with waterproof paper or felt as soon as laid.

(K2e) Over Wood Decks Under Built-up Roofing—Corkboard shall be attached over roof boarding (or planking) with 6 nails to each sheet. Carry the corkboard tight against all parapets, curbs, and similar walls. Cover with the finished roofing as soon as laid.

(K3) Masonry and Fireproof Construction

Corkboard insulation of size and thickness previously specified shall be installed where required as follows:

(K3a) On Inside Face of Masonry Walls—Corkboard shall be attached to the masonry surface in a ½-in. backing of portland cement mortar.

(K3b) Over Fireproof Roofs Under Slate, Tile, or Metal—Corkboard shall be attached to (sleepers, grounds or roof surface?) with 6 nails to each sheet (2 to each bearing). Cover with waterproof paper or felt as soon as laid.

Note: It is assumed that provisions have been made to receive nails for attaching finished roofing either by installing wood sleepers to receive cross furring, or a nailable concrete or other similar surface.

(K3c) Over Fireproof Roof Slabs, Under Built-up Roofing on Flat Surfaces—The roof surface shall first be flooded with hot pitch or asphalt.

The corkboard shall be laid in the hot roofing compound, shoved into place so as to fill the end and side joints with pitch or asphalt in one operation. Cover with the finished roofing as soon as laid.

(K3d) Over Fireproof Roofs, Under Built-up Roofing on Inclined or Vertical Surfaces—The roof or vertical surface shall first be mopped with hot pitch or asphalt.

The corkboard sheets shall be dipped in hot pitch or asphalt on the surface to be laid next the roof and on one end and side joint and shoved into place on the roof surface previously covered with the hot roofing compound. Cover with the finished roofing as soon as laid.

(K3e) Under Fireproof Roof, Floor, or Ceiling Slabs—The concrete surfaces to be insulated shall be thoroughly chipped or picked to facilitate bond. Corkboard shall be attached to the masonry surface in a ½-in. backing of portland cement mortar. Shore and brace the corkboard in position for 48 hours until the backing has set up.

Note: Applicable to existing buildings.

Note: Corkboard may be installed as here specified to metal lath suspended ceilings which have first been scratch-coated with portland cement mortar.

(K3f) Under Reinforced Concrete Fireproof Roof, Floor or Ceiling Slabs—The forms for the slabs, beams, girders, etc., have been constructed to allow for a lining of corkboard. Clean forms of all loose materials. Before the reinforcing metal and concrete are placed, line the forms with a continuous lining of corkboard. Into the corkboard, drive obliquely galvanized wire nails, 2 to the square foot, which shall protrude 1½ in. to form ties for anchoring the corkboard to the concrete when poured.

Note: Applicable to the new work.

TORFOLEUM CORPORATION

Torfoleum Insulating Material

Chrysler Building
NEW YORK, N. Y.

Torfoleum

A superior product used wherever insulation is required for walls, floors and roofs, or for refrigeration. It protects against sound, heat and cold. Over a period of twenty years many millions of feet have been installed in office buildings, auditoriums, stores, factories, residences and for insulation in warehouses, icehouses, steamships and refrigerator cars.

What Torfoleum Is

The basic material used in Torfoleum is dried peat moss, long recognized as an ideal insulator. Torfoleum does not rot. It contains no bituminous or mineral binder to lessen its insulating value.

It is easy to apply, yet due to its fibrous structure will not break easily. Torfoleum can be nailed and it can be cut with a knife or saw. Its application is very simple and can be done by any one familiar with this type of work.

Sizes

Torfoleum is made in sheets 12x32 in. and ½x1 meters (approx. 19½x39 in.), in thicknesses from 1 to 6 in. Packed in cartons containing approximately 64 bd. ft. It weighs less than 1 lb. per bd. ft.

Characteristics

Torfoleum is of a dense, finely pored texture, the pores being smaller than .004 in. in diameter. This is highly important to any material used in the insulation field. Scientific experiments show that the thermal conductivity of air in pores .2 in. in diameter is 82% greater and the thermal resistance correspondingly less than in pores of only .004 in.

Non-capillary—The thermal conductivity of any material depends greatly upon the moisture content of its pores, and since the thermal conductivity of water is about twenty times that of air, it is agreed that with a greater amount of moisture the thermal resistance lessens. Torfoleum is impregnated against water absorption which is a guarantee of the permanence of its insulating quality. Torfoleum sheets are non-capillary and the impregnation protects the minute particles from water absorption. However, moisture can be forced into any material, provided sufficient pressure is applied and, therefore, when Torfoleum is used under water pressure, it is essential that a waterproofing membrane be used.

Efficiency—Torfoleum has the exceptionally low thermal conductivity of .26 B.t.u. per sq. ft. per hour, per 1° F. temperature difference per 1 in. thickness, based on tests by Armour Institute of Technology and others.

Compression Strength—Torfoleum has been rigidly tested for its resistance to compression and the compression in 1 in. under a load of 1764 lb. per sq. ft. is only .03 in.

Free from Harmful Odor—Torfoleum is free from harmful odor and particularly adaptable for use in storage plants where foodstuffs are to be stored. It is well known that butter, milk and other foods readily absorb odors.

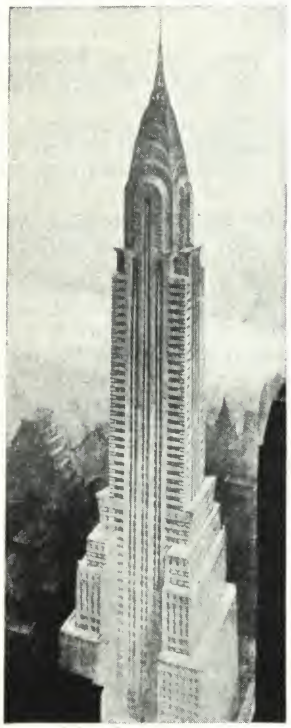
Will Not Harbor Vermin—Torfoleum is a sterile material.

Fire Retardant—Torfoleum is a fire retardant, as it has been thoroughly impregnated against rapid ignition and it may be used as a heat insulator up to 230° F.

Architectural and Engineering Service

We will welcome inquiries and the opportunity to assist in the working out of your insulation or sound deadening problems.

Our wide experience in every field of insulation should enable us to give helpful co-operation, whatever your problem or type of installation may be.



Chrysler Building, New York, N. Y.
William Van Alen, Architect
Fred T. Ley & Co., Inc., General Contractors
Elevator shafts and machine rooms sound deadened with Torfoleum

Roof Insulation, L. Bamberger & Co. Store, Newark, N. J.
Jarvis Hunt, Architect
Geo. A. Fuller Co., General Contractors

Hotel Pierre, New York, N. Y.
Schultze & Weaver, Architects
Geo. A. Fuller Co., Contractors
Torfoleum used for sound deadening

JOINTITE

CORK PRODUCTS

L. MUNDET AND SON INC.
NEW YORK
N.Y.

Jointite TRADE MARK

Index of Products

MUNDET "JOINTITE" CORKBOARD

For the Prevention of Heat Transmission in cold storage plants, rooms, offices and miscellaneous buildings generally

PAGES 2 *to* 7

For the Prevention of Moisture Condensation on roofs and walls

PAGES 10 *to* 15

MUNDET "JOINTITE" MOULDED CORK PIPE COVERING

For the Insulation of all Cold Lines

PAGES 7 *to* 9

MUNDET "JOINTITE" NATURAL CORK ISOLATION MATS

For Neutralizing Sound and Vibration under moving machinery

PAGES 16 *and* 17

The following Mundet Products are shown in other sections of SWEET'S CATALOGUE. See Manufacturers' Index

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For Flooring, in a variety of forms

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■

Jointite TRADE MARK

CORK PRODUCTS

A COMPENDIUM OF INFORMATION ON THE USES OF CORK FOR INSULATION PURPOSES

including useful data, specifications, tables and charts for

REFRIGERATION
SOUNDPROOFING
HEAT PREVENTION
HEAT CONSERVATION
VIBRATION DEADENING
CONDENSATION PREVENTION

■

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461 Eighth Avenue, NEW YORK, N. Y.

Domestic Factories
HILLSIDE, N. J.
BROOKLYN, N. Y.

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Great Britain

LONDON, ENGLAND, MUNDET CORK PRODUCTS, LTD.

Agents

CLEVELAND, OHIO, C. S. ROSS
DES MOINES, IOWA, JOHN KENNEDY
MINNEAPOLIS, MINN., INSULATION SALES CO.
PORTLAND, ORE., F. J. LEONARD
PORTLAND, ORE., PACIFIC ASBESTOS & SUPPLY CO.
SALT LAKE CITY, UTAH, L. A. ROSER
SEATTLE, WASH., PACIFIC ASBESTOS & SUPPLY CO.
UTICA, N. Y., GEORGE WEISENBERGER
VANCOUVER, B. C., CANADA, T. M. GRINDLEY COMPANY, LTD.

Continued on next page

REFERENCES

Bakeries

Gordon Baking Co.*	
Ward Baking Co.*	
Hill Baking Co.	Jersey City, N. J.
Kroger Grocery & Baking Co.*	

Candy Factories

F. G. Shattuck Co. (Schrafft's)	New York, N. Y.
Reichardt Cocoa Corp.	New Brunswick, N. J.
Park & Tilford	New York, N. Y.
National Candy Co.*	
Planters Nut & Chocolate Co.	Suffolk, Va.

Cheese Factories

Kraft Phoenix Cheese Co.*

Clubs

Chicago Womans Club	Chicago, Ill.
Engineers Club	Boston, Mass.
Detroit Hockey Club	Detroit, Mich.
Union League Club	New York, N. Y.

Cold Storage Warehouses

Merchants Refrigerating Co.	Jersey City, N. J.
Great Atlantic & Pacific Tea Co.	Brooklyn, N. Y.
Charles & Co.	New York, N. Y.
Hullman & Co.	Terre Haute, Ind.
Indiana Refrigerating Co.	Indianapolis, Ind.
Fly & Hobson	Memphis, Tenn.

Colleges

Yale University	New Haven, Conn.
Harvard University	Boston, Mass.
University of Pennsylvania	Philadelphia, Pa.
Temple University	Philadelphia, Pa.

Dairies

Borden Farms Products Co.*	
Sheffield Farms Co.*	
Lansing Dairy Co.	Lansing, Mich.
National Dairy Products Co.	Long Island City, N. Y.
H. B. Hood & Sons, Inc.	Charlestown, Mass.

Fish Storage Warehouses

N. J. Ice & Cold Storage Co.	Beach Haven Crest, N. J.
Bay State Fishing Co.	Boston, Mass.
A. Pallidini	San Francisco, Cal.

Florists

General Florist Supply Co.	New York, N. Y.
Burton & Watson, Inc.	Philadelphia, Pa.
Tupelo Floral Co.	Tupelo, Miss.

Fur Storages

Revillon Freres	New York, N. Y.
L. Bamberger & Co.	Newark, N. J.

Government Work

U. S. Buildings in various cities

Hospitals

Physicians and Surgeons Hospital	Wilmington, Del.
Columbus Hospital	Chicago, Ill.
U. S. Government Hospitals*	
Faulkner Hospital	So. Boston, Mass.
Presbyterian Hospital	Newark, N. J.
New York State Hospitals*	
New York City Hospitals*	

Hotels

Hotel Park Central	New York, N. Y.
Hotel St. George	Brooklyn, N. Y.
Hotel Majestic	Philadelphia, Pa.
Bryn Mawr Beach Hotel	Chicago, Ill.
Kenmore Hotel	Boston, Mass.
Jung Hotel	New Orleans, La.

Ice Cream Plants

Breyers Ice Cream Co.*	
F. G. Shattuck Co. (Schrafft's)	New York, N. Y.
Eskimo Pie Corp.	Brooklyn, N. Y.
Annheuser Busch Co.	Oakdale, L. I., N. Y.
Wieland Ice Cream Co.	Chicago, Ill.
Good Humor Ice Cream Co.	Detroit, Mich.

Ice Plants

Knickerbocker Ice Co.	New York, N. Y.
Rubel Ice Corp.	New York, N. Y.
Kansas Power Co.	Dodge City, Kan.
Tri City Ice Co.	Rock Island, Ill.
Boston Ice Co.	Boston, Mass.
Crescent City Ice Mfg. Co.	New Orleans, La.
City Ice & Fuel Co.	St. Louis, Mo.

Industrial Plants

Public Service Gas & Electric Co.	Jersey City, N. J.
Procter & Gamble Co.*	
DuPont Viscoid Co.	Arlington, N. J.
Michelin Tire Co.	Middletown, N. Y.
Bethlehem Steel Co.	Bethlehem, Pa.
Buick Motor Co.	Flint, Mich.
American Enka Corp.	Asheville, N. C.

Office Buildings

New York Life Building	New York, N. Y.
Provident Mutual Life Ins. Building	Philadelphia, Pa.
Shrine Building	Memphis, Tenn.
Bell Telephone Co.*	

Oil Refineries and Plants

Crew Levick Co.	Philadelphia, Pa.
C. F. Simons Son, Inc.	Philadelphia, Pa.
Champlin Refinery Co.	Enid, Okla.
Sinclair Oil Co.	Tulsa, Okla.
Mid Continental Oil Co.	Tulsa, Okla.
Indiana Refining Co.	Indianapolis, Ind.
Standard Oil Co. of California	Los Angeles, Cal.

Packing Companies

C. A. Durr Packing Co.	Utica, N. Y.
Swift & Co.	New York, N. Y.
Wilson & Co.*	
Major Bros. Packing Co.	Mishawaka, Ind.
Emge & Sons	Fort Branch, Ind.
Batchelor & Snyder Co.	Boston, Mass.
Golden State Meat Co.	San Francisco, Cal.
Armour & Co.*	

Provision Plants

Federal Packing Co.	New Haven, Conn.
Archer Daniels Midland Corp.	Edgewater, N. J.
Wm. A. Donnelly	Philadelphia, Pa.
Western Produce Co.	Abiline, Tex.
Hildebrandt Provision Co.	Cleveland, Ohio
International Produce Co.	Chicago, Ill.
Providence Produce Terminal	Providence, R. I.

Restaurants

Childs Restaurants*	
F. G. Shattuck Co. (Schrafft's)*	
Rubens Restaurant	New York, N. Y.
Longchamps Restaurants	New York, N. Y.
Bickford Restaurants	New York, N. Y.
De Mets	Chicago, Ill.
Caruso Restaurants*	

Skating Rinks

Playland	Rye, N. Y.
The Arena	Tulsa, Okla.

Theatres

Loews Theatres*
Warner Bros. Theatres*
Radio Keith Orpheum Theatres*

*Plants in various cities insulated with "Jointite" Corkboard and Pipe Covering.

Continued on next page

History of the Company

The name of Mundet was first identified with cork products in the year 1865. Today the Company ranks among the leaders of the industry.

Cork and Its History

Cork has been used for many centuries. We find that it was fabricated by the ancients into shoe soles, floats, and bottle stoppers. In recent years, the uses of cork have multiplied many times, and today it is a necessary concomitant of civilization.

In Spain, Portugal, Africa (Mediterranean) and Italy we find an evergreen known as the Cork Oak. This tree must survive a tremendous amount of heat since it grows in tropical and semi-tropical zones. Nature has provided for this by promoting a growth which covers the trunk and limbs of the tree and effectively insulates it against the intense heat. This growth (or bark) is the cork of commerce. At periodical intervals the trees are stripped of this bark, which is then processed, baled and shipped to various manufacturing centers in Europe and the United States. These plants produce a multitudinous variety of cork products including cork insulation.

Why Cork Is an Insulator

As explained above, Nature provided a covering that would protect the Cork Oak from the attack of tropical heat. This is accomplished by shaping a covering of relatively even thickness containing a multitude of minute air particles each hermetically sealed one from the other. Each particle of entrapped air is so small that it will not permit the setting up of air currents and in this way heat penetration is prevented. Furthermore, due to its granular structure, cork has no capillarity, while practically all other insulating materials are of a fibrous nature and have a high degree of capillarity.

The Manufacture of Corkboard

The cork bark used for insulation is first ground up into particles or granules of from 3/8 to 5/8 in. in size. These are filled into moulds and hydraulically pressed to the required density. The moulds are then placed in an oven maintained at a relatively high temperature for a period of time dependent upon the thickness of insulation involved. The cork is kept under compression in the moulds throughout the baking process. The heat liquifies the gum or rosin that is peculiar to this type of bark. This gum thoroughly binds the granules together and hermetically seals one from the other, producing a solid slab of cork board (still 100% pure cork). The rough slab is then subjected to a finishing process which cuts it to accurate size and sands its surfaces, completing the manufacture of commercial corkboard insulation.

Essentials of Good Insulation

The essentials of good insulation are low thermal conductivity; fire retardance; permanence; nonabsorbence; sanitation; economy. Mundet "Jointite" Corkboard incorporates all these qualities.

Our Facilities

The Company maintains two plants for the exclusive manufacture of insulation products. One is located in Portugal and the other in New Jersey (about six miles from New York City). These plants are of about the same capacity and can produce a total of 60,000,000 to 70,000,000 ft. board measure of insulation a year. "Jointite" products are stocked in many of the large centers of the world. The Portuguese plant is adjacent to the Port of Lisbon from which regular sailings are to be had to any part of the world. The New Jersey plant at all times carries large stocks of finished products, as do all of the Branch Offices located in the principal cities of the United States and Canada. The Company's shipping facilities are unsurpassed, either by rail or water.

Sales and Service

The Company maintains branches in all the principal cities of the United States and Canada, and in London, England, for the convenience of its clients. Our branch offices are in charge of competent engineers who will gladly co-operate and furnish information pertinent to insulation work.

Contracting

The Company maintains a well organized erecting force at each branch office fully capable of handling any erection contract involving corkboard. No contract is too small or too large.

Guarantee

The Company fully guarantees that its material and workmanship are of the best and agrees to make good, without cost to the client, any defect that may be chargeable to inferior material or workmanship.

Standard Sizes

Mundet "Jointite" Corkboard is furnished in the following sizes: 1/2, 3/4, 1, 1 1/2, 2, 3, 4 and 6 in. thick. All sheets are 12 in. wide and 36 in. long.

Weight of Corkboard

Mundet "Jointite" Corkboard weighs approximately .75 lb. per sq. ft. per 1 in. thick (board measure) when shipped in bulk but when packed in cartons it weighs approximately .90 lb. per sq. ft. per 1 in. thick.

TABLE OF THICKNESSES RECOMMENDED TO BE USED FOR COLD STORAGE WORK AS INSULATION FOR VARIOUS TEMPERATURES

Range of temperature	Walls, in.	Ceilings, in.	Floor on ground, in.	Floor above ground, in.	Roofs, in.
Below 0° F.	8	8	7	8	9
0° to 10° F.	7	7	6	7	8
10° to 20° F.	6	6	5	6	7
20° to 35° F.	5	5	4	5	6
35° to 50° F.	4	4	3	4	5
50° to 60° F.	3	3	2	3	4
Above 60° F.	2	2	0	2	2

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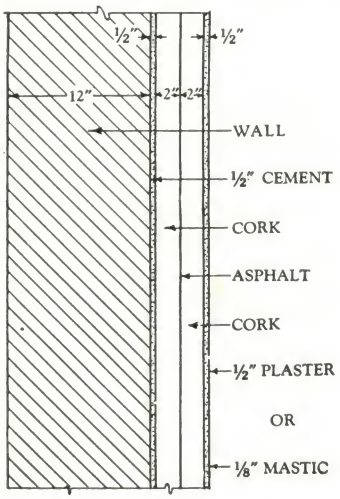
GENERAL COLD STORAGE INSULATION

Specification No. 1—Masonry Walls, Brick, Concrete, Hollow Tile

(Where First Course is Erected in Cement Mortar)



The walls shall be insulated with .... in. of "Jointite" Corkboard, applied in two courses of .... in. each. The first course of corkboard shall be erected against the walls in a ½-in. bed of portland cement mortar.

Note (1): If walls are of concrete, specify that they shall be thoroughly hacked in order to provide a good bond.

The second course of corkboard shall then be applied against the first course in a heavy dip coat of hot asphalt and additionally secured to the first course with hard wood skewers of suitable length. All joints shall be broken relative to adjacent layers and to the preceding course. The exposed cork surfaces shall be finished with a ½-in. plaster finish applied in two coats; the first coat to be a rough or scratch coat and the second coat to be brought to a float (or trowel) finish and marked off in squares of approximately 4 ft. in order to minimize and direct shrinkage cracks.

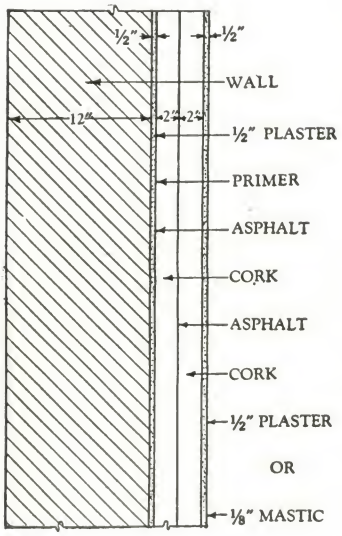
Note (2): If mastic finish is desired in place of plaster finish, omit the last paragraph above and substitute as follows:

The exposed cork surface shall be finished with a ⅛-in. cold mastic finish consisting of a brush or spray application of Mundet Asphalt Emulsion, followed by a trowel application of Mundet Asphalt Emulsion mixed with asbestos and clean screened sand in the following proportions, viz., 50 gal. of emulsion to 100 lb. of asbestos floats to 4 cu. ft. of sand. (This finish is black in color and may be painted if desired.)

Specification No. 2—Masonry Walls, Brick, Concrete, Hollow Tile

(Where First Course is Erected in Hot Asphalt)

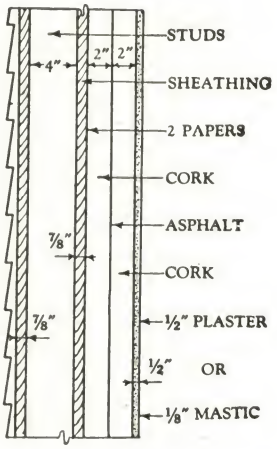
The walls shall first be given a single coat of portland cement plaster left under the float.



Note (1): If walls are of concrete, specify that they shall be thoroughly hacked in order to provide a good bond.

After the plaster coat has set, the walls shall be given two spray, or brush, coats of Mundet Asphalt Primer, following which the walls shall be insulated with .... in. of "Jointite" Corkboard applied in two courses. The first course of corkboard shall be applied against the walls in a dip coat of hot asphalt. The second course and the finish shall be as stipulated in Specification No. 1.

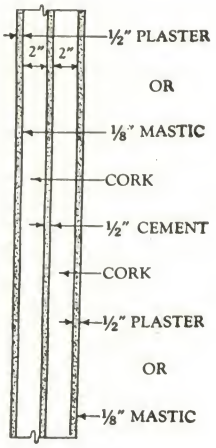
Specification No. 3—Wood Frame Walls



Two courses of waterproof insulation paper shall be securely tacked against the sheathed surfaces, after which the walls shall be insulated with .... in. of "Jointite" Corkboard applied in two courses. The first course of corkboard shall be nailed dry to the wall with the galvanized wire nails made especially for this type of work. The second course of corkboard shall be applied against the first course in a heavy dip coat of hot asphalt, and additionally secured with hard wood skewers of suitable length. All joints shall be broken with respect to adjacent layers and to the preceding course. The finish shall be as provided in Specification No. 1.

Specification No. 4—Cork Partitions

(Cement Mortar)

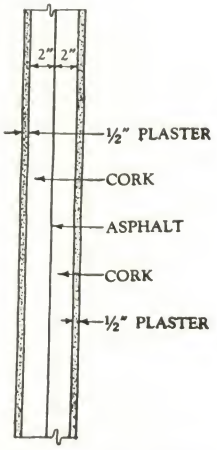


The partitions shall be of the solid cork and cement self-sustaining type, and shall be fabricated of two courses of .... in. "Jointite" Corkboard. The first course of corkboard shall be erected against temporary studding and the second course shall be erected against the first in a ½-in. bed of portland cement mortar, and additionally secured with hardwood skewers of suitable length. All joints shall be broken relative to adjacent layers and to the preceding course. The exposed surfaces shall be finished as provided in Specification No. 1.

Specification No. 5—Cork Partitions

(Hot Asphalt)

The partitions shall be of the solid cork and cement self-sustaining type, and shall be fabricated of two courses of .... in "Jointite" Corkboard. The first course of corkboard shall be erected against temporary studding and the second course shall be erected against the first in a dip coat of hot asphalt, and additionally secured with hard wood skewers of suitable length.



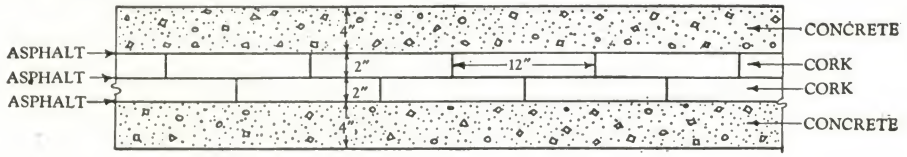
All joints shall be broken relative to adjacent layers and to the preceding course. The exposed cork surfaces shall be finished with ½ in. of portland cement plaster mixed 1:2, applied in two coats; the first coat to be a rough or scratch coat and the second coat to be brought to a float (or trowel) finish and marked off in squares of approximately 4 ft. in order to minimize and direct shrinkage cracks.

Continued on next page

Specification No. 6—Concrete Floors, Concrete Base

The floor shall be insulated with .... in. of "Jointite" Corkboard applied in two courses. The first course shall be laid down in a heavy mop coat of hot asphalt and the second course shall be laid upon the first in like manner, with all joints broken relative to the first course. The exposed top of the corkboard shall then receive a heavy mop coat of hot asphalt which shall thoroughly seal all joints.

A concrete wearing floor .... in. thick shall be laid upon the corkboard. The first .... in. shall be gravel or rock concrete mixed . . : . . : . . followed by a 1-in. cement top mixed 1:2 and floated and troweled to a smooth and even finish. The floor shall be pitched to floor drains.



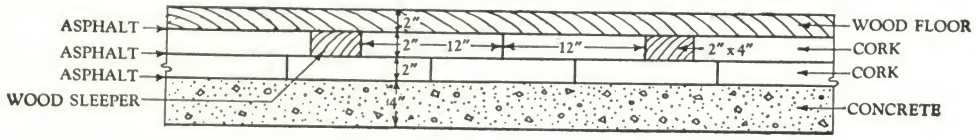
Specification No. 7—Wood Floors, Concrete Base

The floors shall be insulated with .... in. of "Jointite" Corkboard in two layers as provided in Specification No. 6.

Over the first course of corkboard there shall be laid ....x4-in. wood sleepers on 28-in. centers, all securely mopped in.

The exposed cork surface shall then receive a heavy mop coat of hot asphalt which shall thoroughly seal all joints.

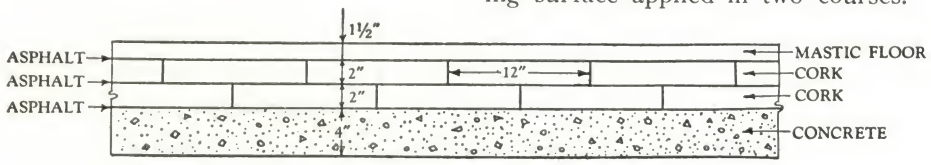
A wearing floor of 2x.... in. long leaf yellow pine shall then be applied, securely nailed to the sleepers provided in the top layer of corkboard.



Specification No. 8—Mastic Floors, Concrete Base

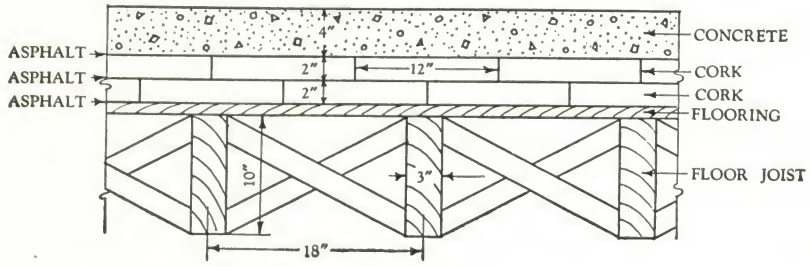
The floor insulation shall be laid as in Specification No. 6.

The finish floor shall consist of a 2-in. mastic wearing surface applied in two courses.



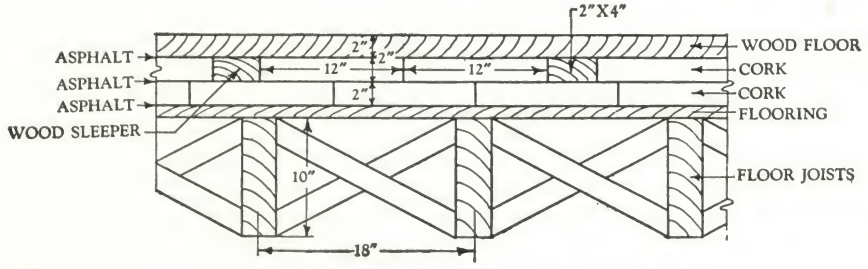
Specification No. 9—Concrete Floors, Wood Base

The floor shall be insulated as in Specification No. 6.



Specification No. 10—Wood Floors, Wood Base

The floors shall be insulated as in Specification No. 7.



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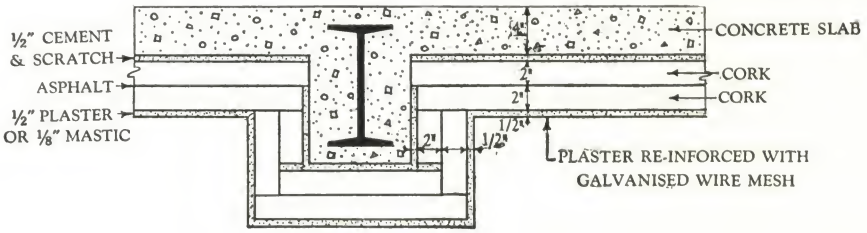
Specification No. 11—Ceilings, Concrete

The ceiling shall be insulated with ... in. of "Jointite" Corkboard applied in two courses. The soffit of ceiling slab shall first be thoroughly hacked and pitted and shall then receive a tight scratch coat of portland cement mortar.

The first course of corkboard shall then be applied in a ½-in. bed of portland cement mortar and securely propped in place until the cement has set. The second course of corkboard shall then be applied against the first course in a heavy dip coat of hot asphalt, and additionally secured with hardwood skewers of suitable length. All joints shall be broken relative to adjacent layers and to the preceding course.

The exposed cork surfaces shall be finished as provided in specification No. 1.

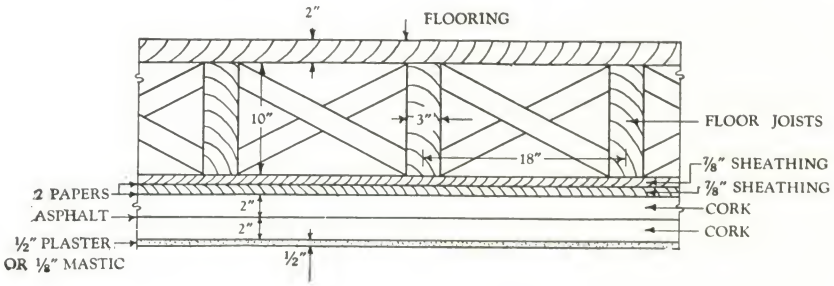
Note: If plaster finish is desired it is recommended that No. 19-gauge galvanized wire mesh having two meshes to the inch be securely stapled to the cork surfaces before plaster finish is applied.



Specification No. 12—Ceilings, Wood

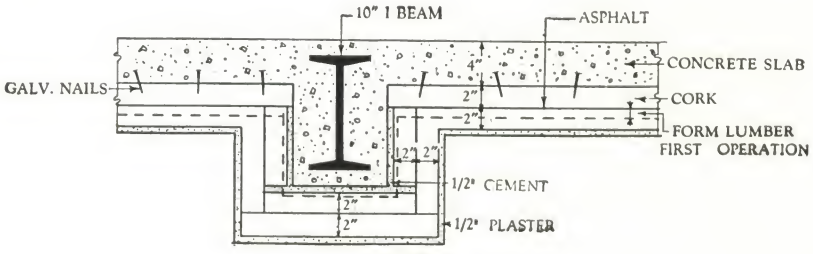
The ceiling shall be insulated with ... in. of "Jointite" Corkboard in two courses over wood sheathing.

Two layers of ⅞-in. tongued and grooved sheathing shall be installed on the underside of ceiling joists with two layers of waterproof insulation paper between the sheathing courses, and two layers of waterproof insulation paper securely tacked to the underside of the sheathing. On the ceiling surface thus prepared shall be erected the first layer of corkboard, nailing each piece securely in place. The second course of corkboard shall then be applied against first course in a dip coat of hot asphalt and finished as provided in Specification No. 1.



Specification No. 13—Ceilings (New Buildings) Concrete

The ceilings shall be insulated with ... in. of "Jointite" Corkboard applied in two courses. The general contractor will lower the forms of the slab construction a distance sufficient to allow the first course of corkboard to be laid dry in the forms. There shall be at least six special galvanized nails placed in each sheet of corkboard laid in forms with the heads protruding not less than 1½ in., to act as a key in the concrete. After the forms are stripped the second course of corkboard and both courses of corkboard on the beams and girders shall be applied and finished as in Specification No. 11.



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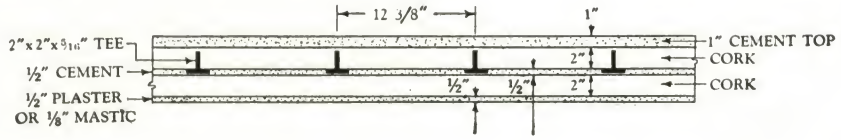
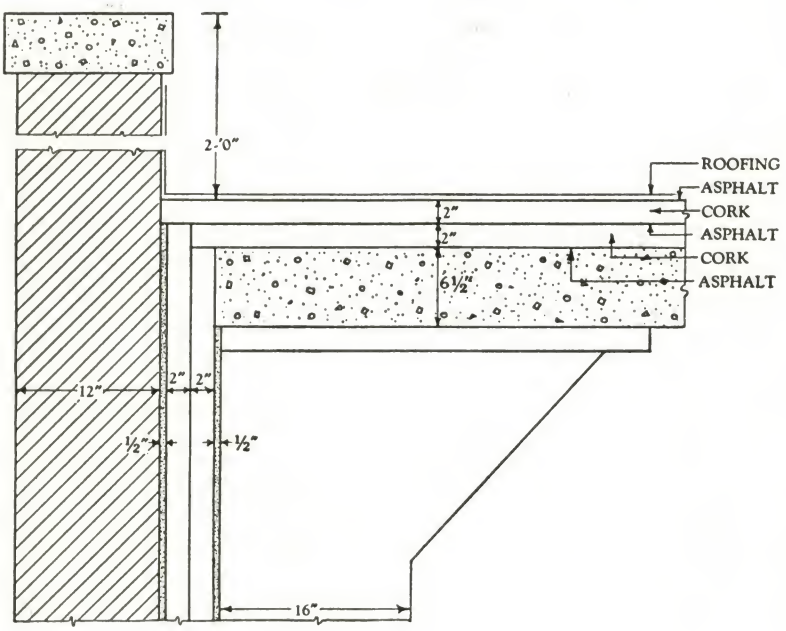
Specification No. 14—Ceilings, False T Iron

The ceilings shall be insulated with . . . in. of "Jointite" Corkboard applied in two courses. A framework consisting of 2x2x.. in. tee irons spaced on 12½-in. centers, shall be erected upon 2x2-in. wood framing concealed in the cork wall insulation. The first course of corkboard shall be placed between the tee irons after all edges have been dipped in hot asphalt. The second course of corkboard shall be applied against the underside of the first course in a ½-in. bed of portland cement mortar, and additionally secured with hardwood skewers of suitable length. All joints in the second course shall be broken relative to adjacent layers and to the first course. The top exposed surface of the corkboard shall be finished with 1 in. of portland cement plaster left under the float. The underside of the insulation shall be finished as provided in Specification No. 1.

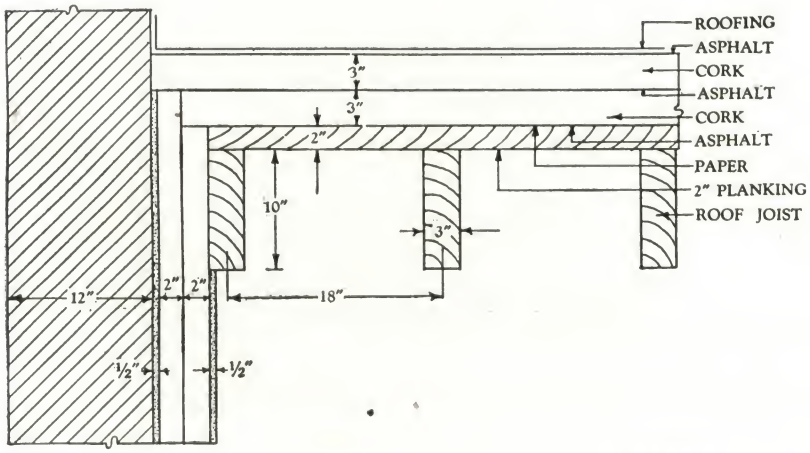


Specification No. 15—Roofs, Concrete

The roof slab shall be insulated with . . . in. of "Jointite" Corkboard applied in two courses. The first course of corkboard shall be laid down on the concrete slab in a heavy mop coat of hot asphalt, and against it a second course of corkboard shall be applied in like manner. All joints shall be broken relative to adjacent layers and to the preceding course. The exposed cork surfaces are to remain uncoated and left ready for the roofing contractor to lay his roofing. The cork contractor and the roofing contractor shall co-operate with each other in order that all insulation laid in any one day will be protected with at least two-ply roofing.



Specification No. 16—Roofs, Wood



The roof shall be insulated with . . . in. of "Jointite" Corkboard applied in two courses. Over the roof planking shall be laid one course of waterproof insulation paper with the seams lapped at least 3 in. and mopped in with hot asphalt. The cork insulation shall then be applied as in Specification No. 15.

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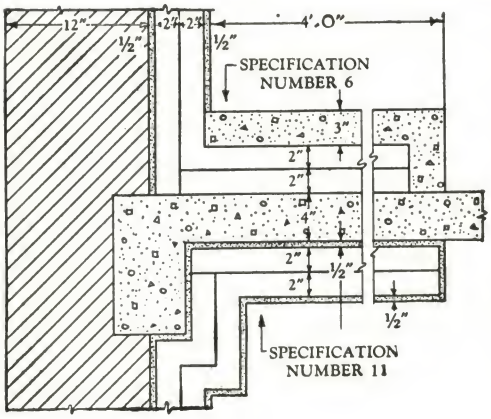
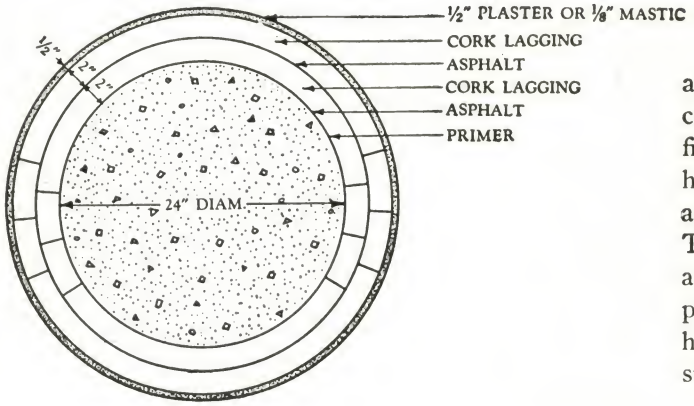
LAP OR RIBBON INSULATION

Used Where Continuous Insulation Is Not Obtainable

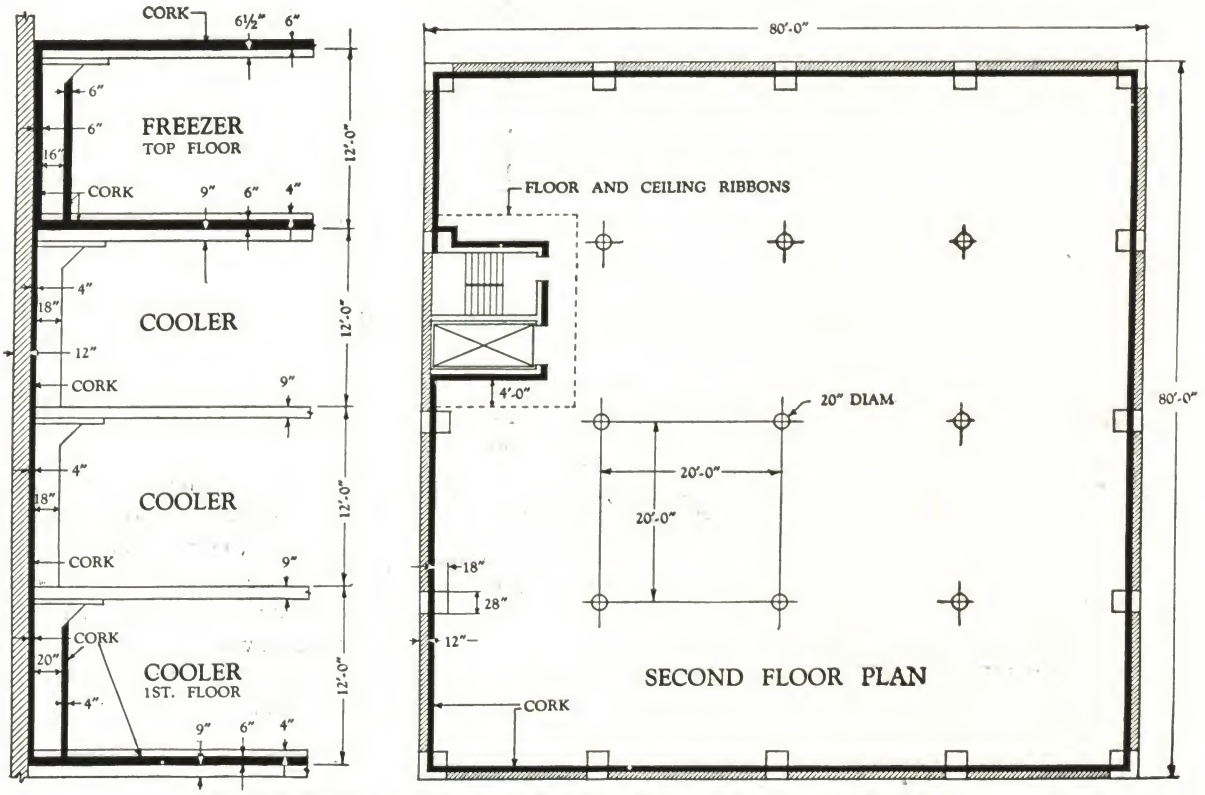


Ribbon insulation is the form shown on the accompanying sketch. It consists of insulation either on floor or ceiling which extends out to a limited distance only from the wall line. It is used where conditions make it impossible to provide continuous insulation. The ribbon insulation must be carried around beams and girders. For specifications, see notes on cut.

Specification No. 17—Circular Columns



The circular columns shall be insulated with .....in. of "Jointite" Corkboard bevelled lagging, applied in two courses. The column surfaces shall receive a single coat of Mundet Primer, after which the first course of lagging shall be applied in a dip coat of hot asphalt. Each lag shall be securely locked to the adjacent lags with hard wood skewers of suitable length. The second course of lagging shall then be applied against the first course in a heavy dip coat of hot asphalt, and additionally secured to the first course with hard wood skewers of suitable length. The exposed cork surfaces shall be finished as in Specification No. 1.



Typical Section and Plan of Building Showing Continuous Installation

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Specification No. 18—Coil Bunker Construction

A coil loft or bunker shall be constructed, supported on ...x... in. timbers spaced 20 in. apart (Item 1), which shall be suitably supported in walls.

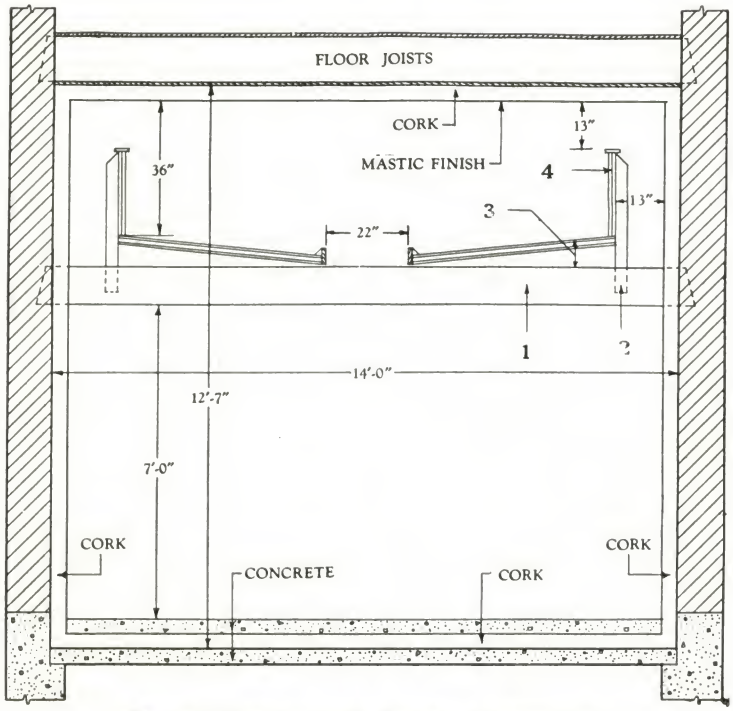
Wood cleats 2x4 in. (Item 2), shall then be securely bolted to the sides of the timbers and will act as supports for the warm air baffles (Item 4).

The top of the timbers shall then be given the correct slope by nailing tapered strips, which shall be the width of the timber and shall vary from 3 in. high at the outside end to 1 in. at the inside. These tapered strips shall then be sheathed with 7/8-in. tongued and grooved sheathing of spruce or cypress, over which shall be laid two courses of waterproof insulation paper, followed by a single course of 2-in. corkboard, laid down in and coated with hot asphalt.

In the corkboard shall be buried 2x2-in. wood sleepers on 26-in. centers, which will act as nailing strips for the 7/8-in. tongued and grooved sheathing which shall be placed over the corkboard together with two layers of waterproof insulation paper, all securely nailed to the sleepers (Item 3). The top surface of bunker floor shall then be covered with No. 24-gauge galvanized iron (or copper) lining flashed up on the warm air baffles a distance of 12 in., and provided at the low point with a scupper for drainage connection. The baffles shall be constructed of two courses of 7/8-in. tongued and grooved sheathing with two layers of waterproof insulation paper between them, all securely nailed to the wooden cleats mentioned above (Item 4).

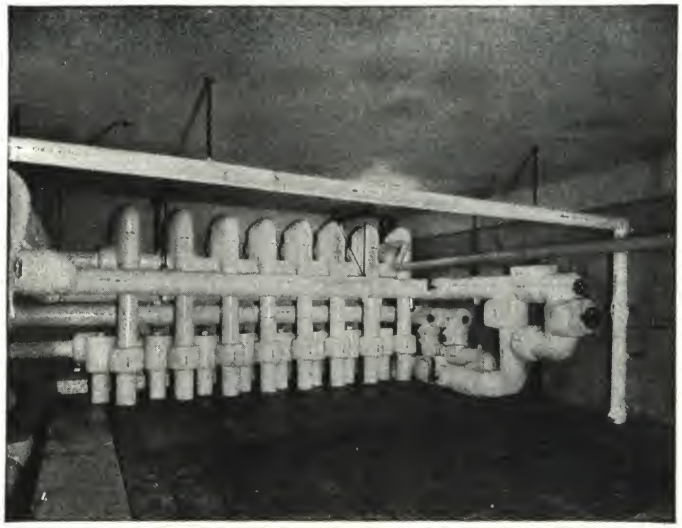
The edges of the cold air duct shall be formed with 2x8-in. timbers securely fastened to the bunker timbers. The metal lining of the bunker shall extend over these timbers and shall be lapped vertically downward at least 2 in.

Note: For rooms having less than 8 ft. inside clear width, it is customary to use a single bunker pan. In rooms of greater than 8-ft. width the double bunker pan illustrated should be used. It is customary to make the total duct widths equal to about 30% of total width of room.



Section Showing Coil Bunker Construction

"JOINTITE" MOULDED CORK PIPE COVERING



New York State Psychiatric Institute and Hospital, New York, N. Y.

All the insulating qualities of cork hereinbefore explained for cold storage, and its resistance to heat transmission generally, apply equally to its value as insulation for cold piping. It affords the most efficient and permanent means for protecting cold water, brine, and ammonia pipe lines and fittings.

"Jointite" Moulded Cork Pipe Covering is made of pure granulated cork compressed and moulded in forms and baked as described for corkboard. Following the baking process each piece of pipe covering is covered all over with a mineral rubber finish which prevents damage from moisture or frost.

Various moulded shapes are made both for pipe and fittings so that all parts of the pipe lines may be neatly and adequately covered.

Continued on next page

Suggested Thickness

Note: The numbered items shown below are for coverings of various standard thicknesses and for purposes as indicated. Reference will be made to this list in specification text.

(1) Ice Water Covering for lines where temperatures of 30° F. and higher are carried.

(2) Standard Brine Cork Covering for ammonia and brine lines where temperature ranges from 5° F. to 30° F.

(3) Special Thick Covering for temperatures below 5° F.

Specification A

Note: The following specification is used more than any other, covering probably 75% of all pipe covering installations.

Pipe—After the pipe lines have been tested and approved, they shall be insulated with "Jointite" [(1), (2) or (3)] Cork Pipe Covering. All contact joints shall be sealed with Mundet Waterproof Cement. All contact joints shall be butted closely and firmly together and secured with copper clad steel wire, spaced at intervals of not more than 6 in. All seams shall be horizontal. All mated sections shall be used together. The so-called "broken joint" method must not be used.

Fittings—The fittings shall be insulated with "Jointite" Moulded Cork Fitting Covers of a thickness to match the above pipe covering. All contact joints shall be sealed with Mundet Waterproof Cement. All joints shall be butted closely and firmly together and secured with not less than four copper clad steel wires. On all flanged fittings and on all screwed fittings larger than 6 in., not less than six wires shall be used.

Voids—All spaces between fittings and fitting covers shall be filled with either Mundet Brine Putty or Fine Regranulated Cork.

Seams—All seams and chipped edges in the fitting covers and pipe covering shall be filled with Mundet Seam Filler and the surface made smooth.

Finish—The entire outer surface of the insulation shall receive one coat of Mundet Finish Paint.

Hangers—Pipe Lines shall be supported, in every case, outside of the covering and shall be protected by carefully fitted metal shields extending 4 in. on each side of the hanger. The shield shall embrace the entire lower semicircle.

Spacing—Minimum spacing between pipes and adjacent surfaces shall be as follows:

Thickness		Clear space between pipes, in.	Clear space between pipes and walls, etc., in.
Brine	Screwed fittings under 6 in.	8	6
	Screwed fittings over 6 in. and flanged fittings	14	8
Special thick	Screwed fittings under 6 in.	10	8
	Screwed fittings over 6 in. and flanged fittings	18	12
Ice water thick	Screwed fittings under 6 in.	6	4
	Screwed fittings over 6 in. and flanged fittings	10	5

Specification B

Note: For use in hotel kitchens, damp cellars, creameries, packing houses, etc., and wherever the atmosphere is saturated with moisture or steam. Essential for outdoor pipe lines where the cork covering is exposed to the weather.

Pipe, Fittings, Voids, Seams—*Note:* Specifications under these headings same as Specification A.

Roofing—After the seams have been filled, there shall be applied ... layers of ... ply smooth surfaced roofing. Each joint shall be lapped not less than 2 in. The laps shall be sealed with asphalt paint and secured with staples or copper clad steel wire. All laps shall be laid in such a manner as to form a watershed.

Finish, Hangers, Spacing—*Note:* Specifications under these headings same as Specification A.

Specification C

Note: A canvas and paint finish for neatness and to harmonize with surrounding decorations or equipment.

Pipe, Fittings, Voids, Seams—*Note:* Specifications under these headings same as Specification A.

Canvas—After the seams have been filled, the pipe covering shall be wrapped with No. 8 Rosin Sized Paper, and the fittings shall be given a coat of asbestos cement, troweled on, and of sufficient thickness to give a smooth base for canvas. Over the pipe and fittings, a jacket of 8-oz. canvas shall be neatly sewn, using not less than three stitches to the inch. All seams shall be located along the line of minimum visibility.

Finish—The canvas jacket shall be sized and painted with two coats of lead and oil paint.

Hangers, Spacing—Specification under this heading, same as Specification A.

Specification D

Note: Unsurpassed for low temperature piping, and offering an ideal surface protection to the mineral rubber finish on cork pipe covering.

Pipe, Fittings, Voids, Seams—Specifications under these headings same as Specification A.

Membrane Jacket—Over the fittings there shall be applied a layer of mineral rubber cloth, lapped not less than 2 in. and sealed with asphalt paint. Starting with a 2-in. lap upon the fittings, the straight pipe shall be wrapped spirally with a layer of rubberized adhesive membrane tape lapped not less than 1 in.

Finish—Finish to be either as in Specification A or Specification C.

Hangers, Spacing—Specifications under this heading same as Specification A.

"JOINTITE" CORK LAGGING

We make moulded cork lagging and discs for the insulation of cylindrical tanks and coolers. The lagging is cut to order to any desired radius. If desired, the lagging can be furnished with a ⅛-in. mastic coating, ironed in at the factory.

Suggested Thickness

Note: The numbered items shown below are for covering of various standard thicknesses and for purposes as indicated. Reference will be made to this list in specification text.

(1) Above 40° F. — 2 in. of lagging
(2) Above 25° F. and below 40° F. — 3 in. of lagging
(3) Above 10° F. and below 25° F. — 4 in. of lagging } Applied in
(4) Below 10° F. — 6 in. of lagging } two courses

Continued on next page

Specification E

Note: This specification is usually used in conjunction with Specification A.

Lagging—*(1) Tank Surfaces*—After the cooler or tank has been tested and approved, the body of the tank shall be insulated with [see items (1), (2), (3) and (4)] ..... in. of "Jointite" Beveled Cork Lagging, applied in ..... courses. The first course shall be applied against the tank (with or without mineral rubber finish on the inside), with all contact joints firmly and securely butted together and sealed wtih Mundet Waterproof Cement. The lagging shall be further secured with copperclad steel wire spaced at intervals of not more than 6 in. The second course of lagging shall then be applied against the first course in the same manner as above with all joints in the lagging broken with respect to the first.

(2) Flanges—The flanges shall be insulated in the same manner as the tank surfaces. The flange lagging shall lap upon the body lagging for 12 in. and shall project beyond the outermost portion of the head, a distance equal to the thickness of the tank insulation.

Discs—The heads shall be insulated with "Jointite" Corkboard Discs of the same total thickness as the tank insulation (with or without mineral rubber finish on the inside ironed on at the factory). The discs shall be applied directly against the head of the tank and supported by the flange lagging.

Voids—Any spaces between the lagging and the tank body shall be filled with Mundet Brine Putty. The spaces between the bolts and flanges shall be filled with Mundet Brine Putty. The spaces between the heads and the flanges shall be filled with fine regranulated cork.

Finish—The entire outer surface of the insulation shall have a mineral rubber finish ironed on at the factory. After the insulation is completed all seams and chipped edges shall be filled with Mundet Seam Filler.

Painting—The entire outer surface shall receive one coat of Mundet Finish Paint.

Specification F

Note: This specification is often used in conjunction with Specification C.

Lagging, Discs, Voids, Finish—*Note:* Specifications under these headings same as Specification E.

Canvas—After the seams have been filled, the outer surface of the tank shall be covered with a layer of No. 8 Rosin Sized Paper. Over the paper shall be sewn a jacket of 8-oz. canvas. All seams shall be of the invisible type and shall have not less than three stitches to the inch.

Painting—The canvas shall be sized and painted with two coats of lead and oil paint.

Specification G

Note: This specification is very commonly used where a neat appearance, plus the ability to withstand a certain amount of rough usage is desired.

Lagging—*(1) Tank Surfaces*—After the cooler or tank has been tested and approved, the body shall be insulated with ..... in. of "Jointite" Beveled Cork Lagging applied in ..... courses. The first course shall be applied against the tank (with or without mineral rubber finish on the inside), with all contact joints firmly and securely butted together. The lagging shall be secured with copper clad steel wire spaced at intervals of not more than 6 in. The second course of lagging shall then be applied against the first course in the same manner as above with all joints in the lagging broken with respect to the first course.

(2) Flanges—The flanges shall be insulated in the same manner as the tank surfaces. The flange lagging shall lap upon the body lagging for 12 in. and shall project beyond the outermost portion of the head a distance equal to the thickness of the tank insulation.

Discs, Voids, Finish—Specifications under these headings same as Specification E.

Plaster—After the seams have been filled, the outer surface of the insulation shall be covered with a layer of 1-in. hexagonal mesh galvanized wire, securely stapled to the insulation. Over the wire shall be applied two coats of portland and asbestos cement plaster. The first coat shall be a rough or scratch coat; the second coat shall be troweled to a smooth and even finish.

Painting—Optional.

New York Life Insurance Co. Building, New York, N. Y.

Erected on site of the old Madison Square Garden. All cold lines are insulated with Mundet "Jointite" Moulded Cork Covering

Continued on next page

ROOF INSULATION

Insulation of Roofs to Prevent Condensation

It is our purpose to show under this heading the great value of proper insulation applied to roofs, in order that the annoying and frequently expensive problem of ceiling "sweat," or condensation, may be overcome.

It is generally recognized today that correct building design must include insulation. The heat transmitted from uninsulated roofs in the winter results in a needless loss, the cost of which comes to a staggering total.

In the summer, these same roofs absorb a tremendous amount of heat and deliver it to the rooms below, thus causing discomfort to, and impairing the efficiency of, people who are working in these areas. In certain commercial plants where the humidity and often the temperature must be governed at a high point, due to the processes of manufacture, an uninsulated roof will inevitably chill the air in its vicinity during the winter months to the point where some of its moisture condenses and forms what is commonly known as ceiling "sweat." The moisture drops to the floor, producing a most annoying condition to people who are working in the room and often causing damage to property, since it will drop upon any materials and machinery that may be underneath. The loss due to condensation must be considered separately from the direct loss due to heat leakage through the roof, the latter being present in all uninsulated construction while the former appears only when the humidity is relatively high or when the difference in temperature between the inside of the roof and the room is of considerable magnitude.

Numerous industries are in the position of, for example, textile mills, which have, as one of the prerequisites for proper manufacturing, a high degree of relative humidity. Many textile mills are located in New England, and in winter are operating with a great variation between the inside and outside temperatures of their buildings. Unless these buildings are insulated, the walls and roofs become very much colder, on the inside, than the surrounding air. This cold is transmitted to the adjacent air, which, upon cooling, reaches the point of total saturation, or dewpoint, and deposits its moisture upon the cold surfaces, from which come the drip. The resultant losses may be grouped as follows:

(1) Direct losses.
  (a) Heat transmitted through roof and walls.
  (b) Damage to goods in process of manufacture.
  (c) Decreased efficiency of labor.

(2) Indirect losses.
  (a) Damage to machinery.
  (b) Deterioration of buildings, particularly of wooden construction.
  (c) Lowered morale of labor due to unpleasant working conditions.

Unfortunately, it is only recently that industry has begun to subject its inherited losses to a careful scrutiny. In the past, ceiling condensation was regarded as a necessary evil, and an inevitable concomitant of high relative humidity. Advanced engineering practice in new buildings, however, has demonstrated its worth to the point where manufacturers have begun to realize that their old equipment cannot compete with new equipment unless it is brought up to date. However, the tendency to maintain a given status quo, plus the inhibition against spending money upon old equipment, has produced a considerable inertia. It is for this reason that all roofs are not insulated, although there have been instances without number where cork insulation has been installed in an existing plant and has paid for itself within two or three years in the single item of coal required for heating.

When bringing to the attention of manufacturers the need for cork insulation in buildings, the greater stress has been laid upon the resultant saving in fuel. Today, however, industrial executives in ever increasing numbers are realizing that a most important factor in their problem of keeping costs at a minimum is the attitude of their labor. A worker is never efficient when he is uncomfortable, and therefore the use of insulation, while it may be considered as an intangible benefit from this angle, is nevertheless of vital import.

The other factors that go to make up the losses in uninsulated construction depend entirely upon individual cases, and it is difficult to evaluate them in general terms, but it is reasonable to conclude that they are present in all cases to a greater or less degree and must eventually appear in the costs of manufacture.

Mention was made, in the foregoing text, of the losses caused by condensation in the textile industry; but it must not be assumed that this industry stands alone. Below are listed a number of types of buildings that are prone to condensation troubles.

Bakeries
Creameries
Laundries
Lumber drying rooms and kilns
Packing houses
Killing rooms
Paper mills
Power houses
Swimming pools
Textile mills—cotton, wool and silk
Tobacco factories
Turkish baths
Twine mills

Thickness of Corkboard Needed

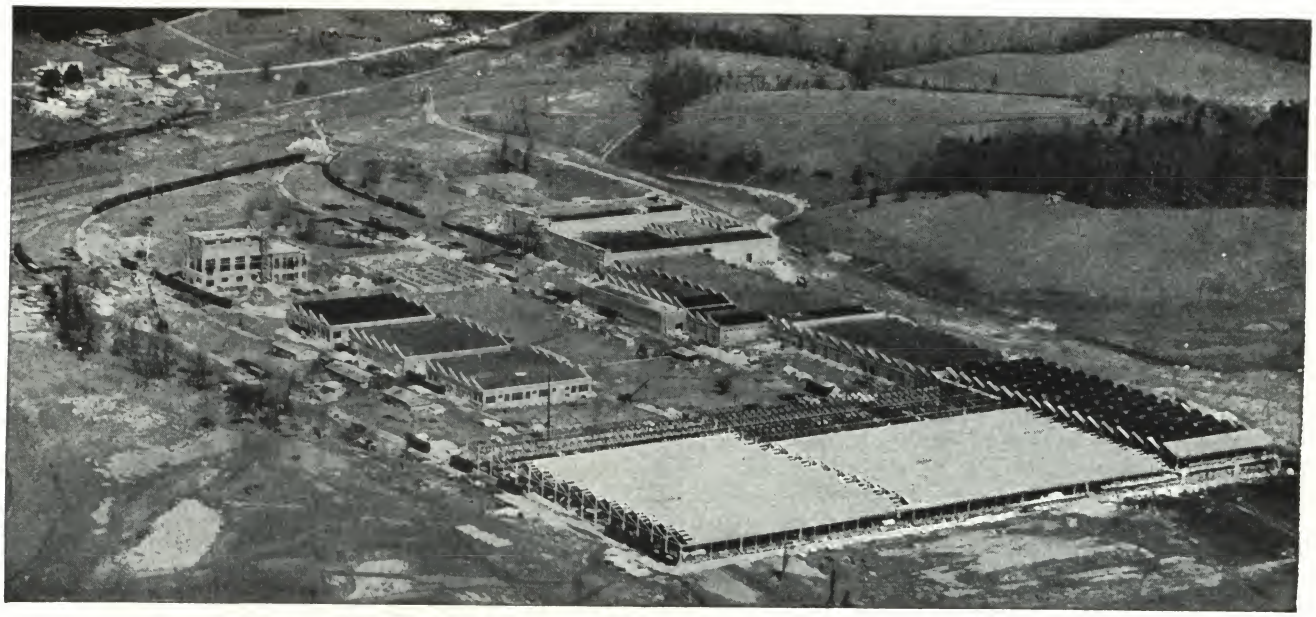
It has already been shown that cork is the ideal insulation for this work. The next important thing to determine is the thickness of corkboard that must be used.

There is no rule of thumb by which it is possible to determine what thickness of cork insulation is required for any given roof. The thickness of insulation is an exact function of the humidity present, the nature of the wall or roof construction, its own co-efficient of heat transmission, and the maximum temperature difference on the two sides of the building construction. In order to facilitate the determination of the correct thickness of corkboard insulation for roofs, a special chart has been included in this section (see page 13) upon which it is possible to read directly the permissible heat loss for any given set of conditions. Upon page 12 will be found a table showing the heat loss of all common types of roof construction. Under each type is shown the heat loss of that construction with various thicknesses of "Jointite" Corkboard Insulation. Typical cases are also shown graphically in illustrations on page 15.

The easiest way of demonstrating the use of the chart, table and illustrations will be to show the working of an actual case. Following is a typical problem: A manufacturing plant is equipped with a 3-in. yellow pine roof and standard ⅝-in. built-up roofing. The inside temperature (dry bulb) at the ceiling is 70° F., the relative humidity is 80%, and the lowest temperature during the winter is minus 10° F.

Locate the line of 70° upon the room temperature scale at the top of the chart and follow down to the 80% relative humidity diagonal. Follow horizontally

Continued on next page



Airplane View of the American Enka Corporation's Plant at Asheville, N. C.
Showing clearly the 75 acres occupied by the plant and the great area of sawtooth and flat roofing, all of which was insulated by Mundet "Jointite" Corkboard

across the chart to the line of 80° maximum temperature difference on the lower scale. Interpolation between the bounding heat loss diagonal lines will show the heat loss to be .124. Referring to the heat transmission table, we find that in connection with a 3-in. yellow pine roof and ⅝-in. built-up roofing, 1½ in. of Mundet "Jointite" Corkboard will give sufficient insulation to preclude the possibility of condensation for the above set of conditions.

Specifications

Note: The following specifications will be found to cover the usual typical cases of roof insulation:

(1) On Wood Deck Construction—On top of wood deck, first apply a single layer of ..... roofing felt laid in hot asphalt with joints lapped 3 in. Following this lay one course of .... in. Mundet "Jointite" Corkboard, laid in a heavy mop coat of hot asphalt, the exposed cork surfaces to be left dry, ready for the application of the roofing.

(2) Over Concrete Construction—On top of the concrete roof slab first apply two coats of asphalt primer, following which .... in. Mundet "Jointite" Corkboard is to be laid in a heavy mop coat of hot asphalt, the exposed cork surfaces to be left dry, ready for the application of the roofing.

(3) Over Steel Roof Decks—On top of steel deck lay one course of .... in. Mundet "Jointite" Corkboard, laid in a heavy mop coat of hot asphalt, the exposed cork surfaces to be left dry, ready for the application of the roofing.

Note: Should roof insulation consist of two-layer work, the second course shall be applied on top of the first course in a dip coat of hot asphalt, with all transverse joints broken.

Laying Cork Insulation on Roof

Continued on next page

HEAT TRANSMISSION

TABLE SHOWING HEAT LOSSES THROUGH ROOFS

Construction	Transmission in B.t.u. per sq. ft. per degree difference in temperature per hour
2-in. concrete slab and roofing, no insulation	.658
2-in. concrete slab and roofing, 1 -in. Jointite Corkboard	.206
2-in. concrete slab and roofing, 1½-in. Jointite Corkboard	.153
2-in. concrete slab and roofing 2 -in. Jointite Corkboard	.122
2-in. concrete slab and roofing, 3 -in. Jointite Corkboard	.087
2-in. concrete slab and roofing, 4 -in. Jointite Corkboard	.067
3-in. concrete slab and roofing, no insulation	.610
3-in. concrete slab and roofing, 1 -in. Jointite Corkboard	.201
3-in. concrete slab and roofing, 1½-in. Jointite Corkboard	.151
3-in. concrete slab and roofing, 2 -in. Jointite Corkboard	.120
3-in. concrete slab and roofing, 3 -in. Jointite Corkboard	.086
3-in. concrete slab and roofing, 4 -in. Jointite Corkboard	.067
4-in. concrete slab and roofing, no insulation	.568
4-in. concrete slab and roofing, 1 -in. Jointite Corkboard	.197
4-in. concrete slab and roofing, 1½-in. Jointite Corkboard	.148
4-in. concrete slab and roofing, 2 -in. Jointite Corkboard	.118
4-in. concrete slab and roofing, 3 -in. Jointite Corkboard	.085
4-in. concrete slab and roofing, 4 -in. Jointite Corkboard	.066
6-in. concrete slab and roofing, no insulation	.500
6-in. concrete slab and roofing, 1 -in. Jointite Corkboard	.187
6-in. concrete slab and roofing, 1½-in. Jointite Corkboard	.143
6-in. concrete slab and roofing, 2 -in. Jointite Corkboard	.115
6-in. concrete slab and roofing, 3 -in. Jointite Corkboard	.083
6-in. concrete slab and roofing, 4 -in. Jointite Corkboard	.065
2-in. Yellow Pine and roofing, no insulation	.345*
2-in. Yellow Pine and roofing, 1 -in. Jointite Corkboard	.160
2-in. Yellow Pine and roofing, 1½-in. Jointite Corkboard	.127
2-in. Yellow Pine and roofing, 2 -in. Jointite Corkboard	.105
2-in. Yellow Pine and roofing, 3 -in. Jointite Corkboard	.078
2-in. Yellow Pine and roofing, 4 -in. Jointite Corkboard	.062
3-in. Yellow Pine and roofing, no insulation	.256*
3-in. Yellow Pine and roofing, 1 -in. Jointite Corkboard	.138
3-in. Yellow Pine and roofing, 1½-in. Jointite Corkboard	.112
3-in. Yellow Pine and roofing, 2 -in. Jointite Corkboard	.095
3-in. Yellow Pine and roofing, 3 -in. Jointite Corkboard	.072
3-in. Yellow Pine and roofing, 4 -in. Jointite Corkboard	.058
Sheet steel deck and roofing, no insulation	1.000†
Sheet steel deck and roofing, 1 -in. Jointite Corkboard	.231
Sheet steel deck and roofing, 1½-in. Jointite Corkboard	.167
Sheet steel deck and roofing, 2 -in. Jointite Corkboard	.130
Sheet steel deck and roofing, 3 -in. Jointite Corkboard	.091
Sheet steel deck and roofing, 4 -in. Jointite Corkboard	.067
4-in. hollow tile, ⅝-in. roofing, no insulation	.485‡
4-in. hollow tile, ⅝-in. roofing, 1 -in. Jointite Corkboard	.187
4-in. hollow tile, ⅝-in. roofing, 1½-in. Jointite Corkboard	.142
4-in. hollow tile, ⅝-in. roofing, 2 -in. Jointite Corkboard	.114
4-in. hollow tile, ⅝-in. roofing, 3 -in. Jointite Corkboard	.083
4-in. hollow tile, ⅝-in. roofing, 4 -in. Jointite Corkboard	.065
6-in. hollow tile, ⅝-in. roofing, no insulation	.398‡
6-in. hollow tile, ⅝-in. roofing, 1 -in. Jointite Corkboard	.171
6-in. hollow tile, ⅝-in. roofing, 1½-in. Jointite Corkboard	.133
6-in. hollow tile, ⅝-in. roofing, 2 -in. Jointite Corkboard	.109
6-in. hollow tile, ⅝-in. roofing, 3 -in. Jointite Corkboard	.080
6-in. hollow tile, ⅝-in. roofing, 4 -in. Jointite Corkboard	.063

*On yellow pine, nominal thickness specified, actual thickness used in tests.
†Factor as furnished by the Truscon Steel Co.
‡½-in. plaster on underside and 2-in. concrete roof slab over tile is assumed.

Use of Chart

Locate the room temperature on Room Temperature Scale at top of chart and follow down on the corresponding line to its intersection with the line which represents the required humidity percentage, finding this point by interpolating, if necessary, on that segment of the vertical line between the diagonal lines, to obtain any required intermediate percentage between those shown in the left-hand column. For the sake of explanation the horizontal line so found will be referred to as the "humidity horizontal" for any particular case in point.

Next, determine the point of maximum difference in temperature on the scale at the bottom of the chart and follow up on the corresponding vertical line until it intersects the "humidity horizontal" and consider the point of intersection as point "A." Note where point "A" lies between two of the diagonal lines which represent amount of heat loss, and by interpolation between these light lines determine its value as compared to the figures in the right-hand column. The value so found will be the maximum allowable heat loss.

Determine from the Table of Heat Loss the thickness of insulation which will show a heat loss less than the value of "A" using the section of the table which shows the proposed type of construction combined with the insulation.

See also typical construction details showing heat loss tabulation.

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HEAT LOSS CHART

FOR DETERMINING THE MAXIMUM ALLOWABLE HEAT LOSS

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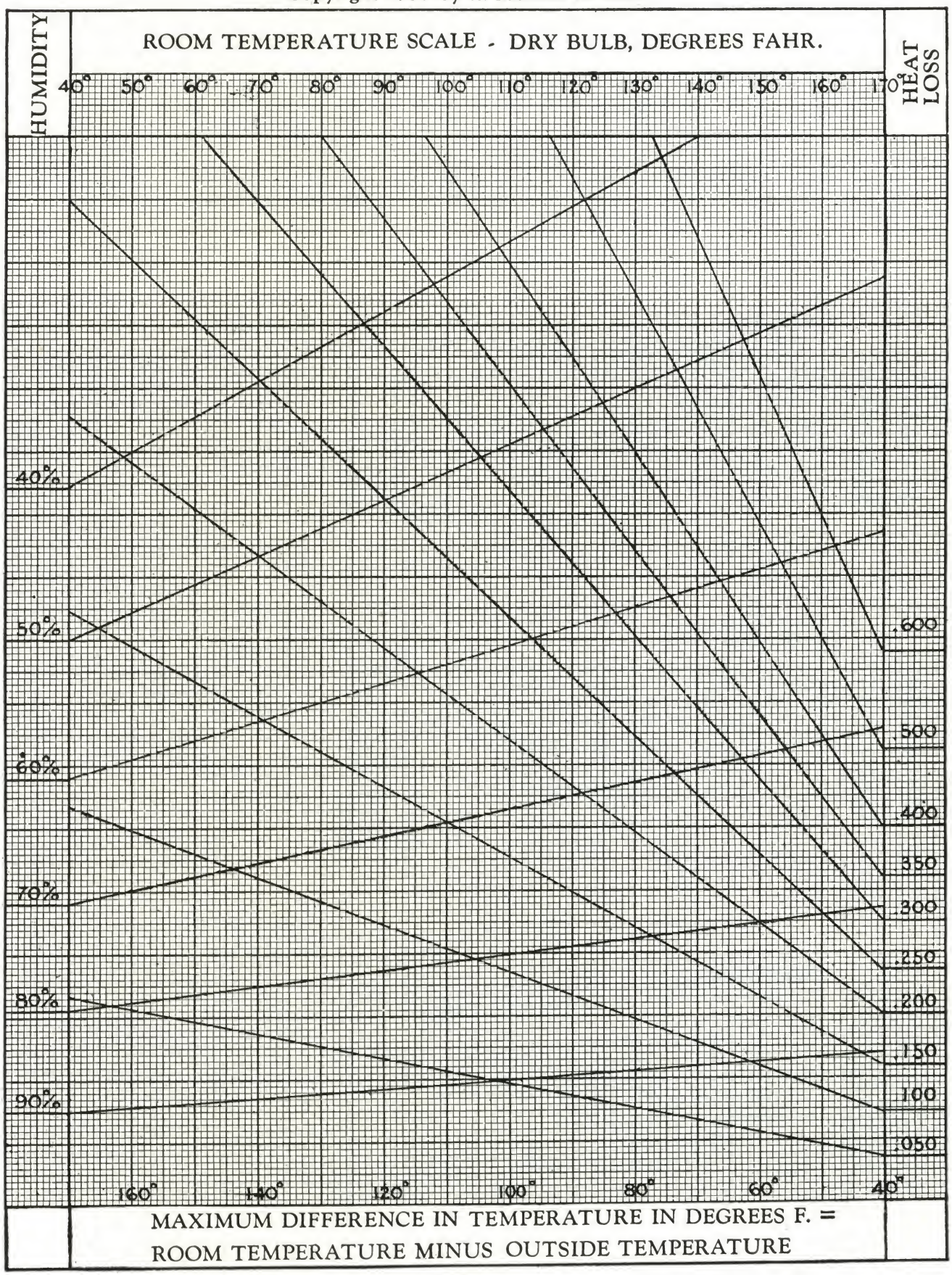

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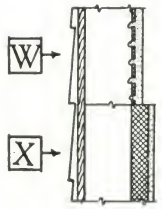
TYPICAL CONSTRUCTION DETAILS

Showing Heat Transmission for Insulated and Uninsulated Construction

Below are illustrated certain commonly used building sections, with and without insulation, together with tables showing the heat transmission through them expressed in B.t.u. per hour, per square foot, per degree difference in temperature. The figures given have been taken or computed from information contained in the 1930 Guide of the American Society of Heating and Ventilating Engineers.

The cuts are representative of methods of construction in common use and the data given will apply regardless of size or class of work. Should there be a type not illustrated upon which information is desired, a communication addressed to any of our offices will receive immediate attention and the specific information will be gladly furnished.

It is apparent from an inspection of these tables that the use of Mundet "Jointite" Corkboard will effect a considerable monetary saving. In commercial practice, the intangible factor of increased comfort for people working in insulated rooms, while difficult to estimate in dollars and cents is, nevertheless, an important consideration that is receiving greater attention from the careful executive. In the home, where comfort is of paramount importance, fuel economy due to use of Mundet "Jointite" Corkboard Insulation is overshadowed by factors of increased health and comfort.

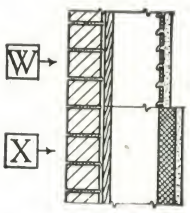


Specification

"W" beveled siding, waterproof paper, sheathing, studding, lath and plaster.

"X" beveled siding, waterproof paper, sheathing, studding, corkboard, plaster.

Not insulated, W	X, insulated with corkboard, in.	
	1½	2
.275	.117	.098

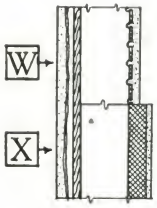


Specification

"W" brick veneer, waterproof paper, sheathing, studding, lath and plaster.

"X" brick veneer, waterproof insulation paper, sheathing, studding, corkboard, plaster.

Not insulated, W	X, insulated with corkboard, in.	
	1½	2
.258	.114	.087

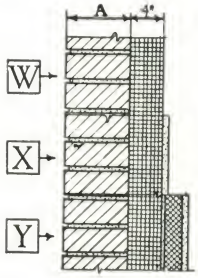


Specification

"W" stucco on metal lath, furring, waterproof paper, sheathing, studding, lath and plaster.

"X" stucco on metal lath, furring, waterproof paper, sheathing, studding, corkboard, plaster.

Not insulated, W	X, insulated with corkboard, in.	
	1½	2
.319	.125	.103



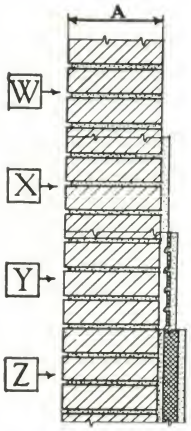
Specification

"W" brick, tile.

"X" brick, tile, plaster.

"Y" brick, tile, portland cement backing, corkboard, plaster.

Thickness, A, in.	Not insulated		Y, insulated with corkboard, in.	
	W	X	1½	2
8	.257	.243	.110	.092
12	.205	.197	.101	.087
16	.196	.185	.098	.085



Specification

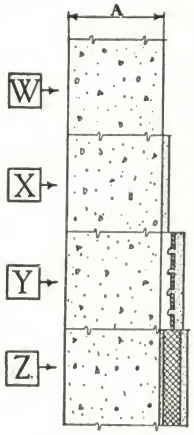
"W" 4-in. face brick and common brick.

"X" brick, plaster.

"Y" brick, furring, lath and plaster.

"Z" brick, portland cement mortar backing, corkboard, plaster.

Thickness, A, in.	Not insulated			Z, insulated with corkboard, in.	
	W	X	Y	1½	2
8	.385	.356	.261	.127	.105
12	.295	.277	.216	.115	.097
16	.238	.227	.184	.104	.090
20	.190	.176	.153	.097	.083
24	.162	.148	.126	.089	.078



Specification

"W" concrete—1 : 3 : 5 mix.

"X" concrete, plaster.

"Y" concrete, furring, lath and plaster.

"Z" concrete, portland cement mortar backing, corkboard, plaster.

Thickness, A, in.	Not insulated			Z, insulated with corkboard, in.	
	W	X	Y	1½	2
4	.641	.573	.367	.150	.121
6	.583	.518	.339	.142	.116
8	.512	.461	.314	.138	.113
10	.455	.416	.292	.134	.109
12	.411	.378	.273	.131	.106
16	.343	.320	.241	.122	.101
18	.319	.299	.228	.120	.099
20	.294	.277	.216	.116	.097

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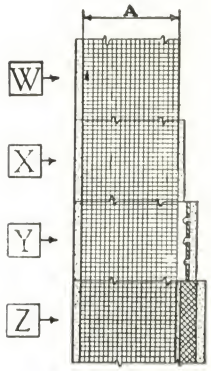


Specification

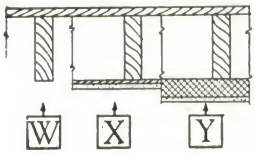
"W" stucco, hollow tile.

"X" stucco, hollow tile, plaster.

"Y" stucco, hollow tile, furring, lath and plaster.

"Z" stucco, hollow tile, portland cement backing, corkboard, plaster.

Thickness, A, in.	Not insulated			Z, insulated with corkboard, in.	
	W	X	Y	1½	2
4	.515	.463	.411	.142	.115
6	.419	.384	.346	.134	.110
8	.317	.296	.228	.119	.099
10	.304	.285	.221	.117	.093
12	.241	.229	.186	.106	.090



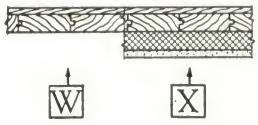
Specification

"W" single wood floor joists.

"X" single wood floor joists, lath and plaster.

"Y" single wood floor, corkboard, plaster.

Not insulated		Y, insulated with corkboard, in.	
W	X	1½	2
.440	.272	.119	.100

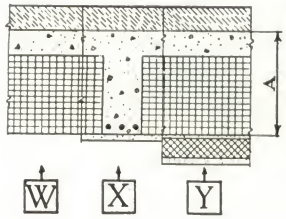


Specification

"W" finished wood floor (1 in.), mill constructed plank floor.

"X" finished wood floor, mill constructed plank floor, corkboard, plaster.

Not insulated, W	X, insulated with corkboard, in.	
	1½	2
.233	.108	.092



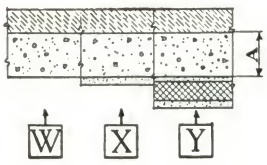
Specification

"W" finished (2-in.) concrete floor, reinforced concrete joist and tile slab.

"X" finished floor, reinforced concrete joist and tile slab, plaster.

"Y" finished floor, reinforced concrete joist and tile slab, portland cement mortar backing, corkboard, plaster.

Thickness, A, in.	Not insulated		Y, insulated with corkboard, in.	
	W	X	1½	2
5½	.621	.550	.150	.120
8	.430	.359	.135	.112
10½	.392	.321	.132	.108
13	.370	.299	.129	.106
15½	.271	.200	.114	.096



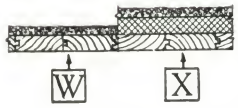
Specification

"W" finished (2-in.) concrete floor, reinforced concrete slab.

"X" finished floor, reinforced concrete slab, plaster finish.

"Y" finished concrete floor, reinforced concrete slab, portland cement mortar backing, corkboard, plaster.

Thickness, A, in.	Not insulated		Y, insulated with corkboard, in.	
	W	X	1½	2
4	.461	.419	.135	.110
5	.438	.400	.133	.109
6	.417	.380	.131	.107
7	.392	.363	.129	.106
8	.378	.348	.127	.105
10	.345	.322	.123	.103

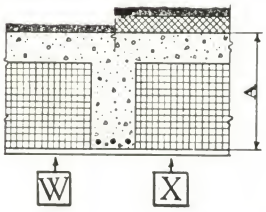


Specification

"W" standard built-up roofing, mill construction plank roof.

"X" standard built-up roofing, corkboard, mill construction plank roof.

Not insulated, W	X, insulated with corkbpard, in.	
	1½	2
.345	.126	.104

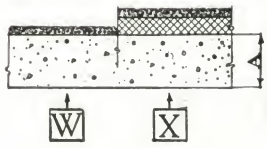


Specification

"W" standard built-up roofing, reinforced concrete joists and tile slab, plaster.

"X" standard built-up roofing, corkboard, reinforced concrete joists and tile slab, plaster.

Thickness, A, in.	Not insulated, W	X, insulated with corkboard, in.	
		1½	2
5½	.515	.143	.116
8	.456	.138	.112
10½	.410	.133	.109
13	.381	.130	.107



Specification

"W" standard built-up roofing, reinforced concrete slab.

"X" standard built-up roofing, corkboard, reinforced concrete slab.

Thickness, A, in.	Not insulated, W	X, insulated with corkboard, in.	
		1½	2
2	.658	.153	.122
3	.610	.151	.120
4	.568	.148	.119
5	.532	.145	.117
6	.500	.143	.115
7	.472	.140	.113
8	.447	.138	.112

Continued on next page

MACHINERY ISOLATION

Mundet Natural Cork Isolation Mats

The most effective way to isolate machinery to prevent the transmission of vibration and noise would be to have an air space completely surround the machine. As this is not possible, it becomes necessary to employ an isolating medium of sufficient strength to support the machinery.

This medium should be selected with a great deal of care or its purpose will be defeated. It must not be a precompressed material, granular, take a permanent set after a load has been imposed upon it, or have too high a loading point before it begins to function. It should have structural strength to sustain the load, sufficient permanent resiliency to remain durable and indestructible when placed under any kind of vibratory loads. It should be water, oil, acid and alkali proof. It should be resilient at a fairly low loading point and able to resume its natural state when subject to severe impacts or thusts.

Many materials have been used for this purpose; compressed cork, felt, sand, rubber, springs, timber and natural cork. (By natural cork is meant the cork just as it has been stripped from the tree, only the extreme outer bark having been removed.) The material selected as serving the greatest number of cases and embodying the most favorable characteristics is natural cork. This when properly used has by far the best isolating properties.

Natural cork is the bark of a species of oak tree principally grown in Spain and Portugal. *Natural cork has in its structure hundreds of air cells* which are very desirable in an isolating material for it supplies the nearest to perfect isolation which is the air space. Also, it has structural strength, permanent elasticity, durability and low loading point.

To obtain the best results the authorities state that the cork should be cut in strips so that the grain of the cork is in a horizontal position when the load is imposed upon it. To do this without the means of cohesive substances, frames of light steel are constructed. These frames should have longitudinal and lateral struts inserted at intervals according to the size of the frame. Into these squares, strips of the natural cork should be carefully fitted. The plates should be sanded to an even surface and impregnated with non-volatile oils to preserve the natural cork oil. This impregnation also makes the cork impervious to water, acids and alkalies.

Mundet Natural Cork Insolation Mats are constructed exactly in accordance with the best established practice. Only the highest quality of materials and workmanship are used in their fabrication. Our cork is the finest of the isolation cork obtainable in Portugal and Spain and because of our ability to use the waste in other products only the very choice pieces are used in making the Mundet Natural Cork Isolation Mats. The steel frames are rigidly constructed and will not burst open even when put under the greatest strain.

Each plate is submerged in our special non-volatile oil and allowed to remain until properly saturated.

Natural cork has been used for more than a quarter of a century for isolating machines and machine foundations, both in this country and in Europe. Many of our leading architects and engineers have standardized on natural cork and include it in the specifications for all machinery foundations, realizing in doing so they are using the only safe method to prevent the transmission of vibration and noise.

Sizes

Mundet Natural Cork Isolation Mats are made in any size or shape, in 1½, 2 or 3-in. thicknesses. The standard thickness, 1½-in., is stocked for immediate delivery and can be had in the following sizes (sizes are in inches):

50x25	40x20	30x15	25x15	15x15
50x15	40x15	30x12	25x10	12x12
50x12	40x12	30x10	20x15	8x8
50x10	40x10	30x8	20x10	6x6

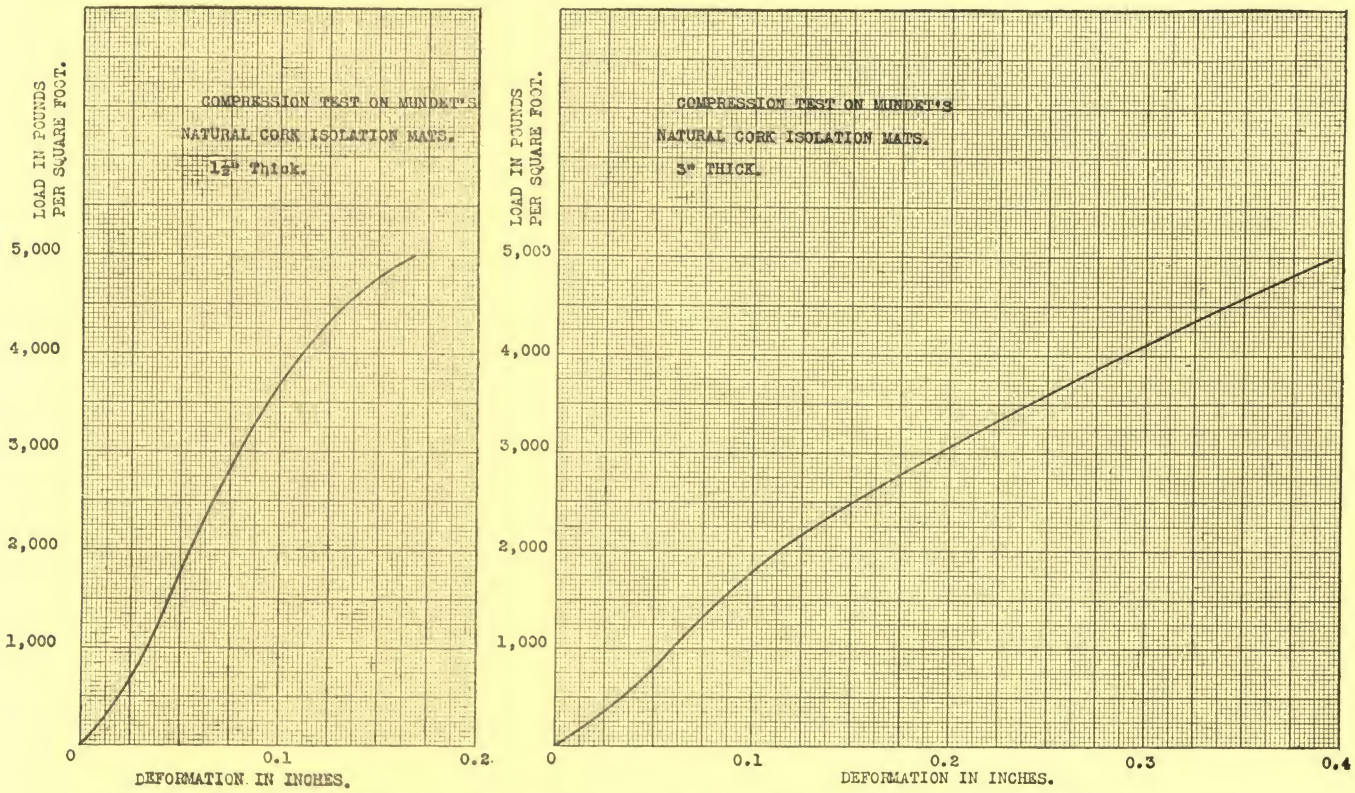
The 2 and 3-in. thick Mundet Natural Cork Isolation Mats are used for machinery having severe vertical impacts or intense vibrations. They can be made in any size or quantity on short notice.

Mundet Natural Cork Isolation Mats

Continued on next page

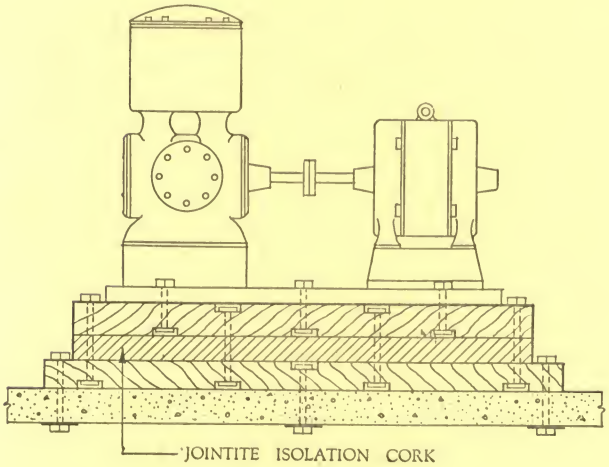
Service

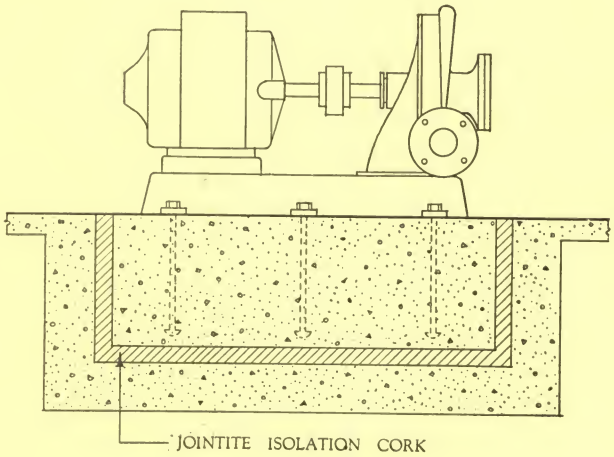
Our numerous branch offices throughout the United States and Canada are manned with trained engineers who will readily solve your vibration or noise problems. Send information regarding your requirements to the nearest office, or ask to have one of our engineers call and tell you how, with Mundet Natural Cork Isolation Mats, your problem can be solved.



Compression Tests on Mundet "Jointite" Isolation Corkboard, 1½ and 3 In. Thick

The above charts show the deformation at different loads for the thicknesses indicated from which can be selected the proper grade to be used





ARMSTRONG'S TEMLOK

DISTRIBUTED BY
ARMSTRONG CORK & INSULATION COMPANY

935 Concord Street, LANCASTER, PA.

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For Armstrong's Corkboard, Corkoustic, and Cork Machinery Isolation, see Manufacturers' Index

Description

Temlok, Armstrong's new low-cost insulating board, is manufactured by fabricating the golden heartwood fibres of southern pine. Golden tan in color, Armstrong's Temlok has high insulating efficiency, low water-absorption, high structural strength, resists mold, is odorless and is easily applied. Developed by the Armstrong Research Laboratories after a four-year search for an efficient low-cost insulating material, Temlok has behind it the ARMSTRONG CORK & INSULATION COMPANY'S prestige and experience in the insulation field.

Sizes

(a) Armstrong's Temlok house insulation, when used to replace sheathing, or as insulating board, is furnished in boards 4 ft. wide, by 6, 8, 9, and 12 ft. long, in 7/8-in. thickness.

(b) Armstrong's Temlok plaster lath is furnished in boards, each 18x48 in., 7/8 in. thick.

(c) Armstrong's Temlok for roof insulation is furnished in solid-inch thicknesses in boards, each 22x47 in. The average weight is 1.2 lb. per board ft., or 120 lb. per square. Armstrong's Temlok is furnished without wrapping when shipment can be made as a full carload. Armstrong's Temlok also is furnished in securely wrapped bundles of seven boards, each bundle having a total weight of 60 lb. There are 50 sq. ft. to a bundle or two bundles to the square.

Physical Characteristics

(a) Thermal Conductivity—Armstrong's Temlok's conductivity is .31 B.t.u. per square foot, per inch thickness, per degree Fahrenheit temperature difference, per hour at 60 degrees mean temperature.

(b) Structural Strength — Armstrong's Temlok has ample structural strength for every practical requirement. The strong firm boards withstand compression.

(c) Moisture Resistance—Laboratory tests show that Armstrong's Temlok has low moisture absorption. Consequently Armstrong's Temlok maintains great insulating efficiency and retains its structural form even under the most severe conditions.

(d) Permanence—Because Armstrong's Temlok is furnished in board forms, it does not deteriorate, pack, or settle. It provides lifelong insulation.

(e) Uniformity—Exacting tests at every stage of the manufacturing process insure uniformity in the finished product.

(f) Application—Armstrong's Temlok is easily applied to walls, ceilings and roofs by standard methods of construction. Standard specifications for any application are available.

Armstrong Service

Armstrong's Engineering and Research facilities are available to you, without obligation. Branch offices and agents listed above are located in all principal cities. Call the branch nearest for further information, or, if you prefer, write for literature and samples to the ARMSTRONG CORK & INSULATION COMPANY, Lancaster, Pa.

CERTAIN-TEED PRODUCTS CORPORATION

BEAVER PRODUCTS COMPANY, INC.

Manufacturers of Beaver Wall Board and Insulating Boards

GENERAL OFFICES
100 East 42nd Street
NEW YORK, N. Y.

PLANTS: FIBRE DIVISION—BUFFALO, N. Y., and THOROLD, ONT. CAN.

For Sales Offices, see Gypsum Plaster pages

For Our Other Products, see Manufacturers' Index

FIBRE BOARD

The Original Fibre Board—The Standard for Quality

Beaver Board is the original wall board and millions of these serviceable panels are used in homes, factories, stores and for a variety of special uses where a sturdy light weight board in convenient sizes is desirable.

Beaver Board is well known throughout the world for its high standard of quality and it is now furnished under Certain-teed and Beaver labels.

TRADE-MARKS

Certain-teed and Beaver Fibre Board (4-Ply)

This 4-ply board is made of long, tough interlocked fibre, pebbled surface on one side—smooth on the other. It contains millions of tiny dead air cells and combines not only heat and cold resisting properties but also strength, rigidity and surface qualities. It comes in convenient panels approximately $\frac{3}{16}$ in. thick, 32 and 48 in. wide, in 6, 7, 8, 9, 10, 12, 14 and 16-ft. lengths, packed 10 panels per bundle.

One side of the board is pebbled and the other side is plain, giving two different decorative surfaces. A special sizing seals the surface against moisture or climatic change and reduces paint consumption.

Advantages—The advantages of Beaver Board are its light weight, ease of cutting and application, insulating qualities and attractiveness of the finished job.

Beaver Board may be applied over old papered or painted walls, thus saving the cost of removing the paper or the need of patching plastered walls. It is of even thickness and has no grain. It is tough, rigid and will not crack, chip or sag, and may be sawed to any odd size.

Jumbo Certain-teed and Beaver Fibre Board (5-Ply)

This 5-ply board, known as *Jumbo Board,* is made of the same materials and in the same way as the Standard Beaver Board and is identical with it except for thickness and weight.

Jumbo Board is recommended for jobs where exceptional strength is desired.

It comes in convenient panels, approximately ¼ in. thick, 32 and 48 in. wide, in 6, 7, 8, 9 and 10-ft. lengths, packed 10 panels per bundle; and in 12, 14 and 16-ft. lengths, packed 8 panels per bundle.

Beaver Board Can Be Sawed as Easily as Lumber

Beaver Board Is Tough and Rigid and Nails Securely Into Place

This Special Surface Takes Paint Easily, Gives an Even Finish, Free from Roughness

Pleasing Decorative Effects May Be Produced by Paneling the Board Intersections

Continued on next page

Certain-teed and Beaver Insulating Board (5-Ply)

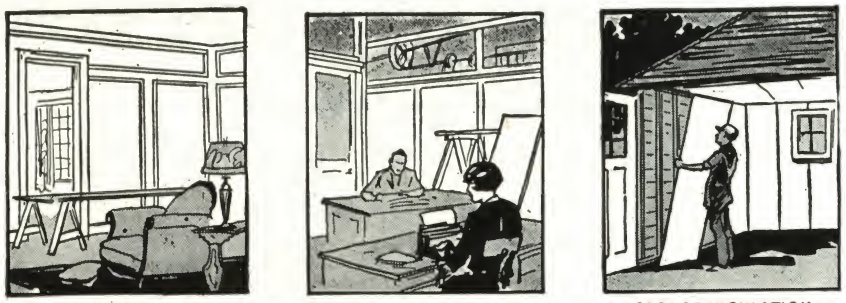
This is a 5-ply laminated insulating board, $\frac{7}{16}$ in. thick, made of a fibrous material combining excellent insulating and soundproofing qualities. It has unusual strength and rigidity as a structural material. It is internally treated to resist moisture.

It nails and saws like lumber and is easily and quickly applied anywhere. As a sheathing it is ideal, supplying the needed insulation back of wood, brick, or other exteriors, at the same time adding unusual strength.

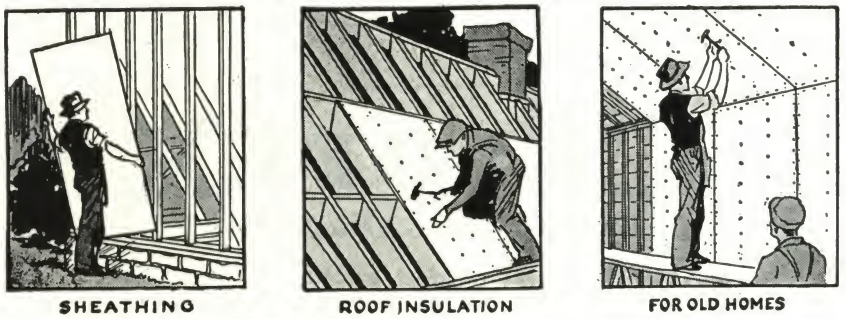
It is also an excellent sound deadener. It offers excellent nailing qualities and is easy to apply to walls and ceilings.

Its close grained surface assures an excellent finished appearance with the use of less paint.

It is supplied in panels $\frac{7}{16}$ in. thick; 48 in. wide only; and in lengths 6 to 12 ft.; packed 5 panels per bundle.



Application of Certain-teed (Beaver) Board



Application of Certain-teed Insulating Board

Certain-teed and Beaver Fibre Tile Board

This is a tough, rigid fibre board, indented and scored to give the appearance of tile. It should be painted or enameled to a high glossy finish to carry out this effect and is remarkably effective as a wall covering when carefully applied and finished.

This tile board is recommended for kitchens, baths, restaurants, etc., providing glistening tile wainscots and walls that are attractive and easily kept clean. It gives a durable, beautiful tile wall at about one-tenth the cost of ceramic tile.

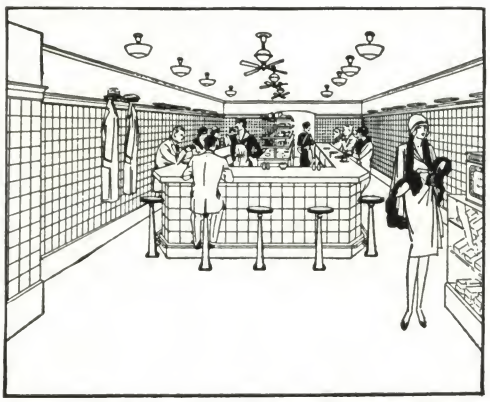
Typical Application of Fibre Tile Board
Rectangular Type

Not only is the tile board itself economical but application costs are greatly reduced. In a 12-ft. panel there are 1153 individual tiles. This whole panel is quickly and securely nailed into place on the studs or right over the old wall material.

It comes in convenient sized panels all ready to be quickly nailed into place, or cut to any size as required. The panels are full $\frac{3}{16}$ in. thick, 4 ft. wide and in lengths of 6, 7, 8, 9, 10, 12, 14 and 16 ft. Two styles of tile board are manufactured, one with individual tiles 1½x4 in. in size, the other with the individual tiles 4x4 in. in size. It is packed 10 panels per bundle.

Its construction is the same as standard fibre board, plus a fifth ply of special jute liner to permit producing a perfect tile indentation.

A beautiful smooth enamel finish can be obtained by using two coats of Certain-teed Enamel First Coater (sanded lightly between coats with 00 sandpaper) and one or more coats Certain-teed Decorative Enamel.



Typical Applications of Fibre Tile Board
Square Type

CELOTEX INSULATING CANE BOARD

Manufactured by
THE CELOTEX COMPANY
919 North Michigan Avenue, CHICAGO, ILL.

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Products

CELOTEX BRAND INSULATING CANE BOARD

CELOTEX STANDARD BUILDING BOARD.
CELOTEX LATH.
CELOTEX CARPET LINING.
CELOTEX LINOLEUM BASE and ¼-IN. CARPET LINING.
CELOTEX ROOF INSULATION BOARD.
CELOTEX INDUSTRIAL INSULATION BOARD.
ACOUSTI-CELOTEX.
CELOTEX REFRIGERATOR INSULATION BOARD.

Description and Manufacture

Celotex, a rigid board form of insulation with a pleasing tan color and an attractive tapestry-like texture, is established throughout the world as a standard building material. It is manufactured by the felting or weaving of tough sugar cane fibres. The Company produced in 1922 some 18 million square feet, in 1929 about 348 million square feet, and its present capacity is approximately 600 million square feet per year. It is distributed through retail dealers.

Service

An Architectural and Building Service Department is at your disposal for the solution of special architectural and engineering problems in relation to insulation.

Thermal Conductivity

The thermal conductivity of Celotex has been established by many nationally known laboratories (U. S. Bureau of Standards, Armour Institute of Technology, and others). The average conductivity established by test in these laboratories is 0.33 B.t.u. per hour, per sq. ft., per degree F., per in. thickness.

Structural Strength

Structural strength tests made by Armour Institute of Technology, The University of Minnesota, The R. W. Hunt Company, Columbia University, and other laboratories have shown that Celotex used as sheathing in buildings provides greater bracing against distortion of the building than does horizontal wood sheathing.

Plaster Bond

Tests made to determine the bond of plaster to Celotex indicates that plaster attains a bond or holding power to Celotex of 1000 lb. per sq. ft. This is a stronger bond than is attained where plaster is applied over wood lath and many other types of plaster lath.

Fire Resistance

Celotex is slow-burning. Due to its high insulating value, light weight, and in the absence of open joints it retards the spread of fires.

Vermin Resistance

In the process of manufacturing Celotex, soluble contents of the fibres are completely removed, leaving no food value whatsoever for rodents or other vermin. Celotex is a sterile product.

Celotex Standard Building Board

Furnished in $\frac{7}{16}$ and $\frac{7}{8}$-in. thickness, cut to standard size of 4 ft. wide by 7, 8, 8½, 9, 9½, 10 and 12 ft. long.

Celotex Lath

Furnished in $\frac{7}{16}$ and $\frac{7}{8}$-in. thickness, 18 in. wide by 48 in. long.

Celotex Industrial Insulation Board

Furnished in thicknesses of approximately ½ in. and multiples thereof, 3 ft. wide by 6 ft. long.

Celotex Roof Insulation Board

Furnished in thicknesses of ½ in. and multiples thereof, 2 ft. wide by 5 ft. long.

Celotex Linoleum Base

Furnished in ¼-in. thickness, 3 ft. wide by 5 ft. long.

Acousti-Celotex

See Section 14.

Continued on next page

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Section 1
CELOTEX AS SHEATHING AND AS EXTERIOR FINISH

Material—Sheathing for all walls and roofs shall be Celotex Standard Building Board ($\frac{7}{16}$, $\frac{7}{8}$ in.) thickness.

Material—Exterior finish shall be Celotex Standard Building Board, which has been weather conditioned by moistening and piling for at least one day.

Framing—Studs and rafters shall be as in ordinary frame construction, 12 or 16 in. on centers 2x4-in. headers shall be inserted between studs and rafters at the ends of all Celotex boards to serve as a nailing base.

Application—The Celotex boards shall be applied lengthwise to the framing, and with $\frac{3}{16}$-in. joints.* Never force Celotex into place. Around door and window frames or where a snug fit is desired Celotex shall be brought to close contact with the frames. When $\frac{7}{16}$-in. Celotex is used, an extra strip of Celotex shall be nailed to the back of door and window frames to prevent air leakage.

Nailing—Standard 1½-in. galvanized roofing nails (for $\frac{7}{16}$-in. Celotex) or 6d common nails for ($\frac{7}{8}$-in. Celotex) shall be used. Nail to intermediate framing members first, spacing nails 6 in. apart and then along edges 3 in. apart and $\frac{3}{8}$ in. from edge, driving nail heads just below the surface.

Applying Wood Siding—Apply wood siding directly over Celotex, nailing through to the studs. Siding boards shall butt over studs.

Applying Shingles on Wall—Nail 1x2-in. furring strips horizontally over Celotex to studs, spacing to fit the shingles. Nail shingles to furring strips.

Applying Shingles on Roof—Nail horizontal 1x2-in. furring strips through the Celotex into the rafters, spacing to fit the shingles.

Applying Stucco—All cased openings shall be flashed with strips of metal or prepared roofing. A layer of asphalt coated waterproof paper weighing approximately 10 lb. per 100 sq. ft. shall be applied over all surfaces of Celotex that are to receive stucco. Stucco shall be applied in accordance with the manufacturer's specification to an approved base.

Applying Brick or Stone Veneer—A layer of asphalt coated waterproof paper weighing approximately 10 lb. per 100 sq. ft. shall be applied over all surfaces that are to be veneered. Anchors for brick or stone work shall be nailed through Celotex into the studs. The brick or stone shall be laid in the usual manner. Allow not less than ½-in. space between the Celotex and the brick or stone.

Painting and Finishing—Exterior surfaces shall be painted (see Section 5) before covering joints with moulding or panel strips which shall be at least 3 in. wide and shall be nailed through to the studs.

*Celotex is cut scant in width and length to allow for this space at joints.

Section 2
CELOTEX AS ROOF LINING, ATTIC LINING, FLOOR LINING

Material—Roof, attic, and floor insulation shall be Celotex Standard Building Board ($\frac{7}{16}$, $\frac{7}{8}$ in.) thickness, and shall be adjusted to inside humidity and temperature conditions.

Framing—Rafters and joists shall be as in ordinary construction, 12 or 16 in. on centers.* 2x4-in. headers shall be provided between framing members at the ends of all Celotex boards to serve as a nailing base.

Application—(See Section 1.) Celotex boards shall be extended to a tight fit with the outside insulation or sheathing directly, or indirectly by bringing into contact with the plate.

*If framing is not spaced properly it shall be furred with 1x2-in. furring strips 16 in. on centers.

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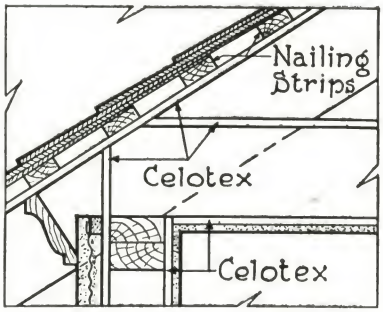
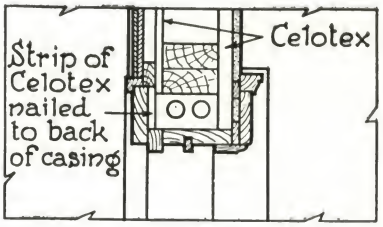
APPLICATION TO FRAME CONSTRUCTION





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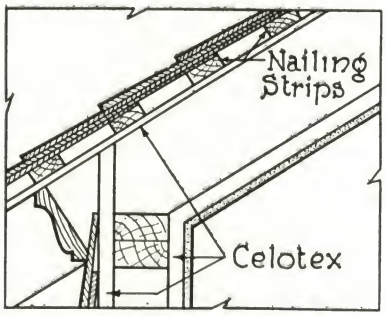

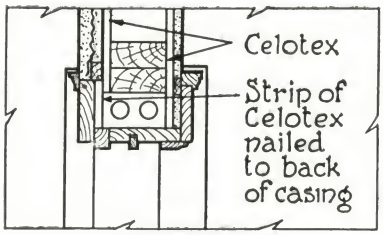

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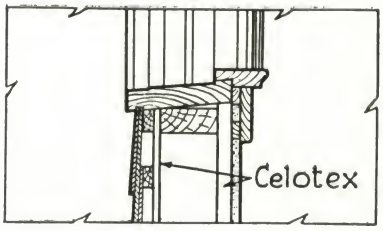
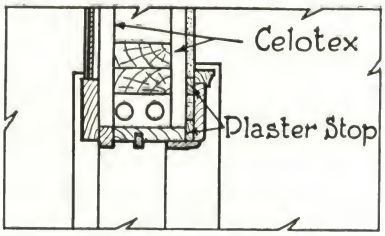


SILL

SHINGLES ON WOOD FRAMING.
7/16" Celotex Sheathing
7/8" Celotex Lath.



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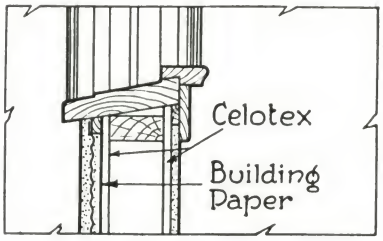

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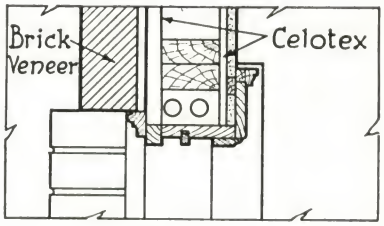

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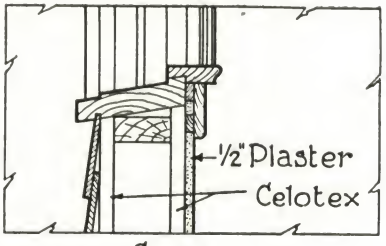

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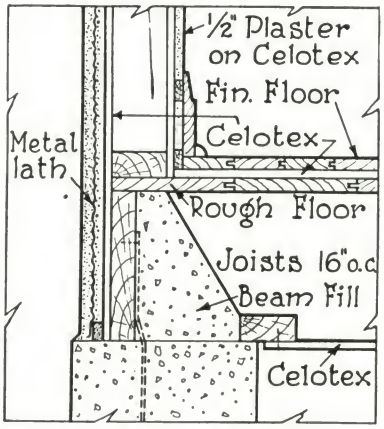
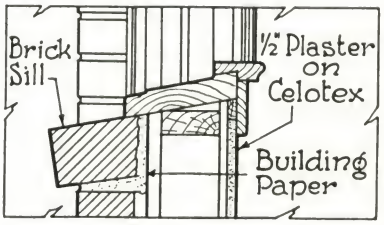
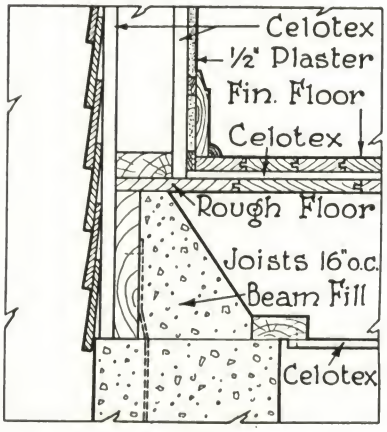


STUCCO ON WOOD FRAMING
7/16" Celotex Sheathing
7/16" Celotex Lath.



SILL

BRICK VENEER ON WOOD FRAMING
7/8" Celotex Sheathing
7/16" Celotex Lath.



WOOD SIDING ON WOOD FRAMING
7/8" Celotex Sheathing
7/8" Celotex Lath

DETAILS SHOWING APPLICATION OF CELOTEX TO FRAME CONSTRUCTION.

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Section 3
CELOTEX AS INSULATION OVER A STRUCTURAL SOLID WOOD BASE SUCH AS A SUB-FLOOR OR SHEATHING (See also Section 7)

Material—Celotex Standard Building Board ($\frac{7}{16}$, $\frac{7}{8}$ in.) thick shall be used.

Application—Laid with edges in moderate contact and shall be nailed sufficiently to hold in place.

Section 4
CELOTEX AS INTERIOR FINISH

Material—Shall be Celotex Standard Building Board ($\frac{7}{16}$, $\frac{7}{8}$ in.) thickness, and shall be adjusted to inside humidity and temperature conditions by standing them loosely around room 24 hours before applying.

Framing—Shall conform to the design of the panelling required, spacing studs and joists not more than 16 in. on centers.* 2x4-in. headers shall be inserted between regular framing at the ends of all Celotex boards and wherever heavy mouldings are to occur, to serve as a nailing base. Bent framing members shall be straightened so as to establish a true even framing surface.

Application—The Celotex boards shall be applied lengthwise to the framing with edges in moderate contact.

*To take Celotex boards cut $\frac{1}{16}$ in. less than 4 ft. wide.

Nailing—Where joints of Celotex are to be covered with moulding, standard 1½-in. galvanized roofing nails (for $\frac{7}{16}$-in. Celotex) or 6d common nails (for $\frac{7}{8}$-in. Celotex) shall be used. For all exposed nailing, 1½ in. ($\frac{7}{16}$-in. Celotex) or 2 in. (for $\frac{7}{8}$-in. Celotex) finishing nails shall be used, and shall be driven at an angle just below the surface. Celotex shall first be nailed 6 in. apart to intermediate bearings, and then along all edges 3 in. apart and $\frac{3}{8}$ in. from edge.

Treatment of Exposed Joints—Edges of Celotex boards that are to form exposed joints shall be (slightly rounded or beveled) before applying.

Note: Bevel by means of cutting tool, saw or sand paper. Round off with sand paper.

Section 5
PAINTING AND DECORATING

Paint (Oil)—All surfaces of Celotex that are to be painted shall be glue sized* or primed.† Joint fillers shall not be used.

Water Stains—Shall be applied direct according to manufacturer's specification.

Kalsomine—Shall have a small amount of glue added to the mixture and shall be applied direct.

Stains—Shall be applied according to the manufacturer's specification.

Stencils—*Note:* May be applied direct and with any medium, but fresco or Japan colors are usually employed, especially over surfaces brushed with sizing or a glue water stain.

Paper—All Celotex joints shall be sanded on the surface and then stripped with a 4-in. galvanized screen cloth.‡ Bonded to the Celotex by means of Swedish Putty, a mixture of plaster of Paris and glue size, or equal, which should be forced through the wire stripping with a 4-in. scraping knife or pointing trowel and spread somewhat to each side so as to avoid a ridge. All nail holes should be pointed up with the bonding material. After the bonding cement has set, the entire surface shall be glue sized.

Plastic Paint—All Celotex joints shall be prepared and stripped with wire screening. (See preceding paragraph on Paper.) Plastic Paint shall be applied over a surface as prescribed by THE CELOTEX COMPANY§ according to manufacturer's specification.

*Glue size shall consist of 1½ lb. shell or chip glue in 1 gallon boiling water. To be applied warm within eight hours.

†Priming coat shall consist of 1 part turpentine, 1 part boiled linseed oil, 1 part paint.

‡12 mesh per inch annealed wire in rolls is preferable.

§Not all plastic paints are satisfactory over Celotex. Some require a glue sized surface.

Section 6
CELOTEX LATH

Material—Lath for all surfaces to be plastered shall be Celotex Lath ($\frac{7}{16}$, $\frac{7}{8}$ in.) thickness, used from the manufacturer's package, and shall not be wetted or moistened.

Framing—Shall be as in ordinary frame construction with studs, joists, and rafters which are to be lathed spaced 12 or 16 in. on centers.

Application—The Lather shall cover all surfaces to be plastered with Celotex Lath, applied with beveled edges exposed to receive and reinforce the plaster. The long shiplapped edges of the lath shall be attached at right angles to the framing. All end joints shall be centered on the framing and shall be broken or staggered. All exterior angles shall be reinforced with standard type of corner bead, and all interior angles and joints with frame or masonry walls shall be reinforced with strips of expanded metal lath or wire mesh bent into the angle and secured in place by stapling. Where arches and curves are to be lathed, nail the lath through the center and bend to the contour of the framing.

Note: Where $\frac{7}{8}$-in. lath is used, the carpenter shall be required to fit all door and window frames with an inside reveal strip or stop of sufficient size and shall block out the frame with plaster grounds wherein necessary.

Plastering on Celotex Lath—Do not wet or moisten Celotex Lath after nailing. Plastering shall be done with prepared gypsum plaster applied in accordance with manufacturer's specifications. The first or scratch coat and the brown coat, if three coat work is done, together shall have a thickness of not less than $\frac{3}{8}$ in. and the total plaster thickness shall not be less than ½ in. Darby strokes shall be in the direction of framing members with the darby spanning two.

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Section 7
CELOTEX AS SOUND INSULATION IN PARTITIONS AND FLOORS

Material—Shall be Celotex.

Note: Insulation placed between or within walls and floors shall be Celotex Standard Building Board or Celotex Industrial Insulation Board. All surfaces that are to be plastered shall be covered with Celotex Lath.

Partitions—*Note:* The particular type of partition shall be specified in detail of construction and material.

Where sound insulation is to be inserted loosely within the partition, a space equal to twice the thickness of the Celotex to be used plus 1 in. shall be specified in the clear.

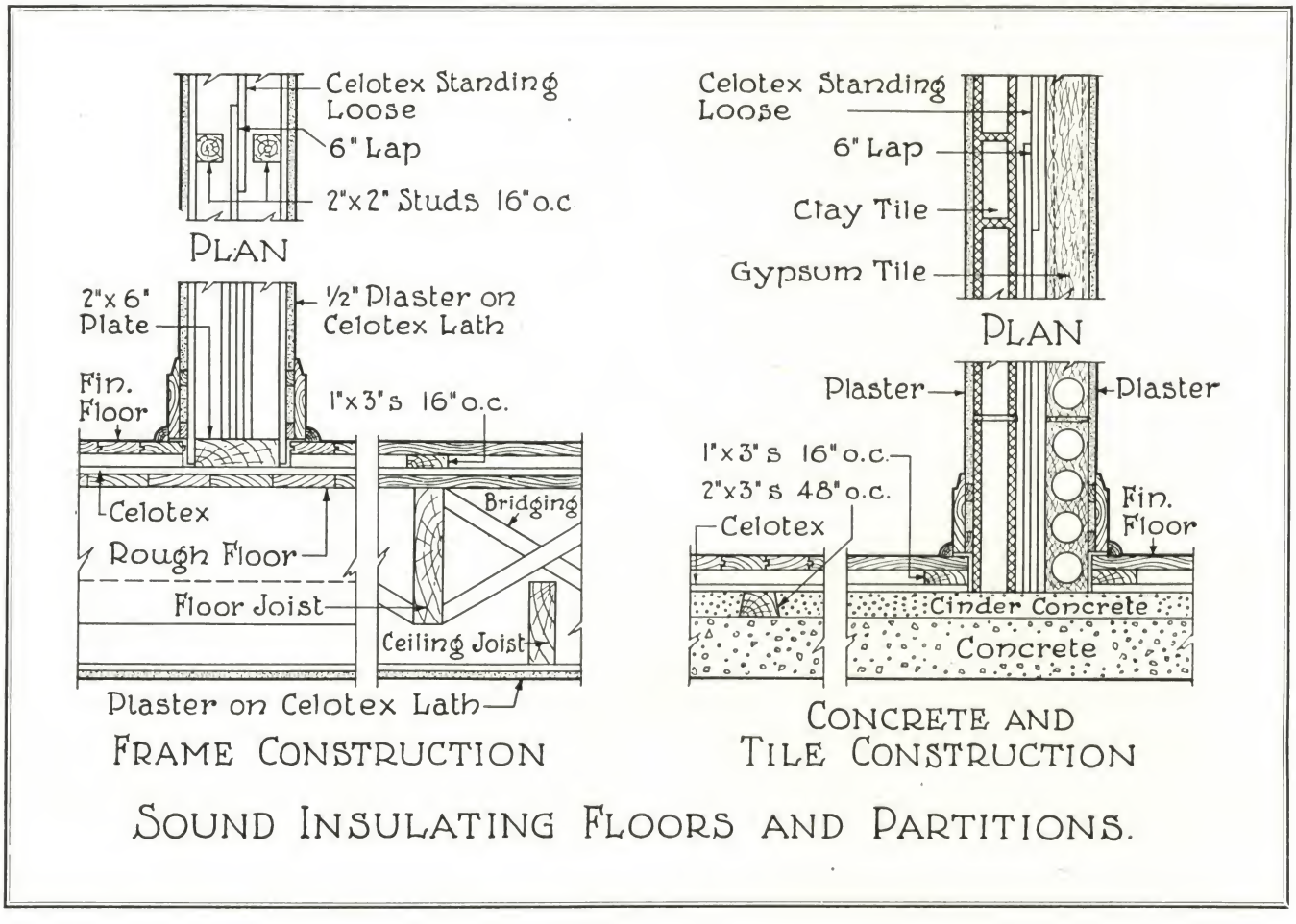
A loose layer of Celotex shall be placed between the walls or faces of the partition, in the space provided, lapping all edges at least 6 in.

Concrete Floors—*Note:* If floors are to be covered with linoleum, Celotex Linoleum Base shall be specified, bonded to concrete with asphalt or linoleum cement.

Celotex shall be nailed to wood sleepers with cinder concrete fill between. 1x3-in. wood strips shall be placed over the Celotex at right angles to the wood sleepers through to which they shall be nailed. The finish floor should be nailed to these strips.

Wood Floors—*Note:* The entire floor construction shall be specified in detail. Best results are obtained by specifying ceiling joists to be separate from floor joists.

Celotex shall be laid over the sub-flooring with edges in moderate contact, and should not be nailed except to hold in place. 1x3-in. wood strips shall be placed over the Celotex and nailed through to the wood sub-floor every 48 in. The finish floor should be nailed to these strips.



SOUND INSULATING FLOORS AND PARTITIONS.

Section 8
CELOTEX AS INSULATION AROUND AIR DUCTS, AND FORM CENTERING, Etc.

Air Ducts—Shall be insulated with Celotex Industrial Insulation Board fastened to wood furring or wired direct according to architect's specification.

Form Centering—Forms for concrete where Celotex is to act as interior finish or as a base for treatment as specified by the architect shall be lined with Celotex Standard Building Board or Celotex Industrial Insulation Board according to manufacturer's specification.

Note: Complete details furnished upon request by THE CELOTEX COMPANY.

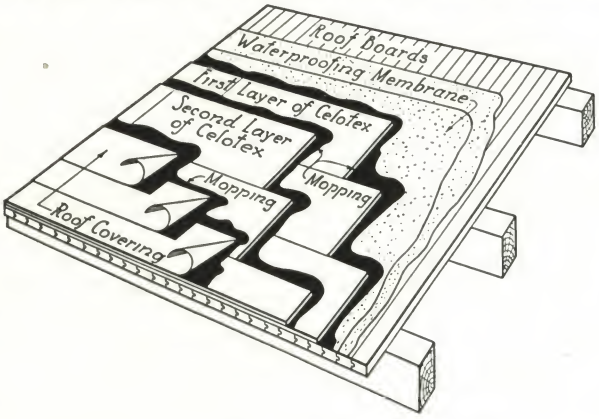
Continued on next page

Section 9
CELOTEX ROOF INSULATION OVER WOOD ROOF DECKS

Material—Shall be Celotex Roof Insulation Board in one or two layers. The first layer shall be (½, 1, 1½ or 2 in.) thick and the second layer shall be (½, 1, 1½, 2 in., etc.) thick.

Note: The layer of lesser thickness shall be applied first.

Roof Deck — Shall be thoroughly dry, broomed clear of all debris and have all loose boarding nailed down.



WOOD ROOF DECK

Note: (1) In some cases such as when there is any possibility of pitch drainage, the entire roof deck should be covered with a layer of rosin sized paper or unsaturated felt, edges lapped 6 in. and turned up and carefully fitted around all walls and projections.

Note: (2) Where high humidities prevail, 2 layers of 14-lb. roofing felt shall be cemented to the above with bitumen, and laid according to the roofing manufacturer's specification. Each sheet shall be lapped one-half the width of preceding sheet and shall be mopped back under the lap at least 12 in.

Under this condition Celotex shall not be nailed to the deck but shall be embedded in moppings.

Application by Nailing—Over the waterproof course thus laid, apply Celotex Roof Insulation Board. Adjoining edges of the boards in each layer shall be brought to moderate contact and shall not be forced into place at any point. Each board shall be secured in place by nailing with 1½-in. galvanized roofing nails with ⅜-in. heads, placed along all edges and a staggered course through the center of the board, with nails placed 12 in. apart.

Where two layers of Celotex Roof Insulation Board are applied, the joints of each layer shall be broken or offset with respect to the joints of the preceding layer. In such case all nailing should be done through the surface of the final layer with nails of sufficient length to obtain 1 in. penetration in the underlying board deck.

Where roof deck adjoins parapet walls, fire walls, pent houses and other appurtenances, the Celotex Roof Insulation Board shall be cut in a neat workmanlike manner and fitted with moderate contact.

Application by Mopping—Where conditions make it advisable to increase the amount of waterproofing used in the construction of the insulation layers, each layer of Celotex Roof Insulation Board shall then be embedded in moppings of hot pitch or asphalt. Where this practice is followed nailing will not be required.

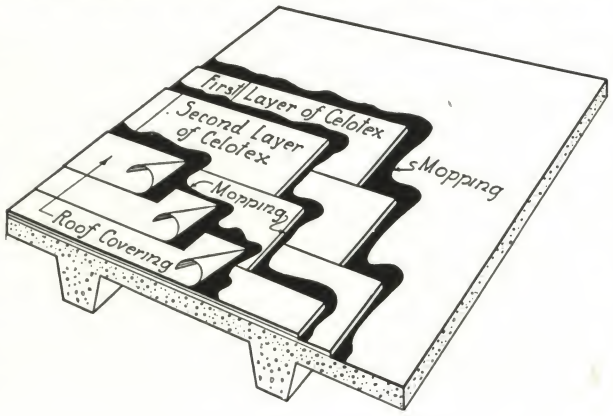
Where a waterproof course of asphalt is laid and the layers of Celotex Roof Insulation Board embedded in asphalt and a coal tar pitch roofing used, the finished surface shall be kept free of all asphalt and the roofing applied in accordance with standard specifications for application over concrete decks.

Section 10
CELOTEX ROOF INSULATION OVER CONCRETE ROOF DECKS

Material—Shall be Celotex Roof Insulation Board in one or two layers. The first layer shall be (½, 1, 1½ or 2 in.) thick and the second layer shall be (½, 1, 1½, 2 in., etc.) thick.

Note: The layer of lesser thickness shall be applied first.

Roof Deck—The concrete roof deck shall be reasonably smooth, dry and well cured, and the surface of the roof shall be cleared of all dirt and loose materials before the Celotex Roof Insulation Board is applied. If asphalt is used, the concrete deck shall first receive a coat of asphalt primer in accordance with the roofing manufacturer's specifications. If coal tar pitch is used, a priming coat is not usually necessary.



CONCRETE ROOF DECK

Application—Mop sufficient area with hot asphalt or pitch using not less than 30 lb. per square to provide for complete embedment of each Celotex Board used. Complete adhesion shall be obtained by carefully pressing down all edges into the mopping of hot asphalt or pitch. All edges of the boards shall be completely coated.

Where Celotex Roof Insulation Board is to be applied in more than one layer, the top surface of each layer shall be coated with a uniform mopping of hot asphalt or pitch. All boards shall be thoroughly embedded and shall be laid with joints broken or offset with respect to the joints of the preceding layer. All edges of the boards shall be completely coated. Alternate layers shall run parallel to each other and at no time shall boards be laid with alternate layers at right angles or crosswise with each other.

Adjoining edges of Celotex shall be brought to moderate contact and shall not be forced into place. Where the roof deck adjoins parapet walls, fire walls, penthouses and other appurtenances, the Celotex Roof

Continued on next page

Insulation Board shall be cut in a neat workmanlike manner, to provide the proper joining.

Only as much Celotex Roof Insulation Board shall be laid over the roof area as can be protected and covered by the roof covering in one day.

Where work is stopped at the end of the day, the edges of the Celotex shall be protected temporarily with an overlapping of sheet of roofing, which temporary sheet shall be cut or lifted when continuation of the work proceeds. The application of the Celotex Roof Insulation Board and the roof covering shall be included in the roofer's contract.

Section 11
CELOTEX ROOF INSULATION OVER STEEL ROOF DECKS

Material—Shall be Celotex Roof Insulation Board in one or two layers. The first layer shall be (½, 1, 1½, or 2 in.) thick and the second layer shall be (½, 1, 1½, 2 in., etc.) thick.

Note: The layer of lesser thickness shall be applied first.

Roof Deck—The metal roof deck shall be properly anchored to the steel purlins and all points shall be properly lapped.

Application—Mop with hot asphalt sufficient area of the metal deck to provide complete embedment of each Celotex Board unit. Each board shall be completely embedded in the hot mopping of asphalt. Adjoining edges shall be brought to moderate contact and boards shall not be forced into place at any point.

Where more than one layer of Celotex Roof Board is used, each layer shall break joints with the preceding one, and each layer shall be coated with a uniform mopping of hot asphalt, and all boards shall be thoroughly embedded and all edges completely coated.

The application of the roof covering shall follow the laying of the Celotex, and no more Celotex shall be laid than can be completely covered in any one day by the roof covering. Where it is necessary to stop work the exposed edges of the Celotex shall be temporarily protected by lapping over with roof felt cemented down with hot asphalt or pitch. When the work is continued, this temporary lap may be lifted or cut and the work proceed in the usual manner.

The roofing shall be applied in accordance with the architect's, engineer's or manufacturer's specification.

Section 12
CELOTEX ROOF INSULATION OVER UNIT TILE ROOF DECKS

Material—Shall be Celotex Roof Insulation Board in one or two layers. The first layer shall be (½, 1, 1½, or 2 in.) thick and the second layer shall be (½, 1, 1½, 2 in., etc.) thick.

Note: The layer of lesser thickness shall be applied first.

Roof Deck—The joints of all tiles shall be properly pointed up and the entire surface cleared of all dirt and loose material and prepared in a suitable manner to receive the Celotex Roof Insulation Board.

Application—*Note:* Where asphalt is used, coat the entire surface with a light uniform mopping into which, while hot, embed Celotex Roof Insulation Board.

Where coal tar pitch is used, spot mop tile units keeping all the moppings back 4 in. from the tile joints and embed the Celotex Roof Insulation Board.

Where Celotex Roof Insulation Board is to be applied in two layers, the top surface of the first layer shall be coated with a uniform mopping of hot asphalt or pitch, and all boards shall be thoroughly embedded and shall be laid with joints broken or offset with the joints of the preceding layer, and all edges of the board shall be completely coated. Alternate layers shall be laid parallel to each other and at no time shall boards be laid with alternate layers running at right angles or crosswise of each other.

Only as much Celotex Roof Insulation Board shall be laid over the roof area as can be covered and protected by the roof covering in any one day. Where work is stopped at the end of the day, the edges of the Celotex Roof Insulation Board shall be protected temporarily with an overlapping sheet of roofing, which temporary protection shall be cut or lifted when continuation of the work proceeds. Where the roof deck intersects with walls or other vertical surfaces to be flashed, the installation of the complete watertight flashing shall directly follow the laying of the Celotex Roof Insulation Board and the roof covering in order to preclude any possible damage by leaks at these points.

Where steep roofs are to be covered, provision shall be made for preventing any possible slippage by nailing, tying or anchoring the Celotex Roof Insulation Board in place.

Where conditions do not require waterproofing between the alternate layers of Celotex Roof Insulation Board (as in using multiple layers), the moppings of hot asphalt or pitch may be dispensed with and the various courses anchored in place by nailing.

Section 13
CELOTEX ROOF INSULATION OVER MONOLITHIC OR POURED GYPSUM ROOF DECKS

Material—Shall be Celotex Roof Insulation Board in one or two layers.

The first layer shall be (½, 1, 1½, or 2 in.) thick and the second layer shall be (½, 1, 1½, 2 in., etc.) thick.

Note: The layer of lesser thickness shall be applied first.

Roof Deck—The entire surface of the roof deck shall be cleared of all debris, and as soon as the gypsum has set, the entire roof surface shall be protected with a liberal coat of waterproof primer.

Application—Shall be in accordance with specification for use over concrete—see Section 2.

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Section 14
ACOUSTI-CELOTEX

Description

Acousti-Celotex is a special product of THE CELOTEX COMPANY, manufactured especially for acoustical correction and sound quieting. Acousti-Celotex is made by a patented process from felted cane fibres into a light rigid tile, perforated with 441 holes per square foot to give it high sound absorbing efficiency.

Sizes and Types

Acousti-Celotex is made in three standard sizes, 6x12, 12x12 and 12x24 in. and in three different types, C, B, and BB. These three types offer a choice of efficiencies to meet the requirements of any particular installation.

Absorption Coefficients

The sound absorbing efficiency of Acousti-Celotex has been determined in the leading laboratories of this country and by actual measurement of typical installations.

Type BB—.70 Type B—.47 Type C—.30

These values are at the standard frequency of 512 vibrations per second. This frequency has been commonly selected as a reference for comparison of the efficiencies of acoustical materials. This frequency is not only at the center of pitch range of speech and music, but usually the coefficient of a material at 512 cycles is very close to its average absorption over all pitches.

The figures shown indicate the portion of the sound energy absorbed at each impact of a sound wave. For example, 1 sq. ft. of Type BB Acousti-Celotex absorbs at 512 cycles 70% of the incident sound, thus furnishing .70 sound absorbing units. A square foot of surface which absorbs all the sound which strikes it has a value of one sound absorbing unit, and is taken as the standard of comparison.

Paintability and Decoration

The large perforations in Acousti-Celotex give it the unique property of "paintability." The numerous deep channels, to which the high efficiency of Acousti-Celotex is due, afford the impinging sound waves ready access to the fibrous and absorbent interior. Painting the surface of the Acousti-Celotex in no way interrupts this action to impair the efficiency of the material. Laboratory experiments show that it may be repeatedly painted with lead and oil, or similar paints, without affecting its acoustical efficiency, provided the perforations are not covered over.

In offices or other rooms, where a surface is desired having a higher light reflection factor than the natural surface of Acousti-Celotex provides, white or light cream interior paints may be used to advantage. Curtis Lighting, Incorporated, of Chicago give the light reflection factor of such a surface as 65%, indicating that a painted Acousti-Celotex ceiling meets even the requirements of a completely indirect lighting system.

This paintability factor makes it possible to decorate the Acousti-Celotex with either over-all finishes, or stencil patterns, using any desired color scheme without affecting the acoustical efficiency. It is thus possible to harmonize with a color layout of any interior.

Application

Acousti-Celotex may be applied directly to finished plaster surfaces with an approved cement and held by supplementary nailing into the corner holes (which are designed for this purpose), or in the edges below the bevel of each tile.

A good grade of gypsum plaster is recommended. The plaster must be hard, smooth, dry, and suitable for the reception of the Acousti-Celotex. On old ceilings, calcimine or loose paint should be removed to provide a good bonding surface for the cement.

Nailing to Wood Strips—Acousti-Celotex may be applied by nailing it to 1x3 in. soft wood furring strips spaced 12 in. on centers or in accordance with the requirements of the design.

On concrete or brick areas the first course of strips may be spaced not over 36 in. on centers, then cross-stripped 12 in. on centers, strips to be attached to slab by suitable expansion bolts, inserts, or wire ties spaced at 30-in. intervals or less.

On tile areas winged toggle bolts are recommended, the spacing to be 30 in. on centers or less. The first course of strips is then cross-stripped as stated above with concrete.

Nailing to Wood Ceiling—Many churches and other types of auditoriums have plank roofs with the bottom side of the planks exposed in the room below. In such cases, the Acousti-Celotex is nailed directly to the wood ceiling or roof decking.

Curved Surfaces—The sizes of Acousti-Celotex tile are such as to facilitate installation on curved surfaces, such as arches and groined ceilings, as well as on plane surfaces.

Alignment—Where Acousti-Celotex is applied in one of the many tile patterns, the quality and good appearance of the finished installation is only obtained by properly laying out the tile and carefully maintaining true alignment during application. All Approved Acousti-Celotex Contractors have been selected for care and experience in this particular item of craftsmanship, and consequently the architect is assured of a satisfactory installation which will carry out the true spirit of his design.

Borders, Moulds, etc.—In those cases where the area of Acousti-Celotex required is less than the total area of the ceiling panels, either the Acousti-Celotex panels can be set into the larger ceiling panels by recessing the plaster back of the Acousti-Celotex, so as to bring the surface of the Acousti-Celotex flush with surface of plaster border, or a border of Celotex Standard Building Board can be provided. In this case a moulding of wood, or some other material, placed around the edges of the panels gives a neat workmanlike appearance.

Adaptability

The three sizes of Acousti-Celotex shown make it possible to install Acousti-Celotex in attractive patterns, and to secure a decorative ceiling with either a flat finish or unpainted installation.

The ability to paint and decorate Acousti-Celotex without impairing its acoustical efficiency enables stencil designs and finishes in a variety of colors so that it is possible to harmonize with any type of architectural

Continued on next page

interior. Upon request layouts will be furnished to show the specific area and color scheme to harmonize with any interior.

The picture of the Stenographic Room in the American College of Surgeons illustrates how beautiful tapestry patterns can be obtained for wall panels, and attractive stencil ceiling finishes produced by stencil patterns.

Specifications

"Acousti-Celotex, Type BB (B or C), shall be applied in accordance with the manufacturer's specifications on the ceiling or sidewalls on such areas as indicated on the drawings, or as specified, by an approved Acousti-Celotex contractor."

The above represents a general specification to be used for Acousti-Celotex. Individual acoustical installations, however, vary so widely that it is impossible to provide in any single specification all of the features peculiar to each type. Complete data regarding specifications may be obtained upon application directly from The Celotex Company.

Acousti-Celotex Contractors

Acousti-Celotex is sold only by Approved Contractors carefully selected by The Celotex Company as distributors for this product. With their organization of competent acoustical engineers, salesmen, and application mechanics in each territory, the most efficient and economical use of the product is assured.

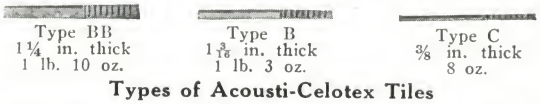
Engineering Service

The Celotex Company, together with its organization of approved Acousti-Celotex contractors, offers acoustical analysis service without obligation. Architects and engineers are thus enabled to obtain complete recommendations for the acoustical correction or sound quieting treatment for any type of installation, even in advance of construction.

Uses

Acoustical Correction—Ballrooms, auditoriums, courtrooms, lodge halls, meeting rooms, conference rooms, church auditoriums, chapels, classrooms, assembly halls, music rooms, theatres, radio studios, phonograph display rooms.

Sound Deadening—Banks and financial houses, bowling alleys, hospital corridors, utility rooms, clinic rooms, nurseries, delivery rooms, offices, restaurants, swimming pools, gymnasiums, laboratories, pistol ranges, telephone booths, elevator shafts, telephone switchboard rooms, etc.



Type BB
1¼ in. thick
1 lb. 10 oz.

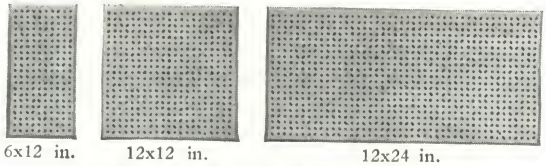
Type B
1⅜ in. thick
1 lb. 3 oz.

Type C
⅜ in. thick
8 oz.

Types of Acousti-Celotex Tiles

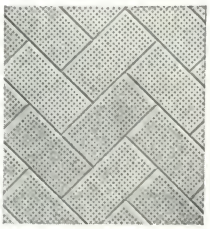
Stenographic Department, American College of Surgeons, Chicago, Ill.

Acousti-Celotex (decorated) used on ceiling and in wall panels for sound control

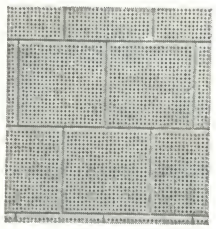


6x12 in. 12x12 in. 12x24 in.

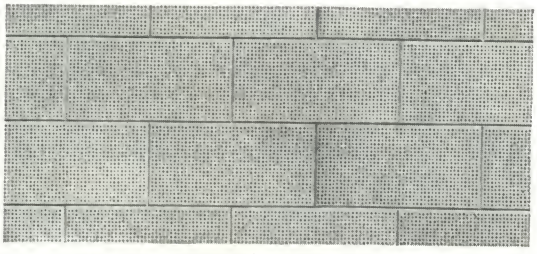
Sizes of Acousti-Celotex Tiles



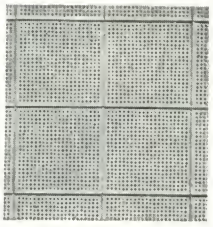
6x12 in. Herringbone



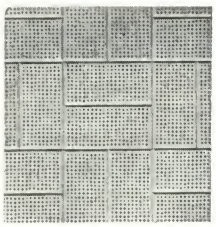
12x12 in. Broken Lines



12x24 in. Ashlar



12x12 in. Straight Lines

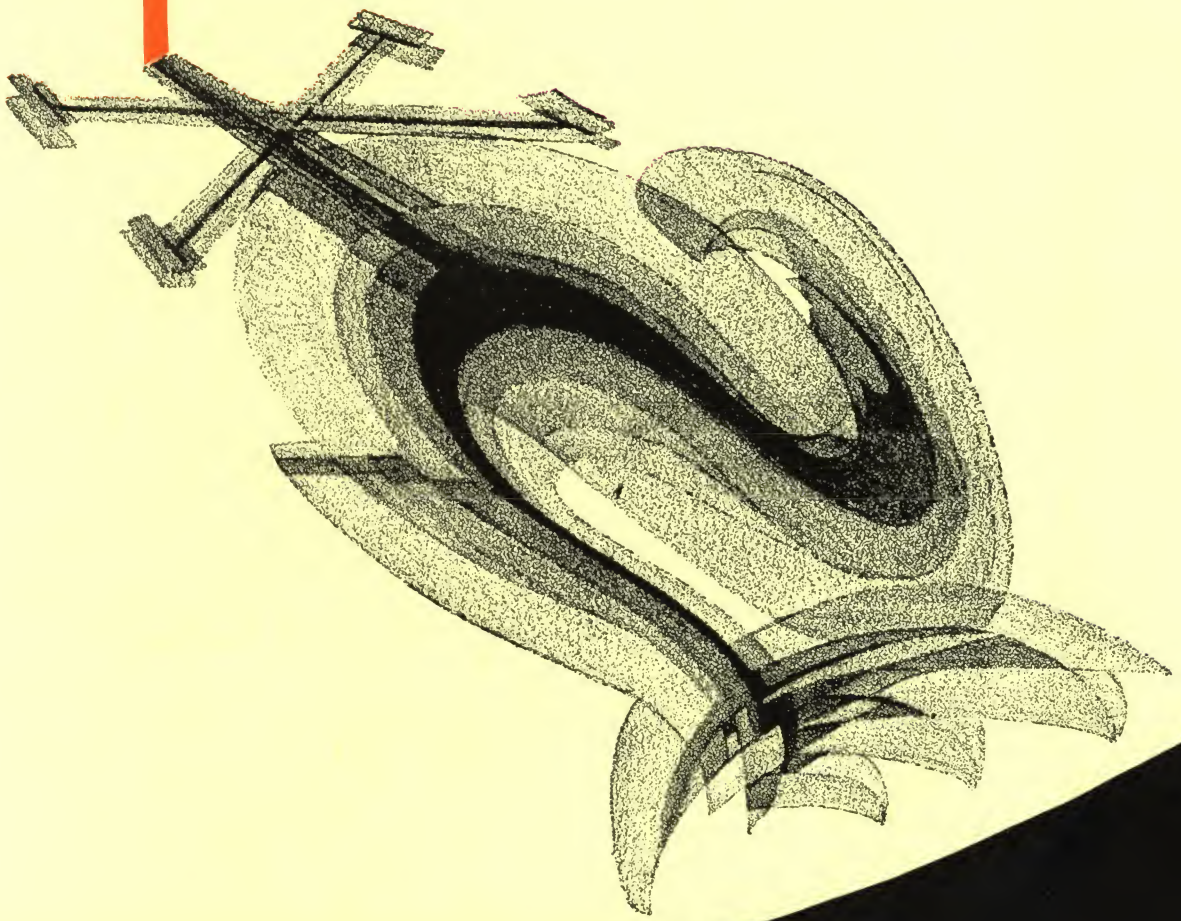


6x12 in. Basket Weave

Acousti-Celotex Patterns

Weatherwood
Insulation Data Book
for
Architects

INSULATION DIVISION
CHICAGO MILL AND LUMBER CORPORATION
111 West Washington Street
CHICAGO, ILLINOIS



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WEATHERWOOD: A STRUCTURAL INSULATING BOARD

Manufactured by
CHICAGO MILL AND LUMBER CORPORATION
111 West Washington Street
CHICAGO, ILL.

Weatherwood
INSULATES AGAINST UNFRIENDLY WEATHER

THE COMPANY—ITS RESPONSIBILITY

Products

(1) Weatherwood Insulating Board, ½ in. and 1 in. thick, 4 ft. wide by 8, 9, 10 and 12 ft. long.

(2) Weatherwood Insulating Lath, ½ in. and 1 in. thick, 18x48-in. units with exclusive tongue and groove matched longitudinal edges.

(3) Weatherwood Roof Deck Insulation, ½ in. to 3 in. thick in multiples of ½ in., 2 ft. wide by 5 ft. long.

The Company—Its Experience

Weatherwood is manufactured by the CHICAGO MILL AND LUMBER CORPORATION which has been continuously in business since 1881—a half century of successful accomplishment. The Corporation has long been a producer of lumber and wood products, and has acquired, together with its associated companies, a thorough knowledge of wood and fiber products. The research and engineering staff for many years has studied from every angle the production of materials kindred to insulating board and the cumulative result of this experience is—Weatherwood.

The Company enjoys an extremely satisfactory financial position, and with its associated companies represents a capital investment of approximately $62,000,000, with an annual business in excess of $30,000,000.

The CHICAGO MILL AND LUMBER CORPORATION owns and operates extensive tracts of southern hardwood in Louisiana, Arkansas, Mississippi and North Carolina and is in a position to produce a practically limitless and perpetual quantity of Weatherwood.

Responsibility

Our rating, the highest given in Bradstreet's and R. G. Dun's, is over $1,000,000—first grade of credit.

Manufacturing Facilities

Weatherwood is manufactured in a specially constructed plant with the most modern equipment for the constant control of uniformity in process and product. Expanding production has been provided for in the construction of the plant, assuring an output equal to all demands. The plant is centrally located at Greenville, Miss., in the heart of the Company's southern hardwood tracts, with unexcelled shipping facilities.

Personnel and Service

The Insulation Division of the CHICAGO MILL AND LUMBER CORPORATION is under the management of some of the most capable and best known men in the insulating material industry. Its Research Department is engaged in constant study and experiment to promote insulation improvements.

To its Technical Department may be submitted all problems of application and decoration for insulation, structural, sound deadening or acoustical uses.

How Weatherwood Is Marketed

Weatherwood is marketed nationally, through the better Retail Lumber Dealers who maintain local stocks of all types of Weatherwood.

The Weather Vane Trade Mark

The Weathercock weather vane is the trade-mark of Weatherwood and "the symbol of insulation efficiency." Through our dealers, we will furnish an attractive, practical weather vane in the shape of our Weathercock trade-mark to install on the roof of each building in which Weatherwood has been used in a proper and representative way. This unusually attractive weather vane carries no advertisement.

(A) WEATHERWOOD—MANUFACTURING PROCESS

(A1) General

Weatherwood is an insulating board designed and manufactured for use in all types of structures as an insulation against heat loss and sound transmission.

(A2) Ideal Insulating Structure

Weatherwood is the only insulating board fabricated from hardwood.

The insulating efficiency of any material is largely dependent on the number and size of its confined structural air cells—the greater the number and the smaller the size of the individual cells the greater the efficiency. It is a well-known fact that hardwood fibers are tiny, *closed-end cells.* Hardwood fibers are not sap ducts, but are clustered around the duct areas. Softwood fibers, on the other hand, are mostly continuous tubes or ducts through which the tree elevates its sap.

The microscopic, confined air cells of the individual hardwood fibers, combined with the multitude of small

Continued on next page

air cells created between the fibers when these are felted or fabricated in Weatherwood, results in an ideal insulating structure of great efficiency.

(A3) Details of Process

(A3a) Raw Stock—Weatherwood is made largely from the waste from certain species of Southern hardwoods. This includes miscellaneous trimmings from sawmills, as well as trimmings and cuttings in the logging operations which are too small for lumber utilization. This material represents the strongest, toughest part of the trees so far as the fiber is concerned.

(A3b) Fiber Reduction Process—All of the trimmings and logwood arriving at the insulation mill are first passed through barkers which completely remove the unsuitable bark. The remaining clean wood is then delivered to the fiber-reducing equipment which grinds it into the various types of fiber constituting the finished board. It is the particular mixture of fibers, individually and in bundles, that makes possible the felting of the entire mass into a strong, homogeneous board.

(A3c) Weatherproofing and Preservative Treatment — Prior to the felting of the fiber into the sheets of Weatherwood, the "stock" is treated with a waterproofing solution, which is uniformly precipitated on each individual fiber of the entire mass. The weatherproofing of a board of this character is accomplished by the formation of a film coating over each fiber which seals the fiber and offers a high surface tension which further protects it from moisture. The waterproofing treatment is consummated with the setting of the size in the drying process (see (A3e)).

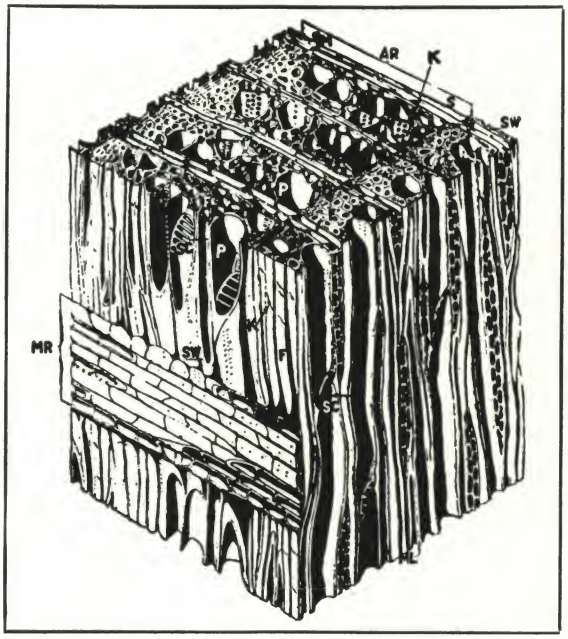
The weatherproofing agent also acts as a sterilizing and preservative treatment for the wood fibers.

(A3d) Felting Process—After the various types of fiber have been prepared and the mass reduced to the proper consistency by the addition of clean water, the mixture or "stock" passes on to an improved type of felting machine, where the fibers are felted into the finished boards, leaving the felting machine in a very wet condition.

This process felts the board, full ½ in. thick, in one homogeneous mass instead of combining several layers; thus the board, free of lamination, is not prone to split and is extremely durable in handling and use.

(A3e) Drying Process—The wet sheet of Weatherwood, now fabricated, passes slowly through a dry kiln of the air circulation type. Here, the rapid circulation of dry, warm air removes the excess moisture from the board and at the same time so sets the weatherproofing and preservative that moisture has very little, if any, effect on the finished product.

(A3f) Cutting—As the board comes from the dryer, it is cut to the size requirements of the various products and, passing along diverse lines, is assembled, finished and prepared for shipment.



Section of Hardwood

This section is enlarged approximately 9½ times showing "F" the closed-end fiber. "AR" is the annular ring made up of "S" spring wood and "SW" summer wood. "MR" shows a transverse medullary ray. "P" is a sap duct formed by the clustered, surrounding fibers "F."

This cut is shown through the courtesy of The Forest Products Laboratory

(B) PHYSICAL CHARACTERISTICS

(B1) Low Thermal Conductivity

The thermal conductivity of Weatherwood has been established by various nationally known testing laboratories. The average conductivity established is .32 B.t.u.'s per hour, per sq. ft., per degree F., per inch thickness. The following test conducted by G. F. Gebhardt, (J. C. Peebles, Testing Engineer) at the Laboratories of Armour Institute of Technology, is typical.

HEAT CONDUCTIVITY OF WEATHERWOOD INSULATING BOARD—FLAT PLATE METHOD

Thickness, in.	Density, lbs. cu. ft.	Heat conductivity, B.t.u.'s per hour	
		1 in. thick	0.502 in. thick
0.502	15.2	0.32	0.64

(B2) Size (Area)

The standard board is 4 ft. wide by 8, 9, 10 or 12 ft. long. Weatherwood Insulating Lath is 18 in. by 48 in. Weatherwood Roof Insulation is 2 ft. by 5 ft.

(B3) Thickness

The Weatherwood boards are fabricated *full ½ in. thick.* All of the various products are marketed in this thickness and in *1-in. thickness* as well.

The 1-in. thick Weatherwood is made up of two thicknesses of the ½-in. stock, rigidly secured together by means of metal staples. This method combines the two ½-in. thick boards permanently into a practical unit *full 1 in. thick.*

See particularly (L3a) page 14 describing in detail the method of manufacturing Stapled Roof Deck Insulation units up to 3-in. thickness.

(B4) Weight

Weatherwood weighs 650 lb. per 1000 sq. ft. of half inch material; inch thickness weighs twice as much, etc.

Continued on next page

(B5) Resistance to Moisture

In the process of manufacture, the complete fiber content is treated to resist absorption of moisture (see (A3c) page 2). Laboratory tests show that the board has an extremely low absorption factor and practically no capillarity.

The insulating efficiency of any material is immediately reduced if it absorbs and holds moisture, due to the fact that water is an excellent heat conductor. Weatherwood under normal building installations may be considered practically moistureproof.

The following tests conducted by G. F. Gebhardt, (J. C. Peebles, Testing Engineer) at the Laboratories of Armour Institute of Technology, are typical.

Water Absorption Test

In making this test two samples of the board measuring 12x12 in. by approximately ½ in. in thickness were used. These samples were placed in a horizontal position in a large vessel containing water, so that the upper surface of the boards was exactly 1 in. below the surface of the water. Each sample was supported on two ½-in. brass rods and held down with sufficient weight to keep the sample submerged. Two brass rods were also placed on the upper surface of each test sample to support the above mentioned weight. In this way, practically the entire surface of the test sample was in contact with the water.

In order that the water might be maintained substantially pure during the test fresh water was supplied at one side of the tank and allowed to flow over a weir at the other side. This water was maintained throughout the test at a constant temperature of 62° F. At the expiration of two hours the samples were removed from the water and the surface moisture removed with blotting paper. They were then weighed and the increase in weight expressed as a percentage of the original dry weight. The results are as follows:

WATER ABSORPTION TEST
WEATHERWOOD INSULATING BOARD

Sample	Size, in.	Weight in grams		Increase in weight	
		Before	After	Grams	Per cent
No. 1	12x12x0.54	332.2	373.0	40.8	12.3
No. 2	12x12x0.54	333.6	375.0	41.4	12.4

Capillarity Test

In conducting this test two samples of the board measuring 4x4 in. by approximately ½ in. thick were used. These samples were placed in a desiccator over sulphuric acid for a period of 24 hours. They were then carefully weighed and placed in a closed vessel containing water. Each sample was placed on edge in such a position that it dipped into the water exactly ½ in. The vessel was then sealed airtight and maintained for 24 hours at a temperature of 70° F. The samples were then removed and weighed and the increase in weight converted to volume of water absorbed, expressed in cubic inches.

CAPILLARITY TEST
WEATHERWOOD INSULATING BOARD

Sample	Size, in.	Water absorbed, cu. in.
No. 1	4x4x0.54	0.445
No. 2	4x4x0.54	0.438

(B6) Structural Strength

The hardwood fibers of which Weatherwood is composed are tough and resilient. Tests on Weatherwood used as sheathing prove that when properly applied, the ½-in. thick board is over twice as strong (so far as bracing against distortion) as standard $\frac{13}{16}$-in. thick matched lumber sheathing applied horizontally in the customary manner. Weatherwood also possesses distinct advantages over diagonal sheathing, in that it is not prone to shrinkage or expansion after application, which tends to throw strains into the framework and is much more economical to apply.

Weatherwood has a tensile strength of over 300 lb. per sq. in., and a modulus of rupture of over 400 lb. per sq. in., fiber stress, bending.

(B7) Plaster Bond

Authentic tests show that to rupture the bond between gypsum plaster and Weatherwood Lath requires over 1350 lb. per sq. ft. Even then, the rupture occurs in the board itself and not at the bond surface. The strength of this plaster bond is more than twice that of wood lath and plaster, which experience has proven entirely adequate.

The following test conducted by Robert W. Hunt Company, Engineers, Chicago, is typical:

Three samples, approximately 6 in. square, were plastered with wood fiber plaster and after curing for seven days were secured by asphalt to wooden blocks on each side of the specimen. The wooden blocks were then secured in the testing machine and in attempting to pull them apart, tension was generated on the specimens tending to pull the plaster away from the insulating board, with the results below.

Failure in each case was through the Weatherwood close to the asphalt by which it was secured to the wooden block.

PLASTER BOND
WEATHERWOOD INSULATING LATH

Specimen No.	1	2	3
Size, in.....	6.00x6.05	5.98x5.95	5.98x6.00
Area, sq. ft.....	.2521	.2471	.2492
Maximum load, lb.	345	235	310
Maximum load, lb. per sq. ft.....	1369	951	1255

(B8) Fire Resistance

Weatherwood is slow-burning. Due to the fact that there are no open joints to permit inflow of air, Weatherwood forms a barrier against fire travel.

(B9) Sterility

Made only of clean, sterilized hardwood fibers it is odorless under all conditions. Its weatherproofing chemical treatment during the manufacturing process (see (A3c) page 2), makes it distinctly distasteful to rodents and insects.

(B10) Durability

The hardwood fibers, from which Weatherwood is fabricated, are the toughest and most resilient in the tree growth (see (A3a) page 2), in addition to which all the fibers are treated with a preservative (see (A3c) page 2).

Continued on next page

(B11) Uniformity

Adequate laboratory control and mill inspection assure absolute uniformity in density, structural strength and appearance. Handling facilities and packing methods eliminate damage under normal shipping conditions.

(B12) Non-compressibility—Resilience

When laid over roof decks under standard roofing materials, it is sufficiently firm to prevent injurious denting or cutting of the roofing under normal use. Weatherwood will not compress under furring strips. When compressed under heavy concentrated loads it resumes its original shape after the load is removed.

(B13) Joints

Due to the size of the boards (4 ft. wide by 8, 9, 10 and 12 ft. long) and the method of installation, the unbroken continuity, essential in the solution of insulation problems, is easily maintained. The exclusive Weatherwood Lath tongue and groove, long-side joint maintains similar continuity where these units (18x48 in.) are used.

(B14) Appearance

One surface is finished in a uniform semirough texture and the other in a smooth screen surface. The color is an attractive deep cream.

(B15) Installation

The board is light in weight and in all of the various convenient sizes it is easy to handle and install at low labor costs. It is cut and nailed like lumber.

(B16) Cost

Conservation of waste materials, quantity production and national distribution through established trade channels assure a reasonable cost absorbed in fuel savings in from four to five heating seasons.

(C) USES

(C1) General—Weatherwood, a structural insulating board made in two commercial thicknesses (full ½ in. and full 1 in.), is designed, as set forth in (B) "Physical Characteristics," pages 2, 3 and 4 to fulfill every building insulation need.

The main purpose of all building insulation is to prevent heat loss through the exterior walls and roofs in cold weather and to exclude the heat from the sun's rays in warm weather—justified not only by the economies of fuel conservation but as well by increased comfort reflected in beneficial effects on health.

When properly installed, Weatherwood is an excellent insulation against sound transmission.

Below are briefly outlined the various uses and applications of Weatherwood, each subsequently treated in detail.

(C2) As Sheathing and Roof Boarding—Under wood siding, stucco, masonry veneer, shingles or slate, etc.

(C3) As Roof Insulation—Over wood, concrete, steel or tile roof decks to be covered with a roofing material.

(C4) As Insulating Lath—To receive interior plaster.

(C5) As Interior Finish (without Plaster)—Either in its natural finish or stained or painted. It is an excellent base for plastic paints and may be used as a base for wall paper.

(C6) As Interior Lining for Sound Absorption—To provide proper acoustical conditions for halls, gymnasiums, churches, schools, etc.

(C7) As Exterior Finish—Painted, it has many uses as an exterior exposed finish in the lighter, less permanent constructions where cost is a prime factor.

(C8) As Added Insulation—Added to the usual constructions purely for its insulating value as follows:

(a) Over exterior wood sheathing covered by additional exterior finish.

(b) Under or over wood roof sheathing covered with shingles or other roofing materials.

(c) Over interior wood studs, joists or other framework with an additional plaster base furred out or placed immediately over it.

(d) Between rough and finished floors.

(e) Over wood, concrete, steel or tile roof decks to be covered with a roofing material.

(C9) As Insulation for Masonry Walls—Applied over furring strips, as insulating lath, as interior finish or as insulation only.

(C10) As a Sound Deadener—In partitions and floor to prevent the transmission of sound from one room to those adjoining.

(D) IMPORTANCE OF GOOD CONSTRUCTION

Preliminary Specification Data

(D1) Introduction

Weatherwood Structural Insulation requires no special construction features for successful application. Experience has shown, however, that so frequently are the basic principles of good construction violated, it is important to stress here the salient points; and particularly so, since the building construction is customarily provided for in other divisions of the specification.

We recommend that the details for good construction as approved by the building code committee of the U. S. Department of Commerce and the National Lumber Manufacturers Association be adhered to. Good construction does not add appreciably to the cost.

In no place in the building construction is faulty construction more apparent than in the resulting cracks in the interior plastering. That the lath and plaster is not always responsible for cracking of plastered surfaces is indicated by the following quotation from the National Building Code Committee report.

"Following are some of the common causes which result in cracked plaster:

(1) Inadequate or faulty footing under bearing posts.
(2) Girders too small or too few bearing posts.
(3) Joists of insufficient size.
(4) Joists under partition not doubled.
(5) Improper framing over wide openings.
(6) Uneven settlement due to shrinkage of wood frame improperly designed.
(7) Settlement of wall footing and foundation.
(8) Separation of partitions from walls.
(9) Failure to conform to good plastering standards."

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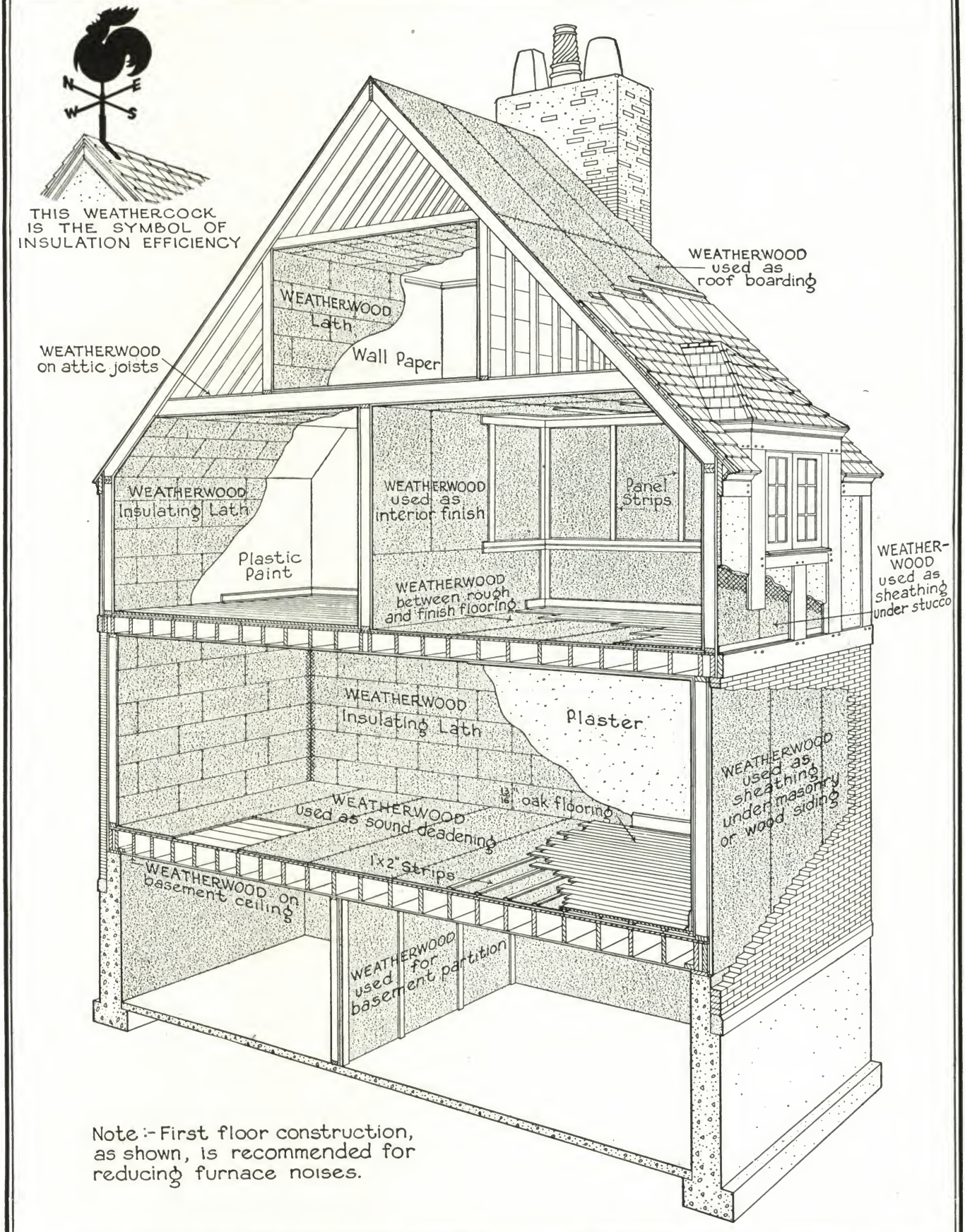

GENERAL ADAPTABILITY OF WEATHERWOOD

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WORKING STRESSES—Joists, Planks, Beams and Stringers—Continuously Dry
(Pounds per Square Inch)

Recommended by Forest Products Laboratory, United States Forest Service, for Grades Complying with the Minimum Basic Structural Provisions of American Lumber Standards

Species	American standard grade	Extreme fiber in bending	Maximum horizontal shear	Compression perpendicular to grain	Modulus of elasticity
Cedar: Alaska	Select	1,100	90	250	1,200,000
	Common	880	72		
Northern and southern white.	Select	750	70	175	800,000
	Common	600	56		
Port Orford	Select	1,100	90	250	1,200,000
	Common	880	72		
Western red	Select	900	80	200	1,000,000
	Common	720	64		
Cypress: Southern	Select	1,300	100	350	1,200,000
	Common	1,040	80		
Douglas fir: Coast type	Dense select	1,750	105	380	1,600,000
	Select	1,600	90	345	
	Dense common	1,400	103	380	
	Common	1,200	72	325	
Rocky Mountain type	Select	1,100	85	275	1,200,000
	Common	880	68		
Fir: Balsam	Select	900	70	150	1,000,000
	Common	720	56		
Golden, noble, silver, white	Select	1,100	70	300	1,100,000
	Common	880	56		
Hemlock: Eastern	Select	1,100	70	300	1,100,000
	Common	880	56		
West Coast	Select	1,300	75	300	1,400,000
	Common	1,040	60		
Larch: Western	Select	1,200	100	325	1,300,000
	Common	960	80		
Pine: California, Idaho and northern white, Pondosa, and sugar	Select	900	85	250	1,000,000
	Common	720	68		
Norway	Select	1,100	85	300	1,200,000
	Common	880	68		
Southern yellow	Dense select	1,750	128	380	1,600,000
	Dense common	1,400	103	380	
	Common	1,200	88	325	
Redwood	Select	1,200	70	250	1,200,000
	Common	960	56		
Spruce: Engelmann	Select	750	70	175	800,000
	Common	600	56		
Red, white, and Sitka	Select	1,100	85	250	1,200,000
	Common	880	68		
Tamarack	Select	1,200	95	300	1,300,000
	Common	960	76		

(D2) Materials

The species of framing material as well as the proper size should be carefully selected for its specific use. Only thoroughly seasoned lumber should be used.

The warping, twisting, excessive shrinkage and deflection of the framing members are responsible largely for cracks in stucco, masonry veneer and interior plaster whether the sheathing be wood or structural insulation such as Weatherwood, or whether the plaster base be wood, metal, gypsum or Weatherwood Insulating Lath.

While Weatherwood Sheathing is extremely strong (see (B6) page 3), no form of sheathing will prevent distortion due to improperly selected, unseasoned framing members.

The tables on this and the following page are recommended in the selection of framing materials.

(D3) Construction

There are three general types of wood frame construction in common use—namely, "balloon frame," "braced frame" and "Western frame." Lumber shrinks at right angles to the direction of the grain. Since the "balloon frame" construction eliminates to the greatest extent the element of lumber shrinkage it is particularly recommended.

In all three types of framing the corner bracing is a most important feature which should never be omitted. Whether the sheathing be wood, applied horizontally or diagonally, or structural insulation board, such as Weatherwood (see (B6) page 3), the diagonal corner bracing is desirable.

Always include the recommended fire and heat stops in "balloon" and "braced frame" constructions.

To summarize the salient recommended construction features we include the details shown on page 8.

MAXIMUM SPANS FOR CEILING JOISTS AND ATTIC FLOOR JOISTS, Uniformly Loaded

Nominal size of joists, in.	Spacing of of joists, center to center, in.	Maximum allowable lengths between supports (clear span). Limited by deflection of 1/360 of the span. Having determined by reference to the building code or the above table the allowable *modulus of elasticity* in pounds per square inch for the species of timber used, refer to the column below with the corresponding value to determine maximum safe span							
		Ceiling joists				Attic floor joists, live load 20 lb. per sq. ft.			
		E=1,000,000	E=1,200,000	E=1,400,000	E=1,600,000	E=1,000,000	E=1,200,000	E=1,400,000	E=1,600,000
2× 4	12	9′ 4″	10′ 0″	10′ 6″	11′ 0″	6′ 6″	7′ 0″	7′ 4″	7′ 8″
	16	8′ 7″	9′ 2″	9′ 8″	10′ 0″	5′ 11″	6′ 3″	6′ 8″	6′ 11″
	24	7′ 7″	8′ 1″	8′ 6″	8′ 11″	5′ 3″	5′ 7″	5′ 10″	6′ 1″
2× 6	12	14′ 2″	15′ 5″	15′ 10″	16′ 7″	10′ 0″	10′ 9″	11′ 3″	11′ 0″
	16	13′ 3″	14′ 0″	14′ 8″	15′ 4″	9′ 1″	9′ 8″	10′ 2″	10′ 8″
	24	11′ 8″	12′ 5″	13′ 0″	13′ 8″	8′ 1″	8′ 7″	9′ 0″	9′ 7″
2× 8	12	18′ 6″	19′ 8″	20′ 0″	21′ 8″	13′ 4″	14′ 2″	14′ 11″	15′ 7″
	16	17′ 2″	18′ 3″	19′ 3″	20′ 2″	12′ 1″	12′ 10″	13′ 6″	14′ 2″
	24	15′ 4″	16′ 4″	17′ 2″	18′ 0″	10′ 9″	11′ 5″	12′ 0″	12′ 7″
2×10	12	23′ 0″	24′ 5″	25′ 8″	26′ 10″	16′ 9″	17′ 9″	18′ 9″	19′ 7″
	16	21′ 4″	22′ 9″	24′ 0″	25′ 0″	15′ 3″	16′ 2″	17′ 0″	17′ 9″
	24	19′ 3″	20′ 5″	21′ 6″	22′ 6″	13′ 7″	14′ 5″	15′ 2″	15′ 10″
2×12	12	27′ 2″	28′ 11″	30′ 0″		20′ 0″	21′ 4″	22′ 6″	23′ 6″
	16	25′ 6″	27′ 0″	28′ 6″	29′ 9″	18′ 4″	19′ 5″	20′ 6″	21′ 5″
	24	23′ 0″	24′ 5″	25′ 9″	26′ 10″	16′ 4″	17′ 4″	18′ 3″	19′ 1″

Note: The lengths are based on: Maximum allowable deflection of 1/360 of span length. Modulus of elasticity as noted for E.

Ceiling Joists
Dead load: Weight of joists plus plaster ceiling (10 lb. per sq. ft.)
Live load: None.

Attic Floor Joists
Dead load: Weight of joist. Weight of lath and plaster ceiling (10 lb. per sq. ft.). Single thickness of flooring (2.5 lb. per sq. ft.).
Live load: 20 lb. per sq. ft. of floor area.

Continued on next page

(D4) Anchors

Where Weatherwood is used as sheathing and roof boarding, exterior finish or interior finish (see section (C) "Uses" page 4), it is recommended that the framed superstructure be well anchored to the foundation. This is due to the fact that the Weatherwood, an extremely light material, is substituted for the heavier standard wood sheathing, exterior siding, etc., or lath and plaster and the anchors are desirable to compensate for the reduced weight.

(D5) Window and Door Frames

Weatherwood Sheathing and Weatherwood Insulating Lath do not require special window and door frames (see details on page 8). It is strongly recommended that in frame construction the window and door frames, whether of stock or special design, be provided with wide outside blind casings (often omitted) and inside ground casings. Authentic tests show that the air infiltration or leakage around windows where these members are omitted is equal to the air leakage through an unweatherstripped window. To prevent air leakage around wood frames in masonry openings, they should be thoroughly calked with oakum or similar material from the inside.

In the average uninsulated dwelling the estimated heat loss through and about the exterior doors and windows is from 40 to 45 per cent—from 55 to 60 per cent is lost through walls and roofs.

Worthwhile reduction of this heat loss at doors and windows may easily be accomplished by proper design and construction, calking, weatherstrips and storm sash.

Often much of the economy and comfort of well insulated walls is lost through poorly constructed, improperly installed, air leaking windows and doors.

MAXIMUM SPANS FOR FLOOR JOISTS, Uniformly Loaded

(Live load 40 lb. per sq. ft. with plastered ceiling. Live load 50 lb. per sq. ft. with unplastered ceiling)

Nominal size of joists, inches	Spacing of joists center to center, inches	Maximum allowable lengths between supports (clear span) — Limited by deflection of 1/360 of the span. Having determined by reference to the building code or the table on page 6 the allowable *modulus of elasticity* in pounds per square inch for the species of timber used, refer to the column below with the corresponding value to determine span				Determined by bending — Having determined by reference to the building code or the table on page 6 the allowable *extreme fiber stress in bending* in pounds per square inch for the species and grade of lumber used, refer to the column below with the corresponding value to determine maximum safe span									
		E = 1,000,000	E = 1,200,000	E = 1,400,000	E = 1,600,000	f = 900	f = 1,000	f = 1,100	f = 1,200	f = 1,300	f = 1,400	f = 1,500	f = 1,600	f = 1,700	f = 1,800
2× 6	12	8′ 6″	9′ 1″	9′ 6″	10′ 0″	9′ 6″	10′ 0″	10′ 5″	10′ 11″	11′ 4″	11′ 10″	12′ 2″	12′ 7″	13′ 0″	13′ 5″
	16	7′ 9″	8′ 3″	8′ 8″	9′ 1″	8′ 3″	8′ 8″	9′ 1″	9′ 6″	9′ 10″	10′ 3″	10′ 8″	11′ 0″	11′ 4″	11′ 7″
	24	6′ 10″	7′ 3″	7′ 7″	8′ 0″	6′ 9″	7′ 1″	7′ 6″	7′ 10″	8′ 1″	8′ 5″	8′ 9″	9′ 0″	9′ 3″	9′ 6″
2× 8	12	11′ 5″	12′ 0″	12′ 8″	13′ 3″	12′ 6″	13′ 2″	13′ 10″	14′ 5″	15′ 0″	15′ 7″	16′ 1″	16′ 8″	17′ 2″	17′ 8″
	16	10′ 5″	11′ 0″	11′ 7″	12′ 1″	10′ 11″	11′ 6″	12′ 0″	12′ 7″	13′ 1″	13′ 8″	14′ 1″	14′ 6″	15′ 0″	15′ 5″
	24	9′ 2″	9′ 8″	10′ 2″	10′ 8″	8′ 11″	9′ 5″	9′ 11″	10′ 4″	10′ 9″	11′ 2″	11′ 7″	12′ 0″	12′ 4″	12′ 8″
2×10	12	14′ 4″	15′ 2″	16′ 0″	16′ 8″	15′ 9″	16′ 7″	17′ 4″	18′ 2″	18′ 11″	19′ 7″	20′ 3″	21′ 0″	21′ 8″	22′ 3″
	16	13′ 1″	13′ 10″	14′ 7″	15′ 3″	13′ 9″	14′ 6″	15′ 2″	15′ 10″	16′ 6″	17′ 1″	17′ 9″	18′ 4″	18′ 10″	19′ 5″
	24	11′ 6″	12′ 2″	12′ 10″	13′ 5″	11′ 4″	11′ 11″	12′ 6″	13′ 1″	13′ 8″	14′ 1″	14′ 7″	15′ 1″	15′ 7″	16′ 0″
2×12	12	17′ 3″	18′ 3″	19′ 3″	20′ 1″	18′ 11″	19′ 11″	20′ 11″	21′ 11″	22′ 8″	23′ 6″	24′ 5″	25′ 2″	26′ 0″	26′ 9″
	16	15′ 9″	16′ 9″	17′ 7″	18′ 5″	16′ 6″	17′ 5″	18′ 3″	19′ 1″	19′ 11″	20′ 7″	21′ 4″	22′ 0″	22′ 9″	23′ 5″
	24	13′ 10″	14′ 9″	15′ 6″	16′ 2″	13′ 8″	14′ 4″	15′ 1″	15′ 9″	16′ 5″	17′ 0″	17′ 7″	18′ 2″	18′ 9″	19′ 4″
2×14	12	20′ 0″	21′ 2″	22′ 6″	23′ 5″	21′ 11″	23′ 2″	24′ 3″	25′ 4″	26′ 4″	27′ 4″	28′ 4″	29′ 4″	30′ 0″	
	16	18′ 4″	19′ 6″	20′ 6″	21′ 5″	19′ 3″	20′ 3″	21′ 3″	22′ 3″	23′ 2″	24′ 0″	24′ 10″	25′ 8″	26′ 6″	27′ 3″
	24	16′ 3″	17′ 3″	18′ 1″	18′ 11″	15′ 11″	16′ 9″	17′ 7″	18′ 5″	19′ 2″	19′ 10″	20′ 7″	21′ 3″	21′ 11″	22′ 6″
3× 6	12	9′ 11″	10′ 6″	11′ 2″	11′ 8″	11′ 10″	12′ 5″	13′ 1″	13′ 8″	14′ 3″	14′ 9″	15′ 3″	15′ 9″	16′ 3″	16′ 9″
	16	9′ 1″	9′ 8″	10′ 2″	10′ 8″	10′ 4″	10′ 11″	11′ 5″	11′ 11″	12′ 5″	12′ 10″	13′ 4″	13′ 9″	14′ 3″	14′ 9″
	24	7′ 11″	8′ 5″	8′ 11″	9′ 4″	8′ 6″	8′ 11″	9′ 5″	9′ 9″	10′ 3″	10′ 8″	11′ 0″	11′ 4″	11′ 9″	12′ 0″
3× 8	12	13′ 1″	13′ 11″	14′ 8″	15′ 4″	15′ 7″	16′ 5″	17′ 3″	18′ 0″	18′ 9″	19′ 5″	20′ 1″	20′ 9″	21′ 5″	22′ 0″
	16	12′ 0″	12′ 9″	13′ 5″	14′ 0″	13′ 8″	14′ 5″	15′ 1″	15′ 9″	16′ 5″	17′ 0″	17′ 8″	18′ 3″	18′ 9″	19′ 4″
	24	10′ 8″	11′ 3″	11′ 10″	12′ 4″	11′ 3″	11′ 10″	12′ 5″	13′ 0″	13′ 7″	14′ 1″	14′ 7″	15′ 0″	15′ 6″	15′ 11″
3×10	12	16′ 5″	17′ 6″	18′ 5″	19′ 3″	19′ 6″	20′ 7″	21′ 7″	22′ 6″	23′ 3″	24′ 4″	25′ 2″	26′ 0″	26′ 9″	27′ 7″
	16	15′ 1″	16′ 1″	16′ 11″	17′ 8″	17′ 2″	18′ 1″	18′ 11″	19′ 9″	20′ 8″	21′ 4″	22′ 2″	22′ 10″	23′ 7″	24′ 3″
	24	13′ 4″	14′ 2″	14′ 11″	15′ 7″	14′ 3″	15′ 0″	15′ 9″	16′ 5″	17′ 1″	17′ 9″	18′ 4″	18′ 11″	19′ 6″	20′ 1″
3×12	12	19′ 9″	20′ 11″	22′ 1″	23′ 1″	23′ 4″	24′ 7″	25′ 9″	26′ 11″	28′ 0″	29′ 1″	30′ 0″			
	16	18′ 2″	19′ 4″	20′ 4″	21′ 3″	20′ 6″	21′ 8″	22′ 9″	23′ 9″	24′ 8″	25′ 8″	26′ 6″	27′ 5″	28′ 3″	29′ 1″
	24	16′ 1″	17′ 1″	18′ 0″	18′ 9″	17′ 1″	18′ 0″	18′ 10″	19′ 9″	20′ 6″	21′ 4″	22′ 1″	22′ 9″	23′ 6″	24′ 2″
3×14	12	23′ 1″	24′ 5″	25′ 9″	26′ 11″	27′ 0″	28′ 6″	30′ 0″							
	16	21′ 3″	22′ 6″	23′ 9″	24′ 10″	23′ 11″	25′ 2″	26′ 5″	27′ 7″	28′ 9″	29′ 9″	30′ 0″			
	24	18′ 9″	20′ 0″	21′ 0″	22′ 1″	19′ 11″	21′ 0″	22′ 0″	23′ 0″	23′ 11″	24′ 10″	25′ 9″	26′ 7″	27′ 5″	28′ 2″

Note: When limited by deflection, the lengths are based on: Maximum allowable deflection of 1/360 of span length. Modulus of elasticity as noted for E. When determined by bending strength on the piece: Allowable stress in extreme fiber in bending as noted for f.

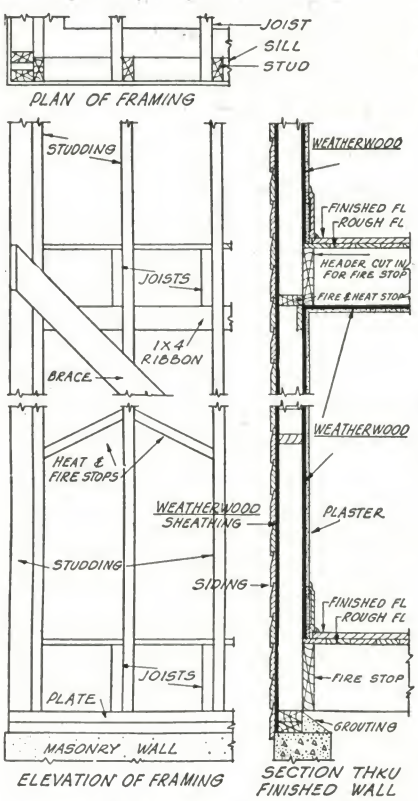
Dead load: Weight of joist. Weight of lath and plaster ceiling (10 lb. per sq. ft.). Double thickness of flooring (5 lb. per sq. ft.).

Live load: 40 lb. per sq. ft. of floor area with plastered ceiling, or 50 lb. per sq. ft. with ceiling unplastered.

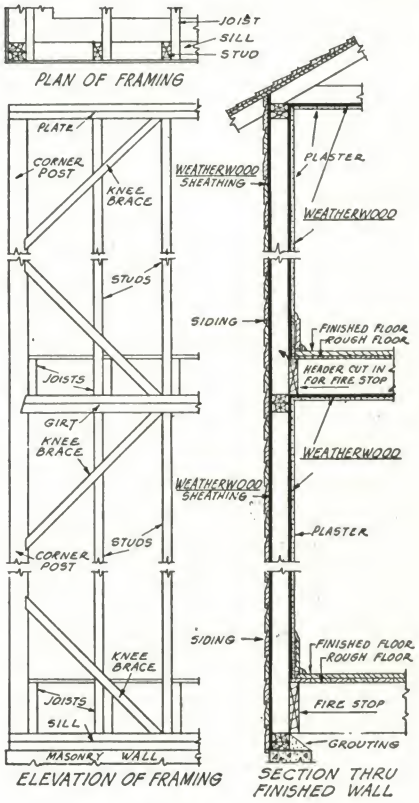
CROSS BRIDGING FOR FLOOR AND CEILING JOISTS

Number of rows	1	2	3
Span	From 6′ 0″ to 10′ 0″	From 10′ 0″ to 20′ 0″	Over 20′ 0″

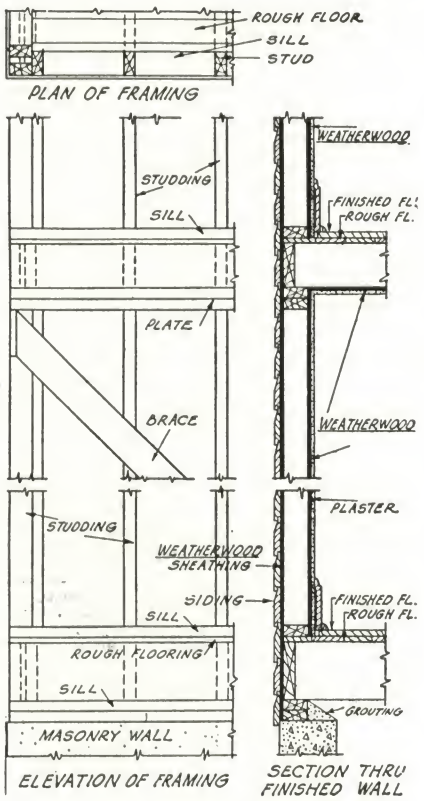
Continued on next page



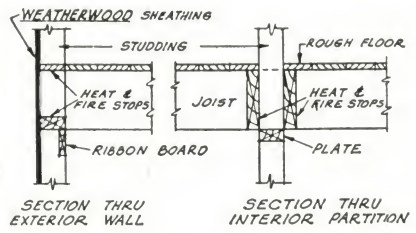
BALLOON FRAME



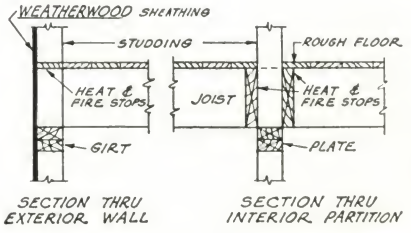
BRACED FRAME



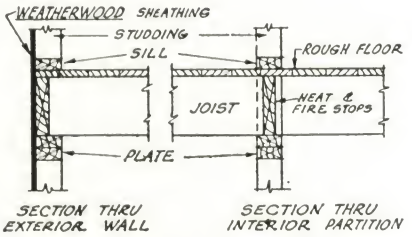
WESTERN FRAME



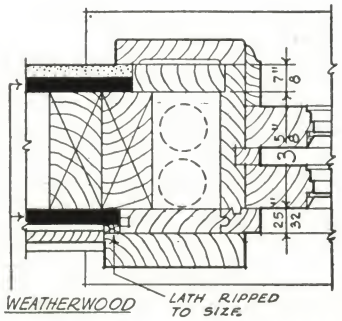
BALLOON FRAME
At Second Floor



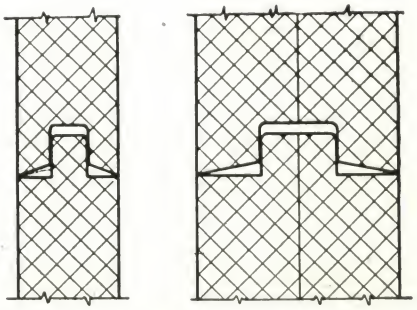
BRACED FRAME
At Second Floor



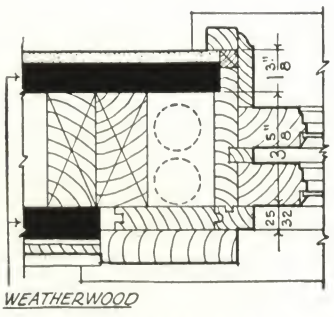
WESTERN FRAME
At Second Floor



STANDARD FRAME
1/2-in. Weatherwood Lath
1/2-in. Weatherwood Sheathing



EXCLUSIVE WEATHER-WOOD LATH JOINT
(Longitudinal) F. S. D.



STANDARD FRAME
1-in. Weatherwood Lath
1-in. Weatherwood Sheathing

RECOMMENDED CONSTRUCTION DETAILS

Continued on next page

(E) EFFECTIVE INSULATION THICKNESS AND LOCATION

(E1) Heat Flow

Loss of heat occurs through the heat flow from a substance of high temperature to one of lower temperature. Unless some barrier, such as insulation which definitely resists heat transmission, is interposed between the two elements of different temperatures, the heat flow is rapid until the temperatures equalize.

The insulating efficiency of a material varies directly in proportion to its thickness—thus, twice the thickness, twice the efficiency and conversely, one-half the thickness, one-half the efficiency. This must be taken into consideration in comparing two materials even if they have the same thermal conductivity on the usual 1-in. thickness.

(E2) Roofs

As set forth in (D5) page 7, from 55 to 60 per cent of the heat loss in uninsulated dwellings occurs through the exterior walls and roofs. Of this loss, the greatest proportion is through the roof or top story ceiling, due to the fact that heated air rises and that the roof represents the greatest single area.

Again, in summer the sun's rays fall more directly and with the greatest intensity on the roof, in consequence of which the top story of the uninsulated house is a source of great discomfort during hot weather.

To be effective, a *minimum* of 1-in. thickness of insulation added to the usual standard construction should be installed in the roof or top story ceiling depending on whether there is an attic or whether the attic space is used for living quarters.

(E3) Exterior Walls

While a lesser proportion of heat loss occurs through the exterior walls as compared with roofs, this loss is sufficient to require a *minimum* of ½ in. thickness of insulation (such as Weatherwood Insulating Lath) added to the usual standard frame, wood sheathed construction to provide any definite economy in fuel consumption. See particularly (E4).

The infiltration of air through masonry walls has been definitely established and has now become a factor in heating design. Due to this fact, it is quite as essential that masonry walls be insulated as frame walls. At least ½-in. thick insulation is desirable. Weatherwood Lath applied to furring strips is an economical method.

(E4) Weatherwood as Sheathing and Roof Boarding

When an insulating material is substituted for some other material, such as Weatherwood Sheathing for wood sheathing, no great insulation benefits accrue unless a sufficient thickness of the insulating material is used.

Weatherwood has a thermal conductivity of .32 B.t.u.'s per hour, per sq. ft., per inch thickness, or .64 B.t.u.'s per ½-inch thickness (see (B1) page 2). Stated in terms of heat resistance, half-inch Weatherwood has a resistance of 1.56 degrees (the reciprocal of its conductivity). Ordinary sheathing lumber has a thermal conductivity of .80 B.t.u.'s per sq. ft., per inch thickness or per $\frac{13}{16}$-in. thickness (as ordinarily used), a thermal conductivity of .98 B.t.u.'s per sq. ft., per degree F., per hour and a resistance of 1.02 degrees. In other words, Weatherwood as a sheathing is approximately 55% more effective in the ½-in. thickness than the standard $\frac{13}{16}$-in. wood sheathing.

Despite this fact, and even though there is no insulating board with higher efficiency than Weatherwood, it should be recognized that used alone as sheathing without additional insulation on the interior, such as Weatherwood Insulating Lath, the ½-in. thickness of Weatherwood Sheathing is not sufficient to produce a truly economical wall from a heat loss standpoint. The same considerations apply where Weatherwood is substituted for roof boarding.

Therefore, wherever Weatherwood insulating board is substituted for wood sheathing on walls, and additional insulation is not included on the interior, always use the 1-in. thick Weatherwood.

Where Weatherwood is substituted for roof boarding always use the 1-in. thickness and add at least a ½-in. thickness on the interior primarily as insulation (see (C8) page 4), as an interior finish (see (C5) page 4) or as insulating lath (see (C4) page 4).

(E5) Insulating the Interior

The effectiveness and fuel economy of interior insulation is quite universally overlooked.

It is a well established fact that it is fuel economy to maintain the same temperature in the home both day and night. More fuel is consumed in raising the temperature of a cold house in the morning than is consumed in maintaining the uniform temperature because of the inefficiency of intermittent firing.

It is also a fact that the average person sleeps in a cold bedroom. The radiator is turned off and the window is opened, which virtually during this 8-hour period (one-third of the heating day) converts large areas of the second story into unheated space similar to an unheated attic. The heat loss from the first story through the first story ceiling or second story floor almost compares with the heat loss through the uninsulated top floor ceiling or roof (see (E2) page 9).

If the first story floor over a cold basement, and the first story ceiling (second story floor) are insulated and the partitions between heated halls, bathrooms, dressing rooms and bedrooms are likewise insulated, the greatest fuel economies are possible and greater comfort is assured.

A simple method of accomplishing these desirable features is the use throughout the dwelling of Weatherwood Insulating Lath on all interior partitions and ceilings. In floor construction the use of 1-in. Weatherwood lath or the ½-in. lath on the ceiling with the addition of ½-in. insulation elsewhere in the construction is recommended.

This same insulation which makes it possible to create a cold area as a unit without heat loss in the rest of the house, also adds a great comfort in sound insulation as well. An appreciably less amount of sound will be transmitted from one floor to the next and from one room to those adjoining.

Continued on next page

(F) WEATHERWOOD AS SHEATHING AND ROOF BOARDING

(F1) Use

(F1a) Walls—Under wood siding, shingles, stucco or masonry veneer.

(F1b) Roofs—Under shingles, slate, tile or similar rigid roof units which may be laid over wood furring strips.

(F2) Sizes

Full ½ in. and 1 in. thick by 4 ft. wide by 8, 9, 10 or 12 ft. long.

(F3) Advantages

(F3a) Low Thermal Conductivity—It is an excellent insulator when used in the proper thickness. (See (B1) page 2 and (E4) page 9.)

(F3b) Strength—One-half inch thick, it is approximately twice as strong (bracing against distortion) as horizontal wood sheathing. (See (B6) page 3.)

(F3c) Moistureproof—Chemically treated, it is highly moisture and decay resistive. It requires no waterproof paper over it for protection. (See (B5) page 3.)

(F3d) No Open Joints—The large boards join only over framing members. Weatherwood provides a continuous, unbroken, uniform surface which, without the aid of waterproof building paper, successfully prevents air infiltration.

(F3e) Expansion or Contraction—Weatherwood under all conditions remains as originally applied. It does not expand or contract appreciably.

(F4) SPECIFICATIONS

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply to the particular work. Words in bracketed italics are selective.*

(F4a) Work Included

Note: *Here list and locate definitely the wall and roof areas to be covered. If both ½-in. and 1-in. thickness are used, list separately and the respective locations or areas covered.*

Note: *For selection of thickness see division (E) page 9 and particularly (E4).*

(F4b) Material

(Sheathing) (and) (roof boarding) shall be Weatherwood as made by CHICAGO MILL AND LUMBER CORPORATION, 111 West Washington Street, Chicago. Boards shall be full *(½ in.) (and) (1 in.)* thick *(as above designated),* 4 ft. wide by 8, 9, 10 or 12 ft. long as best adapted.

(F4c) Application

(F4c1) General—Continuity of insulation is imperative. Apply Weatherwood with the length parallel with the framing members. Where possible boards shall be of sufficient length to completely span between sills and plates or other structural members. Where end joints are necessary these shall only be made centered over 2x4-in. headers cut in between framing members. Side joints shall center over framing members.

(F4c2) Spacing—Weatherwood boards shall be spaced ⅛ in. apart at all edges. Bring the Weatherwood in close contact with window and door frames and trim.

(F4c3) Nails—

(a) Use 6d common nails for ½-in. thick Weatherwood.
(b) Use 8d common nails for 1-in. thick Weatherwood.

Note: *Large headed nails are unnecessary.*

(F4c4) Nailing—At all edges, space nails 3 in. apart on centers and ½ in. from the edge. On intermediate framing members, space nails 6 in. apart on centers. First nail Weatherwood to intermediate studs and then nail the edges.

(F5) SUPPLEMENTARY PROVISIONS

Note: *Provide for the following in other specification divisions.*

Note: *Weatherwood is not a nailing base.*

(F5a) Construction

Follow the recommendations of the Building Code Committee of the U. S. Department of Commerce and the National Lumber Manufacturers Association. (See division (D) pages 4, 6, 7 and 8.)

(F5b) Wood Siding

All joints shall butt over the center of a stud.

(F5c) Furring Strips

Provide 1x2-in. furring strips properly spaced over Weatherwood to take shingles, slate, tile and similar wall and roof covering. Nails shall be sufficiently long to pass through the furring and Weatherwood and penetrate the framing members at least 1 in.

(F5d) Stucco Base

Stucco must be reinforced with self-furring galvanized wire or expanded metal exterior stucco lath secured to studs with nails sufficiently long to pass through the Weatherwood and penetrate the stud at least 1 in.

(F5e) Masonry Veneer Ties

Provide masonry ties at each stud spaced 16 in. apart vertically. Nails shall be sufficiently long to pass through the Weatherwood and penetrate the stud at least 1 in.

(F5f) Frame Furring, etc.

Provide in accordance with the details window and door frame furring strips to compensate for the thickness of Weatherwood.

Note: *We advocate wide outside blind stops in frame construction. If, however, these are omitted, provide that the inside of the outside casings be lined with beveled strips of Weatherwood. See particularly (D5) page 7 and details on page 8.*

(G) WEATHERWOOD INSULATING LATH

(G1) Use

As an insulating plaster base.

(G2) Size

Full ½ in. and full 1 in. thick by 18x48 in. Half-inch thickness wrapped 12 pieces to the package, 72 sq. ft. One-inch thickness wrapped 6 pieces to the package, 36 sq. ft. Weight, 650 lb. per 1000 sq. ft., ½ in. thick.

(G3) Advantages

(G3a) Low Thermal Conductivity—It is an excellent insulator when used in the proper thickness. (See (B1) page 2 and (E) page 9, particularly (E4)).

(G3b) The Exclusive Weatherwood Lath Joint—It has always been known that a continuous surface over which plaster might be applied would provide the best possible base. It is, however, impracticable to do this and at the same time eliminate the tendency of such a surface to expand and contract excessively causing buckling.

Previous plaster bases have always left horizontal joints of greater or less width into which the plaster was forced. As the units of such a plaster base dry out and shrink, these joints open up pulling away from the plaster which worked into the joints leaving a weak and fragile plaster joint to withstand all strains and vibrations.

Continued on next page

The tongue and groove Weatherwood Lath joint (see details on page 8) is an *exclusive* Weatherwood feature and alone in its ability to form a tight, strong joint along the horizontal or long edge (spanning the space between framing members) into which plaster cannot be forced. It is so designed that when the wet plaster is troweled over the board, and the slight normal expansion takes place, the beveled profile of the joint permits this expansion to take place by the compression of the fibers at the joint. As the plaster dries, the resilient Weatherwood fibers gradually resume their original position and since they cannot contract to a condition smaller than the original one, there is no opening of joints along these edges. Practically a homogeneous surface is therefore provided as a plaster base, resulting in the elimination of strains at the joints which would tend to crack the plaster.

The tongue and groove joints also eliminate the springing of the board out of its true plane at these unsupported joints when the scratch and brown coats of plaster are being troweled on. This often occurred with earlier forms of lath boards tending to develop hair line cracks through the set and partially dry scratch coat when the brown coat is being applied and before the set plaster thickness is sufficient to withstand the strain.

(G3c) Strong Plaster Bond—Weatherwood provides an especially strong bond between the base and plaster. (See (B7) page 3.)

(G3d) Strength—While not of primary importance, the strength of bracing against distortion when applied to frame construction is an advantage, especially when applied to interior partitions. (See (B6) page 3.)

(G3e) Moistureproof—Moisture cannot pass through Weatherwood Lathe (see (B5) page 3). This characteristic of Weatherwood protects the frame from the moisture of the plaster, which passes into the interior of the building to be carried away by adequate ventilation.

Since the plaster thickness is reduced to a uniform ½ in., less moisture must be driven off during the plastering operation than is the case with open-mesh types of lath which require a much thicker body of plaster.

(G3f) No Lath or Joint Marks—The exclusive Weatherwood Lath tight tongue and groove joint eliminates the so-called lath or joint marks appearing on the plaster surface due to condensation of moisture and collection of dirt along the open joints of the plaster base and which require frequent cleaning and redecoration.

(G3g) Easily Handled—The convenient size, 18x48 in., provides an easily handled unit, rapidly erected. Can be carried into any space a man can work. Is easily scored and cut with a lathing hatchet where necessary to fill out at angles, corners, etc.

(G4) SPECIFICATIONS

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply to the particular work. Words in bracketed italics are selective.*

(G4a) Work Included

Note: *Here list and locate definitely the wall and ceiling areas to be covered. If both ½-in. and 1-in. thickness are used list separately and the respective locations or areas covered.*

Note: *For selection of thickness see division (E) page 9 and particularly (E4) and (E5).*

(G4b) Material

Plaster base shall be Weatherwood Insulating Lath as made by Chicago Mill and Lumber Corporation, 111 West Washington Street, Chicago. Units shall be full *(½ in.) (and) (1 in.) thick (as designated above),* 18 in. wide by 48 in. long.

(G4c) Application

(G4c1) General—Do not moisten lath before application. Apply Weatherwood Lath, rough or textured side exposed and tongue up, with the length at right angles to the framing *(or furring)* members. End joints shall center over framing members. Stagger end joints in successive courses on all walls and ceilings; likewise stagger end joints at juncture of walls and ceilings.

(G4c2) Spacing—Tongue and groove joints shall be brought tight in moderate contact. Units shall be spaced ⅛ in. apart at ends.

(G4c3) Nails—

(a) Use 4d common, blued or box nails, for ½-in. thick Weatherwood Lath.

(b) Use 6d common, blued or box nails, for 1-in. thick Weatherwood Lath.

Note: *Large headed nails are unnecessary.*

(G4c4) Nailing—Space nails 5½ in. apart on centers set ½ in. from the edges. First nail to intermediate framing *(or furring)* members and then at ends. Secure long edges at angles of walls and ceilings, spacing nails 5½ in. on centers and not more than ½ in. from the edge.

(G4c5) Prevention of Condensation—In cold weather apply Weatherwood to exterior studs *(furring) (rafters),* etc. before temporary heat is applied.

Note: *Because Weatherwood Lath does not permit passage of moisture, heating before lining the exterior cold walls, etc., results in a condensation of moisture from the warm, moist air on the inside of the sheathing and framing members. This originally forms as frost, which melts and must be absorbed gradually by the sheathing and frame, since it cannot pass the Weatherwood barrier to be carried off by the air. Weatherwood applied before heat insulates the warm, moist air from the cold exterior walls and eliminates this possibility of condensation.*

(G5) SUPPLEMENTARY PROVISIONS

Note: *Provide for the following in other specification divisions.*

(G5a) Construction

Follow the recommendations of the Building Code Committee of the U. S. Department of Commerce and the National Lumber Manufacturers Association. See Division (D) pages 4, 6, 7 and 8.

(G5b) Furring

Fur all exterior masonry walls to receive Weatherwood with *(1x2 in.) (specify)* furring strips, accurately shimmed to a true, level plane, set 16 in. on centers. Substantially secured to the masonry.

(G5c) Grounds

Furnish and erect, substantially secured to framing members through the Weatherwood Lath, full ⅜-in. grounds on exterior frame walls and full ½-in. grounds elsewhere.

Note: *Full ½-in. thickness of plaster should be used over Weatherwood Lath. Where stock window and door frames are used they provide for ⅞-in. thickness for lath and plaster, therefore on exterior frame walls, which are usually of less area due to window and door openings, a ⅜-in. thickness may be used. If special frames are detailed, provide for full ½-in. thickness of plaster over the lath.*

(G5d) Plastering

(G5d1) Caution—Do not wet Weatherwood Lath before applying plaster.

(G5d2) Cornerite—Apply metal lath "cornerite" strips over Weatherwood Lath at all re-entrant angles and all corners not protected with corner beads.

(G5d3) Plaster—Use gypsum cement or gypsum wood fiber plasters.

(G5d4) Thickness—Full ⅜ in. thick on exterior frame wall, elsewhere full ½ in. thick, flush with grounds.

Note: *See (G5b) above.*

(G5d5) Application—Apply in three (3) coats in accordance with the plaster manufacturer's specification. Surfaces shall be rodded to a true plane. All corners and angles shall be plumb and true. Wherever necessary and particularly on ceilings, provide plaster screeds to insure an even and uniform plaster thickness.

Note: *The maintaining of a uniform and sufficient plaster thickness over a fibrous or board plaster base such as Weatherwood, and especially on ceilings, cannot be too strongly stressed if permanent, satisfactory results are to be expected. Too frequently a weak, thin plaster coat, inadequate to withstand the usual strains of building settlement, shrinkage and vibration, results in plaster cracks which react on even the best of plaster bases.*

(G5d6) Ventilation—Provide adequate ventilation for the proper drying of the plaster work.

Note: *Due to the moistureproof characteristics of Weatherwood Lath, all moisture emanating from the plastering operation must be carried off by the air coming in contact with the exposed surface. Particular attention to proper ventilation is necessary.*

Continued on next page

(H) WEATHERWOOD AS INTERIOR FINISH

(H1) Introduction

Generally speaking, we realize that Weatherwood as interior finish (without interior plaster) has but limited architectural adaptability. There are, however, many applications, such as acoustical correction, finish for basement, amusement rooms, garages, attic rooms, storerooms, etc., where its good appearance coupled with its value as insulation make it highly desirable. It is particularly practical in alteration work.

It takes stains, paints, plastic paints and wall paper with admirable results. The foundation to which Weatherwood is applied, and the care with which it and the finish is applied is obviously reflected in its final satisfactory appearance.

(H2) Use

As an unplastered interior wall and ceiling finish, in its natural state (unfinished), stained, painted or covered with plastic paint or with wall paper.

Unfinished or finished with stains it has a decided value as an interior lining for sound absorption in halls, gymnasiums, churches, schools, etc. When used for acoustical correction it should not be painted.

(H3) Sizes

(H3a) When Exposed (Natural, Stained or Painted)—Full ½ in. and 1 in. thick (depending on insulation requirements) by 4 ft. wide by 8, 9, 10 and 12 ft. long. Where design dictates, smaller units may be used.

(H3b) Finished with Plastic Paint or Wall Paper—Weatherwood or Weatherwood Insulating Lath, full ½ in. and 1 in. thick (depending on insulation requirements).

(H4) Advantages

(H4a) Low Thermal Conductivity—It is an excellent insulator when used in the proper thickness. (See (B1) page 2 and (E) page 9.)

(H4b) Good Appearance—One side is finished in a uniform semirough, textured finish—the other side smooth. Either side may be selected for exposure. The natural color is an attractive cream-white. Joints may be exposed, finished square or beveled or they may be covered with wood or Weatherwood battens.

(H4c) Strength—It is strong and durable. (See (B3) page 3.)

(H4d) Moistureproof—It is highly moisture resistant. (See (B5) page 3.)

(H4e) Fire Resistance—It is not a fire hazard. (See (B8) page 3.)

(H4f) Continuity—It is a perfect, continuous seal against air infiltration. (See (B10) page 4.)

(H4g) Cleans Easily—In its natural state or stained it is easily cleaned with a stiff brush or with a vacuum cleaner.

(H5) SPECIFICATIONS

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply to the particular work. Words in bracketed italics are selective.*

(H5a) Work Included

Note: *Here list and locate definitely the wall and ceiling areas to be covered. If two types of finish—namely (1) exposed with natural stained or painted finish and (2) finished with plastic paint or wall paper or two thicknesses are required, list separately and the respective locations or areas covered.*

(H5b) Material

(H5b1) Wall *(and ceiling)* finish shall be *(Weatherwood Insulation Boards) (and) (Weatherwood Insulating Lath)* as made by Chicago Mill and Lumber Corporation, 111 West Washington Street, Chicago.

Note: *Specify "Weatherwood Insulation Boards" where exposed with natural, stained or painted finish. Specify Weatherwood Insulating Lath where finished with plastic paint or wall paper.*

(H5b2) Size shall be *(½ in.) (and) (1 in.)* thick by 4 ft. by 8, 9, 10 or 12 ft. long or units cut from the board in panels of symmetrically disposed sizes to conform with the detail drawings.

Note: *Use clause above for natural, stained or painted finish. Select the thickness required for insulation value.*

(H5b3) Size shall be *(½ in.) (and) (1 in.)* thick by 18x48 in., standard Weatherwood Insulating Lath.

(H5c) Application

(H5c1) General—

(a) Weatherwood Boards—

Note: *Same as (F4c1) page 10.*

(b) Weatherwood Lath—

Note: *Same as (G4c1) page 11.*

(H5c2) Spacing—

(a) For Weatherwood Boards—

Note: *Same as (F4c2) page 10.*

(b) For Weatherwood Lath—

Note: *Same as (G4c2) page 11.*

(H5c3) Finishing Joints of Weatherwood Boards—

(a) Exposed Joints—Neatly finish the exposed joint edges with sandpaper *(square) (rounded) (beveled)* as detailed.

(b) Battens—Form Weatherwood joint battens of widths detailed with edges neatly sandpapered *(square) (round) (beveled).* Fit battens neatly at all intersections or at points in contact with other trim. Secure battens with finishing nails as specified in (a) (H5c5).

(H5c4) Nails—

(a) For Weatherwood Boards—Use 2-in. finishing nails.

(b) For Weatherwood Lath—

Note: *Same as (G4c3) page 11.*

(H5c5) Nailing—

(a) For Weatherwood Boards—Nails shall be driven at an angle with heads neatly set below the surface.

Note: *Continue same as (G4c4) page 11.*

(b) For Weatherwood Lath—

Note: *Same as (F4c4) page 10.*

(H6) SUPPLEMENTARY SPECIFICATION PROVISIONS—FINISHING, ETC.

Note: *Provide for the following in other specification divisions.*

Note: *Weatherwood is not a nailing base.*

(H6a) Construction

Note: *Same as (F5a) page 10.*

(H6b) Furring

Note: *Same as (G5b) page 11.*

(H6c) Finish

Note: *Weatherwood boards may be left natural, or finished with stain or paint. Weatherwood lath may be finished with plastic paint or wall paper.*

(H6c1) Natural—When a harder surface is desired, colorless sizing, such as water size, may be applied.

(H6c2) Stain—Weatherwood takes water, alcohol or other types of stain admirably, either in single tones, panels or stencil design.

Note: *Where used as acoustical correction, use stain only. Paint fills the pores and materially reduces the acoustical efficiency.*

(H6c3) Paint—Size thoroughly with water, glue or oil size. Apply paint in accordance with the manufacturer's directions.

(H6c4) Plastic Paint—Plastic paints do not provide satisfactory protection from excessive moisture. Where a building is highly humidified at times, the use of plastic paint over Weatherwood is not recommended, since it takes but slight shrinkage strain to form cracks in the thin plastic paint layer.

Continued on next page

In no case is a single coat of plastic paint over Weatherwood recommended. Such a thin coat will not adequately cover all irregularities and joints and it provides no protection against the usual strains of service. Therefore, use two (2) coats of plastic paint on Weatherwood.

Joints should be filled with the joint filler specified by the plastic paint manufacturer and covered with cloth or wire screen tape as specified.

Depending on the type of plastic paint, size may or may not be required. Apply plastic paint in accordance with the manufacturer's directions.

(H6c5) Wall Paper—First line the wall over the Weatherwood Lath with 1½-lb. unsaturated building felt neatly applied with wall paper paste in the same manner as wall paper. The joints should be accurately trimmed to butt. Over the felt apply the wall paper in the customary manner. Careful workmanship will furnish a highly satisfactory finish almost comparable with that of a plastered wall.

(J) WEATHERWOOD AS EXTERIOR FINISH

(J1) Use

While generally speaking of limited architectural adaptability, Weatherwood as exterior finish has many applications, especially when its moistureproof insulation value is considered.

It is particularly adapted to the lighter, less permanent construction where cost is a prime factor, and especially for buildings of but one story, such as small dwellings, garages, summer cottages, portable temporary schools, etc. It is an ideal exterior finish for such temporary construction buildings as offices and tool and material storehouses.

(J2) Sizes

Full ½ in. and 1 in. (depending on insulation requirements) thick by 4 ft. wide by 8, 9, 10 or 12 ft. long.

(J3) Advantages

The advantages as set forth in (F3) page 10 for Weatherwood Sheathing and Roof Boarding apply equally to Weatherwood Exterior Finish.

(J4) Specifications

(J4a) Construction Provisions—Follow the recommendations of the Building Code Committee of the U. S. Department of Commerce and the National Lumber Manufacturers Association. (See division (D) pages 4, 6, 7 and 8.)

(J4b) Application, etc.—The specifications (F4) page 10 for Weatherwood Sheathing apply likewise to Weatherwood Exterior Finish.

(J4c) Painting—Size thoroughly with a dependable water, glue or oil size. Finish with two (2) coats of any good exterior house paint applied in accordance with the manufacturer's directions.

Note: *The painting of Weatherwood surfaces should be done before the application of the joint battens, trim, etc.*

(J4d) Joint Battens, Trim, etc.—Cover all joints between the Weatherwood boards and all edges with wood batten strips or exterior wood trim, secured through the Weatherwood to the framing members.

(K) WEATHERWOOD USED AS ADDED INSULATION

(K1) Use

Note: *See separate division (L) page 14 for Weatherwood Insulation over roof decks of wood, concrete, steel, tile, etc.*

(K1a) Over Exterior Wood Sheathing—Covered by additional exterior finish such as wood siding, shingles, stucco, masonry, veneer, etc.

(K1b) Under or Over Wood Roof Boarding—Covered by shingles or other roofing materials. For rigid roofing units, such as wood shingles, slate, etc., furring strips are recommended if insulation is placed over roof boarding. Generally speaking, if placed under roof boarding directly on the rafters the position closer to the heat source is preferable, and obviously any type of roofing applicable over wood roof boarding may be used.

(K1c) Over the Interior of Framing Members—Over studs, furring, joists, rafters, etc., with plaster base furred over or placed immediately over the Weatherwood.

(K1d) Between Rough and Finished Floors.

(K2) Sizes

Full ½ in. and 1 in. thick by 4 ft. wide by 8, 9, 10 or 12 ft. long.

(K3) Advantages

(K3a) Low Thermal Conductivity—It is an excellent insulator. (See (B1) page 2.)

(K3b) Moistureproof—Chemically treated it is highly moisture and decay resistive, thus permanently of insulation value. (See (B5) page 3.)

(K3c) Continuity—No Open Joints—When properly applied, it provides a continuous unbroken surface which successfully prevents air infiltration. (See (B13) page 4.)

(K3d) Non-compressibility—Retains its firm, non-compressible form when placed under other materials, thus maintaining its original insulating value. (See (B12) page 4.)

(K3e) Rugged Strength—Does not tear or break in application. (See (B6) page 3.)

(K3f) Decreases Fire Hazard—Permits the proper location of the recommended fire stops in standard construction and in itself is not a fire hazard. (See (B8) page 3.)

(K3g) Easy to Install—Light and rigid, its conveniently sized units are easily and economically installed.

(K4) SPECIFICATIONS

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply to the particular work. Words in bracketed italics are selective.*

(K4a) Work Included

Note: *Here list and locate definitely the insulation to be installed. If both ½ in. and 1-in. thicknesses are used, list separately and the respective locations or areas covered.*

Note: *For selection of thickness, see division (E) page 9.*

(K4b) Material

Insulation shall be Weatherwood as made by CHICAGO MILL AND LUMBER CORPORATION, 111 West Washington Street, Chicago. Boards shall be full *(½ in.) (and) (1 in.)* thick *(as above designated),* 4 ft. wide by 8, 9, 10 or 12 ft. long as best adapted.

(K4c) Application

(K4c1) General—Continuity of insulation is imperative. Apply Weatherwood with the length parallel with the framing members, smooth face exposed. Where possible, boards shall be of sufficient length to completely span between sills and plates or other structural members. Where end joints are necessary, these shall only be made centered over 2x4-in. headers cut in between framing members. Side joints shall center over framing members.

(K4c2) Spacing—Weatherwood boards shall be spaced ⅛ in. apart at all edges. Bring the Weatherwood in close contact with window and door frames and trim.

(K4c3) Nails—

(a) Use 6d common nails for ½-in. thick Weatherwood.

(b) Use 8d common nails for 1-in. thick Weatherwood.

Note: *Large headed nails are unnecessary.*

(K4c4) Nailing—Space nails on edges and intermediate framing members 12 in. apart on centers. Nail to intermediate supports first and then nail edges approximately ½ in. from the edge.

Note: *Additional fastening is provided through the securing of the usual covering materials. If advantage of the structural strength of Weatherwood is desirable, nailing should be done in accordance with clause (F4c4) page 10 instead of as above.*

Continued on next page

(K4c5) Prevention of Condensation—
Note: *Same as (G4c5) page 11.*

(K5) SUPPLEMENTARY PROVISIONS

Note: *Provide for the following in other specification divisions.*
Note: *Weatherwood is not a nailing base.*

(K5a) Construction
Note: *Same as (F5a) page 10.*

(K5b) Furring Strips
Note: *Same as (F5c) page 10 unless provision is made for securing the covering with nails sufficiently long to pass through the Weatherwood and penetrate the sheathing or roof boarding beneath. Also same as (G5b) page 10 where required on the inside of masonry walls.*

(K5b1) Where Weatherwood is used over rough flooring, provide 1-in. x 2-in. stripping 16 in. over centers to receive nailing of finished flooring.

(K5c) Stucco Base
Note: *Same as (F5d) page 10.*

(K5d) Masonry Veneer Ties
Note: *Same as (F5e) page 10*

(K5e) Frame Furring, etc.
Note: *Same as (F5f) page 10.*

(L) WEATHERWOOD INSULATION OVER ROOF DECKS

(L1) Use

Over wood, concrete, tile, and steel roof decks covered with standard built-up roofing. Prevents heat loss and condensation. Particularly adapted to industrial use.

(L2) Size (Area of Units)

Weatherwood Roof Insulation units for industrial purposes are made 2 ft. wide by 5 ft. long representing the ultimate development of experience with various sizes of units for roof insulation. It weighs approximately 625 lb. per ½-in. thickness, per 1000 sq. ft. This size of the Weatherwood Roof Insulation unit is the correct medium between a unit which is too small or too large for economical and practical application.

Insulation, due to its protection against low roof deck temperatures, reduces the contraction of the deck. This reduced contraction of a roof deck during cold weather is compensated for by a slight yielding of the fibers within each unit—some of this contraction and expansion is also taken up in the joints between the Weatherwood units.

Note: *The application of insulating material over a roof deck tends to decrease the amount of contraction and expansion which takes place due to the extremes of temperature. The difference in temperature from one extreme to the other in a roof deck covered with 1 in. of Weatherwood ranges between 40° and 90°—a total variance of only 50°, whereas on an uninsulated deck, the temperature of the deck in extremes of temperature ranges between zero and over 100°, a variance of over 100°. The resulting reduction in expansion and contraction strains is obvious.*

(L3) Thicknesses and Weights

Weatherwood Roof Insulation units (2x5 ft.) are made in full ½-in. thickness or any multiple of ½ in. up to full 3-in. thickness. They weigh 60 lb. per square (100 sq. ft.) for ½-in. thick, 130 lb. per square 1 in. thick, 195 lb. per square 1½ in. thick, 260 lb. per square 2 in. thick, 325 lb. per square 2½ in. thick and 390 lb. per square 3 in. thick.

Weatherwood unit thicknesses provide the greatest economy in application, since the correct thickness for the greatest efficiency is applied in one operation—not built up by applying various layers of the ½-in. thickness on the job.

Weatherwood Roof Insulation units are factory fabricated to the various thicknesses in the two methods described below:

(L3a) Stapled Weatherwood—The various thicknesses are provided by stapling layers of ½-in. Weatherwood units (2x5 ft.) together with non-corroding metal clips. These clips are spaced close enough to secure rigidity and permanence. An advantage of stapling lies in the increased heat resistance.

There is a definite resistance to heat flow called contact resistance at the point where two layers of material are placed together due to the two surfaces and the thin film of air between them. Tests at the University of Minnesota by Prof. F. D. Rowley show that in a 2-in. block made by stapling four pieces of ½-in. material together, the total heat resistance of the block is increased slightly over 11% as compared to a solid 2-in. thickness of the same material.

The cross section of the clip is so small that even the most delicate instruments would show no appreciable heat loss by conduction through them from inside to outside surface.

(L3b) Laminated Weatherwood—For special purposes or for those who prefer this type, Weatherwood Roof Insulation units (2x5 ft.) are made as a laminated board, wherein the ½-in. thicknesses are cemented together with a high grade waterproof cement.

This cement is a development of years of research and experience by the Chicago Mill and Lumber Corporation in the manufacture of plywood. Its use provides added moisture sealing at each layer since the cement is even more moisture resistant than the Weatherwood.

The method does not require hydraulic pressure, consequently there is no reduction of thickness or increased density of the Weatherwood Insulation with the resultant lessening of insulating efficiency.

(L4) Advantages

(L4a) Insulating Efficiency—Weatherwood Roof Insulation has a thermal conductivity of .32 B.t.u. per inch thickness per hour, per degree F., temperature difference, per square foot. (See (B1) page 2 for supporting evidence.)

(L4b) Thickness and Size of Units—The thicknesses of Weatherwood Roof Insulation are full ½ in. and multiples thereof up to *full* 3 in. (See (L3) opposite.) This should be borne in mind when making comparisons with other insulating materials. It is obvious that two boards having the same thermal conductivity on an inch basis would be unlike in actual efficiency if one were full ½ in. thick, the other of lesser thickness, or if one becomes compressed in application. (See (L4c) below.)

The unit area (2x5 ft.) of Weatherwood Roof Insulation in the various thicknesses is not only the most practical from an installation economy point of view, but it is an area which experience has proven will best compensate for the expansion and contraction of the deck upon which it is laid. Under the most adverse conditions it prevents wrinkling and buckling of built-up roofings laid over it. (See (L2) and (L3) on this page and (L4h) page 15.)

(L4c) Non-compressibility—Resilience—Weatherwood compresses slightly under heavy pressures, but upon release of pressure immediately returns to its original thickness. This resilience protects against loss of efficiency and makes the covering material more resistant to abrasion and puncturing.

(L4d) Bond—Weatherwood bonded to another substance by use of pitch or asphalt will withstand a pull of over 1200 lb. per sq. ft. This more than provides for the bonding requirements of a roof insulating material.

(L4e) Moisture Resistance—As explained in (A3c) page 2 describing the manufacture of Weatherwood, moisture absorption is extremely low because of the thorough weatherproofing of the individual fibers in making up the board. It is not only unaffected by moisture, but, in addition, has no capillarity, so that even with moisture on the top surface of Weatherwood from leaks in roof covering, or beneath Weatherwood on roof deck from condensation, this moisture will not be drawn into the board (see (B5) page 3 for supporting evidence). This is an important factor in guarding against deterioration of insulating material due to rot or decay.

Continued on next page

(L4f) Tough—Easily Handled—Weatherwood Roof Insulation is the only insulating board fabricated from hardwood. The strong hardwood fibers from which it is produced assure a board of unusual strength, and one that is light and easy to handle. The tough fibrous structure is such that the board is not brittle, having a high tensile strength. It is easily cut and can be adapted to all types of openings, or roof angles. It is uniform in thickness—assured by inspection and approval of each board before packing at the mill. Bundles are substantial and easy to handle on the job.

(L4g) Adapts Itself to Irregularities of Roof Decks—A prime requirement of an insulating material for application over concrete is that it be yielding enough to form itself to the irregularities of the deck and, at the same time be rigid enough to prevent wrinkling and buckling when embedded in hot pitch or asphalt. Weatherwood is midway between the two extremes —pliable enough to follow irregularities in the concrete surface—rigid enough to permit a maximum of economy in handling and application. The size of Weatherwood Roof Insulation units practically eliminates any tendency to bridge over depressions in the surface of the deck and loss of bonding at these points.

(L4h) Absorbs Expansion and Contraction—An insulative material must be capable of absorbing expansion and contraction strains within itself without buckling or wrinkling.

Weatherwood has sufficient rigidity in itself to add considerable bracing strength to the steel deck and some additional resistance to the bending of the steel deck under load. Because of the yielding nature of its fibers, it is capable of absorbing a large amount of contraction within its own structure.

(L4i) Low Coefficient of Expansion—A material which is to be applied over a roof deck must be of an inert nature, that is, it must have a low coefficient of expansion under moisture conditions, so that additional expansion and contraction effects are not added to the roof deck itself. In addition, a material which expands or contracts greatly due to moisture will have a tendency to curl as one side or the other becomes moist. This is ruinous to any material applied over a roof deck. Because of its highly weatherproofed, fibrous structure, there is practically no expansion in Weatherwood. Weatherwood is an inert or "dead" material, which does not tend to curl or buckle because of strain within itself. This characteristic is imparted to Weatherwood in the manufacture of the board because of its completely homogeneous structure, and the nature of its all wood fiber.

(L5) APPLICATION OVER WOOD DECKS SPECIFICATIONS

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply to the particular work. Words or clauses in bracketed italics are selective—use only when they apply.*

(L5a) Work Included

Note: *Here list and locate definitely the roof areas to be covered. If more than one thickness is used, list separately and the respective locations or areas covered.*

Note: *For data to assist in the selection of the correct thicknesses required for fuel and radiation savings and the prevention of condensation, see divisions (L9) and (L10) page 21.*

(L5b) Material

Roof insulation shall be Weatherwood as made by CHICAGO MILL AND LUMBER CORPORATION, 111 West Washington Street, Chicago. Insulation shall be *(specify)* thick, *(stapled) (laminated)* boards, 2x5 ft. in area.

(L5c) Application

(L5c1) Condition of Deck—Deck shall be dry, finished smooth, swept clean and all nails driven flush.

(L5c2) Felt—Apply *(one) (two)* layer *(s)* of dry, saturated roofing felt over the roof boards. Lap the felt at least 1½ in. at joints. *(Felt shall extend 6 in. up on walls and all vertical surfaces and shall finally be turned over and mopped to top of insulation.)*

Note: *Felt protects against dripping of pitch or asphalt through deck. Include last bracketed italicized clause only where there is excessive humidity inside the structure. Depending on humidity conditions use one or two layers.*

(L5c3) Laying—Apply the Weatherwood units over the felt, bringing the edges to contact. Break joints between alternate rows. *(Where more than one thickness of insulation is used on a single area, nail the first layer in place only sufficiently to maintain its alignment and lay the second layer directly over the first, breaking all joints.)*

Note: *Include or omit last bracketed italicized clause above as required.*

Lay only as much insulation as can be covered and protected by the finished roof covering in a single day. Where work is stopped, protect the edges of insulation with overlapping mopped strips of roofing felt, leaving the felt strips as a permanent seal.

(L5c4) Nailing—Insulation shall be secured to deck with roofing nails sufficiently long to penetrate through the insulation and provide firm hold in deck. Space nails approximately 12 in. apart on centers and not more than 2 in. from edges of the unit. Carry one row of nails longitudinally through the center of each unit.

(L5c5) Finished Roofing—Finished roofing shall be applied over insulation in accordance with the manufacturer's specification, using at least 35 lb. of *(pitch) (asphalt)* per square under the first layers.

(L6) APPLICATION OVER CONCRETE OR TILE ROOF DECKS—SPECIFICATIONS

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply to the particular work. Words or clauses in bracketed italics are selective—use only when they apply.*

(L6a) Work Included

Note: *Here list and locate definitely the roof areas to be covered. If more than one thickness is used, list separately and the respective locations or areas covered.*

Note: *For data to assist in the selection of the correct thicknesses required for fuel and radiation savings and the prevention of condensation see divisions (L9) page 16 and (L10) page 21.*

(L6b) Material

Roof insulation shall be Weatherwood as made by CHICAGO MILL AND LUMBER CORPORATION, 111 West Washington Street, Chicago. Insulation shall be *(specify)* thick, *(stapled) (laminated)* boards, 2x5 ft. in area.

(L6c) Application

(L6c1) Condition of Deck and Insulation—Deck shall be smooth, dry and swept clean. Surfaces of Weatherwood shall be dry.

Note: *Hot pitch or asphalt will not adhere to moist surfaces.*

(L6c2) Felt—Apply *(one) (two)* layer *(s)* of saturated roofing felt over the roof deck, thoroughly stuck in hot *(pitch) (asphalt)*. Felt shall extend 6 in. up on walls and all vertical surfaces and shall finally be turned over and mopped to top of insulation.

Note: *Include this clause where interior of structure is subject to high humidity conditions as in paper, textile mills, etc., or on applications made during winter months where decks do not have opportunity to thoroughly cure and dry out before insulation is applied.*

Continued on next page

(L6c3) Priming—Prime deck thoroughly before mopping of asphalt.

Note: *Include this clause if insulation is laid in asphalt.*

(L6c4) Laying—Mop deck thoroughly with *(composition of hot pitch and tar) (hot asphalt)* using not less than 35 lb. per square. Apply the Weatherwood units while the mopping is still hot. Firmly bed the Weatherwood in the binder over the entire surface, bringing the edges to contact. Break joints between alternate rows. *(Where more than one thickness of insulation is used on a single area. Mop the surface of the first layer and apply the second layer while the binder is still hot, breaking all joints. Press second layer firmly into position.)*

Note: *Include or omit last bracketed italicized clause above as required.*

Lay only as much insulation as can be covered and protected by the finished roof covering in a single day. Where work is stopped, protect the edges of insulation with overlapping mopped strips of roofing felt stuck down to the deck. Leave strips as a permanent seal when work is resumed.

(L6c5) Finished Roofing—Finished roofing shall be applied over insulation in accordance with the manufacturer's specification, using at least 35 lb. of *(pitch) (asphalt)* per square under the first layers.

(L7) APPLICATION OVER STEEL DECKS SPECIFICATIONS

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

Note: *Select and include only those clauses which apply to the particular work. Words or clauses in bracketed italics are selective—use only when they apply.*

(L7a) Work Included

Note: *Here list and locate definitely the roof areas to be covered. If more than one thickness is used, list separately and the respective locations or areas covered.*

Note: *For data to assist in the selection of the correct thicknesses required for fuel and radiation savings and the prevention of condensation, see divisions (L9) page 16 and (L10) page 21.*

(L7b) Material

Roof insulation shall be Weatherwood as made by Chicago Mill and Lumber Corporation, 111 West Washington St., Chicago. Insulation shall be *(specify)* thick, *(stapled) (laminated)* boards, 2 x5 ft. in area.

(L7c) Application

(L7c1) Condition of Deck and Insulation—Deck shall be smooth, dry and swept clean. Surfaces of Weatherwood shall be dry.

Note: *Hot asphalt will not adhere to moist surfaces.*

(L7c2) Laying—Mop deck thoroughly with hot asphalt using not less than 35 lb. per square.

Note: *Pitch should not be used over steel decks.*

Apply the Weatherwood units while the mopping is still hot. Firmly bed the Weatherwood in the binder over the entire surface, bringing the edges to contact. Break joints between alternate rows. *(Where more than one thickness of insulation is used on a single area. Mop the surface of the first layer and apply the second layer while the binder is still hot, breaking all joints. Press second layer firmly into position.)*

Note: *Include or omit last bracketed italicized clause above as required.*

Lay only as much insulation as can be covered and protected by the finished roof covering in a single day. Where work is stopped, protect the edges of insulation with overlapping mopped strips of roofing felt stuck down to the deck. Leave strips as a permanent seal when work is resumed.

(L7c3) Finished Roofing—Finished roofing shall be applied over insulation in accordance with the manufacturer's specification, using at least 35 lb. of *(pitch) (asphalt)* per square under the first layers.

(L8) APPLICATION UNDER STEEL DECKS

Some steel decks are so designed and assembled as to permit the placing of an insulating board on the under side of the deck to act as interior ceiling finish, as well as for insulating efficiency and the absorption of sound within the structure.

This is accomplished by placing the board into the flanges of the supporting members of the roof deck, wedging it under the stiffening angles.

The chief requirements of an insulating board for this purpose is that it be stiff enough not to sag between supports; moisture resistant enough not to require painting or other protection; a comparatively high sound absorption efficiency; high insulating efficiency; a light color with good light reflection value, combined with attractive surface appearance. All of the requirements are readily met with Weatherwood.

Application details depend upon the design of each particular roof deck. In general, Weatherwood is cut to fit and pieces are of a special size. A clearance of one-quarter inch is to be left at all edges. End joints should come over framing members for sealing purposes. Weatherwood is fastened into position by the wedging together of the steel deck.

Complete specifications adapted to the specific deck construction will be furnished on application.

(L9) DETERMINATION OF HEAT RESISTANCE OF INDUSTRIAL ROOFS

(L9a) General

One of the chief factors in determining the economic efficiency of an industrial roof is its resistance to heat flow. This heat flow is going on through any roof deck when there is a difference in temperature between the interior and exterior surfaces of a building. The rate of heat flow depends upon, first, the design of the roof structure and second, upon the amount of insulation used in combination with the roof deck.

Definite ratings have been established for materials in all types of construction which give the rate of heat flow in British thermal units of heat per square foot of area for each degree of temperature difference and for the thickness of material specified in the rating. These B.t.u. ratings must be transposed into economic units, that is, into the pounds or units of fuel wasted by the flow of heat represented in the B.t.u. rating.

The determination of these unit costs is a simple mathematical computation, but the various factors making up this computation must be selected to suit the conditions met in each particular problem. The following text, tables and charts illustrate the factors involved, show the method of mathematical calculation and by use of the graphical charts, provide a quick and easy method of computing the comparative efficiency of any roof deck.

(L9b) Factors Involved

(L9b1) Conductivity or B.t.u. Ratings—The conductivity of the deck, both insulated and uninsulated, must first be determined. Tables on page 18 give such B.t.u. ratings for all of the common types of roof construction, together with their B.t.u. rating insulated in various degrees. In order to obtain maximum economic efficiency, the heat loss in units of fuel must be determined. The cost of insulating materials is then balanced against the savings made possible by their use.

(L9b2) Area—The square foot area of the roof deck, subject to the loss of heat, must be determined. This is fixed by the design of the structure.

(L9b3) Temperature Difference—The average difference in temperature must be fixed by comparing the average desired inside temperature and the average outside temperature during the heating season. This average outside temperature varies with locality as shown on the table on page 20, which gives these average values for various parts of the United States, for the period from October 1 to May 1 or seven months. If these values are used, figure a heating season of 210 days. Some engineers prefer to figure the actual number of days during which the average outside temperature is lower than the inside temperature. When this is done, an average outside value should be used just covering that period or number of days.

Continued on next page

(L9b4) Fuel—The fuel units consumed by loss of heat through a roof naturally depends upon the amount of heat represented by each fuel unit. A partial list of fuels showing their comparative heat contents follows:

Anthracite coal	11,600 to 13,500 B.t.u. per lb.
Bituminous coal	12,000 to 14,500 B.t.u. per lb.
Distillate oil—32° to 40° Baume	135,000 to 140,000 B.t.u. per gal.
Natural gas	1,131 B.t.u. per cu. ft.
Coal Gas	560 B.t.u. per cu. ft.

(L9b5) Efficiency of Heating Equipment—The efficiency of the fuel burning equipment determines the percentage of the actual heat content of the fuel that is turned into useful heat in the structure. Coal burning equipment will usually range between 50% efficient for residential buildings up to 65% efficient for industrial plants. Oil burning equipment will range between 65% and 75% under like conditions. Gas efficiency is usually figured at about 80%.

(L9c) MATHEMATICAL COMPUTATION FOR FUEL SAVING

In computing mathematically the fuel loss through any roof the procedure is as follows: the conductivity or B.t.u. rating is multiplied by the area of the roof in square feet, by the difference in average inside and outside temperatures during the heating season, by the number of days in the heating season (period covered by average outside temperature value) and finally, by 24 hours to change the B.t.u. hourly rating into day units. The product of this series of multiplications is then divided by the heat contents per unit of the fuel used and by the efficiency of the fuel burning equipment. In the case of coal, to reduce the pounds of fuel to tons, the product is divided by 2000.

A typical determination of coal saving by the use of one inch of Weatherwood follows:

Location: Chicago, Illinois.

Roof deck—5-in. concrete slab covered with built up roofing.	
Conductivity uninsulated (from table on page 18)	.532
Conductivity with 1-in. Weatherwood (from table on page 18)	.203
Area of roof deck (assumed)	20,000 sq. ft.
Inside temperature (average throughout 24 hrs.)	60° F.
Exterior temperature (average for seven months from table on page 19)	36.4° F.
Temperature difference	23.6° F.
Heating season (seven months used for temperature)	210 days
Fuel (coal assumed at)	12,000 B.t.u. per lb.
Boiler efficiency (assumed)	65%

$$\frac{(.532 - .203) \times 20{,}000 \times 23.6 \times 210 \times 24}{12{,}000 \times .65 \times 2000} = 50.2 \text{ tons}$$

(L9d) RADIATION REQUIREMENTS

(L9d1) General—The amount of radiation saved by the insulation of the roof also enters into the determination of economic efficiency of the roof structure. The factors involved in mathematically computing the radiation saving by insulation are as follows:

L9d2) Conductivity—The conductivity or B.t.u. rating must be determined for the deck, both uninsulated and with the amount of insulation added which is to be considered, as in the case with computations for coal saving.

(L9d3) Temperatures—Interior temperature average during the day and night is not used as in the case of coal saving, but the maximum required temperature during any extended period is the temperature used. Determine the lowest outside temperature from table on page 19 and to this add 15°, as it is only necessary that sufficient radiation be provided to furnish a maximum temperature with an outside temperature of approximately 15° above the lowest. This is because the lowest outside temperature is very unusual and probably exists for only short periods.

(L9d4) Type of Radiation—The type of radiation, that is, steam, vapor or hot water, will determine the B.t.u. rating per square foot for the radiation used. Usual values for these three types of radiation are as follows:

Steam radiation	240 B.t.u. per sq. ft.
Vapor system	200 B.t.u. per sq. ft.
Hot water system	150 B.t.u. per sq. ft.

(L9e) MATHEMATICAL COMPUTATION FOR RADIATION SAVINGS

The difference in temperature between maximum interior temperature desired and a temperature 15° above the lowest recorded outside temperature, should be multiplied by the difference in conductivity of the insulated roof as compared to the uninsulated roof and multiplied again by the roof area. Divide the product of this multiplication by the B.t.u. rating of the type of radiation to be used. A typical illustration of radiation savings by the use of Weatherwood as in the previous problem follows:

Example

Outside low temperature (lowest recorded plus 15°) from table on page 19	–8° F.
Inside maximum desired temperature	65° F.
Temperature difference	73° F.
Type of radiation (steam assumed)	240 B.t.u. per sq. ft.

Take other conditions from analysis of fuel saving (L9c)

$$\frac{73^\circ \times (.532 - .203) \times 20{,}000}{240} = 2001 \text{ sq. ft. of radiation saved.}$$

(L9f) GRAPHIC SOLUTION OF FUEL AND RADIATION SAVINGS

(L9f1) General—Easy and rapid calculation of the savings in coal and radiation on any type of deck and with any amount of insulation may be found without the necessity of mathematically computing such savings by the use of graphic chart on page 20. In using this chart, first determine the factors which influence the solution, just as in the mathematical computations given in (L9c) and (L9e).

(L9f2) Fuel Saving Computation—Having determined these factors turn to the chart and select the point on the conductivity scale representing the conductivity of the uninsulated roof deck as determined from tables on page 18 or calculated. The scale of conductivities is found on the left side of the vertical center line at the top of the chart and ranges from .0 to .9 B.t.u. per hour. From this point pass horizontally to the left to an intersection with the line representing the thickness of Weatherwood to be used. From this intersection pass vertically down to the diagonal line representing the proper temperature difference (average inside and average outside) on the lower half of the chart. From this intersection pass horizontally to the right to an intersection with the diagonal line representing number of days in heating season. From this intersection pass vertically up to an intersection with the line representing the fuel to be used and efficiency of plant. From this intersection pass horizontally to the right to the scale at the right edge of the chart. The readings on this scale give the units of fuel saved over one heating season per thousand square feet of roof area as follows:

Scale reading direct	= tons of coal
Scale reading × 100	= gallons of oil
Scale reading × 10,000	= cu. ft. of gas

In order to determine the total fuel required per thousand square feet of roof area for any deck either insulated or uninsulated, follow exactly the same procedure but start with the proper conductivity on the horizontal scale at the center of the left hand portion of the chart on page 20 and do not use the upper half of that portion of the chart or the Weatherwood curves.

(L9f3) Radiation Savings—In order to determine the savings, start again at the point on the conductivity scale representing conductivity of uninsulated deck and pass horizontally across to the line representing the thickness of Weatherwood. From this intersection, pass vertically down to the diagonal line representing temperature difference between maximum inside and low outside temperatures. From this intersection, pass horizontally to the right to an intersection with one of the three radiation scales at the right edge, either steam, vapor, or hot water. The reading thus established on this scale is the number of square feet saved by use of the insulation for each 1000 sq. ft. of roof.

To determine the total required radiation for any deck, start at the horizontal scale at the center of the page with the conductivity of the deck as it is to be built and by intersecting the temperature difference line and the radiation scale, the reading on this last scale gives the total square feet of radiation required for each 1000 sq. ft. of this roof deck.

Continued on next page

COEFFICIENTS OF TRANSMISSION (U)

Various Types of Flat Roof Decks Covered with Built-up Roofing

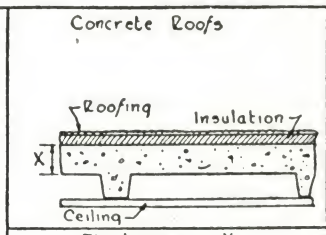
Note: These coefficients are expressed in B.t.u. per hour per square foot per 1 degree Fahrenheit difference in temperature between the air on the two sides and are based on an outside wind exposure of 15 miles per hour.

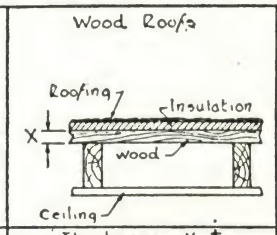
Note: These tables are reproduced from The American Society of Heating and Ventilating Engineers Guide, by special permission.

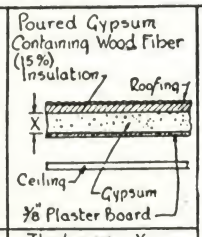
FLAT ROOFS - METAL LATH AND PLASTER CEILINGS ‡

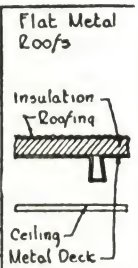
The values of U in this Table are based on the following Internal Conductivities (C) which are expressed in B.t.u. per Hr. per Sq.Ft. per 1°F

Roofing	1.325	per 1"
Concrete	8.30	per 1"
Gypsum (15% Wood fiber)	2.30	per 1"
Wood (Yellow Pine or Fir)	1.00	per 1"
Fiber Insulation (Board form)	0.33	per 1"
Felts & Quilts (Sq/t)	0.27	per 1"
Cork board	0.30	per 1"
Plaster (Cypsum)	2.32	per 1"
Cellular Gypsum (24#)	0.77	per 1"









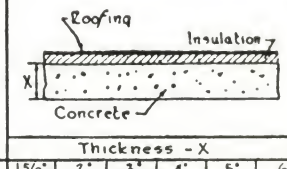
			Thickness - X						Thickness - X †					Thickness - X		Thickness - X
Roof No.	Thickness of Insulation	Kind of Insulation	1⅝" a	2" b	3" c	4" d	5" e	6" f	1" g	1½" h	2" i	3" j	4" k	3" l	4" m	n
227	0"	No Insulation	0.304	0.300	0.290	0.280	0.271	0.262	0.258	0.227	0.213	0.175	0.149	0.221	0.202	0.324
228	½"	Fiber Insulation (Board form)	0.208	0.206	0.201	0.196	0.192	0.188	0.185	0.169	0.160	0.138	0.121	0.165	0.154	0.217
229	1"		0.158	0.157	0.154	0.152	0.149	0.146	0.145	0.133	0.129	0.114	0.102	0.132	0.125	0.163
230	1½"		0.128	0.127	0.125	0.123	0.121	0.119	0.119	0.112	0.108	0.097	0.089	0.110	0.105	0.131
231	2"		0.107	0.106	0.105	0.104	0.102	0.101	0.101	0.096	0.093	0.085	0.078	0.095	0.091	0.109
232	1"	Cork board	0.151	0.150	0.147	0.145	0.142	0.140	0.138	0.129	0.124	0.110	0.100	0.127	0.120	0.155
233	1½"		0.121	0.120	0.118	0.116	0.115	0.113	0.112	0.106	0.103	0.093	0.085	0.105	0.104	0.123
234	2"		0.100	0.100	0.099	0.098	0.096	0.095	0.095	0.090	0.088	0.081	0.075	0.089	0.086	0.102
235	½"	Soft Felt or Quilt (Not Compressed)	0.194	0.192	0.188	0.184	0.180	0.176	0.174	0.160	0.152	0.132	0.116	0.157	0.147	0.202
236	1"		0.143	0.142	0.139	0.137	0.135	0.133	0.132	0.123	0.118	0.106	0.096	0.121	0.115	0.147
237	2"	Cellular Gypsum	0.170	0.168	0.165	0.162	0.159	0.156	0.154	0.143	0.136	0.120	0.107			

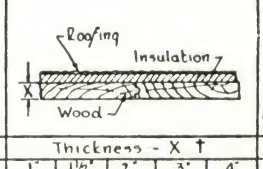
*Precast cement. †Nominal thicknesses specified—actual thicknesses used in computations.
‡The figures in this table may be used with sufficient accuracy for wood lath and plaster ceilings.

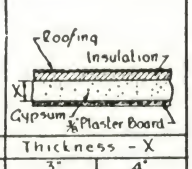
FLAT ROOFS - NO PLASTER CEILINGS (UNDERSIDE OF ROOF DECK UNFINISHED)

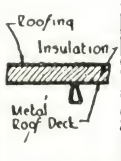
The values of U in this Table are based on the following Internal Conductivities (C) which are expressed in B.t.u. per Hr. per Sq.Ft. per 1°F

Roofing	1.325	per 1"
Concrete	8.30	per 1"
Gypsum (15% wood fiber)	2.30	per 1"
Wood (Yellow Pine or Fir)	1.00	per 1"
Fiber Insulation (Board form)	0.33	per 1"
Felts & Quilts (Sq/t)	0.27	per 1"
Cork board	0.30	per 1"
Plaster Board	3.04	per 1"
Cellular Gypsum (24#)	0.77	per 1"









			Thickness - X						Thickness - X †					Thickness - X			
Roof No.	Thickness of Insulation	Kind of Insulation	1⅝"* a	2" b	3" c	4" d	5" e	6" f	1" g	1½" h	2" i	3" j	4" k	3" l	4" m	n	o
216	0"	No Insulation	0.680	0.658	0.610	0.568	0.532	0.500	0.485	0.386	0.345	0.256	0.204	0.369	0.318	0.781	1.50 ‡
217	½"	Fiber Insulation (Board form)	0.334	0.330	0.317	0.306	0.295	0.285	0.280	0.243	0.226	0.184	0.156	0.237	0.214	0.358	
218	1"		0.222	0.220	0.214	0.209	0.203	0.199	0.196	0.178	0.168	0.144	0.126	0.174	0.162	0.232	
219	1½"		0.166	0.165	0.162	0.159	0.156	0.153	0.151	0.140	0.134	0.118	0.106	0.138	0.130	0.172	
220	2"		0.133	0.132	0.130	0.128	0.126	0.124	0.123	0.116	0.112	0.100	0.091	0.114	0.109	0.136	
221	1"	Cork board	0.208	0.206	0.201	0.196	0.192	0.188	0.185	0.169	0.160	0.138	0.121	0.165	0.154	0.217	
222	1½"		0.154	0.153	0.151	0.148	0.145	0.143	0.142	0.132	0.126	0.124	0.101	0.130	0.120	0.160	
223	2"		0.123	0.122	0.120	0.119	0.117	0.115	0.114	0.108	0.104	0.095	0.086	0.107	0.102	0.126	
224	½"	Soft Felt or Quilt (Not Compressed)	0.301	0.297	0.286	0.277	0.268	0.260	0.256	0.225	0.210	0.174	0.148	0 219	0.200	0.319	
225	1"		0.193	0.191	0.187	0.183	0.179	0.175	0.174	0.159	0.151	0.131	0.116	0.156	0.146	0.201	
226	2"	Cellular Gypsum	0.246	0.243	0.236	0.229	0.223	0.217	0.214	0.193	0.182	0.154	0.133				

*Precast cement. †Nominal thicknesses specified—actual thicknesses used in computations.
‡No built-up roofing. The value for corrugated iron is obtained by assuming that the surface area is increased 50 per cent.

These tables are based on the use of ½-in. insulating board with rated efficiency of .33 B.t.u. per in. thickness per sq. ft. per hour. The thermal conductivity of Weatherwood is .32 B.t.u., therefore the use of Weatherwood increases these wall efficiencies slightly over the figures given above.

Continued on next page

CLIMATIC CONDITIONS
COMPILED FROM U. S. WEATHER BUREAU RECORDS

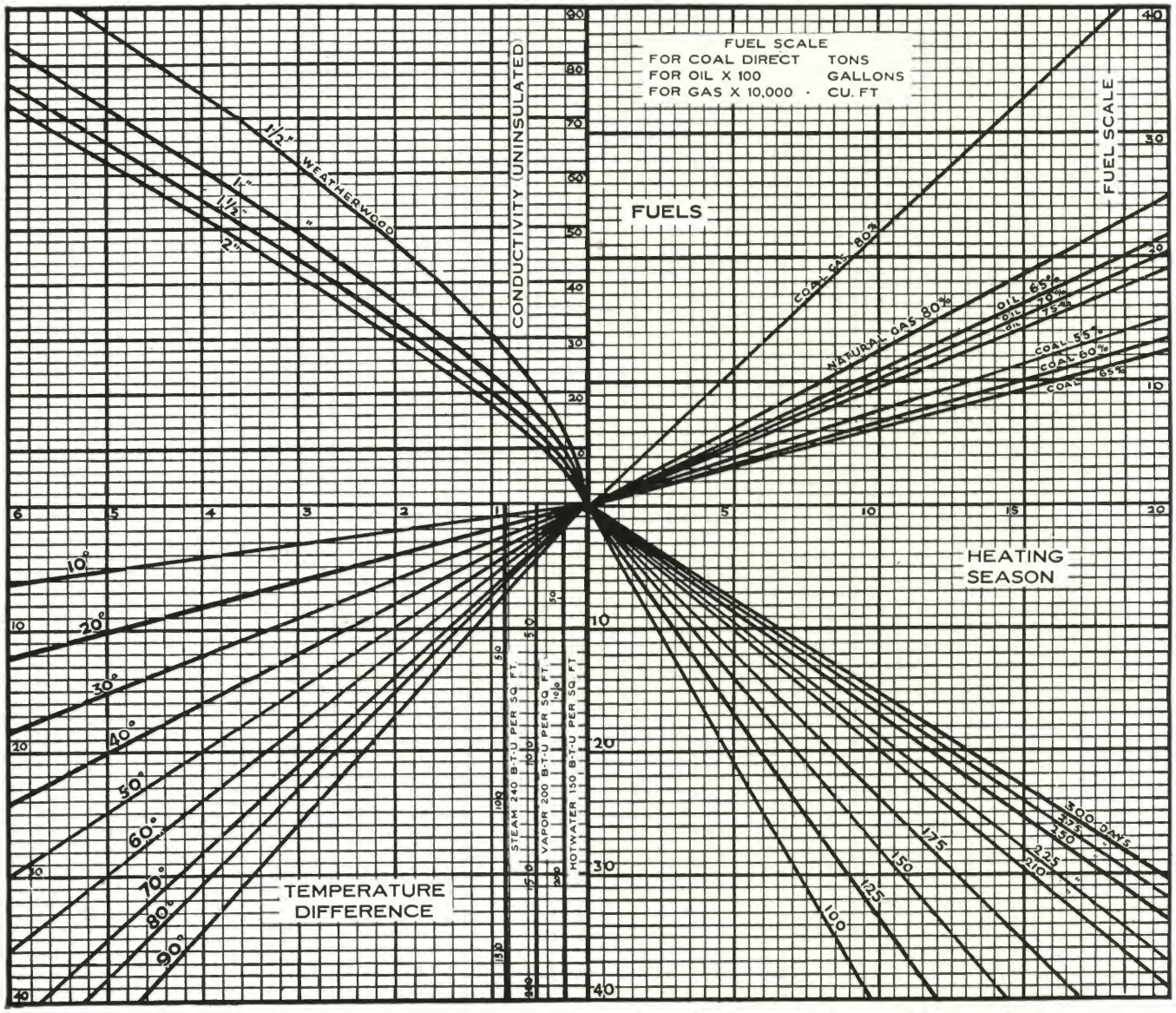
Col. A	Col. B	Col. C	Col. D	Col. E	Col. F	Col. A	Col. B	Col. C	Col. D	Col. E	Col. F
State	City	Average temp., Oct. 1st–May 1st	Lowest temperature	Average wind velocity Dec., Jan., Feb., miles per hr.	Direction of prevailing wind, Dec., Jan., Feb.	State	City	Average temp., Oct. 1st–May 1st	Lowest temperature	Average wind velocity Dec., Jan., Feb., miles per hr.	Direction of prevailing wind, Dec., Jan., Feb.
Ala.	Mobile	57.7	−1	8.3	N	Nev.	Tonopah	39.6	−7	9.9	SE
	Birmingham	53.9	−10	8.6	N		Winnemucca	37.9	−28	9.5	NE
Ariz.	Phoenix	59.5	16	3.9	E	N.H.	Concord	33.4	−35	6.0	NW
	Flagstaff	34.9	−25	6.7	SW	N.J.	Atlantic City	41.6	−7	10.6	NW
Ark.	Fort Smith	49.5	−15	8.0	E	N.Y.	Albany	35.1	−24	7.9	S
	Little Rock	51.6	−12	9.9	NW		Buffalo	34.7	−14	17.7	W
Cal.	San Francisco	54.3	29	....	N		New York	40.3	−6	13.3	NW
	Los Angeles	58.6	28	....	NE	N.M.	Santa Fe	38.0	−13	7.3	NE
Colo.	Denver	39.3	−29	7.4	S	N.C.	Raleigh	49.7	−2	7.3	SW
	Grand Junction	39.2	−16	5.6	SE		Wilmington	53.1	5	8.9	SW
Conn.	New Haven	38.0	−14	9.3	N	N.D.	Bismarck	24.5	−45	....	NW
D.C.	Washington	43.2	−15	7.3	NW		Devil's Lake	18.9	−44	11.4	W
Fla.	Jacksonville	61.9	10	8.2	NE	Ohio	Cleveland	36.9	−17	14.5	SW
Ga.	Atlanta	51.4	− 8	11.8	NW		Columbus	39.9	−20	9.3	SW
	Savannah	58.4	8	8.3	NW	Okla.	Oklahoma City	48.0	−17	12.0	N
Idaho	Lewiston	42.5	−13	4.7	E	Ore.	Baker	34.1	−20	6.0	SE
	Pocatello	36.4	−20	9.3	SE		Portland	45.9	−2	6.5	S
Ill.	Chicago	36.4	−23	17.0	SW	Pa.	Philadelphia	41.9	−6	11.0	NW
	Springfield	39.9	−24	10.2	NW		Pittsburgh	40.8	−20	13.7	NW
Ind.	Indianapolis	40.2	−25	11.8	S	R.I.	Providence	37.6	−9	14.6	NW
	Evansville	44.1	−15	8.4	S	S.C.	Charleston	56.9	7	11.0	N
Iowa	Dubuque	33.9	−32	6.1	NW		Columbia	53.7	−2	8.0	NE
	Sioux City	32.1	−35	12.2	NW	S. D.	Huron	28.1	−43	11.5	NW
Kans.	Concordia	38.9	−25	7.3	N		Rapid City	32.3	−34	7.5	W
	Dodge City	40.2	−26	10.4	NW	Tenn.	Knoxville	47.0	−16	6.5	SW
Ky.	Louisville	45.2	−20	9.3	SW		Memphis	50.9	−9	9.6	NW
La.	New Orleans	61.5	7	9.6	N	Texas	El Paso	53.0	−2	10.5	NW
	Shreveport	56.2	−5	7.7	SE		Fort Worth	54.7	−8	11.0	NW
Me.	Eastport	31.1	−23	13.8	W		San Antonio	60.7	4	8.2	N
	Portland	33.6	−17	10.1	NW	Utah	Modena	38.1	−24	8.9	W
Md.	Baltimore	43.6	−7	7.2	NW		Salt Lake City	40.0	−20	4.9	SE
Mass.	Boston	37.6	−13	11.7	W	Vt.	Burlington	29.3	−27	12.9	S
Mich.	Alpena	29.1	−27	11.3	W	Va.	Norfolk	49.1	2	9.0	N
	Detroit	35.4	−24	13.1	SW		Lynchburg	45.2	−7	5.2	NW
	Marquette	27.6	−27	11.4	NW		Richmond	47.4	−3	7.4	S
Minn.	Duluth	25.1	−41	11.1	SW	Wash.	Seattle	45.3	3	9.1	SE
	Minneapolis	29.6	−33	11.5	NW		Spokane	37.5	−30	....	SW
Miss.	Vicksburg	56.0	−1	7.6	SE	W.Va.	Elkins	38.8	−21	4.8	W
Mo.	St. Joseph	40.3	−24	9.1	NW		Parkersburg	41.9	−27	6.6	S
	St. Louis	43.3	−22	11.8	NW	Wis.	Green Bay	28.6	−36	12.8	SW
	Springfield	43.0	−29	11.3	SE		La Crosse	31.2	−43	5.6	NW
Mont.	Billings	34.7	−49	....	W		Milwaukee	33.0	−25	11.7	W
	Havre	27.7	−57	8.7	SW	Wyo.	Sheridan	31.0	−45	5.3	NW
Nebr.	Lincoln	37.0	−29	10.9	N		Lander	28.9	−36	3.0	NE
	North Platte	34.6	−35	9.0	W						

INSIDE TEMPERATURES USUALLY SPECIFIED

Type of building	Deg. Fahr.	Type of building	Deg. Fahr.
Schools—		Hospitals—	
Class rooms	68	Private rooms	70
Assembly rooms	66–68	Private rooms (surgical)	70–80
Gymnasiums	55–65	Operating rooms	70–95
Toilets and baths	70	Wards	68
Wardrobe and locker rooms	65–68	Kitchens and laundries	66
Kitchens	66	Toilets	68
Dining and lunch rooms	65–68	Bathrooms	70–80
Playrooms	60–65	Homes—	
Natatoriums	75	Where 68° is generally the desirable standard of temperature a guarantee of 70° is customarily exacted.	
Theatres—		Stores	65–68
Seating space	68–72	Public buildings	68–70
Lounge rooms	68	Warm air baths	120
Toilets	68	Steam baths	110
Hotels—		Factories and machine shops	60–65
Bedrooms and baths	70	Foundries and boiler shops	50–60
Dining rooms	70	Paint shops	80
Kitchens and laundries	66		
Ball rooms	65–68		
Toilets and service rooms	68		

Continued on next page

CHART FOR GRAPHIC SOLUTION OF FUEL AND RADIATION PROBLEMS



RELATIVE HUMIDITY—Degrees Wet-bulb Depressions—Fahrenheit

Dry-Bulb Temp. F.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
50	93	87	80	74	67	61	55	49	43	38	32	27	21	16	10	5																
52	94	87	81	75	69	63	57	51	46	40	35	29	24	19	14	9	4															
54	94	88	82	76	70	64	59	53	48	42	37	32	27	22	17	12	8	3														
56	94	88	82	76	71	65	60	55	50	44	39	34	30	25	20	16	11	7														
58	94	88	83	77	72	66	61	56	51	46	41	37	32	27	23	18	14	10														
59	94	89	83	78	72	67	62	57	52	47	42	38	33	29	24	20	16	11														
60	94	89	83	78	73	68	63	58	53	48	43	39	34	30	26	21	17	13														
61	94	89	84	78	73	68	63	58	53	49	44	40	35	31	27	22	18	14														
62	94	89	84	79	74	69	64	59	54	50	45	41	36	32	28	24	20	16														
63	95	89	84	79	74	69	64	60	55	51	46	42	37	33	29	25	21	17														
64	95	90	84	79	75	70	65	60	56	51	47	43	38	34	30	26	22	18														
65	95	90	85	80	75	70	66	61	57	52	48	44	39	35	31	27	24	20														
66	95	90	85	80	75	71	66	61	57	53	48	44	40	36	32	29	25	21														
67	95	90	85	80	76	71	66	62	58	53	49	45	41	37	33	30	26	22														
68	95	90	85	80	76	71	67	62	58	54	50	46	42	38	34	31	27	23														
69	95	90	85	81	77	72	67	63	59	55	51	47	43	39	35	32	28	24														
70	95	90	86	81	77	72	68	64	59	55	51	48	44	40	36	33	29	25														
71	95	90	86	81	77	72	68	64	60	56	52	48	45	41	37	33	30	27														
72	95	91	86	82	77	73	69	65	61	57	53	49	45	42	38	34	31	28														
73	95	91	86	82	78	73	69	65	61	57	53	50	46	42	39	35	32	29														
74	95	91	86	82	78	74	69	65	61	58	54	50	47	43	39	36	33	29	26	23	20	17	14	11								
75	96	91	86	82	78	74	70	66	62	58	54	51	47	44	40	37	34	30	27	24	21	18	15	12	9	7	4	1				
76	96	91	87	82	78	74	70	66	62	59	55	51	48	44	41	38	34	31	28	25	22	19	16	13	11	8	5	3				
77	96	91	87	83	79	74	71	67	63	59	56	52	48	45	42	39	35	32	29	26	23	20	17	14	12	9	6	4				
78	96	91	87	83	79	75	71	67	63	60	56	53	49	46	43	39	36	33	30	27	24	21	18	16	13	10	8	5	3			
79	96	91	87	83	79	75	71	68	64	60	57	53	50	46	43	40	37	34	31	28	25	22	19	17	14	11	9	6	4	1		
80	96	91	87	83	79	75	72	68	64	61	57	54	50	47	44	41	38	35	32	29	26	23	20	18	15	12	10	7	5	3		
81	96	92	88	84	80	76	72	69	65	61	58	55	51	48	45	42	39	36	33	30	27	24	21	19	16	13	11	9	6	4		
82	96	92	88	84	80	76	72	69	65	61	58	55	51	48	45	42	39	36	33	30	28	25	22	20	17	14	12	10	7	5		
83	96	92	88	84	80	76	73	69	66	62	59	56	52	49	46	43	40	37	34	31	29	26	23	21	18	15	13	11	8	6	3	2
84	96	92	88	84	80	76	73	69	66	62	59	56	52	49	46	43	40	37	35	32	29	26	24	21	19	16	14	12	9	7	5	3
85	96	92	88	84	81	77	73	70	66	63	60	57	53	50	47	44	41	38	36	33	30	27	25	22	20	17	15	13	10	8	6	4
86	96	92	88	84	81	77	73	70	66	63	60	57	53	50	47	44	42	39	36	33	31	28	26	23	21	18	16	14	11	9	7	5
87	96	92	88	85	81	77	74	70	67	64	61	57	54	51	48	46	43	40	37	34	32	29	26	24	22	19	17	15	12	10	8	6
88	96	92	88	85	81	77	74	70	67	64	61	57	54	51	48	46	43	40	37	35	32	30	27	25	22	20	18	15	13	11	9	7
89	96	92	88	85	81	78	74	71	68	65	61	58	55	52	49	47	44	41	38	36	33	31	28	26	23	21	19	16	14	12	10	8
90	96	92	89	85	81	78	74	71	68	65	61	58	55	52	49	47	44	41	39	36	34	31	29	26	24	22	19	17	15	13	11	9
92	96	92	89	85	82	78	75	72	68	65	62	59	56	53	50	48	45	42	40	37	35	32	30	28	25	23	21	19	17	15	13	11
94	96	93	89	85	82	79	75	72	69	66	63	60	57	54	51	49	46	43	41	38	36	33	31	29	27	24	22	20	18	16	14	12
96	96	93	89	86	82	79	76	73	69	66	63	61	58	55	52	50	47	44	42	39	37	35	32	30	28	26	24	22	20	18	16	14
98	96	93	89	86	83	79	76	73	70	67	64	61	58	56	53	50	48	45	43	40	38	36	34	32	29	27	25	23	21	19	17	15
100	96	93	89	86	83	80	77	73	70	68	65	62	59	56	54	51	49	46	44	41	39	37	35	33	30	28	26	24	22	21	19	17
104	97	93	90	87	83	80	77	74	71	69	66	63	60	58	55	53	50	48	46	43	41	39	37	35	33	31	29	27	25	23	21	20
108	97	93	90	87	84	81	78	75	72	70	67	64	62	59	57	54	52	49	47	45	43	41	39	37	35	33	31	29	27	25	24	22
112	97	94	90	87	84	81	79	76	73	70	68	65	63	60	58	55	53	51	49	47	44	42	40	38	36	35	33	31	29	27	26	24
116	97	94	91	88	85	82	79	76	74	71	69	66	64	61	59	57	54	52	50	48	46	44	42	40	38	36	34	33	31	29	28	26
120	97	94	91	88	85	82	80	77	74	72	69	67	65	62	60	58	55	53	51	49	47	45	43	41	40	38	36	34	33	31	29	28

Note: Figures horizontally opposite the dry-bulb reading and vertically opposite the wet-bulb reading give the percentage of relative humidity.

Continued on next page

(L10) PREVENTION OF CONDENSATION

(L10a) General

The condensation of moisture is an every day phenomenon causing more or less unsatisfactory conditions wherever it is not properly controlled. The control of condensation in industrial plants, where working conditions involve high moisture content of the air, is an important item in plant maintenance and employee health. In some types of plants, such as laundries, paper mills and bakeries, this is a necessary evil which can be eliminated only by great expense. In other types of industrial buildings such as textile mills or tobacco plants, a high moisture content of the air is absolutely essential to provide proper working and conditioning factors. Modern buildings are providing humidity control in order to maintain the higher relative humidity of the air required to promote comfort and health of occupants. These conditions require proper insulation against heat loss through the roof in order to prevent the condensation of moisture on these surfaces, which not only impairs the mechanical efficiency of the humidity control, but makes working conditions unsatisfactory, and adds unnecessary hazards to delicate equipment or material in process of manufacture.

It is common knowledge that condensation of moisture, that is, the forming of minute particles or drops of moisture upon a surface is caused by warm, moist air striking a colder surface and in so doing, precipitates the moisture content on the cold surface. The fundamental reason for this lies in the ability of air to hold only a certain quantity of moisture vapor in suspension at certain temperatures. Air at 100 degrees Fahrenheit is capable of holding more moisture vapor in suspension than air at 75 degrees Fahrenheit. In this respect, air may be compared to a sponge, which when fully expanded is capable of holding a great deal more water than when it is partially contracted or squeezed. The cooling of air is comparable to the squeezing of the sponge. When air strikes a cold surface and is suddenly cooled, it is obvious that being unable to hold the water vapor in suspension, this water vapor is condensed into the form of moisture or drops of water which naturally form on the surface which has cooled the air.

Obviously, the preventive for condensation lies in maintaining a surface warm enough so that it does not sufficiently cool the surrounding air to cause a depositing of moisture. Two general methods of providing proper temperatures of surfaces are possible—first, a high velocity of warm air played upon the colder surface will break down the surface film of still air lying directly over the surface of the material and so warm the surface that condensation cannot take place. This method is extremely expensive and in most cases impractical. In stores, fans are oftentimes placed so as to play upon the show window glass area and are sufficient to keep the temperature of the inside glass surface above the condensation point. The second method, and more practical one, is the proper insulation of the ceiling from exterior cold conditions so that the temperature drop from interior ceiling to interior air is not sufficient to bring the air to the point at which condensation will take place.

The insulation of ceiling surfaces to prevent condensation should be accomplished by the application of Weatherwood Roof Insulation on the exterior or coldest surface of the roof. This is always advisable since the mass of roof structure is thus kept at a warmer temperature. Insulation against condensation is the reverse of insulating against heat loss, as regards the effective location of the insulating material. It is best to eliminate as much volume to be heated as possible when insulating to conserve heat. In the case of condensation, it is desirable to keep the mass of roof structure as warm as possible, to give added insurance against condensation. This is particularly true in frame construction as warm, moist air is liable to filter in behind the insulation, developing condensation on the interior of the wall structure. It is true in a lesser extent with masonry construction, as warm, moist air may find its way into crevices of the masonry.

The problem of preventing condensation then, resolves itself into providing sufficient insulation to maintain proper interior temperature of wall or ceiling surfaces. The amount of insulating material required is governed by the relative humidity of the air inside and the range of exterior temperatures. For the convenience of those interested in the prevention of condensation, a chart is reproduced on page 23 giving an easy and quick method of determining the proper amount of Weatherwood required to offset various conditions.

The determination of the amount of insulation required to prevent condensation under any specified condition is a simple mathematical computation. It is necessary, however, to understand clearly the factors involved in the computation.

(L10b) Factors Involved

(L10b1) Relative Humidity—This is the first and prime factor to be given consideration in any condensation problem, because the relative humidity may or may not be changed in order to improve conditions. As stated in (L10a), the humidity in an industrial structure sometimes is an unnecessary evil in which case it can be reduced somewhat by mechanical means or it may be an absolute necessity to provide proper working conditions. In any event, the humidity at which the structure will be used must be determined and this value used in the computation for required amount of insulation.

Humidity is defined as the number of pounds of water carried as vapor by one pound of dry air. This definition refers strictly to water and air, as we are working with these mediums. Humidity is also used to denote the same relationship between any liquid vapor and dry gas. This relationship is often called absolute humidity.

In the condensation problems we are primarily concerned with relative humidity. This is defined as the ratio between the amount of water vapor contained in the air at any given temperature to the amount of water vapor the same air would carry or hold at the same temperature if the air were saturated. That is, relative humidity is really an expression of the percentage of saturation existing in the air under any given condition. Exterior air is always partially saturated with moisture and a study of weather bureau reports shows that the humidity of the exterior air varies from hour to hour during the day. The average humidity for various parts of the United States taken at 8 A.M. ranges between 70% and 85%, while the average humidity for the same locality at 8 P.M. ranges between 50% and 75%. The reason for this lies in the heavy condensation of moisture on the earth's surface during the early hours of the morning with the resultant higher saturation of the lower strata of air during the early hours. As the sun and wind distribute this moisture, however, through the entire atmosphere and also as the air is warmed and expands, the relative percentage of saturation is reduced.

Condensation problems are not concerned with exterior humidity conditions. The air within a structure may be entirely different as to percentage of saturation compared to exterior air. This percentage of saturation depends directly upon the processes of manufacture and the artificial humidity control provided within the structure. The following list of industrial plants indicates some of the types of plants in which condensation problems will be found and also gives the usual prevailing relative humidity for such plants.

Type of Building	Average Relative Humidity
Laundries	66% to 88%
Dry cleaning plants	65% to 85%
Paper mill roofs	70% to 85%
Paper machine hoods	85% to 95%
Textile Mills	65% to 85%
Bakeries	80% to 90%
Canning factories	70% to 85%
Ripening and seasoning rooms	80% to 90%

If it is impossible to make a check of humidity conditions, or for buildings under design, a relative humidity should be figured at about the maximum of the usual conditions as indicated by the above table. However, it is always advisable to make a check test to determine the relative humidity either on the structure under consideration or on a similar one.

This test is simply a matter of obtaining dry-bulb and wet-bulb readings within the room. The dry-bulb reading is the ordinary thermometer temperature. This temperature should, however, be taken at a point as near the surface on which the condensation forms as possible. The wet-bulb reading merely means that the bulb of the thermometer is wrapped in a cloth

Continued on next page

or any material which will hold moisture so that the evaporation of this moisture affects the temperature reading of the thermometer. A simple method of obtaining this wet-bulb reading is to use an ordinary thermometer which has a cloth wrapped around the mercury bulb at the bottom. This cloth should be dipped in water at a temperature as near room temperature as possible. After thoroughly wetting the cloth, the thermometer itself should be whirled around in the air, either with the hand or on the end of a cord, so that the maximum evaporation effect can take place. Several such trials should be made until the lowest reading is obtained by this method. The difference between the wet-bulb and the dry-bulb reading is known as the wet-bulb depression. By referring this wet-bulb depression to table on page 20, the relative humidity of the air can be determined.

(L10b2) Temperature Conditions—Next determine the maximum temperature difference between the interior temperature and the coldest outside temperature at which it is ncessary to prevent condensation. If it is desired to prevent condensation even on the very coldest days take the lowest outside temperature for the locality from weather bureau reports given in the table on page 19.

If it is necessary to prevent condensation only on the average cold days and a very slight amount of condensation would be permissible on the extreme cold days, a temperature of 15 or 20 degrees above the lowest recorded temperature should be used. The difference between the inside temperature and this temperature is the figure to be used in the computation.

(L10b3) Heat Resistance of Surface at which Condensation Takes Place—As stated in (L10a) page 21, condensation is due to the cooling of the interior air as it strikes the ceiling or under side of roof deck, which is colder. This difference in temperature is due to the heat resistance of the surface, that is, the thin film of air which forms next to the surface and is stationary. This resistance will vary with different types of surfaces, and as it is the drop in temperature across this surface resistance that causes condensation, the accurate value for the type of surface used must be obtained for the computation. The following is a table of surface conductivities as determined by Harding and Willard, taken from the Heating and Ventilating Engineer's Guide.

Building Material	Surface Coefficient
Asbestos (sheet)	1.40
Brick work (ordinary)	1.40
Cement plaster (finished)	0.93
Concrete	1.30
Cork Board	1.25
Glass	1.50
Wood (finished surface)	1.40
Average of all values	1.34

The values quoted in the above table are given in B.t.u. per square foot of surface, per hour, per degree Fahrenheit difference in temperature. The average value of 1.34 is often used in computation in preference to a specific value for a definite material, particularly where no values are known for the material in use. Where surfaces are used, which are known to be much higher or lower than the average value, these definite values should always be used.

(L10b4) Determination of Dew Point—Condensation is caused by a cooling of the air to the point at which the air is totally saturated with moisture. For example, air at 60° F. and with a humidity of 90% will reach saturation, if cooled 3° and condensation will begin. The allowable drop in temperature which will not bring saturation under any conditions of relative humidity and temperature, must now be determined by use of chart at bottom of page 23 as follows: Select the temperature along the bottom of the chart corresponding to the condition in the structure. Follow vertically upward on this line until an intersection is made with the horizontal line representing the humidity within the structure. From this point, follow the curved lines up to the top of the chart. Along the top of the chart is a second temperature scale. The point on this scale intersected by the curved line is the dew point temperature. Subtracting this temperature from the original temperature gives the drop in temperature which will cause condensation. This drop in temperature is to be used in the computation of thickness of insulation required.

(L10b5) Conductivity of Roof Deck Uninsulated—The final factor in making computation for the prevention of condensation is the heat conductivity of the roof deck uninsulated. These values may be obtained by referring to table on page 18 and selecting the type of structure to be used.

(L10c) MATHEMATICAL COMPUTATION OF CONDENSATION CONDITIONS

Having definitely determined all of the factors which influence the results, these factors must be arranged in mathematical order for the final computation.

The computation is as follows: First, compute the resistance of deck complete, without the insulation. This resistance is obtained by dividing the rated conductivity into one—that is: $\frac{1}{\text{B.t.u. Rating}} = \text{Resistance}$. Now divide the total temperature difference by the conductivity of the surface film and divide again by the drop in temperature which will cause condensation of the moisture in the air. From this product subtract the resistance of the deck and multiply the difference by the conductivity of Weatherwood per inch of thickness (or .32). This gives the actual thickness of Weatherwood which will just prevent condensation under the condition stated.

Example

Same general conditions assumed as for typical analysis for fuel saving in (L9c) page 17.

Inside temperature (operating condition)	65° F.
Outside temperature—low	–8° F.
Temperature difference	73°
Relative humidity (near roof)	70%
Conductivity of deck uninsulated	.532
Surface conductivity (using average value)	1.34
Temperature drop across surface that will cause condensation (from chart at the bottom of page 23)	10.5°

$$\text{Resistance of deck uninsulated} = \frac{1}{.532} = 1.88$$

$$\left\{ \frac{73}{1.34 \times 10.5} - 1.88 \right\} \times .32 = 1.05''$$

One inch of Weatherwood is sufficiently close to eliminate any condensation except on days with temperature below —8° F.

(L10d) GRAPHIC SOLUTION OF CONDENSATION PROBLEMS

The chart at the top of page 23 provides a quick and easy method of computing the amount of insulation required. This eliminates the necessity of mathematical computation and the necessity of referring to the psychometric chart to determine the temperature drop permissible, so that a complete solution is provided in one operation. This is done as follows: Select on the inside temperature scale at the upper left edge of the vertical center line the temperature for the building in question. From this point, pass horizontally to the left to an intersection with the line representing the relative humidity. From this point, pass vertically down to the diagonal line representing the temperature difference (inside maximum and outside low). From this point, pass horizontally over to the diagonal line representing surface coefficient. From this intersection, pass vertically up until an intersection is made with the horizontal line representing conductivity of uninsulated deck. If this intersection point falls close to one of the Weatherwood lines, the thickness represented by the line will prevent condensation. If the intersection falls between Weatherwood lines, the next line representing the next greater thickness is the amount of Weatherwood necessary.

It is obvious that a complete reversal of the method can be used to determine the relative humidity a certain deck and certain amount of insulation will support. For an uninsulated deck start at the conductivity of the deck located on the horizontal scale at the center of the chart.

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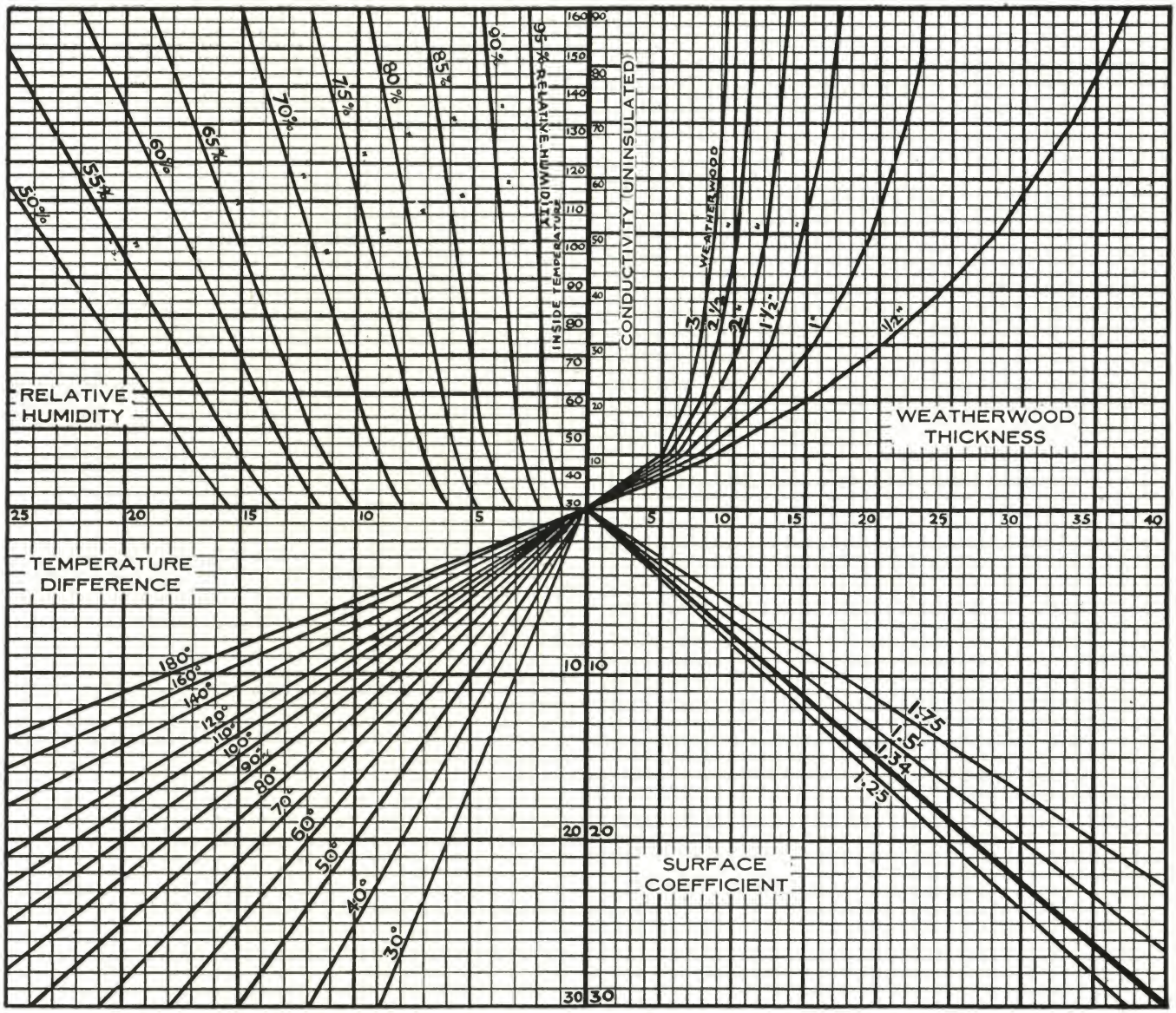
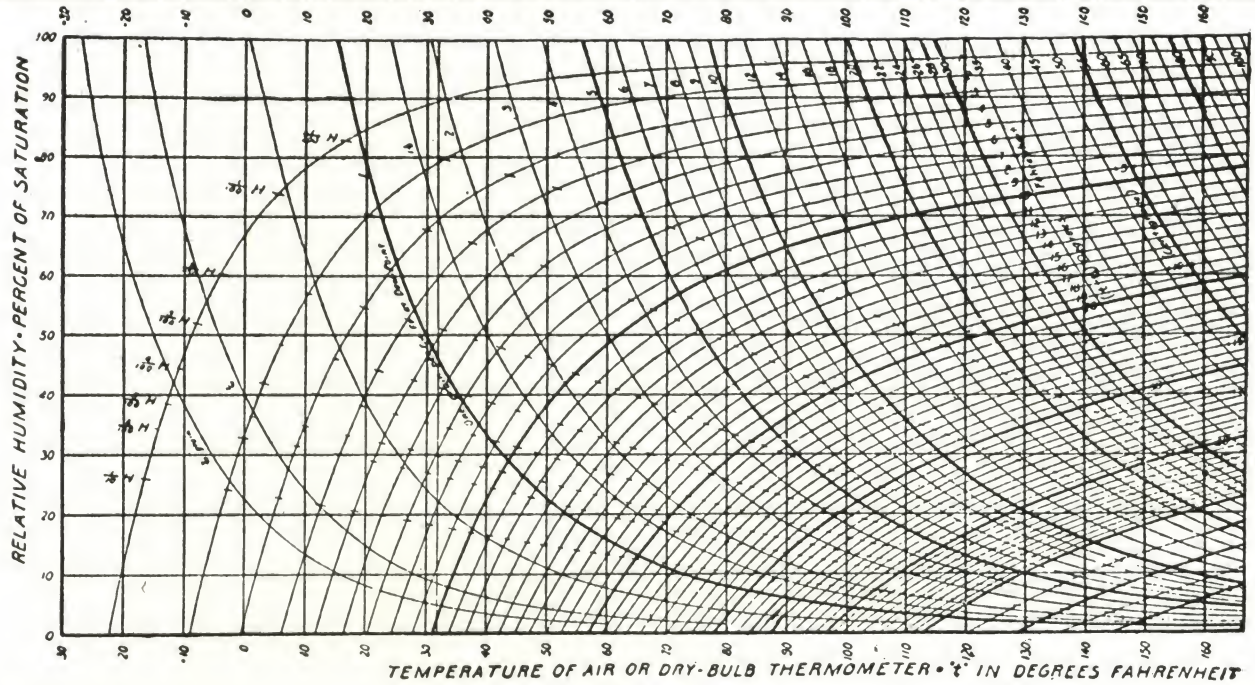
CHARTS FOR GRAPHIC SOLUTION OF CONDENSATION PROBLEMS





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(M) WEATHERWOOD SOUND DEADENING CONSTRUCTION

(M1) The Need for Sound Deadening

Although much stress has been laid upon the strength and fire resistance of buildings, and within later years, upon the insulation of buildings to stop heat loss, very little attention has been paid to the importance of insulating against sound passing between adjoining rooms or apartments.

It is only too true that in many apartment buildings today, ordinary conversation in one apartment can be heard in adjoining apartments. Consider then, how much more disturbing it must be when there are noises in one apartment which are considerably louder than the ordinary spoken tone. What is true in apartment buildings is equally true in offices and industrial buildings. Laboratory research shows that noise reduces personal efficiency from five to thirty per cent, depending upon the occupation of those affected.

Dr. Donald A. Laird, Director of the Psychological Laboratory of Colgate University, says, "Many executives think that noise is inevitable, that nothing can be done to lessen it, and that any way it does not matter. All three ideas are wrong. Noise cuts into dividends by lessening output and requiring more energy from workers. There is no evidence that workers get used to noise. They may become unconscious of its presence, but the effect upon their output remains.

"In the Colgate University Laboratory, it was determined by the use of special apparatus that noise of usual office intensity cuts into the output of professional typists on the average of 5 per cent. In higher mental work, such as the executive does, the cut into output is in the neighborhood of 30 per cent.

"In a survey of two large plants conducted by the United States Public Health Service, it was found that labor turnover, absence from work, and requests for transfer to other work were above the plant average in those departments which were noisy."

Owners and operators of apartment buildings and apartment hotels are today finding that effective sound deadening between rooms or apartments is an important factor in leasing and filling these buildings. In many cases apartments have been rented on the supposition that they were soundproof, because of the fact that they were built along heavy construction lines. Later, occupants have found, to their sorrow, that this did not solve the problem and that they were much disturbed by occupants of adjacent apartments.

There are many points at which sound deadening is necessary. These points include the transmission of sound between offices, apartments or studios; transmission of sound between reception rooms and consultation rooms; transmission of sound between floors; transmission of sound between rooms and adjacent elevator shafts; transmission of sound from mechanical and ventilating equipment; transmission of sound between manufacturing and office space in industrial buildings; transmission of sound between kitchens or equipment rooms and patients' rooms of hospitals.

The purpose of this Division is to give briefly the important facts to be considered on the subject of sound deadening.

Definite suggestions are made as to various methods of obtaining sound deadening of wall or floor sections, and diagrams indicate the construction suggested.

Scientists agree that a material which in itself will absorb a certain amount of sound and can be used in a structural way, is well adapted for use in sound deadening construction. This is quite true of Weatherwood, an insulating board fabricated from hardwood. The Manufacturing Process (A) pages 1 and 2 and the Physical Characteristics (B) pages 2, 3 and 4 clearly indicate why Weatherwood is readily adaptable for sound insulation, as well as for heat insulation.

(M2) The Problem of Sound Deadening

The general problem of insulation or isolation of sound does not differ greatly from the problems encountered in the insulation of heat. In both cases is is a form of energy that is being dealt with and, in both cases, it is an economic impossibility to prevent entirely the transmission of such energy. Modern demand for higher standards of living are just beginning to be felt in the sound deadening field. Sound filters through loose and flimsy construction just as heat filters through. Consequently, the problem of sound insulation ultimately resolves itself into the same thorough attention to detail as is necessary where efficient heat insulation is required.

It so happens that the same characteristics which make certain materials good heat insulators, make them peculiarly adaptable and efficient in the insulation of sound. The following data outlines briefly how sound is insulated or isolated and at the same time shows clearly why Weatherwood provides good sound deadening results and how it should be employed to do so.

(M3) Sound Transmission

The insulation of sound really divides itself into two separate problems based on the origin of the sound. There are two distinct types of sound. First, those sounds which originate in or are produced first in air; second, impact or tapping sounds, such as sounds produced when a solid wall or metal pipe is struck by a hard object. The transmission of both of these types of sound takes place through all physical mediums, no physical substance being entirely resistant to sound transmission. One kind of sound insulation, however, will not produce equal results with both types of sound and different methods must be employed when insulation for both types is required.

Sound is transmitted first by conduction, and second, by vibration of solid bodies or areas. The conduction of sound is effected by the transfer of sound energy from particle to particle of any substance and in the case of many materials, with only a little loss of original intensity. This phenomena of sound transmission is similar in results to the transmission of heat energy, or for that matter any form of energy transfer by conduction. In the case of sound energy, a vibration is set up in the particle immediately adjacent to the source of sound and this vibration is reproduced in each succeeding particle in contact. Different materials have different rates or velocities at which the transmission of sound through them will take place. Generally speaking, those materials with low velocity of sound transfer are better for sound insulation. As in the case of heat transfer, air and other gases have a comparatively lower transfer rate than solids, such as wood or steel. The following brief table is indicative of the nature of transmission of sound by conduction through materials.

VELOCITIES OF SOUND (Approximate Values)

Substance	Velocity in feet per second	Reported
Aluminum	16,740	Masson
Copper	11,670	Wertheim
Gold—soft	5,717	Wertheim
Iron	16,320	Wertheim
Lead	4,026	Wertheim
Zinc	12,140	Wertheim
Vulcanized rubber	177	Exner
Pine—along the fiber	10,900	Wertheim
Poplar—along the fiber	14,050	Wertheim
Brick	11,980	Chladni
Air—dry	1,087	Violle
Illuminating gas	1,609	Zoch
Water	1,315	Masson

The second method of sound transmission is by means of vibrating bodies or areas. This type of sound transmission is illustrated by the use of sounding boards. In this type of transmission, the sound may either originate as an air borne or an impact sound, but results in the setting up of vibrations of an entire area or panel, the original sound having set this panel into vibration. The vibration of the panel itself reproduces and transmits the original sound into the next medium by its vibration. A body having a large area as compared to volume has a marked tendency to transmit sound by vibration, as compared to those bodies having a large volume and small areas. Thin bodies have a tendency to increase their vibration effect as the area increases. Thin, vibrating panels vary in transmission of sound in proportion as their total area is increased and also as the rigidity of the fastening of the edges is lessened. In other words, rigid fixing of the edges of thin panels, aids in preventing the transmission of sound through such a panel.

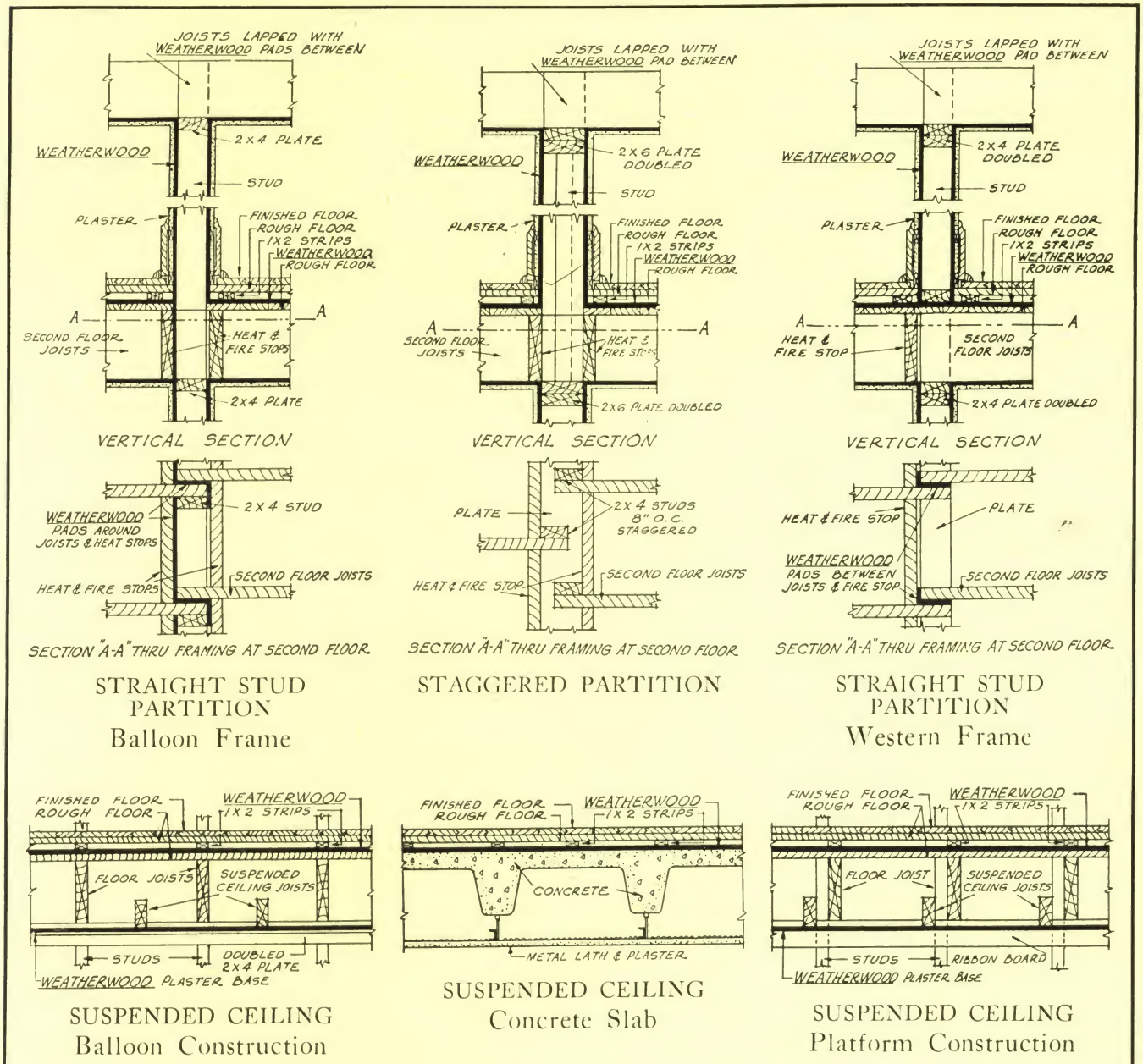
After consideration of the methods by which sound is transmitted, it is obvious that the chief difference between air borne sound and impact sound, as regards their insulation, lies chiefly in the comparative intensities of such sound. In other words, air borne sounds have had the deadening and what is more important, the diffusing influence of the volume of air in which they originated, while the impact sounds are transmitted practically in their initial intensity with none of the reducing effects of diffusion in surrounding media or

Continued on next page

deadening by passing through low velocity material. It is obvious from this that air borne sounds having an intensity exactly equal to impact sound, as they both strike a transmitting medium or material, would require very much the same insulation design for proper deadening. However, this is very rarely the case, and air borne sounds reach the separating wall, floor, or structure, usually at a greatly reduced intensity as compared to the intensity of impact sounds. Generally speaking, then, it is obvious that impact sounds will be found to be much more difficult to insulate than those which are air borne. For that reason sound deadening construction is particularly valuable in apartment buildings, hotels, hospitals, public buildings and industrial buildings.

(M4) Destruction of Sound Energy

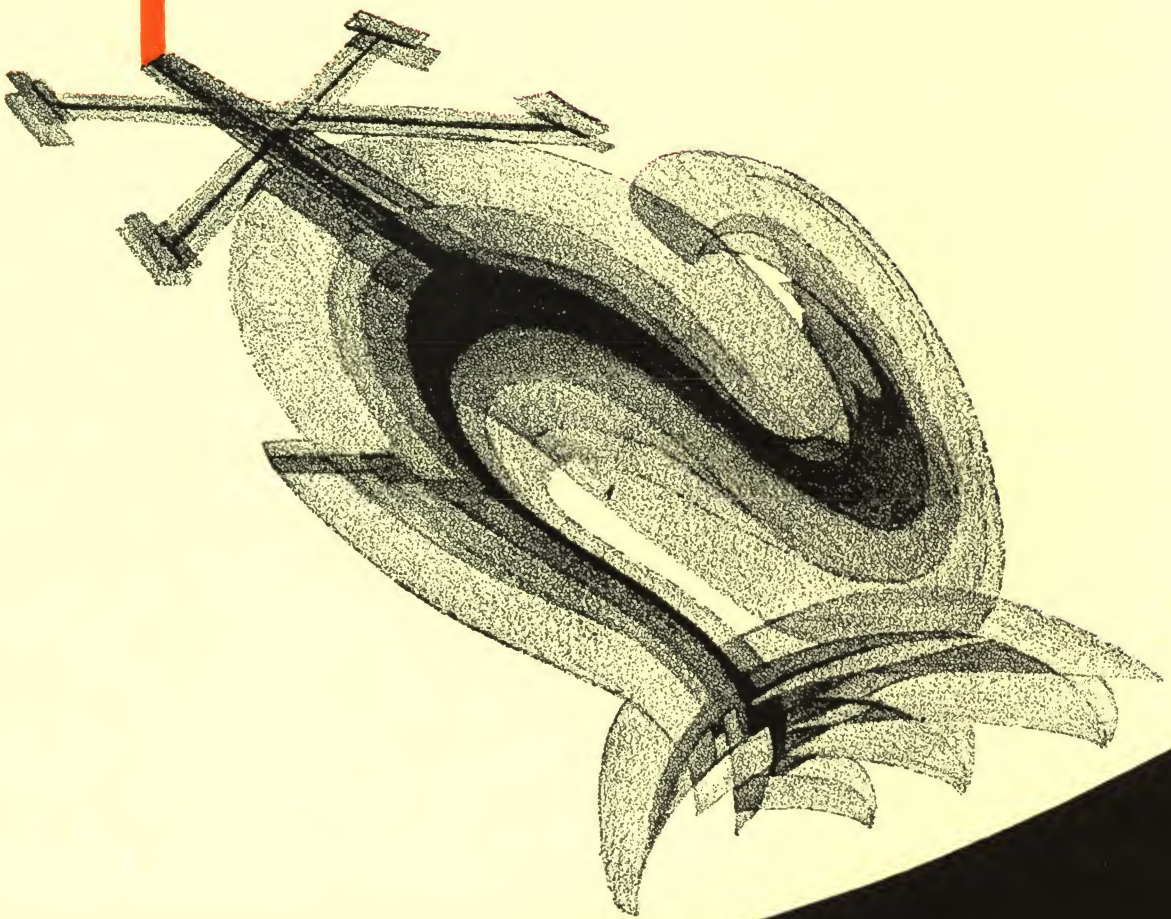
Sound is a form of energy and the fundamental physical laws tell us that energy is never destroyed, but is merely stored in one form or another. The destruction, therefore, of sound energy involves a change into some other form. In other words, sound is capable of doing work and the performance of this work must be permitted in such a way that the original sound is dissipated or transformed into heat to the greatest possible extent, thus preventing the transmission of the original sound into those spaces which are to be insulated. Those materials which have a low velocity rate for the transmission of sound obviously assure greater dissipation of sound. This greater resistance may be compared to electrical resistance, that is, the resistance built up by low transmission rate materials transforms more of the original sound into heat thus changing its original form. The destruction, therefore, of sound energy requires the use of "dead" or low transmission rate materials in the arrangement of materials through which the sound must pass. It is at the same time obvious that if comparatively "dead" materials are used in large, thin, section areas, a tendency to transmission by vibration is created. A combination structure must, therefore, be provided, which gives in the first place rigidity, to prevent transmission by vibration and in the second place, involves the use of a "dead" material to assist in the destruction of sound energy. A complete treatise, "The Weatherwood Handbook of Sound Deadening Construction" will be sent on request to anyone interested.



SOUND DEADENING CONSTRUCTION DETAILS

Weatherwood
Insulation Data Book
for
Architects

INSULATION DIVISION
CHICAGO MILL AND LUMBER CORPORATION
111 West Washington Street
CHICAGO, ILLINOIS



HOUSING COMPANY

THERMATEX DIVISION

Distributors of Thermatex, an Advanced Type of Insulating Material

40 Central Street, BOSTON, MASS.

PLANTS

PORTSMOUTH, N. H. CAMBRIDGE, MASS. WAVERLY, MASS.

For Acoustex Sound Absorbent Tiles, Framing Steel and Heirloom Panel, see Manufacturers' Index

THERMATEX

Description

Thermatex is a wood fibre product of extremely low density developed to meet in one material the varying requirements of residential and industrial insulation. Manufactured by a new process, exclusively owned by Bemis Industries, Inc., 40 Central Street, Boston, Mass., and distributed by HOUSING COMPANY, Thermatex makes new sizes, thicknesses and insulation efficiencies available at prices considerably lower than the cost of obtaining equal insulation in other materials.

Reg. U. S. Pat. Off.

Application

The range of thicknesses in which Thermatex is offered makes it suitable for practically every insulation need. Being very light it is easily handled and worked. It is nailed directly to studs or rafters. Erection is rapid. No special skill on the part of workmen is required. In industrial application pieces precut to size are put directly in place.

Four Sizes and Types of Thermatex Insulation Give Every Degree of Insulating Value That Can Be Desired

Sizes

The Thermatex line offers economical insulation for every degree of insulation efficiency required.

1-in. Thermatex—Nailed to studs. Used as a plaster base, we recommend the nailing of metal lath over the face to be plastered. While Thermatex provides a plaster base equal to that of fibre board, experience has shown that better construction utilizes a lath base, and we strongly recommend its use. If to be used as a finishing material we can supply attractive screened surfaces, sanded and ready for paint as final finish.

2-in. Thermatex—Used for roof insulation and for application to studs particularly where casement windows are used and a deep reveal is desired, and for semi-heavy-duty industrial and manufacturing insulation such as refrigeration applications.

3-in. Thermatex—Same as 2-in. in use, but offering 50% greater insulation. A heavy duty product.

3-in. Thermatex—Wall block is used between studs in residential construction.

Standard—All Thermatex products are made in standard size 2x4 ft. except insulating wall block, which is supplied in 14-in. widths to fit between studs and up to 4 ft. in length. Special sizes and shapes not greater than 2x4 ft can be furnished at slightly higher cost.

Advantages

Efficiency—Insulation is a matter of comparison—all materials offering insulation in some degree. Thermatex is ideal because it is remarkably efficient *as a material* and because it is supplied in thicknesses that give a wide range of insulation values.

The following values of heat transfer in B.t.u's per square foot per degree difference of Fahrenheit temperature were determined by tests performed in the Armour Institute of Technology, Massachusetts Institute of Technology and others:

1-in. board	0.294
2-in. board	0.147
3-in. board	0.098
3-in. block	0.123

Typical wood frame wall (clapboards, building paper, boarding, 2x4 studs, ¾-in. plaster) with 3-in. Thermatex Wall Block between studs 0.123. This is roughly 50% of the heat transfer value of the same wall without the Thermatex.

Permanence—Made of all wood fibre, Thermatex has the enduring qualities of wood. It is semi-rigid and stays put.

Fire-safe Insulation—Thermatex is slow burning. When exposed to direct flame it chars but does not support combustion. When the flame is removed, Thermatex does not burn or smolder.

Resists Moisture—Thermatex fibres are chemically treated to resist moisture.

Under average building conditions, Thermatex is practically non-absorbent.

Hygienic—Made entirely of wood fibre, Thermatex is clean and odorless. It does not attract or harbor vermin.

Adaptability—By reason of its lightness, semi-rigidity, range of thicknesses and workability, Thermatex is suited to covering considerable area or to fitting into special openings or around particular constructions, supplying the degree of insulation valve required.

Low Cost—Prices are low per unit of Thermal efficiency and this favorable price differential increases with the increased thickness of Thermatex. This feature is shown graphically on the chart below. Three factors are shown on the graph.

1. Resistivity (Vertical)—Is the thickness of the material divided by the conductivity per inch of thickness. The more resistivity the greater the insulation value.

2. Unit Cost (Horizontal)—Is based on square foot of the various types of insulating materials as of prices Boston, August 1, 1930

3. Standard Thicknesses—In which the material is available are indicated by circles.

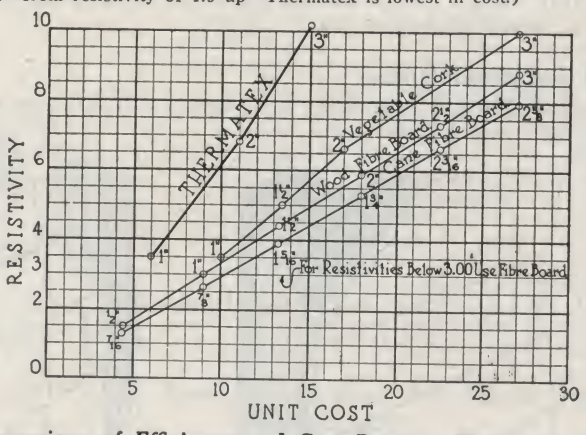
How to Use the Chart

Start at left with the resistivity required (degree of insulation) and move to the right until material curve is met. Follow upward and to the right along the curve until the next circle is reached. This indicates the available thickness of the material investigated which will give the desired insulation. Obviously the interval from point where material curve is met to the next circle represents added insulation . . . "velvet" above and beyond requirements. Dropping perpendicularly from circle to unit cost line gives cost comparison. The price plotted on the chart is an indication in units per square foot, but because of price fluctuations should be used only as a comparative cost indication between the different materials investigated.

Example—A resistivity of 3 is required and is furnished by the following commercial sizes:

Material	*Resistivity*	*Cost*
1-in. Thermatex	K – 3.5	6
1-in. Cork	K – 3.5	10
2 layers Wood Fibreboard	K – 3.	9
3 layers Cane Fibreboard	K – 3.9	13.5

Use of this chart quickly points out correct cost efficiency of various materials which will give desired insulation. (For really adequate insulation—from resistivity of 1.5 up—Thermatex is lowest in cost.)



Comparison of Efficiency and Cost Between Thermatex and Other Insulating Materials

Service

From the completely equipped plant of Bemis Industries, Inc., located at Portsmouth, N. H., which has rail and water connections to all main points, HOUSING COMPANY offers prompt service and economical shipments. Architects, engineers and manufacturers are invited to put their insulation problems up to our Service Department. Experienced engineers are ready to study your needs and make recommendations without obligation on your part.

JOHNS-MANVILLE

EXECUTIVE OFFICES
292 Madison Avenue, NEW YORK, N. Y.

For Branch Offices, see Section on Wall Tile

Products

JOHNS-MANVILLE INSULATING BOARD and PLASTER LATH.

Also Packings for all purposes; Refractory Cements; Waterproofing and Dampproofing; Asbestos Ebony; Asbestos and Asphalt Roll Roofing; Rotproof Roofs; Asbestos products of all kinds.

For the following Johns-Manville products, see Manufacturers' Index:

Acoustical Treatment and Sound Isolation; Shingles; Built-up Roofing; Celite for concrete and mortar; Home Insulation; Insulations; Tile Flooring; Transite, Flat and Corrugated; Wall Tile.

JOHNS-MANVILLE INSULATING BOARD, INDUSTRIAL BOARD, PLASTER LATH, BEVEL BOARD AND RIGID ROOFINSUL

General

These light weight, efficient, structural insulating materials are composed of wood fibres, treated to make them water repellent, fabricated into a homogeneous mass of interlacing fibres. They have structural strength and rigidity, these virtues being present to a lesser degree in the Industrial Board designed for use where strength is not a requisite. All of these materials may be economically and rapidly installed. They can be cut and nailed in the same manner as wood. Thicknesses greater than ½ in. are composed of two or more ½ in. thicknesses stapled together in manufacture.

Weight—These materials weigh approximately .75 lb. per sq. ft. per ½ in. thickness.

J-M Insulating Board

Furnished 4 ft. wide, in lengths of 6, 7, 8, 9, 10 and 12 ft.; in thicknesses of a full ½ and 1 in. It may be used in place of wood sheathing under wood siding, shingles, stucco or brick. It may be used in interiors, decorated or undecorated, with joints battened or exposed. It will take ordinary or plastic paints, shellac and certain plaster substitutes. In buildings of a more or less temporary character economically constructed—such as sheds, camp cottages, etc.—it may be used as exterior finish. It is extensively used as a finish for attics, basement rooms, etc.

J-M Industrial Board

Furnished 3 ft. wide by 6 ft. long, in thicknesses of full ½, 1 and 1½ in.

J-M Plaster Lath

Furnished 1 ft. 6 in. x 4 ft., in thicknesses of a full ½ and 1 in. The edges along the long dimension are shiplapped.

Usable in place of wood lath, metal lath or other plaster bases. Its use eliminates unsightly lath marks. It provides a bond for gypsum plaster of over 1000 lb. per sq. ft. besides adding considerable structural strength to the structure.

J-M Bevel Board

Furnished 6x12 in., 12x12 in., 12x24 in., 24x24 in., 24x32 in. and 18x32 in. in thickness of full ½ in.

The edges along the long dimension, or two opposite edges in the case of the square pieces, are shiplapped and beveled, the remaining edges being beveled only.

This form of insulating board is provided for use where a tile effect is desired.

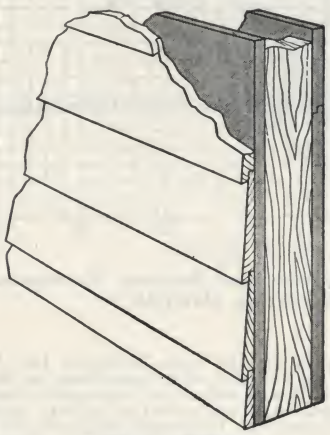
J-M Rigid Roofinsul

Furnished 2x4 ft. or 2x5 ft., in thicknesses of full ½, 1, 1½ and 2 in.

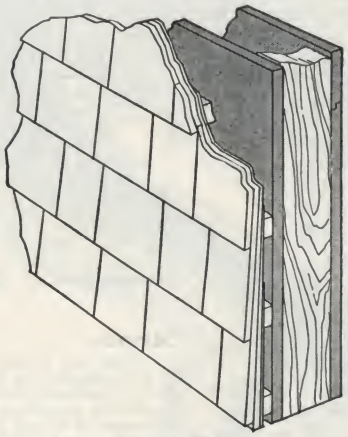
In thicknesses greater than ½ in. this material is shiplapped on all four edges.

Rigid Roofinsul is designed for application over roof decks of wood sheathing or non-combustible construction, to alleviate or prevent condensation and reduce the passage of heat or cold.

It is intended that the roof waterproofing shall be applied directly over it.



Under Siding



Under Shingles

Under Stucco

Continued on next page

SHORT FORM SPECIFICATIONS FOR FURNISHING AND APPLYING JOHNS-MANVILLE INSULATING BOARD, PLASTER LATH AND BEVEL BOARD

Note: As the furnishing and applying of these materials is generally made a part of the "Carpentry," "Lathing" or other specification, the following has been prepared to be so included.

Insulating Board Used As Sheathing

Note: The following information relates to work allied with the application of the Insulating Board and should be provided for in the specifications for the work involved:

Studs and rafters shall be spaced at 16-in. centers. Headers, not less than 2x4 in., shall be provided to center behind all end joints of the Insulating Boards. In applying siding, furring, wood sheathing, metal lath or wall ties, etc., over the Insulating Board, all nailing shall be done to enter the studs or rafters not less than 1 in. All end joints in siding, furring, wood sheathing, etc., shall be formed over a stud.

Masonry veneer shall be applied to leave a space not less than 1 in. wide between the veneer and the Insulating Board. Where stucco is to be used over the board, metal lath applied over furring strips or self-furring lath shall be used.

The contractor shall furnish and install Johns-Manville Insulating Board (*state thickness*) thick, to (*state in detail surfaces to be covered*).

The board shall be installed in the largest stock pieces applicable under the job conditions so that there will be a minimum number of joints. The boards shall be installed with their long dimension vertical, parallel to studs or rafters, and all joints, which shall be formed open approximately $\frac{3}{16}$ in. wide, shall be centered over a framing member. No board shall be forced tightly into place, but they shall be fitted closely to all openings and to all intersecting surfaces. Moistening of the board prior to application is not required.

The boards shall be secured at each framing member with galvanized roofing nails, with $\frac{3}{8}$ in. diameter heads and of a length sufficient to penetrate the framing members not less than 1 in. The nailing shall be placed first in the intermediate framing members at 6 in. centers and then $\frac{3}{8}$ in. from all edges at 3 in. centers.

Plaster Lath

Note: The following information relates to work allied with the application of the Plaster Lath and should be provided for in the specification for the work involved:

Studs, joists, rafters, or furring shall be spaced at 16-in. centers. Only quick-setting gypsum plaster with not more than 10% lime content shall be used for the first coat of plaster. The first coat or the scratch and brown coat combined shall be not less than $\frac{3}{8}$ in. thick on ceiling surfaces and $\frac{1}{4}$ in. thick on wall surfaces and the total thickness of the finished plaster job shall be not less than $\frac{1}{2}$ in. on ceiling surfaces or $\frac{3}{8}$ in. on wall surfaces. The plaster shall be applied in accordance with the manufacturer's specification. Rooms shall be well ventilated while plaster is drying as moisture will not pass through the lath.

The contractor shall furnish and install Johns-Manville Plaster Lath (*state thickness*) thick, to (*state in detail surfaces to be covered*).

The lath shall be applied with the coarse textured side exposed, with the long dimension at right angles to the framing members and with all end joints broken and centered over a framing member. The ship-lapped joints along the long dimension shall be formed closed and the end joints shall be formed open approximately $\frac{1}{4}$ in. wide. The lath shall be fitted closely to all openings and to all intersecting surfaces, but none shall be forced tightly into place. Moistening of the lath prior to application is not required.

The lath shall be secured at each framing member with common or blued nails of a length 1 in. greater than the thickness of the lath being applied. The nailing shall be placed first in the intermediate framing members and then $\frac{3}{8}$ in. from ends at not more than $5\frac{1}{2}$ in. centers, the end nails at each framing member being placed not more than $\frac{1}{2}$ in. from the ship-lapped edge. The lath shall be similarly nailed at sills, headers and plates, $\frac{3}{8}$ in. from edges at not more than $5\frac{1}{2}$-in. centers.

At all interior corners, strips of metal lath not less than 4 in. wide bent 2 in. each way, shall be installed over the lath, secured to the framing members. At all exterior corners, metal corner bead shall be installed and secured to framing members.

Insulating Board and Bevel Board Used As Interior Finish

Note: The following information relates to work allied with the application of the Insulating Board and Bevel Board and should be provided for in the specifications for the work involved:

Studs and rafters shall be spaced at not greater than 16-in. centers, and so that all vertical joints in the board shall center over same. Headers, not less than 2x4 in., shall be provided to center behind all end joints of the Insulating Board.

The contractor shall furnish and install Johns-Manville (*state whether "Insulating Board" or "Bevel Board" and if Insulating Board, state thickness or if Bevel Board, state size of units*), to (*state in detail surfaces to be covered*). (If "as detailed on the drawings" so state.)

Note: If the Insulating Board is used and the joints are to be covered with battens, the following should be added:

The boards shall be secured at each framing member with nails of a length sufficient to penetrate the framing members not less than 1 in. Where the nailing will be covered with a batten, galvanized roofing nails with $\frac{3}{8}$-in. diameter heads shall be used. Where the nailing is to be exposed, finishing nails driven at an angle of 30 degrees and staggered, shall be used. The nailing shall be placed first in the intermediate framing members at 6-in. centers and then $\frac{3}{8}$ in. from all edges at 3-in. centers.

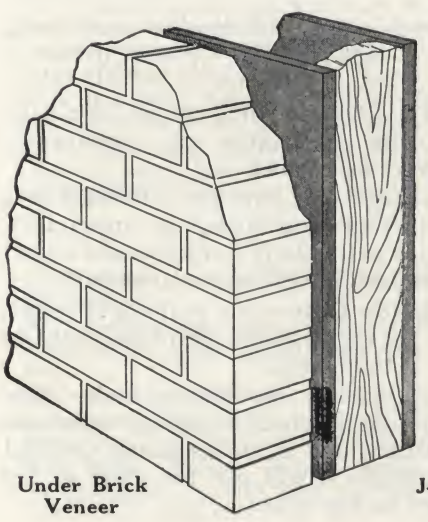
Note: If the Insulating Board is used without battens or if the Bevel Board is used, the following should be added:

The boards shall be secured at each framing member with finishing nails of a length sufficient to penetrate the framing members not less than 1 in., driven at an angle of 30 degrees and staggered. The nailing shall be placed first in the intermediate framing members at 6-in. centers and then $\frac{3}{8}$ in. from all edges at 3-in. centers.

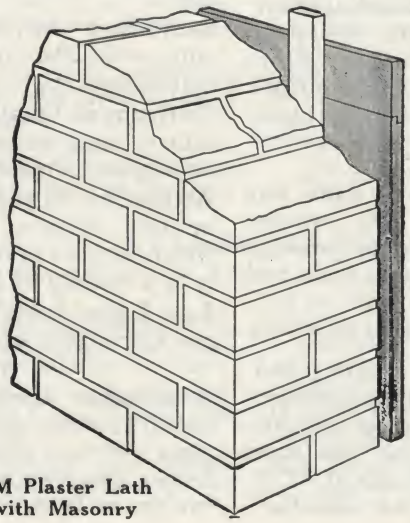
Note: If a design is to be followed it should be described or shown on the drawings. If battens are to be used their size, design, etc., should be described or shown.

Used As a Base for Plastic Paint, Solidon, etc.

Note: Where J-M Insulating Board is to be used as a base for plastic paint, Solidon, etc., the board should be specified to be erected in accordance with the recommendations of the manufacturer of the material which is to be applied over the board.



Under Brick Veneer



J-M Plaster Lath with Masonry

THE INSULITE CO.

GENERAL OFFICES
Builders' Exchange Building
MINNEAPOLIS, MINN.

MILLS: INTERNATIONAL FALLS, MINN., AND FORT FRANCES, ONTARIO, CAN.

Product

INSULITE—a dual purpose strong, durable, efficient Structural (Board form) Insulation. Prevents heat loss in winter, and heat discomfort in summer; prevents condensation; is an excellent sound deadener; Insulite Acoustile is specially adapted to acoustical correction.

LOCAL REPRESENTATIVE

INSULITE
the Wood-Fiber Insulating Board

yearly output of 300,000,000 sq. ft. Experienced workmen, superintendents, and inspectors assure uniformity of product.

Distribution — Insulite is distributed nationally through retail lumber dealers who maintain large stocks for immediate delivery. To facilitate shipping and handling without injury, Insulite is neatly and tightly wrapped in strong easily handled bundles. Insulite Acoustile is sold and applied by approved contractors.

Facilities and Service

Experience—Insulite has been continuously made and marketed for over 16 years. Experience gained through constant observation of actual installation made during this period in practically every type of building construction, coupled with thorough and complete laboratory tests, assure comprehensive and dependable information on the practical applications and benefits to be derived from its use.

Plant—A thoroughly modern plant capable of a

Service—THE INSULITE CO. maintains at their general office a Service Department, personneled with experienced Insulation and Acoustical Correction engineers and experts. Competent representatives and service men are accessible in all the principal cities. The Company tenders its full co-operation and service facilities to architects in the solution of any special problem.

PHYSICAL CHARACTERISTICS

Description—Insulite is made by felting wood fiber into broad rigid sheets, ½ in. thick, which may be easily sawed to any size or shape. One surface is neatly finished with a burlap-like texture. The color approximates that of new, unfinished soft wood of comparatively light or ivory tone. Samples on request.

Thermal Conductivity—.29—.33 B.t.u. per hour, per inch thickness, per square foot, per degree difference in temperature. (Conductivity varies with density, *i. e.*, Building Board .33; Refrigerator Board .30).

Density—Building board .7 lb. per sq. ft.; refrigerator board .5 lb. per sq. ft.

Strength—Tensile strength of building board approximately 300 to 350 lb. per sq. in. Authentic laboratory tests show the comparison of strength between ½-in. Insulite Sheathing (applied vertically) and Standard No. 2, ⅞x8 in. shiplap (applied horizontally) each applied to a wood frame as nearly under normal, average construction as possible.

The average load at failure for Insulite walls was 4750 lb. (average deflection 1.32 in.). The average maximum load on the wood walls was 1800 lb. (average deflection 7.24 in.—the limit of apparatus used and failure in ordinary building construction).

Note: Complete log of tests on application (College of Engineering, University of Minnesota).

Non-absorbent—Under average use in building construction, the material is practically non-absorbent. Authentic laboratory tests show the following comparison of a dry ½x48-in. x 8-ft. sheet, and the same sheet after subjection to a continuous spray of water at 70° F. for 24 hours: (1) Weight dry 22.5 lb., wet 28.8 lb.—difference 6.3 lbs. (2) Elongation or expansion under above test—lengthwise .33 in., crosswise, .19 in.

Note: Complete log of this severe test on application (College of Engineering, University of Minnesota).

Insulite Lath—Authentic laboratory tests show that a weight of 1152 lb. is necessary to separate plaster from 1 sq. ft. of Insulite Lath. The same tests show that a strain of only 514 lb. is required to separate the plaster from a square foot of wood lath, including mechanical clinch.

Note: Complete log of test on application (C. F. Burgess Laboratories, Madison, Wis.).

Durability—Examination of Insulite after ten years of actual structural use discloses no depreciation of any kind.

Sanitation—Insulite is clean and odorless—containing only wood fiber it is sanitary. It will not attract or harbor vermin.

Uniform in Quality—Manufactured under close laboratory supervision, its uniformity in composition, density and appearance is assured.

Attractive Appearance—One surface is finished in a uniform textured surface like burlap in appearance, which without finish is particularly attractive and adapts it to a variety of interesting decorative treatments.

Low Labor Installation Cost—Due to its light weight and convenient size for each specific use or purpose, the cost of installation is minimized.

Reasonable Cost—Quantity production under ideal manufacturing conditions assure reasonable comparative costs both as a structural and as an insulating material. Under average conditions it will pay for itself in fuel savings in from four to five years.

Continued on next page

USES, SIZES, AND THICKNESSES

Insulite Lath—(A) ½ in. thick by 18x48 in., long edges shiplapped and all edges beveled. (B) 1 in. thick by 18x48 in., two sheets firmly stapled together with all edges offset and beveled. An insulating lath applied the 48-in. dimension at right angles to studding joists and rafters.

Note: 1-in. thickness recommended for top story ceilings and roofs where greatest heat losses occur.

Insulite Building Board—½ in. thick, 48 in. wide, lengths 8 ft., 9 ft., 10 ft., 12 ft., adapted as both interior and exterior wall finish. Used as wallboard or sheathing.

(A) Interior Finish—Applied the long way parallel to the studding and ceiling joists. The attractive burlap-like surface lends itself to interesting decorative treatment.

(B) Exterior Finish—Applied the long way parallel to the studding, the exterior exposed face painted and all joints covered with wood battens.

Insulite Roof Insulation—Two forms; adapted to roof deck constructions of wood, concrete, tile, or steel.

(A) Roof-lap—½ or 1 in. thick by 18x36 in. 1-in. unit consists of two sheets firmly fastened together with edges offset to heat-seal at joints. Applied over roof construction under standard built-up roofing.

Insulite Acoustile—¾ in. thick, with edges beveled. (Can be made in special sizes up to 24x24 in.) An effective sound absorbent of good appearance adapted to decorative treatment. Applied with finishing brads over furring strips or cemented over finished plaster.

Sound Deadener—Any use of Insulite has sound deadening value. Many applications are made with this as the major objective. Insulite Lath is specially recommended for this purpose for ceilings, partitions, and party walls. Insulite applied between rough and finished flooring is an effective sound deadener. In order to insure the best results to fit the particular type of construction refer sound deadening problems to the Insulite Service Department.

Prevention of Condensation—Since the application of insulation for the prevention of condensation in industrial plants involves special engineering considerations, this use of Insulite requires special treatment. Experienced engineers of the Insulite Service Department are always accessible for assistance in the solution of any special problem.

MASTER SPECIFICATIONS FOR INSTALLING INSULITE

(A) General Requirements

Note: The following clauses shall be included in this or other headings of the specifications when and where they apply.

(A1) Work Included—

Note: List accurately types and kind of Insulite and where the material is applied.

(A2) Material—The insulating material shall be Insulite as manufactured by the INSULITE Co., Minneapolis, Minn., of type as hereinafter specified.

(A3) Framing—Framing members (studding, furring, joists, rafters, etc.) shall be accurately spaced on either 12 or 16-in. centers.

Note: Insulite is accurately rectangular with straight edges. Substantial nailing base must be provided where edges of adjacent boards meet.

Note: Insulite boards are made sufficiently scant of the nominal widths to allow for the specified space between adjacent boards.

(A3a) Where Insulite Wall Board is exposed for [interior] [exterior] use, framing members shall be so spaced as to make symmetrical arrangement of boards in accordance with the detail drawings. Wherever end joints occur, provide cut in framing members to take nailing.

(A3b) Straighten all crooked studs.

(A4) Cutting and Fitting—Continuity of the insulation is imperative. Cut to fit snugly and accurately around all exterior window and door frames.

(A4a) Cut in blocks and fit Insulite snugly between all joist and rafter ends on exterior walls and at plates.

Note: This applies to interior installations.

(A5) Nailing—Wherever any material is to be applied over Insulite with nails these shall be driven through the Insulite into the studding or joists.

Note: Insulite is in no sense a nailing base.

(A5a) To obviate needless puncturing of the large insulation sheets, when tacked in position, snap a chalk line on the exposed surface to accurately locate the centers of intermediate studs for nailing purposes.

(B) Insulite Lath

(B1) Material—½ in. thick, 18x48 in. long, edges shiplapped and all edges beveled [1 in.]. Two thicknesses ½ in. stapled together with all edges beveled and offset.

(B2) Application—Apply directly to framing members, the 48-in. dimension at right angles to the direction of the framing. Break all vertical joints in alternate courses. Apply with texture (burlap) surface exposed.

(B3) Nailing—Nails shall be spaced 5½ in. on centers—16 nails to a sheet. On long sides of units nails shall be placed not more than ½ in. from shiplapped edges.

(B3a) Half-inch Units—Space sheets ¼ in. apart at vertical or end joints. Lap all horizontal or long shiplapped joints snugly but do not force into place. Nail with 4d box nails (approximately 6 lb. of nails per 1000 sq. ft.).

(B3b) One-inch Units—Lap all joints snugly, but do not force into place. Nail with 6d box nails (approximately 9 lb. of nails per 1000 sq. ft.). Nail both sides of end joints.

(B4) Metal Lath Strips—Apply a strip of metal lath, at least 4 in. wide, at all re-entrant angles and all corners not provided with corner beads, to guard against plaster cracks.

(B5) Plastering—Use Gypsum plaster applied in accordance to the manufacturer's specifications, to not less than ⅜-in. grounds (over Insulite).

Note: While plaster is drying in cold weather it is absolutely necessary that rooms and attics be well ventilated. Moisture cannot pass through Insulite and must be carried off by adequate ventilation.

(C) Insulite Sheathing

(C1) Material—½ in. thick, 48 in. wide, [8 ft.] [9 ft.] [10 ft.] [12 ft.] long.

(C2) Application—Apply vertically, directly to studding. Keep sheets ¼ in. apart at all edges and ends—never force into place.

(C3) Nailing—Nail with 1½-in. galvanized roofing nails to each bearing spaced 4½ in. apart. Nail first to intermediate studs (see A5a), then nail edges and ends.

(C4) Wood Siding Finish—Apply directly over Insulite Sheathing, nail to each stud in usual manner (see A5). All siding joints shall butt over center of studding.

(C5) Shingle Finish—Apply wood strips over Insulite Sheathing at right angles to studding to serve as nailing base for shingles. Space strips to take the particular shingle weathering as detailed or specified.

(C6) Stucco Finish—Over Insulite Sheathing apply galvanized self-furring wire or metal lath. Nail to studding with 1½-in. 14 gauge staples (see A4). Apply stucco in usual manner.

Note: Do not apply stucco directly to Insulite.

(C7) Brick Veneer Finish—Apply brick veneer in usual manner over Insulite Sheathing. Nail brick ties through Insulite to studding (see A5).

Continued on next page

(D) Insulite Wall Board—Exposed Inside

(D1) Material—½ in. thick, 48 in. wide, [8 ft.] [9 ft.] [10 ft.] [12 ft.] long.

(D2) Application—Apply, with texture (burlap) surface exposed, directly to and the length parallel with the framing members (studding, furring, joists, rafters—see A3a). Keep sheets ¼ in. apart at all edges and ends—never force into place.

(D3) Nailing—First nail to intermediate bearings with 2-in. finishing nails, 12 in. on center, driven at a slight angle and neatly set slightly below finished surface (see A5a). Then nail edges of sheets with only sufficient 4d box nails to hold sheet in place until panel strips are applied.

(D4) Staining—Alcohol, benzol or water stains may be used on Insulite.

(D5) Sizing and Painting—Thoroughly size Insulite with either glue size or Insulite Self-sizing Paint.

Note: Two coats of Insulite Self-sizing Paint is a satisfactory finish if more elaborate decoration is not desired.

After sizing any good oil paint or enamel may be applied.

(D6) Paneling—Apply wood or Insulite strips over joints and elsewhere as needed to create the desired effect. Joint fillers are not recommended.

Note: A very satisfactory effect may be obtained by neatly beveling edges of Insulite strips with sandpaper block.

(D7) Plastic Finishes—

(D7a) Application—As in D2. Symmetrical spacing is not needed, but cut-in framing members must be provided wherever end joints occur.

(D7b) Nailing—Nail to each bearing (intermediate bearings first) with 4d box nails, 8 in. on centers.

(D7c) Joint Reinforcement—Apply 2-in. strips of fine galvanized wire screen over all joints.

(D7d) Finish—Apply finish in accordance with manufacturer's specification.

(E) Insulite Wall Board—Exposed Outside

(E1) Material—½ in. thick, 48 in. wide, [8 ft.] [9 ft.] [12 ft.] long.

(E2) Preliminary—Before applying Insulite, nail a 2x6-in. water table or skirting board, with top edge beveled to the outside of studding. Cut in header at top behind water table to form nailing base for Insulite.

(E3) Application—Apply, with texture (burlap) surface exposed, directly to and the length parallel with the studding (see A3a). Keep sheets ¼ in. apart at all edges and ends—never force into place.

(E4) Nailing—First nail to intermediate studs with 6d box nails spaced 12 in. on centers. Then nail edges and ends of sheets with 1½-in. galvanized roofing nails, spaced 12 in. on centers.

(E5) Painting—Size thoroughly with Insulite Self-sizing Paint. Apply over sizing two coats of any good exterior house paint in accordance with the manufacturer's specification.

(E6) Battens and Trim—Cover all joints with wood batten strips securely nailed to studding.

Note: Joint fillers are not recommended.

(F) Insulite ½-in. Roof Insulation

(F1) Material—½ in. thick, 18x36 in. and 2x5 ft.

(F2) General—The amount of insulation laid shall not be more than can be covered and protected by roofing laid in any one day. Sweep deck clear of rubbish and see that it is dry and smooth. Apply cant strips over insulation at all walls, parapets, etc.

(F3) Over Wood Decks—

(F3a) Cover roof boards with a layer of dry felt or rosin sized paper.

Note: Use to guard against dripping of pitch or asphalt through roof boards, where desirable.

(F3b) One Thickness—Apply insulation directly to roof boards in rows, breaking joints in alternate rows—do not force into place. First nail center of sheets at random about 14 in. on centers, then nail all edges 12 in. on centers. Use 1-in. roofing nails.

(F3c) Two Thicknesses—Apply insulation directly to roof boards in rows. Break joints in first layer alternate rows. Joints of second layer shall stagger or break joints with those of first layer—do not force into place. Use only sufficient nails in first layer to hold sheets in place. Apply second layer directly over first layer, first nailing center of sheets at random about 14 in. on centers, then nail all edges 12 in. on centers. Use 1½-in. roofing nails for second layer.

(F4) Over Concrete, Tile, or Steel Decks—

Note: If asphalt is used, concrete or tile decks must first be primed.
Note: Hot pitch or asphalt will not adhere to moist surfaces. Be sure that both roof and Insulite surfaces are dry before mopping and applying insulation.
Note: To insure proper bond during cold weather, insulation should be laid as fast as deck is mopped.

(F4a) One Thickness—Mop the roof surface thoroughly with hot pitch or asphalt using at least 35 lb. per 100 sq. ft. While hot, apply Insulite, tamping, pressing or rolling sheets intc pitch--do not force into place.

(F4b) Two Thicknesses—Lay the second layer over the first layer, as specified above, in a mopping of hot pitch or asphalt with joints of second layer broken over those of first layer. Apply second layer as specified above for first layer.

Note: For thicker insulation apply added layers as herein specified.

(F5) Finished Roofing—Apply finished roofing material in accordance with manufacturer's specification, using at least 35 lb. of pitch, or asphalt per square for first felt.

(G) Insulite 1-in. Roof Insulation

(G1) Material—1 in. thick, 18x36 in. and 2x5 ft., consists of two layers of ½-in. Insulite firmly stapled together with all edges offset (shiplapped).

(G2) General—The amount of insulation laid shall not be more than can be covered and protected by roofing laid in any one day. Sweep deck clear of rubbish and see that it is dry and smooth.

Apply insulation so that offset edges will overlap edges of adjacent sheets. Stagger or break end joints. Edges and ends shall be butted together but not forced in place.

Apply cant strips over insulation against all walls, parapets, etc.

(G3) Over Wood Decks—

(G3a) Cover roof boards with a layer of dry felt or rosin sized paper.

Note: Use to guard against dripping of pitch or asphalt through roof boards, where desirable.

(G3b) Apply insulation directly to roof boards, nailing each unit with 1½-in. galvanized barbed roofing nails, three nails in the middle transversely and three at each end. Nail middle row first, keeping nails not more than 2 in. back from edges.

(G4) Over Concrete, Tile, or Steel Decks—

Note: If asphalt is used, concrete or tile decks must first be primed.
Note: Hot pitch or asphalt will not adhere to moist surfaces. Be sure that both roof and Insulite surfaces are dry before mopping and applying insulation.
Note: To insure proper bond during cold weather, insulation should be laid as fast as deck is mopped.

Mop the roof surface thoroughly with hot pitch or asphalt using at least 35 lb. per 100 sq. ft. Embed Roof-lap units firmly while pitch is hot, staggering or breaking end joints.

(G5) Finished Roofing—Apply finished roofing material in accordance with manufacturer's specification, using at least 35 lb. of pitch or asphalt per square for first felt.

(H) Insulite Acoustile

(H1) Material—¾ in. thick, sizes up to 24x24 in. with all edges beveled.

(H2) Application—By approved Insulite Acoustile contractors, or .....

(H2a) Over Furring Strips—Apply 1x2-in. furring strips, centered according to tile width, at right angles to framing members.

Nail Acoustile to strips with six 1½-in. brads, three at each side with heads neatly set below surface.

(H2b) Over Plaster—Apply Acoustile directly to the plaster surface with linoleum cement or waterproof glue. Nail with 1¼ in. brads, one in center and one in each corner. Set heads of brads neatly below surface.

Note: If walls are uneven, fur out and apply as above.

(H3) Decoration—Stain with either water, alcohol or benzol stains, in design and color desired.

Note: Sizing of any kind or oil paint will greatly impair the acoustical value of Insulite.

MAIZEWOOD PRODUCTS CORPORATION

GENERAL OFFICES
203 North Wabash Avenue
CHICAGO, ILL.

PLANT: DUBUQUE, IOWA

Maizewood
CORN STALK
Insulation

The Product

Maizewood is an insulating and sound deadening board that combines most satisfactorily the desirable qualities of light weight, strength, insulating efficiency, low capillarity, and low absorption of moisture. Its properties fit it for use in all types of construction.

As Sheathing—Maizewood is used on the exterior sides of walls, under shingles or siding or under veneers of brick, stucco, or stone.

As Roof Insulation—It is used under standard roofing materials.

As Plaster Base—Maizewood lath has universal application.

As Wall Board—Maizewood may be left in its natural state or finished with any of the commonly used tinting coats, or with paints.

As Exterior Finish—Maizewood has great structural strength and, after sizing, may be finished with any kind of good exterior house paint.

As Sound Deadener—Maizewood may be used in floors as well as in walls, partitions and ceilings. Maizewood has the acoustical qualities usual in this type of board.

The Company

Maizewood Products Corporation is the only company manufacturing insulating board from cornstalks, one of the most important by-products of American agriculture. The company is affiliated with National Cornstalk Processes, Incorporated, which was formed by leaders in manufacture, finance, and agriculture, to develop industries which will add to farm income by using cornstalks as raw material.

Maizewood is the outgrowth of years of research at Iowa State College, Ames, Iowa, where the processes were developed by Dr. Orland Russell Sweeney. It is the first cornstalk fiber product to enter the building field.

Facilities

The Maizewood plant at Dubuque, Iowa, is kept continually up-to-date in equipment and in practice. The company has financial backing adequate for the expansion of manufacturing facilities to meet any demands.

Distribution

Maizewood is distributed through Carr, Ryder & Adams Co., Dubuque, Iowa, to retail lumber yards in mid-western and north central states. Large stocks are carried at convenient distributing points.

Engineering Counsel

The original development of Maizewood was the work of Dr. Orland Russell Sweeney, of Iowa State College at Ames, and Dr. Sweeney today is in charge of research and further development. The operating personnel of the plant is composed of men trained in the work by Dr. Sweeney. The company thus is in position to give to architects and to engineers the very highest type of counsel.

PHYSICAL CHARACTERISTICS

Appearance

Maizewood is made by felting or weaving the fibers of mature cornstalks into a broad, continuous board with no laminations—a board $\frac{7}{16}$ in. thick that may be sawed easily to any size or shape. One surface is neatly finished with a burlap-like texture and the other surface is smoothed to a satin-like finish.

The color is a medium, warm tan, that makes an attractive interior finish. Samples will be sent on request.

Board Sizes

As sheathing, Maizewood is cut to a standard 4-ft. width and is 7, 8, 9, 10, and 12 ft. in length. The standard board weighs approximately 63 lb. per 100 sq. ft.—a low weight for a board of the structural strength of Maizewood. Maizewood lath is cut 18x48 in. with long edges shiplapped. Thickness $\frac{7}{16}$ in.

As roof insulation, Maizewood is furnished ½ and 1 in thick and the standard slabs are 2x3 ft., although the roofing boards can be furnished in other sizes if desired. On the roof, the 2x3-ft. slabs are convenient, and may be applied with a minimum amount of labor. Special roofing can be furnished with thickness in multiples of ½ in., when specified. This is built up of ½-in. boards stapled together with corrosion-resisting wire with edges flush.

Thermal Conductivity

The thermal conductivity of Maizewood, as established by J. C. Peebles, of the Armour Institute of Technology, is .325 B.t.u. per hour, per square foot per degree Fahrenheit, per inch thickness. *Complete report of tests will be sent upon request to the general offices of the company in Chicago.*

Continued on next page

Tensile Strength

The breaking (modulus of rupture) strength of Maizewood Cornstalk Insulation is approximately 425 lb. per sq. in. *Complete details of strength tests by J. C. Peebles, of the Armour Institute of Technology, and by Iowa State College will be sent upon request.*

Structural Strength

Tests by Phil C. Huntly, of the Armour Institute of Technology, show that Maizewood used as sheathing in buildings provides a bracing against distortion greater than that provided by horizontal wood sheathing. Under a load of 900 lb. the distortion of a section of wall sheathed with Maizewood was ½ in. The distortion of the wood sheathed section was 7¼ in. under the same load and conditions. *Complete report on application.*

Nail Pulling Test

Tests show Maizewood Cornstalk Insulation to have remarkable resistance to the pulling of nailheads through the board. In the tests of J. C. Peebles, of the Armour Institute of Technology, the force required to pull a nail with a ⅜-in. head through a board of Maizewood was just equal to the force required to pull the nail from white pine.

Maizewood properly nailed to wood framing members will stand strains many times greater than those to which it will be subjected under actual conditions in a structure.

Low Moisture Absorption

The individual fibers of the mature cornstalks used in Maizewood are thoroughly waterproofed. Moisture, taken on or given off among the fibers, has no effect upon the fibers themselves. Maizewood has low capillarity and little tendency to accumulate moisture content. A sample may be immersed in water for several hours up to half its thickness and at the end of the test the upper surface of the board will be dry. Cravenetting the individual fibers results in the combination of minimum moisture absorption and maximum insulating value.

Compression

The following results, obtained by Phil C. Huntly, of the Armour Institute of Technology, show the amount of compression of Maizewood under a dead load:

Load equivalent per sq. ft.	Compression in inches
188 lb.	.002
720 lb.	.006
1584 lb.	.008

The above figures show the hard, firm nature of Maizewood Cornstalk Insulation and its resistance to depression under pressure.

Bond with Plaster

Tests made by Iowa State College and by Phil C. Huntly, of the Armour Institute of Technology, establish that a load equivalent to 1200 lb. per sq. ft. is necessary to separate gypsum plaster from a plaster base of Maizewood, when the plaster is properly applied and dried. This high bonding strength is due to the long fibers and the absence of any layers in this uniformly felted board.

Fire Resistance

Maizewood is slow burning, and, due to the absence of open joints, a wall or partition sheathed with this material, retards the progress of a fire. Maizewood may be treated with any of the standard fireproofing paints, applied according to the makers' specifications.

Durability

The mature fibers of the cornstalk are exceptionally durable. With ordinary protection, Maizewood will retain its strength and insulating value throughout the life of the building in which it is installed.

It has proved its durability even under most unfavorable conditions of test. In one case, where Maizewood was used in the roof insulation of a boiler room, alterations were made and the Maizewood, after having been subjected daily for several years to severe moisture and condensation conditions, was found, under tests, to have suffered no determinable depreciation.

Sanitation

Maizewood does not attract rodents nor vermin. It is clean, odorless, and sanitary.

Uniformity

Samples are taken from the board at regular intervals and subjected to complete tests, thus assuring uniformity of product.

GENERAL SPECIFICATIONS

No Special Instructions Necessary

In general, standard specifications for the use of rigid insulating boards will apply to Maizewood and no special instructions are necessary. However, we are giving brief specifications covering its more common uses.

Maizewood as Sheathing

Standard Maizewood is to be used for all walls, under wood siding, or shingles, or veneers of stucco, brick or stone.

Framing—Studs, joists, and rafters, as in usual construction, shall be placed accurately on 16-in. centers. Headers, 2x4 in., shall be inserted between framing members where ends of Maizewood boards meet, to provide a nailing base. Headers will be unnecessary if boards are ordered in proper length.

Applying Maizewood—Maizewood shall be applied lengthwise with and directly to the framing members, with a ⅛-in. space between boards, at both sides and ends. Maizewood is cut scant enough to permit this. In applying sheathing, nail Maizewood, first, to intermediate framing members and then along the sides and ends. Use 1½-in. standard roofing nails, with ⅜-in. heads, spacing them 4 in. apart, and ⅜ in. from edges and ends of the boards. To obviate puncturing the boards, snap a chalk line on the exposed side of the board, after it is in position, to designate accurately the line along which to nail through to the centers of the intermediate members.

Finishes—Wood siding, shingles, and veneers shall be applied according to the specifications of the makers of these various materials, the only injunction regarding Maizewood being that any furring or anchors shall be fastened to the framing members by nails that penetrate the wood at least 1 in. Maizewood is *not* a nailing base.

Continued on next page

Stucco—Over Maizewood sheathing apply galvanized self-furring wire or metal lath. Nail to studding with 1½-in. 14 gauge staples. Apply stucco in usual manner. Do not apply stucco directly to Maizewood.

Maizewood as Roof Insulation

Standard Maizewood, when used for the usual framed roof insulation, shall be applied by the same general methods that govern sheathing.

Over Rafters—When Maizewood is to be shingled or covered with rigid roofings, it shall be nailed directly to the rafters. Furring strips, spaced for the roofing to be used, shall then be placed at right angles to the rafters and nailed through to them.

Under Rafters—When Maizewood is applied to the underside of rafters, care shall be taken to see that it extends down to a tight joint with sidewall insulation or, if the house is old with no insulation, to a tight joint with sidewall sheathing or plate.

If direct contact can not be made with the large size board, carefully fill in the intervening space with smaller pieces. See that air currents are checked.

Over Attic Joists—Nail Maizewood direct to joists, making tight connections with sidewall insulation, or sheathing. Nail the wood flooring, used over the Maizewood, through to the joists.

Maizewood may be used over old attic floors and, if a further finish is desired, it may be covered with wood flooring, linoleum, carpet, or canvas.

Plastering—If the attic is to be plastered, Maizewood cut to lath size, 18x48 in., should be used.

Flat Decks—Maizewood shall be used over wood, concrete, tile or steel decks, according to the specifications of the manufacturers of the roofing materials used. Maizewood roof slabs are 2x3 ft. and ½ or 1 in. thick. Sizes, 3x4 ft. or 2x5 ft., furnished on order.

Maizewood Plaster Base

Application—Nail the 18x48-in. boards direct to framing members, with the 48-in. dimension at right angles to studs or joists, with rough side exposed for plaster. The shiplap edges shall be joined but not forced into place. Ends shall be spaced ⅛ in. Nail with 5d box nails, ⅜ in. from edges, 4½ in. apart. Do not piece out with wood lath.

Reinforce exterior corners with metal bead, and reinforce interior angles with expanded metal lath or wire mesh, bent into the angles and securely stapled.

Plastering—Plastering shall be applied according to the makers' specification, the total thickness to be not less than ½ in.

Maizewood Exterior Finish

Standard Maizewood Boards—8 to 12 ft.—shall be applied, burlap side exposed, directly to and the length parallel with the studding, with ⅛-in. spacing. After sizing, apply two coats of good exterior house paint, according to the manufacturer's specifications. Cover all joints with wood battens nailed through to studs.

Maizewood Interior Finish

Standard Maizewood Board—48 in. wide and 8 to 12 ft. long—shall be used with your choice of the finishes exposed. Nail to intermediate studs with finishing nails, heads slightly sunk. Use 4d box nails on edges, sufficient to hold the Maizewood until panel strips are applied, and nailed securely, through the Maizewood, to studs.

Paneling may be either of wood or of Maizewood strips.

If Maizewood is to be decorated, after glue sizing is applied, any good paint or enamel may be used according to the maker's specifications.

Maizewood Sound Deadener

Maizewood, in standard board or plaster base form, used in floors, sidewalls or partitions, has considerable value as sound deadener. However, if sound deadening between adjoining rooms is of prime importance, certain special but well-known features of construction should be adopted. The studs may be doubled in number and staggered, and the Maizewood Plaster Base applied to the alternate studs, set on the standard 16-in. centers. The studs may be doubled in number and set with the 4-in. dimension parallel with the direction of the partition and with a 2-in. space between the two rows of studs. In this 2-in. space Maizewood can be installed, loose, except at top and bottom.

With Maizewood Plaster Base on both sets of studs, with the middle sheet of Maizewood Standard Board, with two air chambers and with no members carrying through the partition, this is a most effective sound deadening construction.

Maizewood for Acoustical Correction

Maizewood for acoustical correction, sound absorption and freedom from distortion of sound, may be applied over furring strips or directly over the plaster, with cement or glue, in a room already plastered.

Decoration should be with water, alcohol, or benzol stains.

For information on special problems, address the central offices, MAIZEWOOD PRODUCTS CORPORATION, *203 North Wabash Avenue, Chicago, Illinois.*

NATIONAL GYPSUM COMPANY

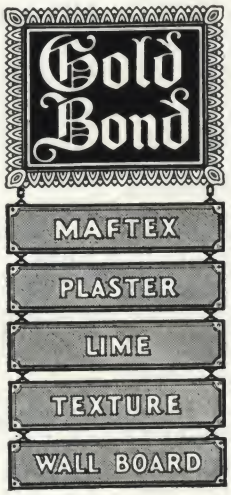
Gold Bond Maftex Insulation Board

GENERAL OFFICES
409 Jackson Building
BUFFALO, N. Y.
CHICAGO OFFICE, Conway Building
MILLS: CLARENCE CENTER, N. Y., NATIONAL CITY, MICH., LUCKEY, OHIO, CAMDEN, N. J.

Products

GOLD BOND MAFTEX INSULATION BOARD and GOLD BOND MAFTEX INSULATION LATH.

For Gold Bond Wall Board, Plaster, Lime, Tile Board, Lath, Sheathing Board, Dry Fill Insulation, Exterior Stucco, Texture Paint and Color Texture, see Manufacturers' Index.



Fibres

The value of any insulating material depends upon the fibres that compose it. Maftex is the only insulation board made from the fibres of imported licorice roots and these fibres not only are notably high in minute air cell content—the basis of all insulation—but they are the toughest fibres used for insulation purposes. These fibres are necessarily tough and moisture resistant because they are four-year, subsoil growths, brought to this country from the licorice fields of the Orient and the Mediterranean districts.

Homogeneous

Gold Bond Maftex is built up as a homogeneous, single-ply board. There are no plies to weaken the structure. All fibres are reduced to the pure fibre state by long cooking under high steam pressure and then moistureproofed by a sizing treatment before being built up into the finished board. The board is kiln dried and then tempered to have the correct moisture content for use on the job.

Insulation

In repeated tests by leading insulation authorities, Maftex has consistently earned the low conductivity rating of .337 B.t.u. This rating is the maximum obtained by any insulating board—it means that Maftex provides all the insulation that can be obtained "plus" other services not to be had in equal degree by any board except Maftex. Proof upon application.

Structural Strength

Any building material to be worthy of the name should contribute to the staunchness and stamina of the building. Maftex does just that, and does it more than any other insulating product, since it is made from the world's toughest insulating fibres—imported licorice roots—and resists torsional strains and stresses far beyond the usual expectancy with any fibre product.

Fire Retardation

Maftex is distinctly slow burning, charring rather than flaming when subjected to the hot blast of a closely placed blow torch.

Verminproof

Rodents do not attack Maftex and will not live in it.

Sound Deadening

The fibre density of Maftex, together with the resilience of the board, makes it an excellent sound deadener. The licorice fibres are natural sound deadeners and the resiliency of the board prevents diaphragm action, so that it does not transmit sound by vibration in the way that sound is carried by many rigid materials.

Acoustical Service

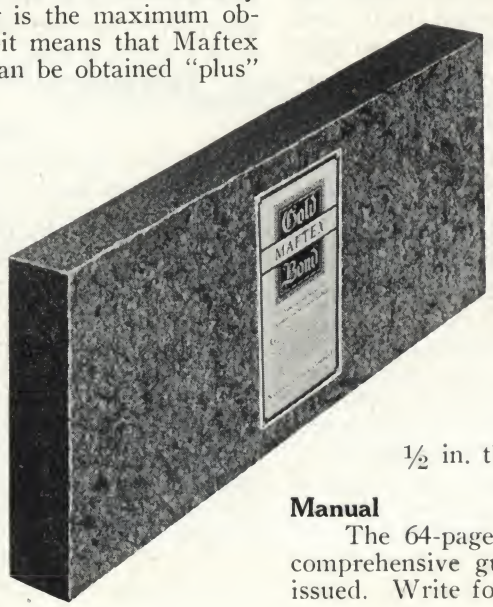
The sound absorbing fibres of Maftex render another highly important "plus" service, in that they hush the echoes in a room and prevent unpleasant reverberations. Poor acoustics have spoiled many a beautiful room, but they are easily avoided by using Maftex.

Plaster Base

Both Maftex Insulation Board and Maftex Lath have a plaster bond of exceptional tenacity, since there is a natural penetration of gypsum plaster into the licorice fibres.

Sheathing

Maftex provides an exceptional structural service when used as outside sheathing and notably strengthens the stability of the building.



Wall Board

Maftex can be used wherever wallboard is required and its pleasing mat surface may be left undecorated or finished by plastering or painting.

Sizes

Maftex Insulation Board is $\frac{7}{16}$ in. thick, 4 ft. wide, and comes in lengths of 8, 9, 10 and 12 ft. The weight is approximately 750 lb. per 1000 ft.

Maftex Insulating Lath is $\frac{7}{16}$ in. thick. It is made with square edges, 16x48 in. or ship-lap edges, 18x48 in.

Maftex Roof Insulation Board is ½ in. thick and comes in sheets 4x4 ft.

Manual

The 64-page Maftex Manual is one of the most comprehensive guide books to correct insulation ever issued. Write for your copy.

Masonite

Structural Insulation
Insulating Lath
Quartrboard
Presdwood

Masonite Corporation

111 W. Washington Street, Chicago, Illinois

MASONITE CORPORATION

Manufacturers of Masonite Structural Insulation and Presdwood

111 West Washington Street

CHICAGO, ILL.

PRODUCTS

MASONITE STRUCTURAL INSULATION.

MASONITE INSULATING LATH.

MASONITE PRESDWOOD 1/8 INCH THICK.

MASONITE QUARTRBOARD.

MASONITE PRESDWOOD $\frac{3}{16}$ INCH THICK.

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MASONITE

Its Manufacture and Adaptability

Masonite is a manufactured board, made entirely of wood fibre. It retains the natural strength and composition of wood, but is so made that a high degree of insulation value is added.

In the Mason Process of producing this scientific wood product, clean wood chips are exploded under high steam pressure, so that the wood is reduced to fibre. The product thus produced consists entirely of long cellulose fibre, with their strength unimpaired and the lignins, or natural cementing structure of the wood, entirely retained. No chemicals are used; the exploding process is purely a physical one, so that there is no change in the wood except tearing it apart into natural fibres.

Because the Mason Process has succeeded in producing a long fibre of unimpaired strength without the use of chemicals, the MASONITE CORPORATION is able to fabricate a board with the natural strength and composition of wood—an achievement never before attained.

Masonite Structural Insulation, as you buy it, is simply these long fibres thoroughly felted together and pressed into board form. No binder is added to the product. The natural cementing matter of the wood being unharmed, nothing but pressure and heat is needed to form the fibres into structural board. The pressure is applied hydraulically until the required degree of density is obtained. It is possible, therefore, to fabricate Masonite in various degrees of density, suiting the formation to the service the board is to perform.

Masonite Structural Insulation is pressed to a point which gives it the proper amount of structural rigidity, but still maintains great insulating value by leaving a myriad of minute air cells in and between the fibres. As a result, this material combines structure and insulation to a degree that has heretofore been difficult to find.

Its Insulation Value

The thermal conductivity of Masonite Structural Insulation for 1-inch thickness as determined by the G. F. Gebhardt Laboratories, expressed in B.t.u.'s per hour, per square foot of surface, per degree Fahrenheit difference in temperature between the two surfaces of the material is 0.328. Tested by Prof. Frank B. Rowley, testing engineer, University of Minnesota, it was found to have a co-efficient of heat conductivity of 0.321. Both of these tests were made by the flat plate method. According to hot box tests made by J. C. Peebles of Armour Institute of Technology, the coefficient of conductivity is 0.253.

Where to Use Masonite

The specifications listed in the following pages indicate the great spread of uses of Masonite Structural Insulation. Probably no other building material fits such a great variety of jobs as this one. Its smooth, uniform boards, $\frac{7}{16}$ inch thick, 4 feet wide and 8, 9, 10 or 12 feet long, and with a density of about 19 pounds per cubic foot, can be handled, sawed, cut and nailed like wood, because they are wood.

Only the most common uses are discussed in these pages, the more unusual ones being reserved for special bulletins.

Masonite as Sheathing

Probably the most common use of Masonite in building is sheathing. Under frame, brick, stone or stucco exterior walls it replaces other materials without increase in cost, but with a great increase in the value of the building. The added insulation meets every demand of the present day trend toward insulated buildings, and shows amazing results in the reduction of heating costs, additional comfort in winter and summer, and greater rigidity and strength in the structure.

Continued on next page

Three important factors of saving should be noted where Masonite is used for sheathing: *Labor costs* are reduced by the increased rapidity and ease with which the big, uniform boards go into place; *building paper* is eliminated, being unnecessary on any Masonized building; *waste* is cut to the irreducible minimum.

Masonite as Plaster Base

Where Masonite is used as a plaster base, it puts an end to all controversy about the use of a substitute for lath. The introduction of Masonite in shiplapped boards, 2x4 feet, has brought such uniformly excellent results that even the most skeptical builders acclaim it as a fundamental improvement in plastering practice.

Masonite Insulating Lath (as covered in Specification No. 3) is uniformly furnished in bundles of 100 square feet and they are shiplapped along both 4-foot edges. Applied in staggered arrangement, they make an exceedingly strong rigid base. In a series of tests to determine the strength of the bond between Masonite Insulating Lath and plaster applied to it, the Robert W. Hunt Company, testing engineers, found that it withstood a pull of more than 1066 pounds per square foot of surface.

High Resistance to Moisture

The action of Masonite Insulating Lath under moisture is one of the remarkable features that causes exceedingly favorable comment everywhere. Samples of Masonite 12 inches square tested by Robert W. Hunt Company for water absorption were completely immersed. At the end of 4 hours they had absorbed, by volume 2.59%; at the end of 24 hours, 7.16% and at the end of 72 hours only 15.87%. Shrinking and swelling are practically eliminated. Walls plastered on Masonite Insulating Lath remain smooth, even, free from cracks and free from unsightly lath marks.

Note particularly that Masonite Insulating Lath requires no special treatment nor reinforcement, because joints are broken every 2 feet. The only exception to this rule is at the corners, where strips of metal lath or wire screen are recommended.

Masonite as Interior Finish

Masonite's surface suits it particularly well for use as an interior finish. It is smooth, with just enough texture and mottling to provide an interesting surface.

Used in its natural state, it makes a very pleasing panel wall, decidedly out of the ordinary in effect.

Stain, plastic paint, or textured wall finishes may be applied direct to the board. Paint or varnish should be applied over a size or priming coat.

Because of its surface texture, Masonite has won recognition as an interior finish from many builders who have heretofore questioned the use of similar materials for this purpose. Being a true wood product, Masonite eliminates the artificial, "temporary" look common to similar partitions, and provides a substantial permanent wall.

In covering joints, the usual plan of wood battens is applicable. More artistic finishes, in a great variety of paneled effects, may be secured by the use of special Masonite battens or fancy mouldings.

Masonite as Roof Insulation

To stop heat losses through the roof, Masonite may be applied in a number of ways, making it possible to reduce fuel costs in every type of building.

The recommended practice for application of Masonite on the outer roof of houses with wood rafters calls for the application of Masonite directly over the rafters, so that the entire roof is lined with insulation. The usual wood sheathing is then nailed over the Masonite, with boards spaced 1 inch apart. This well insulated roof serves as an excellent base for wood shingles, asbestos shingles, slate, burned clay tile and asphalt shingles.

On buildings already constructed, the desired insulation may be secured by the application of Masonite under the rafters.

Over concrete and wood decks, where the flat, exposed surface often leads to tremendous heat losses, Masonite is a particularly effective insulation. Nailed to the wood, or mopped on to the concrete, it serves equally well. On another page there is presented a chart giving exact figures of heat losses in different types of roofs and showing how those heat losses may be reduced and brought under control.

Special specifications for various types of roof insulation not covered in detail in these pages, may be had by writing MASONITE CORPORATION.

Masonite as Sound Deadening

Where Masonite is used on walls, ceilings and floors, it has another important function, along with its structural and heat insulating values. Masonite is an invaluable material in the control of sound. With the increasing demand for soundproof construction, it is especially interesting to note that the use of Masonite provides excellent results with little additional cost.

The control of insulation of sound is accomplished either through the weight of the wall, as in heavy masonry walls, or through the rigidity of the wall. The efficiency of Masonite is due to the latter.

Testing the reduction of sound intensity through different standard types of partitions, Prof. Paul E. Sabine, at the head of the Department of Acoustics, Riverbank Laboratories, Geneva, Ill., found that through 4-inch clay tile, plastered, weighing 28.0 pounds per square foot, there was a reduction of 34 sensation units, while through a partition of Masonite on wood studs, plastered, weighing 17.0 pounds per square foot, the reduction in sensation units was 35.1.

Conversational speech was heard faintly but was unintelligible through the Masonite partition. The sound of a phonograph was almost inaudible.

Following tests made on Masonite Structural Insulation, taken from dealers' regular stock, by Prof. Sabine, to determine the sound absorption coefficients of the standard $\frac{7}{16}$-inch board when used as the exposed finished wall or ceiling surfaces as a means of preventing excessive reflection of sound and reverberation in rooms, he made the following report:

This table of coefficients covers the entire range of tones encountered in music and speech.

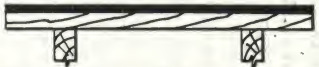
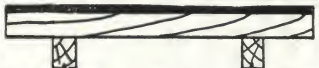
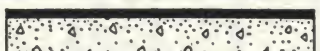
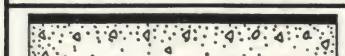
Tone Frequency	C2 128	C3 256	C4 512	C5 1024	C6 2048	C7 4096
Masonite on 2x4-in. studs.....	.18	.245	.31	.34	.30	.24
Masonite on 2x1-in. furring....	.17	.24	.28	.295	.30	.28

Continued on next page

HEAT LOSSES THROUGH VARIOUS ROOF CONSTRUCTIONS—INSULATED AND UNINSULATED

TYPE OF ROOF INSULATION

Reference to this heat loss chart will show at a glance that a five-ply pitch and gravel roof with a ⅞-in. wood deck will lose a coal value of 6.79 tons per thousand feet of area in one heating season, when exposed to an average difference in temperature of 40° and uninsulated. The same roof, insulated with one layer of Masonite, loses only 3.92 tons during one heating season.

		Conductivity -K-	Percent Saving Due To Insulation	Sq. Ft. of Radiation Required Per 1000 Sq. Ft. Roof Area For 10° Difference In Temperature Multiply Amount Shown By Diff. in Temp / 10		Heat Losses In Tons Of Coal Per 1000 Sq. Ft. Of Roof Area, Per 210 Days At Differences Of Temperature Shown. Calculations Are Based On Average Heating Value Of Coal 12000 B.T.U. And Furnace Efficiency Of 60%. Temperature Difference — F									
				Steam	H. Water	10°	20°	30°	40°	50	60°	70°	80°	90°	100°
 5 Ply Pitch & Gravel Roof ⅞" Wood Deck (Soft Wood)	None	.485		20.02	30.32	1.70	3.39	5.10	6.79	8.50	10.19	11.89	13.58	15.27	17.00
	One Layer MASONITE	.280	42%	11.67	17.50	.98	1.96	2.94	3.92	4.90	5.87	6.84	7.83	8.82	9.80
	Two Layers MASONITE	.196	60%	8.16	12.50	.68	1.37	2.06	2.74	3.43	4.12	4.79	5.48	6.15	6.85
 5 Ply Pitch & Gravel Roof 1¾" Wood Deck (Soft Wood)	None	.345		14.37	21.57	1.20	2.40	3.62	4.83	6.04	7.24	8.45	9.65	10.85	12.05
	One Layer MASONITE	.226	35%	9.42	14.22	.79	1.58	2.37	3.16	3.96	4.75	5.54	6.33	7.12	7.92
	Two Layers MASONITE	.168	51%	7.00	10.50	.59	1.17	1.76	2.35	2.94	3.52	4.12	4.70	5.29	5.88
5 Ply Pitch & Gravel Roof 2" Concrete Deck	None	.658		27.40	41.13	2.31	4.61	6.90	9.22	11.50	13.81	16.11	18.41	20.72	23.06
	One Layer MASONITE	.330	50%	13.75	20.61	1.15	2.30	3.45	4.61	5.75	6.90	8.05	9.20	10.36	11.53
	Two Layers MASONITE	220	67%	9.16	13.75	.77	1.54	2.30	3.08	3.84	4.61	5.37	6.14	6.92	7.70
5 Ply Pitch & Gravel Roof 3" Concrete Deck	None	.610		25.40	38.17	2.13	4.27	6.40	8.54	10.68	12.81	14.95	17.10	19.20	21.35
	One Layer MASONITE	.317	48%	13.21	19.80	1.11	2.22	3.32	4.43	5.54	6.65	7.75	8.86	9.97	11.08
	Two Layers MASONITE	.214	65%	8.92	13.38	.75	1.50	2.24	2.99	3.74	4.50	5.24	5.99	6.74	7.49
 5 Ply Pitch & Gravel Roof 4" Concrete Deck	None	.568		23.65	35.75	1.99	3.98	5.96	7.95	9.94	11.92	13.90	15.89	17.88	19.86
	One Layer MASONITE	.306	46%	12.75	19.13	1.07	2.14	3.21	4.28	5.35	6.42	7.49	8.56	9.63	10.72
	Two Layers MASONITE	.209	63%	8.71	13.08	.73	1.46	2.19	2.92	3.65	4.38	5.11	5.84	6.57	7.32
 5 Ply Pitch & Gravel Roof 6" Concrete Deck	None	.500		20.81	31.25	1.75	3.50	5.25	7.00	8.75	10.50	12.25	14.00	15.75	17.50
	One Layer MASONITE	.285	43%	11.88	17.82	.99	1.98	2.97	3.96	4.95	5.94	6.93	7.92	8.91	9.90
	Two Layers MASONITE	.199	60%	8.29	12.45	.70	1.40	2.10	2.80	3.50	4.20	4.90	5.60	6.30	7.00
5 Ply Pitch & Gravel Roof 2"Concrete 6"Hollow Tile	None	.495		20.62	30.95	1.73	3.46	5.19	6.92	8.65	10.38	12.11	13.84	15.57	17.30
	One Layer MASONITE	.292	41%	12.15	18.25	1.02	2.04	3.06	4.08	5.10	6.12	7.14	8.16	9.18	10.20
	Two Layers MASONITE	.207	58%	8.62	12.93	.72	1.44	2.16	2.88	3.60	4.32	5.04	5.76	6.48	7.20

Continued on next page

CONDENSATION CHART

The following example will explain the condensation chart. On a roof of five-ply pitch and gravel type, condensation starts at a relative humidity of 50% when the difference in temperature is 70° and the roof is uninsulated. Insulated with one layer of Masonite, the same roof under the same conditions would show no condensation up to a humidity of 70%, while two layers of Masonite would resist humidity up to 80%.

CHART SHOWING WHETHER OR NOT CONDENSATION WILL FORM ON BOTTOM OF DECK

Black Indicates Danger Of Condensation
White Indicates No Condensation

TYPE OF ROOF	Uninsulated	With One Layer Of MASONITE	With Two Layers Of MASONITE
	Percent Relative Humidity 10 20 30 40 50 60 70 80 90	Percent Relative Humidity 10 20 30 40 50 60 70 80 90	Percent Relative Humidity 10 20 30 40 50 60 70 80 90
5 Ply Pitch & Gravel Roof $\frac{7}{8}$" Wood Deck (Soft Wood)			
5 Ply Pitch & Gravel Roof $1\frac{3}{4}$" Wood Deck (Soft Wood)			
5 Ply Pitch & Gravel Roof 2" Concrete Deck			
5 Ply Pitch & Gravel Roof 3" Concrete Deck			
5 Ply Pitch & Gravel Roof 4" Concrete Deck			
5 Ply Pitch & Gravel Roof 6" Concrete Deck			
5 Ply Pitch & Gravel Roof 2" Concrete 6" Hollow Tile			

Temperature Difference 10 20 30 40 50 60 70 80 90

Continued on next page

GENERAL SPECIFICATION NO. 1

Masonite as Sheathing in Frame Construction—See Fig. 1, Page 9

(1A) Material

(1Aa) Sheathing and insulation of all exterior walls shall be Masonite Structural Insulation 7/16" thick, as manufactured by MASONITE CORPORATION, Chicago, Ill.

(1B) Framing

(1Ba) Studs, joists, sills and plates shall be framed as in ordinary frame construction. All studs shall be placed accurately on 16" centers. Where horizontal joints in the Masonite are necessary, use 2"x4" headers cut in between the studs. Any odd spaces required to make over-all lengths shall be located in or near the middle.

Note: *No extra cross bracing other than commonly used is required. Fire stops and wind bracing are recommended. If required, so specify.*

(1C) Application

(1Ca) The Masonite boards shall be applied with the long dimension parallel with and directly to the studding, allowing ample bearing surface for nailing on all edges. Horizontal joints shall only be made over framed headers. Boards shall be placed 3/16" apart at sides, top and bottom. Do not force boards into place.

(1Cb) Around window and door frames, and where tight joints are required, bring Masonite to moderate contact.

(1Cc) Where standard frames are used, nail in a 3" wide strip of Masonite to build up back of outside window and door casings.

(1Cd) Cut Masonite to fit snugly around rafters that project beyond face of studs.

(1D) Nailing

(1Da) Beginning in center, nail Masonite first to intermediate studs, and then entirely around all edges of board to studs, sills, plates and headers. Use galvanized 1½" roofing nails, with 3/8" head, all nails shall be 4" apart on centers and 3/8" from all edges. Drive nails flush with surface of Masonite.

(1E) Siding Walls

(1Ea) Wood siding shall be applied directly over Masonite without the use of building paper, nailing through into studs. Joints in siding shall butt on center of studs.

(1F) Shingle Walls

(1Fa) Furring strips, spaced to the proper shingle weathering, 1"x2" shall be applied horizontally over Masonite and nailed through into studs.

(1Fb) Shingles shall be secured to furring strips in accordance with the manufacturer's specifications.

GENERAL SPECIFICATION NO. 2

Masonite as Sheathing Under Stucco, Brick or Stone Veneer—See Figs. 2 and 3, Page 9

(2A) Material

(2Aa) Sheathing and insulation of all exterior walls shall be Masonite Structural Insulation 7/16" thick, as manufactured by MASONITE CORPORATION, Chicago, Ill.

(2B) Framing

(2Ba) Studs, joists, sills and plates shall be framed as in ordinary frame construction. All studs shall be placed accurately on 16" centers. Where horizontal joints in the Masonite are necessary, use 2"x4" headers cut in between the studs. Any odd spaces required to make over-all lengths shall be located in or near the middle.

Note: *No extra cross bracing other than commonly used is required. Fire stops and wind bracing are recommended. If required, so specify.*

(2C) Application

(2Ca) The Masonite boards shall be applied with the long dimension parallel with and directly to the frame work members, allowing ample bearing surface for nailing on all edges. Horizontal joints shall only be made over framed headers. Boards shall be placed 3/16" apart at sides, top and bottom. Do not force boards into place.

(2Cb) Around window and door frames, and where tight joints are required, bring Masonite to moderate contact.

(2Cc) Where standard frames are used, nail in a 3" wide strip of Masonite to build up back of outside window and door casings.

(2Cd) Cut Masonite to fit snugly around rafters that project beyond face of studs.

(2D) Nailing

(2Da) Beginning in center, nail Masonite first to intermediate studs, and then entirely around all edges of board to studs, sills, plates and headers. Use galvanized 1½" roofing nails, with 3/8" head, all nails shall be 4" apart on centers and 3/8" from all edges. Drive nails flush with surface of Masonite.

(2E) Stucco Finish

(2Ea) 1"x2" wood furring strips for *(metal) (wood)* lath shall be applied vertically, nailed through Masonite into each stud.

(2Eb) Apply all metal lath in accordance with the standard specifications of the Associated Metal Lath Manufacturers.

(2Ec) Wood lath to be applied in the customary manner.

(2Ed) Stucco shall be applied in accordance with the stucco manufacturer's specifications.

Note: *No stucco shall be applied direct to Masonite on exterior walls.*

(2F) Brick or Stone Veneer

(2Fa) Shelf angles for the support of lintels, etc. and metal ties shall be nailed through Masonite into studs only. Do not nail into Masonite between studs.

(2Fb) Brick or stone shall be set out at least ½" from the face of Masonite.

GENERAL SPECIFICATION NO. 3

Masonite Insulating Lath as Plaster Base and Insulation for Outside and Partition Walls and Ceilings—See Figs. 4 and 5, Page 9

(3A) Material

(3Aa) Plaster base shall be Masonite Insulating Lath as manufactured by MASONITE CORPORATION, Chicago, Ill. Lath shall be 7/16" thick, 48" wide, 12", 18", or 24" high, with the 48" edges shiplapped.

(3B) Framing

(3Ba) Studs, joists, sills and plates shall be framed as in ordinary frame construction. All studs shall be spaced accurately on 12" or 16" centers.

(3C) Application for Frame Construction

(3Ca) The Masonite Insulating Lath shall be applied at right angles to the studding, joists or rafters. Apply boards to break joints, space 1/8" apart at all ends. Bring shiplapped edges to moderate contact. Do not force into place.

(3Cb) Around window or door frames, or where tight joints are required, bring Masonite to moderate contact.

(3Cc) All re-entrant angles shall be protected with galvanized *(metal lath Cornerite) (strips of wire screen cloth)* from floor to ceilings and where side walls meet ceiling.

Continued on next page

The *(Cornerite) (wire screen cloth)* shall be nailed through Masonite to studs.

(3Cd) The center joint of all room ceilings shall be covered with a piece of rib lath cut so the rib covers center of joint. Allow portion of expanded lath to extend on each side. Rooms over 16 ft. wide shall have two additional strips spaced midway between the center strip and the wall. All strips shall run the long way of the room.

(3D) Nailing

(3Da) Nail Masonite Insulating Lath with 5d box nails every 4″ on centers. Nail intermediate studs first and then the ends.

(3E) Application for Masonry Construction

(3Ea) Wood furring strips 1″ x 2″ shall be applied vertically, secured in the usual manner to the masonry walls, set 12″ or 16″ on centers.

Note: *Application of Masonite Insulating Lath to the furring strips shall be as specified in (3C), page 5.*

(3F) Plaster

(3Fa) Quick setting gypsum plaster containing not more than 2% lime shall be used. Plaster should set in about one and one-half hours and not to exceed two hours. Apply plaster directly to the surface of the Masonite. The first coat (scratch coat and brown coat together) shall be brought out flush to ½″ grounds and must be thoroughly dry before applying finish coat. Total thickness shall be not less than ½″.

(3Fb) The plasterer shall use the darby in the direction of the studding or joist, and it shall be of sufficient length to span two or more studs or joists.

Note: *Do not wet Masonite before applying plaster. Keep room being plastered well ventilated in both winter and summer. Lime plaster is not recommended over Masonite.*

GENERAL SPECIFICATION NO. 4

Masonite Structural Insulation as an Interior Finish

See Fig. 6, Page 9

(4A) Material

(4Aa) All interior walls and ceilings shall be covered with Masonite Structural Insulation 7/16″ thick, as manufactured by MASONITE CORPORATION, Chicago, Ill.

(4B) Framing

(4Ba) Studs, joists, sills and plates shall be framed as in ordinary frame construction. All studs shall be placed accurately on 16″ centers. Where horizontal joints in the Masonite are necessary, use 2″x4″ headers cut in between the studs.

(4Bb) Consideration shall be given for the design of the paneling desired, using extra studs if necessary.

(4Bc) Headers shall be installed back of chair rails and all similar moulded trim.

(4C) Application

(4Ca) The Masonite boards shall be applied directly to the frame work members, allowing ample bearing surface for nailing on all edges. Horizontal joints shall only be made over framed headers. Boards shall be placed 3/16″ apart at sides, top and bottom. Do not force boards into place.

(4Cb) Around window and door frames, and where tight joints are required, bring Masonite to moderate contact.

(4D) Nailing

(4Da) Beginning in the center, nail Masonite to intermediate studs with 1¾″ finishing nails, driven at a 30 degree angle every 6″. Heads shall be countersunk with nail set. Nail edges with standard galvanized 1½″ roofing nails with ⅜″ heads, spacing them 4″ apart on centers and ⅜″ from edge of board.

(4E) Trim

(4Ea) Joints shall be covered with Masonite battens 7/16″ x 4″ beveled at a 45 degree angle on each edge. For corners or angles, bevel one edge only. Do not bevel the ends.

(4Eb) Baseboard and other trim shall be as commonly used.

(4Ec) Nail battens secured to framing, headers, etc., with 6d finish nails set at a 30 degree angle.

(4F) Painting and Decorating

Note: *Masonite may be left in its pleasing natural color and finish, or it may be painted or enameled. Before painting, size with a glue, casein or prepared sizing. Painting without size will use more paint than necessary. See paint specifications.*

GENERAL SPECIFICATION NO. 5

Masonite Structural Insulation for Ceiling and Floor Insulation

See Figs. 7 and 8, Page 10

(5A) Material

(5Aa) Ceilings—For ceilings, use Masonite Insulating Lath, as manufactured by MASONITE CORPORATION, Chicago, Ill.

(5Ab) Floors—For floor insulation, use Masonite Structural Insulation (full size boards).

(5B) Application

(5Ba) Ceilings—For ceilings, nail Masonite Insulating Lath directly to ceiling joists, using standard 5d box nails, when plaster is to be applied. Framing shall follow usual framing specifications, as given in plastering specifications No. 4.

(5Bb) Floors—For floor insulation, apply on usual framing specifications, nailing Masonite Structural Insulation directly to the joists, using standard 5d box nails. Nail rough floor through Masonite to the joists.

GENERAL SPECIFICATION NO. 6

Sizing, Painting, Staining, Tinting, Plastic Paints or Wall Paper on Masonite Structural Insulation

(6A) Staining

Note: *Any stain, whether oil, benzol, alcohol or acid may be applied over Masonite in the usual manner. Water stain and oil commercial stains used for dyeing wood can be used over Masonite. Apply according to the manufacturer's specifications. Masonite will take paste-water stain without first sizing.*

(6B) Sizing

Note: *In order to get maximum covering capacity for oil paints, the surface of the Masonite boards shall be sized. Various standard sizes offered on the market may be used, or a size may be made by dissolving two pounds of shell or chip glue in three gallons of boiling water. A second coat may be applied four or six hours later, if required. Second coat should be diluted with ¼ volume water, all size shall be applied warm.*

(6C) Painting

Note: *Allow size coat to become thoroughly dry, then apply one or two coats of paint, or enamel.*

Continued on next page

GENERAL SPECIFICATION NO. 7

Masonite as Insulation and Base for Plastic Paints

(7A) Material

(7Aa) All interior walls and ceilings shall be covered with Masonite Structural Insulation 7/16" thick, as manufactured by MASONITE CORPORATION, Chicago, Ill.

(7B) Framing

(7Ba) Follow usual framing specifications. Headers are particularly recommended behind chair rails and all other moldings.

(7C) Nailing

(7Ca) A 5d box nail placed 6" apart on centers through center of board and 4" apart around all edges shall be used. Set all nail heads with a ball head hammer. Apply small amount of plastic paint over the heads of the nails and smooth down to an even finish.

(7D) Joint Construction

(7Da) Sand the Masonite for a width of about 3" each way from the joints, using a block of wood and No. 1 sand paper. Over each joint apply a strip of muslin 2" or 3" wide, or buckram tape, embedding it in the plastic paint that has been applied to the joint to receive it. The plastic paint must be spread along each side of the tape for an inch or more to prevent the edges of the tape from showing through the finished wall. The cloth tape must be pressed firmly into the plastic paint by the use of a painter's scraping knife, or pointing trowel and with sufficient force to bring the tape into intimate contact with the Masonite.

(7E) Corner Construction

(7Ea) A strip of wire screen cloth or metal cloth bent to a right angle, shall be inserted in all re-entrant angles and bonded in place with the plastic paint as specified in paragraph (7Da).

(7F) Application

(7Fa) After the plastic paint in the joints and angles has become thoroughly dry, sand to a smooth even surface, using No. ½ sand paper to prepare the surface ready for the application of the plastic paint. The plastic paint shall be applied in accordance with the manufacturer's specifications.

GENERAL SPECIFICATION NO. 8

Wall Paper Applied to Masonite Structural Insulation

(8A) Framing

Note: *Follow usual framing specification. Headers behind chair rails and all other mouldings are particularly recommended.*

(8B) Nailing

Note: *Follow plastic paint nailing specifications, then set all nail heads with a ball head hammer and apply a small amount of Swedish putty over the heads of the nails and smooth down to an even finish.*

(8C) Joint Construction

Note: *Follow method as specified in Specification No. 7 for plastic paint, except instead of treating the joints with plastic paint and muslin strip or buckram, they should be treated with Swedish Putty and muslin strip or buckram. After the Swedish Putty has become thoroughly dry, sand to a smooth and even finish. Use No. ½ sandpaper.*

(8D) Application

(8Da) After the joints have been properly treated, the entire wall surface shall be given a coat of paperhanger's size, or casein size. Size coat shall be thoroughly dry before applying paper.

(8Db) The paper shall be hung in the usual manner.

GENERAL SPECIFICATION NO. 9

Masonite as Roof Insulation Under Wood Rafters

See Fig. 9, Page 10

Note: *Application of Masonite under wood rafters should be specified for the insulation of all existing roofs and also for new roofs covered with wood shingles, slate, zinc, copper and all other types of roof covering materials requiring a solid wood deck for nailing.*

(9A) Material

(9Aa) Insulation shall be Masonite Structural Insulation 7/16" thick, manufactured by MASONITE CORPORATION, Chicago, Ill., in sizes 4'x8', 9', 10', or 12'.

(9Ab) Use Masonite Insulating Lath for attics where scuttle holes will not permit the use of the larger size boards.

(9B) Framing

(9Ba) The rafters shall be spaced 16" on centers.

(9Bb) Whenever it is necessary to have a horizontal joint in Masonite, a 2"x4" header shall be cut in between the rafters.

(9C) Application

(9Ca) The Masonite boards shall be applied parallel with and directly to the rafters, with a bearing for nailing on all edges.

(9D) Nailing

(9Da) Nail with either 5d box or 1½" roofing nails, spaced 6" apart in body of board and 4" apart around all edges.

(9Db) Wherever a tight joint is desired around openings, at corners, etc., fit Masonite carefully and bring to moderate contact. Do not force boards into place.

(9E) Interior Finish

(9Ea) If interior finish is desired, care shall be exercised in laying out rafters, studs and headers for the paneling design required. Intermediate rafters, studs and headers shall be nailed with 1¾" finishing nails every 6", nails to be driven at a 30 degree angle.

Note: *For nailing sides and ends, see specification No. 4.*

(9Eb) Panel strips shall be of Masonite 7/16"x4", with edges beveled at a 45 degree angle.

(9F) Plaster Base

(9Fa) When plaster is to be applied, Masonite Insulating Lath shall be used, applied in accordance with standard specification No. 3 for the application of plaster to Masonite Insulating Lath.

(9G) Special Treatment

Note: *Many unusually artistic battens and all-over decorative effects may be secured with Masonite. By using special cutting tools, or by sanding strips of Masonite, many different designs may be made quickly and easily.*

Continued on next page

GENERAL SPECIFICATION NO. 10

Masonite as Roof Insulation on Top of Wood Rafters—See Fig. 10, Page 10

Note: The use of Masonite on top of wood rafters is applicable for roofs of wood shingle, asbestos shingle, etc.

(10A) Material

(10Aa) Roof insulation shall be Masonite Roof Insulation 7/16" thick, manufactured by MASONITE CORPORATION, Chicago, Ill.

(10B) Framing

(10Ba) Space rafters 16" on centers. Cut in a 2" x 4" header wherever there is a horizontal joint in the Masonite. Provide suitable pieces for a nailing base at the ends of all rafters, ridges, hips, valleys, etc.

(10C) Application

(10Ca) Apply Masonite parallel with and directly to the rafters with a bearing for nailing along all edges.

(10Cb) Leave 3/16" space between all boards at top, bottom and sides. Around corners, gables, openings, chimneys, and at all points where a tight joint is required, the Masonite shall be finished carefully and brought to moderate contact. Boards should not be forced into place.

(10D) Nailing

(10Da) Masonite shall be nailed first to intermediate rafters and headers, then nailed around all edges of each board. Nails shall be standard 1½" roofing nails with 3/8" heads, spaced 4" apart. Drive heads flush with the surface of the Masonite. Place nail not less than 3/8" from the edges of the board.

(10E) Roof Sheathing

(10Ea) For *(wood shingles) (asbestos shingles) (tile) (specify)* roofs, apply wood sheathing over Masonite in the usual manner, nailed through the Masonite into the rafters.

GENERAL SPECIFICATION NO. 11

Masonite Roof Insulation Over Concrete, Gypsum, Wood and Steel Decks See Figs. 11 and 12, Page 10

(11A) Material

(11Aa) Roof insulation shall be Masonite Roof Insulation, size 3'x4' or 4'x4', as manufactured by MASONITE CORPORATION, Chicago, Ill.

(11B) Preparation of Concrete and Gypsum Decks

(11Ba) The roof deck shall be reasonably smooth, dry, well cured and free from all rubbish.

(11Bb) If not well cured, the deck shall be primed, using not less than one gallon of standard concrete primer per 100 square feet of roof.

(11C) Application over Concrete and Gypsum Decks

(11Ca) Mop deck solid with a heavy, uniform coat of hot roofing pitch, or asphalt, using not less than 30 pounds per 100 square feet. Masonite shall be laid in pitch or asphalt having a melting point of approximately 200° F. and pressed firmly into place while the asphalt or pitch is hot. All edges of Masonite shall be brought to moderate contact. Do not force boards into place. Transverse joints and joints of successive layers shall be broken.

(11Cb) If more than one layer of Masonite is applied, mop the top surface of the previous layer in the same manner as stated above, using 30 pounds of pitch or asphalt to each 100 square feet of surface, but without primer.

(11Cc) Apply roofing in the usual manner, over Masonite, according to the roofing manufacturer's specifications.

(11D) Preparation of Wood Decks

(11Da) The roof deck shall be made of seasoned, dressed and matched lumber, properly nailed, all nails driven flush with boards. The deck shall be laid to slope and pitched to drain as shown on plans. The deck shall be swept clean before laying Masonite.

(11Db) Nail cant strips around walls and elsewhere where required.

(11E) Application over Wood Decks

(11Ea) The first layer of Masonite shall be nailed to wood deck, using 1½" standard roofing nails with 3/8" heads and spaced 12" on centers, nails to be driven flush with surface. Nails in body of board to be staggered.

(11Eb) If more than one layer of Masonite is to be used, mop the surface of the first layer with not less than 30 pounds of pitch or asphalt, per 100 square feet of surface.

(11Ec) Press Masonite firmly into the hot pitch or asphalt, breaking all joints.

(11Ed) Apply roofing in usual manner over the Masonite, according to the roofing manufacturer's specifications.

(11F) Preparation of Steel Decks

Decks shall be free from grease, oil, dirt, etc., and the weather surface properly coated with suitable asphalt primer. All rubbish shall be removed and the deck swept clean. All sharp angles shall be rounded out so as to avoid rough sharp edges. Lay a strip of roofing felt 6" wide, uncemented, over expansion joints at ridge, cementing the Masonite over it.

(11G) Application Over Steel Decks

Note: *Follow the method of application as given in (11C).*

GENERAL SPECIFICATION NO. 12

Masonite Insulation Applied to Lime or Gypsum Plastered Walls and Ceilings for Acoustical Correction

(12A) Material

(12Aa) The plastered walls or ceilings or both, shall be covered with Masonite Structural Insulation 7/16" thick, as manufactured by MASONITE CORPORATION, Chicago, Ill.

(12B) Application

(12Ba) The Masonite Structural Insulation boards shall be fastened to the plastered walls and ceilings by means of one of the commercial adhesives, applied according to the manufacturer's specifications.

Note: *The adhesive should be a waterproof glue or cement and of such a character that it would be easily worked and applied. It must be quick setting, have a certain degree of elasticity when set, be inedible and unattractive to insects and rodents and should be comparatively inexpensive.*

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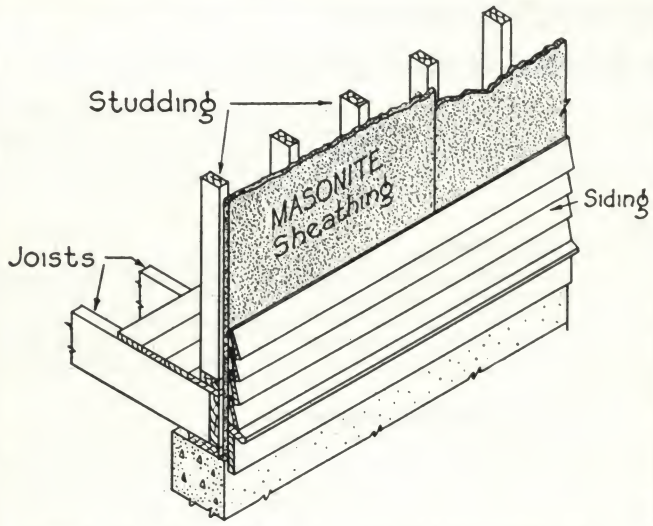

FIG. 1 FRAME CONSTRUCTION

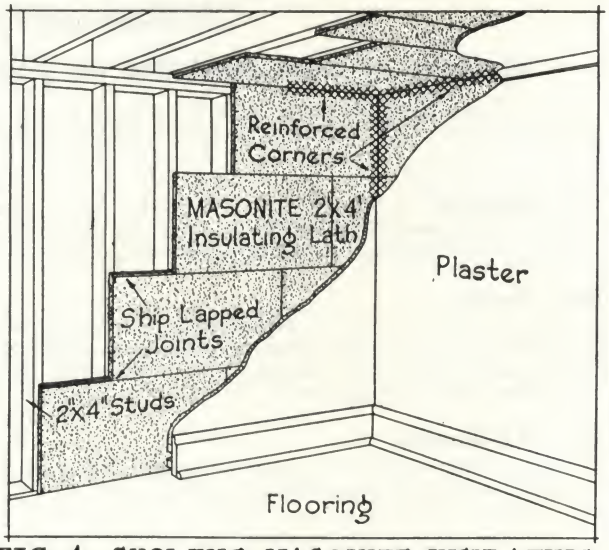

FIG. 4 SHOWING MASONITE INSULATING LATH USED AS PLASTER BASE

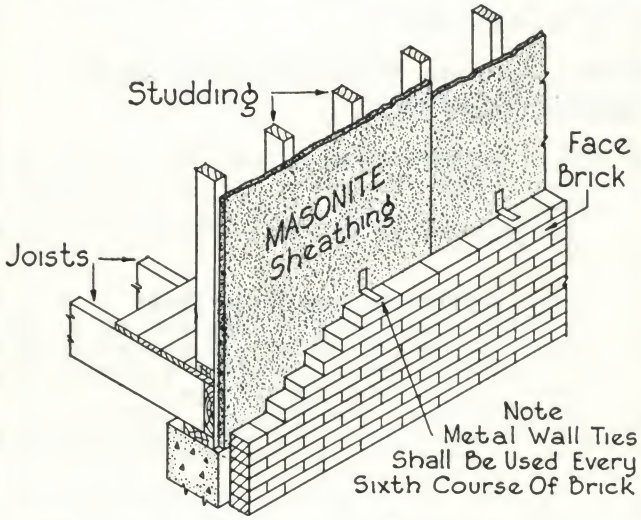

FIG. 2 BRICK VENEER

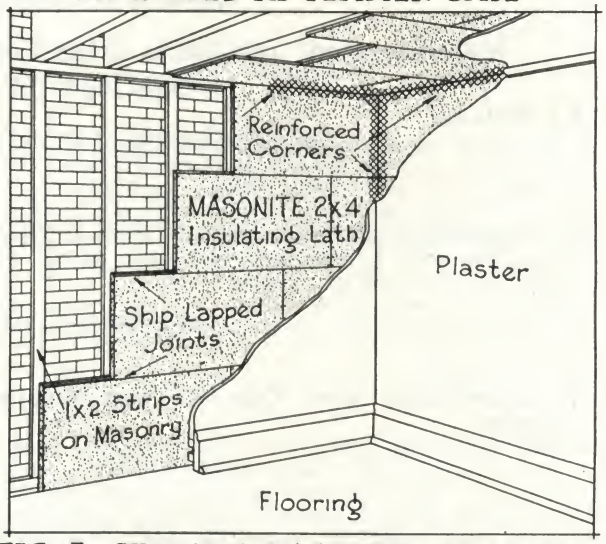

FIG. 5 SHOWING MASONITE INSULATING LATH USED AS PLASTER BASE ON MASONRY

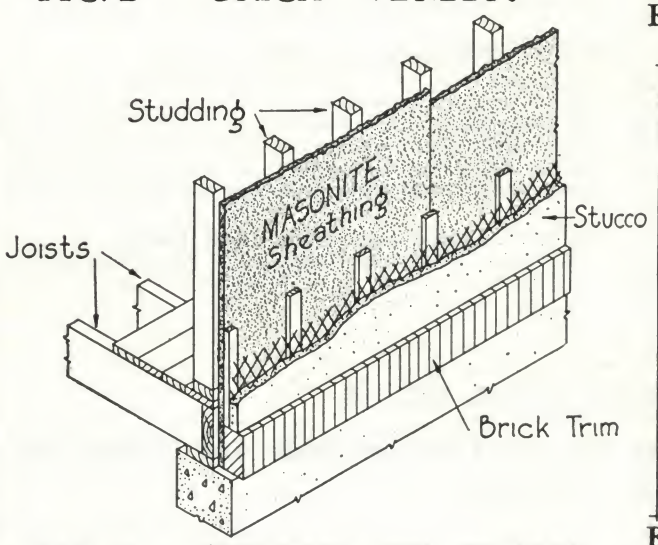

FIG. 3 STUCCO ON FRAME

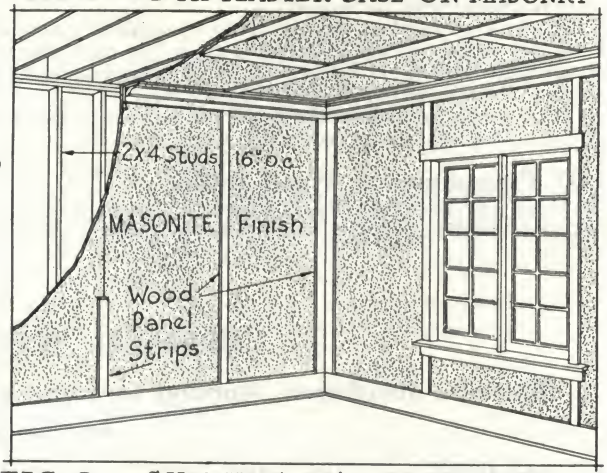

FIG. 6 SHOWING MASONITE USED AS AN INTERIOR TRIM

MASONITE CONSTRUCTION DETAILS

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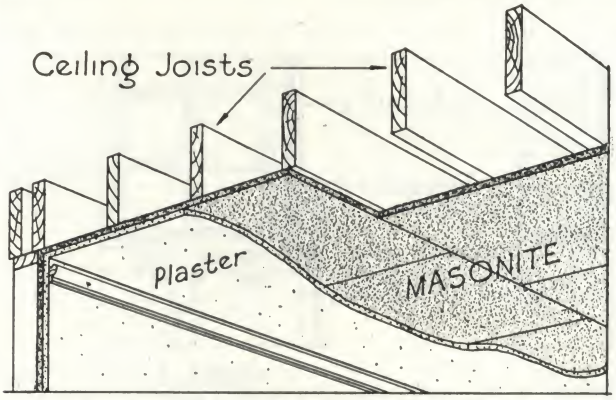

FIG. 7 CEILING INSULATION

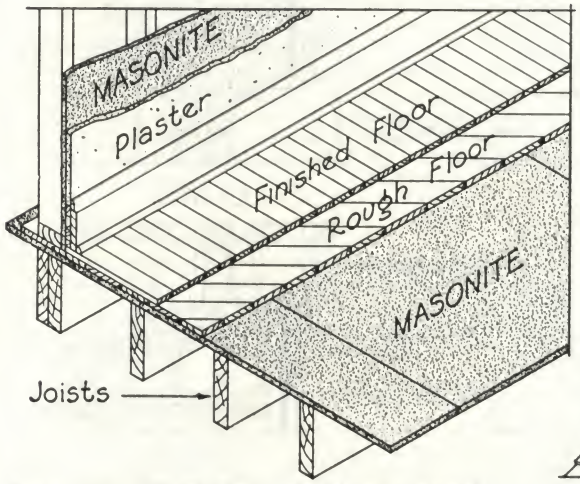

FIG. 8 FLOOR INSULATION

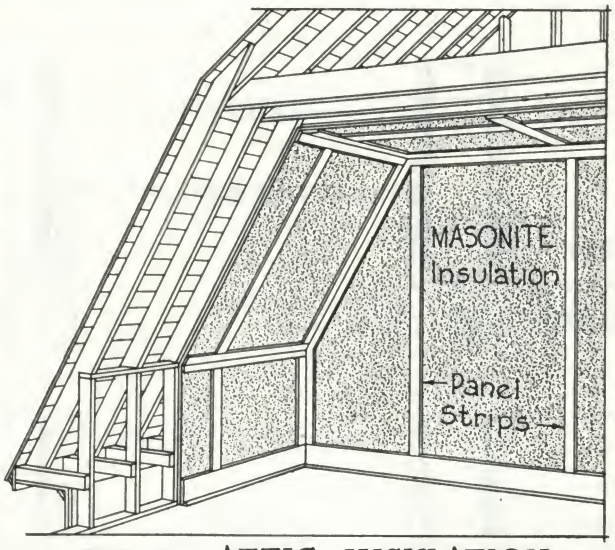

FIG. 9 ATTIC INSULATION

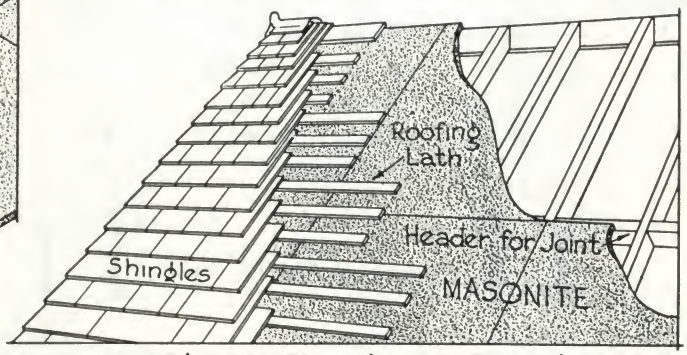

FIG. 10 MASONITE NAILED TO RAFTERS

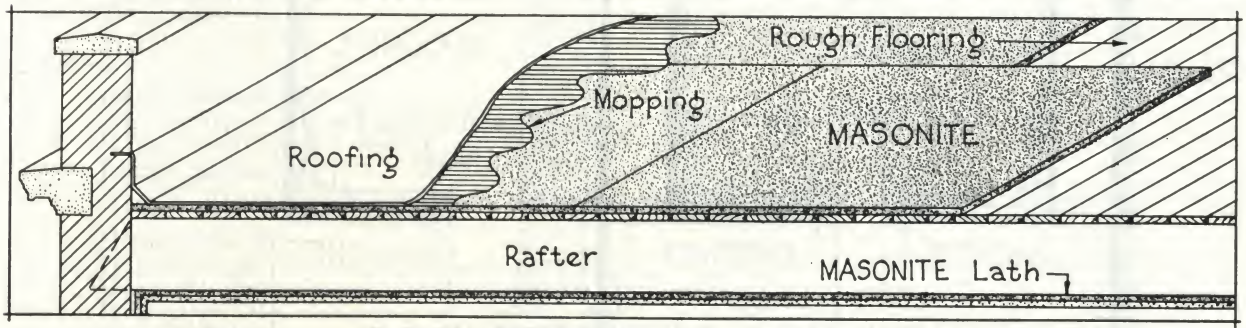

FIG. 11 ROOF INSULATION OVER WOOD DECK

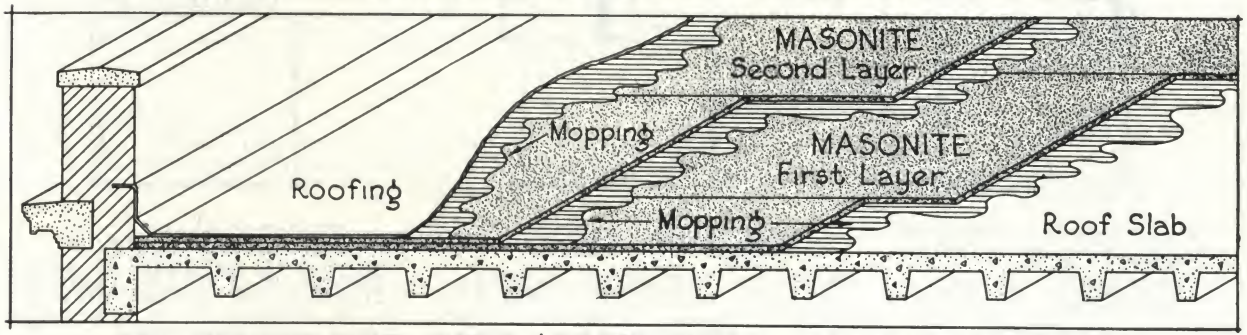

FIG. 12 ROOF INSULATION OVER CONCRETE DECK

MASONITE CONSTRUCTION DETAILS

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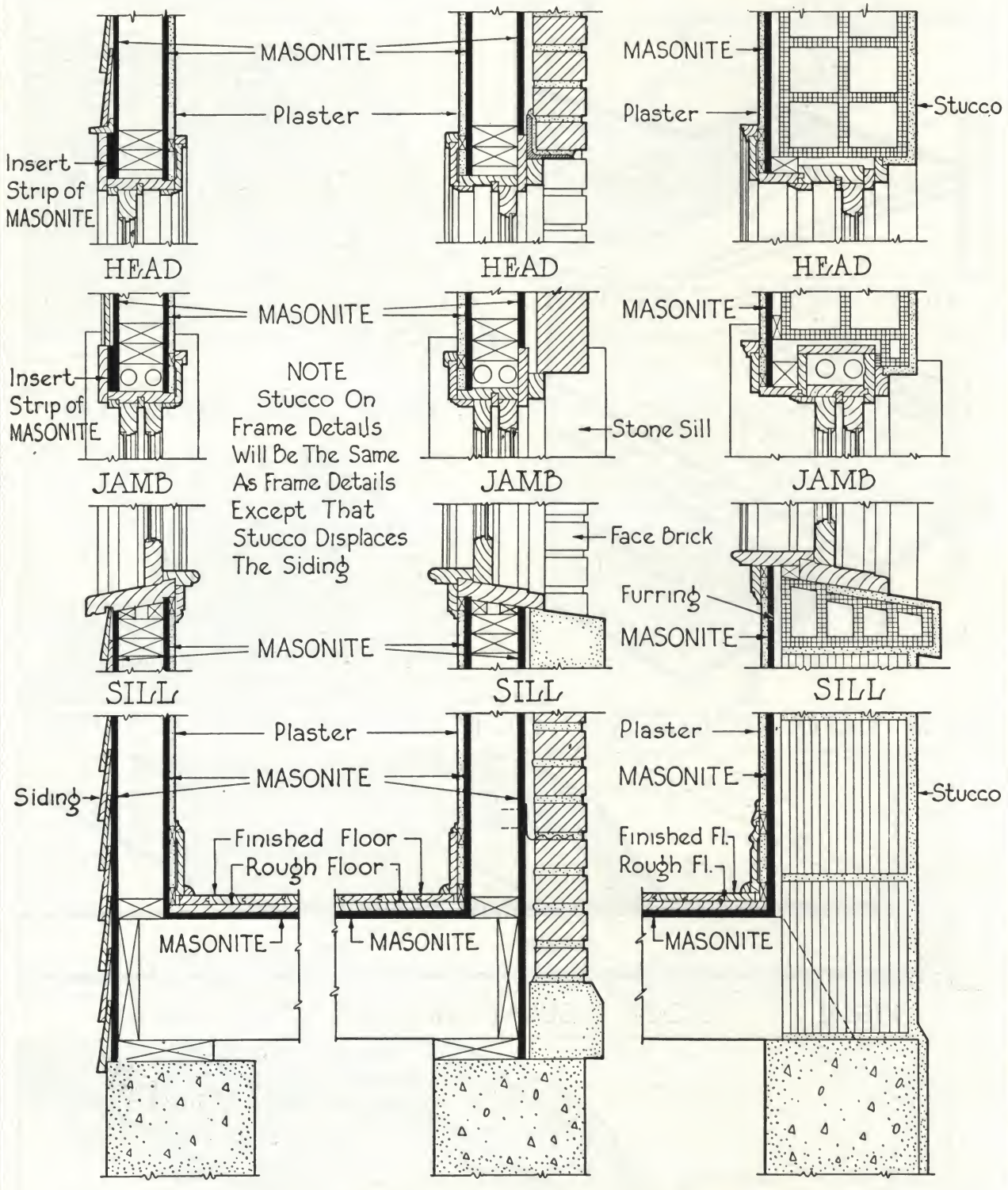


SECTION THRU FRAME WALL

FIGURE 13

SECTION THRU BRICK VENEER WALL

FIGURE 14

SECTION THRU HOLLOW TILE WALL

FIGURE 15

MASONITE CONSTRUCTION DETAILS

Continued on next page

MASONITE PRESDWOOD

What Masonite Presdwood Is

It is an all-wood fibre board, made from fibre obtained by exploding fresh, clean chips by high pressure steam. These fibres are then thoroughly felted together and are finished into boards in steam heated, flat-bed hydraulic presses where they are subjected to hundreds of tons of pressure and at the same time to a temperature of nearly 500° F.

In four ways, Masonite Presdwood is a better product than nature's own original material. It is both grainless and knotless, has greater resistance to moisture, is much denser and far tougher. Yet it contains no foreign substance, not even a chemical binder. It is genuine wood—and nothing else—torn apart by steam and put together again by heat and pressure.

Shape, Size and Thickness

Presdwood is made only in board form to a standard width of 4 feet and to a maximum length of 12 feet. These boards are available in two thicknesses only, ⅛ and $\frac{3}{16}$ inch.

Advantages Presdwood Offers

It will not crack, split or splinter. It is highly resistive to wear and to moisture and shows little contraction or expansion. It contains no grit or foreign substance of any kind and does not, in any way, damage tools. It is easily worked on planers, sanders and shapers, as well as with hand tools.

Uses of Masonite Presdwood

To cover this subject would necessitate the use of much space, for Presdwood is being used extensively in many diversified fields. The uses pointed out herewith are therefore those uses which are of particular interest to the architect, builder, contractor, carpenter and home owner.

For Interior Decoration

Presdwood is used for panels on walls and ceilings, either natural, or as a ground for any desired decorative treatment in private homes, business offices, stores or public buildings. Properly installed, there is no danger of the broad, smooth, handsome boards curling, warping or buckling. It is also used extensively in built-in cabinets and for closet lining.

For Stores and Business Houses

It is used for paneling sidewalls and ceilings, for partitions, for the front and tops of counters, as tops for desks and tables and as drawer bottoms. In some instances it is being used for flooring.

For Lining Concrete Forms

In this field, the use of Presdwood is attracting much attention. Where concrete surfaces are to be left exposed, the use of Presdwood for form lining results in a fine, smooth surface on the concrete wall or column, so that no special surfacing or grinding work is required. In this work the same piece of Presdwood may be used several times. On one big job it was reported that a part of the Presdwood was used eight times.

For Special Uses

Presdwood is also being used to build radiator cabinets, clothes hampers, fire screens, radio tension boards, radio cabinets, card tables, incubators, brooders, shipping cases and children's playhouses.

Method of Applying Presdwood

Cutting and Fitting—Any woodworking tool may be used. Boards should be cut accurately to size. Under no condition should Presdwood be sprung or forced into place.

Nailing—Both size and type of nails to be used are determined by the particular requirements of the case. Where any nailing is required in the center of the board, it should be done first, after which the nailing at the edges would be done. Never "toe nail" Presdwood.

Gluing—Glue Presdwood just as you would any other wood board, using a good grade of waterproof cement or glue and being careful to secure a solid contact.

Note: *Where Presdwood is to be exposed to high humidity, it should have water sprinkled or brushed on the screen side and allowed to stand 48 hours or longer before being installed. This insures a permanent smooth, flat surface, as the board will absorb the proper amount of moisture, after which it will show no further contraction or expansion.*

Finishes Applied to Presdwood

Among the manufacturers whose products have been applied to Masonite Presdwood with thoroughly satisfactory results are the following:

Adams & Elting, U. S. Gutta Percha Paint Co., Berry Bros., Inc., Cook Paint & Varnish, DeVoe & Raynolds, DuPont, Eagle Picher Lead, Elaterite Paint & Manufacturing, Glidden, Grand Rapids Wood Finishing, Heath & Milligan, Hockaday, Inc., Marietta Paint & Color, Martin-Senour, Benj. Moore & Co., Murphy Varnish, National Lead, Peaslee-Gaulbert, Pittsburgh Plate Glass, Pratt & Lambert, Sherwin-Williams, Truscon Laboratories, and Watson Paint & Varnish.

Note: *While the sealers, lacquers, enamels and varnishes of certain well-known manufacturers are mentioned specifically in these specifications, it will be found that similar products of other reputable manufacturers will serve equally as well. Confer with your paint dealer or manufacturer concerning any special finishes or effects you may desire.*

Brush Applied

Natural—The rare beauty of rich brown burled Presdwood that always arouses admiration may be preserved by applying first a high grade clear sealer, then two or more coats of clear lacquer or varnish. A beautiful natural finish may be attained by:

First—Applying one coat of Pratt & Lambert's Filtex, reduced 50% with turpentine substitute or one coat of Sherwin-Williams Sanding Sealer No. 04598.

Second—Sanding, when dry, with 000 sandpaper or rub lightly with fine steel wool.

Third—Flow on two or more coats of varnish or two coats of Sherwin-Williams Wood Finishing Lacquer No. 04623. Rub lightly with fine steel wool after each coat dries. For the finest varnish finish rub down the last coat with pumicestone and sweet oil. A number of interesting finishes have been developed which retain the natural burl, but change the color.

Gold Bronze—Secured by applying a mixture of Mongolian Gold Powder No. 10, oil and japan with waste and then wiping. After allowing to dry 12 hours, spray with white lacquer.

Beryl Green—Secured by brushing on one coat of Beryl Green wiping oil stain, wiping, allow to dry 12 hours, then spraying one coat of water white lacquer and one coat of clear flat lacquer.

Gray Marble—Secured by brushing on one coat of Gray Wiping Oil Stain, and finishing as in the Beryl Green.

The following finish is particularly good for outside use:

DuPont Duco—Apply one or more coats of lacquer sealer No. 233-1041. Sand with fine sandpaper or steel wool. Then apply two coats of DuPont No. 259 Finishing Lacquer. Many colors are available and the lacquer number 259 should be given in connection with the color number.

Spray Applied

Note: *There are many spraying lacquers suitable for inside use. Among them being:*

DuPont Duco—Use one or more coats of sealer No. 233-1041 rubbed when dry with fine sandpaper or steel wool, then two coats of finish lacquer No. 237.

Mill White Enamel—An inexpensive finish for factories and workrooms is one coat of Filtex reduced by adding one-fourth part turpentine substitute. One coat of Lyt-all flat finish and one coat of Lyt-all Gloss Finish.

Satin Finish Enamel—Apply one coat of Benj. Moore & Co. Filcote. One coat of Moore's Sani-Flat White, reduced with 1 pint of raw linseed oil to 1 gallon of paint. One coat of Moore's Dulamel White. Rub lightly with 000 sandpaper or fine steel wool, after the first two coats, if desired.

Outside Paint

Outdoor Paint Finish—Apply one coat lead and oil, using raw linseed oil in large proportions. Second coat with lead and oil, using less oil than in the first coat. The third or finish coat will contain the usual proportion of lead, oil and zinc.

Masonite

Structural Insulation
Insulating Lath
Quartrboard
Presdwood

THE UPSON COMPANY

Upson Processed Board, Fibre-Tile, Self-clinching Fasteners

10 Upson Point
LOCKPORT, N. Y.

Products

UPSON PROCESSED BOARD, made in thicknesses of $\frac{3}{16}$, ¼ and ⅜ in.

$\frac{3}{16}$-in. Upson Board made in 6, 7, 8, 9, 10, 12, 14 and 16-ft. lengths and in widths of 32, 48 and 64 in.

¼-in. and ⅜-in. Upson Board made in 6, 7, 8, 9, 10, 12, 14 and 16-ft. lengths, and one width only—48 in.

UPSON FIBRE-TILE, Upson Board with a special hard, smooth surface with deep tile indentations—4x4 in.—made in lengths of 6, 7, 8, 9, 10, 12, 14 and 16 ft.—48 in. wide.

UPSON DECORATIVE STRIPS are ¼ in. thick—3, 4, 6, 9 and 12 in. wide—made in lengths of 12, 14 and 16 ft.

UPSON SELF-CLINCHING FASTENERS eliminate unsightly nailholes in the surfaces of panels. The only method of applying wall board without the unsightly nailholes.

For Upson Blue-Stripe Insulation, see Manufacturers' Index.

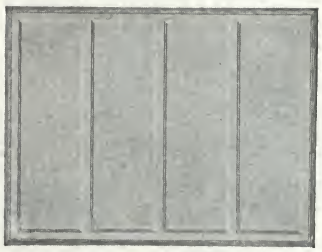
Upson Relief Ceilings

A new type of ceiling—a recent Upson achievement—provides the beauty of hand modeled plaster and eliminates many of the objections to paneling hitherto experienced.

Two or more layers of Upson Decorative Strips are superimposed over the edges of the big Upson Board panels so as to create a design. This raises the design in relief against its background resulting in a pleasing contrast of high-light and shadow.

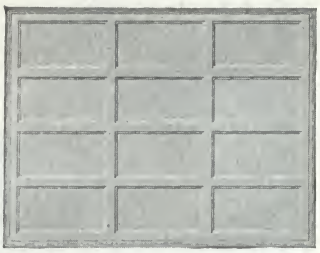
Four popular Upson ceiling designs are shown below. From experience we have found that most people prefer to model their Relief Ceiling after one of these standard designs.

Colonial



Greek

Patrician



Classic

Typical Upson Relief Ceiling Designs Which Will Suggest Many Others to the Thoughtful Architect

While these are adaptable to most types of rooms, every interior of regular or irregular shape can have its own specially and harmoniously designed Upson Relief Ceiling. The Upson Architectural Service Department will be glad to co-operate with architects in planning special designs.

Upson Relief Ceilings add much to the attractiveness of a room, yet are very easily installed. The cost is little more than that of a plain ceiling, but the first cost is also the last as Upson Relief Ceilings give permanent service.

The Upson Studio of Decoration and Color will gladly give suggestions on furnishings and color schemes for any type of room.

Upson Processed Board

Qualities—Made of selected wood fibre. Has the distinctive Upson *super* or "pebbled" surface—the finest painting surface of any wall board.

Looks and handles much like lumber. Has a clean cutting edge. Weighs one-third as much as plaster wall board. One man can easily apply it, even on ceilings.

Saves Paint—Upson Board is *pre*-sized at the factory. One or two coats of paint are sufficient to finish it. This saves from $5 to $25 a room in cost of painting.

Properly Applied, Should Not Warp—Upson Board will not crack, chip or fall. *Properly applied it should not warp or bulge—it should lie flat on the wall. It has a record of less than one complaint to every 8,000,000 ft. sold and used.*

Resists Jars and Blows—Certified tests by impartial laboratories (detailed report of laboratories gladly sent on request) show a panel of Upson Board to withstand from 40% to 150% heavier blows than other fiber and plaster wall boards tested. *Strength,* not thickness, is what counts in a wall and ceiling material.

Waterproofed—Upson Board is adapted for use under practically all climatic conditions. In certified tests, Upson Board, immersed in water for a given length of time, gained only one-half *ounce* to the square foot, whereas samples of plaster wall boards exposed to the same test increased nearly one-half *pound* to the square foot. Other fibre boards tested in the same way were found to absorb nearly twice as much water as Upson Board.

A Good Fire Retardant—Expert building and insurance authorities agree there is no fireproof building material. In justice to contractors and architects, Upson Board, therefore, has never been termed fireproof, although it is a good fire retardant as numerous letters in our files prove—it chars rather than burns. In characterizing this product as a "fire retardant" THE UPSON COMPANY is thus following the recommendation of the National Fire Protection Association.

Uses—Upson Board is used for *walls, ceilings and partitions* in every kind of building; either in new construction (direct to studs) or in repairing or remodeling (over old lath or plaster).

Upson Board is also well suited as an insulator and sound deadener under finished flooring, linoleum or carpets.

Continued on next page

It is used *in homes* for built-in closets and storerooms, cupboards and cabinets. In the cellar—for partitioning off the furnace and sealing up floor joists to prevent dust from seeping through the house. Good for fruit closet, workroom and laundry. Good, too, for partitioning off cellar of two-family apartment.

In the factory for walls and ceilings of administrative offices, built-in plant offices, wall and ceiling insulation in shops, factory partitions, and for miscellaneous uses such as lockers, machine guards, cupboards, cabinets and telephone booths.

On the farm it is used for walls and ceilings of farm and tenant houses, lining outbuildings, milk houses, tool houses, garages, chicken coops, and cow barns.

In department stores for walls, ceilings and partitions, built-in offices, special booths, show window backings, display signs, cutouts, counter backings, and counter tops.

Upson Board is widely specified by architects for commercial and public buildings such as hotels, professional offices, shops, churches, schools, restaurants and lunchrooms, public halls, moving picture theaters, and for many other purposes. Also on construction jobs for temporary workhouses, guards and partitions.

Architects also specify Upson Board for remodeling and repairing, but *particularly for ceilings* in new construction. Nothing better for ceilings.

Identification—Identify *genuine* Upson Board by the famous *blue*-center running through the edge of every panel.

Application of Upson Processed Board

In applying Upson Board, your contractors are dealing with a material that is similar to fine interior trim. The quality of the material, therefore, justifies reasonable care in following out the simple specifications.

(1) Preliminary Steps—When the Upson Board is delivered on the job, open each bundle and expose the panels to the air for a few hours.

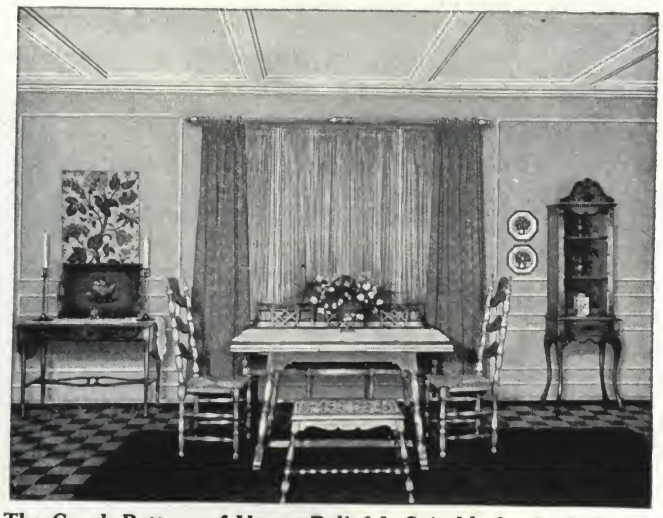
Lay out your panel scheme before you start work. As with trim, the framework and building should be dry before applying wall board.

Studs, joists or furring should not be more than 12 to 16 in. between centers for $\frac{3}{16}$-in. Upson Board. For studs on 18 to 24-in. centers, Extra-Thick, Extra-Strong ($\frac{1}{4}$-in.) Upson Board should be used.

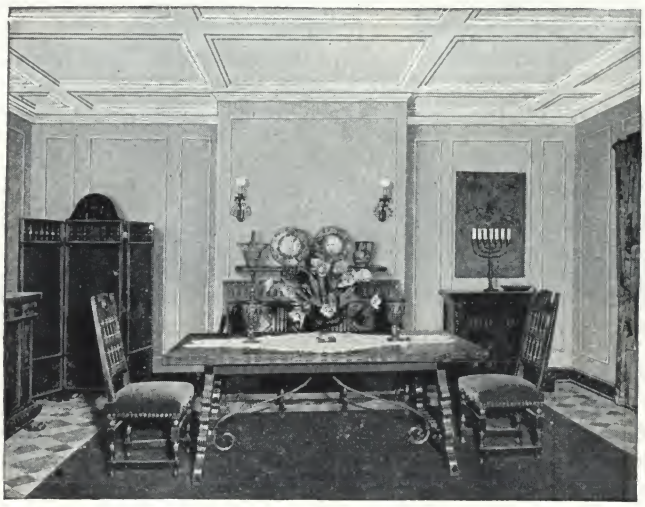
(2) Preparation—Level up all joists or studs to afford a flat, smooth nailing surface. The most satisfactory jobs are obtained by furring in order to obtain a level surface.

Place headers or nailing pieces at top of baseboard, flush with studs; back of plate rail or picture moulding; and at angle of ceiling. Place extra nailing pieces back

This Colonial Upson Relief Ceiling Adds Just Enough Design to Give Character to the Room As a Whole



The Greek Pattern of Upson Relief Is Suitable for Both Simple and Elaborate Rooms of the House



Modern Furnishing Often Requires the Elaborate Type of Ceiling, As the Patrician

The Classic Pattern of Upson Relief Contributes a Large Part to the Beauty of This Room

Continued on next page

of electric fixtures and other objects needing support.

If the house has been built for plaster, the difference between the thickness of plaster—which is ¾ in. thick—and Upson Board, which is $\frac{3}{16}$ in. thick, must be taken care of. This is either done by furring out all studs, or by cutting down the width of window casings and doors, or by inserting strips in space between wall board and trim.

(3) How to Cut Upson Board—Upson Board is best cut with a fine-tooth saw or a sharp jackknife. In sawing, place the side of panel to be painted face up, being careful not to deface it. To cut with a jackknife, simply lay panel on floor or table, cutting half way through. Then snap panel along knife cut.

(4) Application in New Buildings or Unfinished Rooms—It is recommended that Upson Self-clinching Fasteners be used for centers of panels.

To nail edges use 1-in. Upson In-to-Stay Nails or 1-in. No. 16 flat head barbed wire nails placed every 16 in. apart. Be sure to nail at least ½ in. *back from edge.*

Applying ceiling first. Always leave $\frac{3}{16}$ in. *between panels,* and see that edges of panels are near center of stud to provide ample nailing space.

If panel does not cover nearly half of stud, or projects at least ¾ in. on stud, nail strip to side of stud flush with face, thus providing proper nailing surface.

Panels should be cut so that they run from floor to ceiling angle. Fit board tightly around windows and doors to make an airtight job.

(5) Application Over Old Plaster—We recommend that old plaster be furred with ⅞x2-in. wooden strips on 16-in. centers. Low spots should be shimmed or built-up to afford a level nailing surface. Next apply the board to the furring.

Where plaster is level and an inexpensive job is desired, Upson Board can be nailed directly over the old plaster, using 2-in. finishing nails for centers and 2-in. flat head nails for edges of panels.

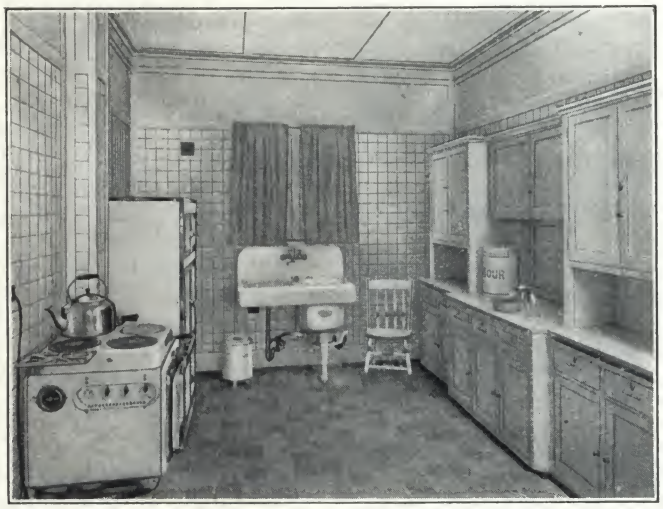
Baseboard should be removed, but if this is impossible, a backband may be run around top of base and around trim. Upson Self-clinching Fasteners can not be used over old plaster unless it is furred.

(6) Application Over Brick or Stone Walls—Walls should first be waterproofed with some protective material like asphaltum. If walls are subject to unusual dampness, paint the back of Upson Board with oil paint.

Walls should be furred with ⅞x2-in. strips on 16-in. centers. The furring should be straight and even, to give a flat, smooth wall when the board is applied.

The use of wallpaper is not recommended, and The Upson Company does not assume responsibility for unsatisfactory results where wallpaper is used. For many reasons, such as shrinking of "green" studs or settling of the building, plaster almost invariably cracks, and affects the wall paper.

(7) "Dont's"—(a) Avoid nailholes. Always use Upson Self-clinching Fasteners on intermediate studs or joists—(b) Do not butt panels—leave $\frac{3}{16}$-in. space—(c) Do not use wallpaper—settling may cause cracks at joints—(d) Paint one coat before applying trim and one coat after.



Upson Fibre-Tile Makes Permanent, Crackproof Colorful Walls for Kitchen, Bath and Other Rooms Where Tile Walls Are Desired

Upson Fibre-Tile

Qualities—Has a special hard, smooth surface with permanent tile indentations. Does not crack along the tile indentations, like ordinary tiled-boards. Nor does it crack like "cement tile." Ideally adapted for enameling. Being pre-sized, Upson Fibre-Tile requires fewer coats of enamel than ordinary tile board and saves from $5 to $25 a room in decorating costs.

Upson Fibre-Tile is thoroughly waterproofed and even withstands ordinary leaks. It is finished after application, and can be kept clean with a damp cloth.

Uses—Kitchen, laundry, bath, candy kitchens, restaurants, florist shops, barber shops, and in dozens of other business or professional stores and offices.

Application of Upson Fibre-Tile

Same as with Upson Board. Enamel as follows:

Directions for Enameling—First coat: 8 parts flat white paint, 1 part turpentine. Second coat: equal parts high grade enamel and flat white. Third coat: high grade enamel, flowed on as it comes in the can.

Sandpaper all coats thoroughly before applying the additional coats. Allow ample time to dry between coats.

Upson Self-clinching Fasteners

Apply Upson Board and Upson Fibre-Tile with Upson Fasteners, "patented," which *anchor* panels securely *from the back.* The only device which successfully eliminates unsightly nailheads, a big objection to all other wall boards.

Blue Print Service

The Upson Blue Print Service answers every question regarding the proper application and decoration of Upson Board. It was prepared by some of the best known architects in the country. It is, in truth, a wall board encyclopedia, requiring three years of preparation. Nearly a thousand sketches were drawn and re-drawn, and finally condensed into forty complete blue prints.

These blue prints have been bound into a handy book, 8½x11 in., containing, in addition, photographs of finished Upson Board jobs, together with complete directions for application and decoration.

Literature

Write to The Upson Company for "Characterful Walls and Ceilings" and "Relief Ceilings Booklet."

INSO BOARD

MANUFACTURED BY

THE STEWART INSO BOARD CORPORATION

ST. JOSEPH, MO.

Products

STANDARD BUILDING INSO BOARD.

INSO LATH.

Also manufacture INSO BOARD Insulation, INSO BOARD Industrial Board.

The Dependable Building Insulation for Homes or Other Buildings.

Description

Thickness $\frac{7}{16}$ in., average weight 65 lbs. per 100 sq. ft., width 48 in., length 6, 7, 8, 8½, 9, 10, 12 ft. Made of the tough fibres of straw "milled" into panels, INSO BOARD combines great structural strength with high cold-and-heat and sound-retarding powers (see thermal comparison at conclusion of this description).

Its Principal Uses Are

(1) To be used as sheathing on frame, stucco, brick and all types of buildings. It gives structural strength and insulation at one cost.

(2) As sound deadener. INSO BOARD, in giving heat insulation also gives insulation against sound on floors and walls.

(3) As roof and attic insulation. In homes already built a great degree of insulation can be had by lining the attic or roof with INSO BOARD, as 65% of all heat leakage is through the roof. Also used in basements to partition rooms and keep upstairs free of dust and soot.

(4) As plaster base or wall finish. Plaster may be applied directly to INSO LATH replacing other materials.

(5) As interior and exterior finish on walls. INSO BOARD can be used in its natural color (a soft golden tan) or can be painted, stained, or decorated to suit the taste. Very desirable for plastic paints.

Economy

INSO BOARD is economical to use because (1) it has many structural uses in addition to its insulation value—as wall board, plaster base (in 48x18 in. size), as sheathing under stucco, wood or brick veneer, etc.; and (2) it is readily installed, requiring but little sawing, no fitting or beveling, and reducing labor costs.

Permanence

INSO BOARD properly used will last as long as any other building element in the structure. As inner wall—moistureproof material, adds years to life of all wood or metal parts it protects.

REGULAR INSULATION

Framing—All joists, studs, rafters, plates and sills to be spaced accurately 16 in. on centers. 2x4-in. headers shall be cut in between the framing for horizontal joists.

Different Spacing—The INSO BOARD may be applied in the same manner as for the 16-in. spacing, without cutting, when necessary to space joists or any part of the frame 12 in. between centers.

No bracing other than that ordinarily used in such frame construction is necessary.

Where INSO LATH is to be used as a plaster base, replacing lath, specifications covering INSO LATH will apply.

Preparation for Erecting—Spray INSO BOARD lightly with hose, sprinkling can or broom dipped into clean water, and pile, *not less than 24 hours before it is to be applied.*

In cold or freezing weather, spray INSO BOARD while unloading, and pile *indoors.*

Do not remove boards from pile until ready to nail them into position.

When used as carpet underlay, do not wet or nail INSO BOARD. Lay close.

Erection of Inso Board—INSO BOARD is to be applied full length, vertically and directly in contact with framing prepared, with ample bearing for nailing along all edges. An open space of $\frac{3}{16}$ in. shall be left at top and bottom of boards and between two boards meeting over a nailing base. INSO BOARD is cut scant to allow for this space.

INSO BOARD may be set in close contact with window and door frames where a snug joint is desirable to exclude air. *Do not force into place.*

Over contact between ceiling joist and frame and supporting joist and frame an extra strip must be nailed to further prevent leakage.

Nailing Inso Board—Nail first along the intermediate studs, starting at the top. Then nail all edges of each board, setting nails ⅜ in. from the edge, and 3 in. apart on edges; space nails 4 to 6 in. apart along intermediate members.

Nail in the same manner to joists, furring, sills, plates, rafters and headers.

Nails—Use 1½-in. galvanized roofing nails with ⅜-in. heads, or 4d blued box nails; countersink nails so that the heads are slightly below the surface of the INSO BOARD.

Where INSO BOARD is applied to ⅞x1¾-in. wood furring strips use 1¼-in. galvanized roofing nails with ⅜-in. heads, or 4d blued box nails.

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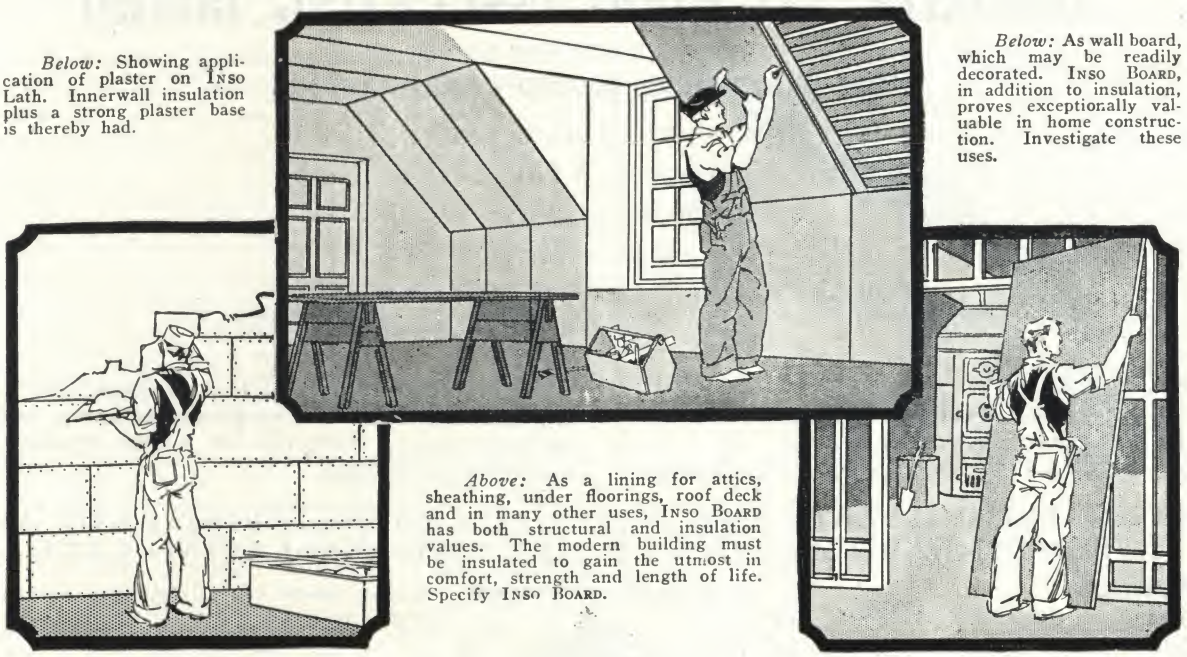


Below: Showing application of plaster on Inso Lath. Innerwall insulation plus a strong plaster base is thereby had.

Below: As wall board, which may be readily decorated. Inso Board, in addition to insulation, proves exceptionally valuable in home construction. Investigate these uses.

Above: As a lining for attics, sheathing, under floorings, roof deck and in many other uses, Inso Board has both structural and insulation values. The modern building must be insulated to gain the utmost in comfort, strength and length of life. Specify Inso Board.

Stucco

Apply stucco according to the manufacturers' specifications to any of the following stucco bases:

(1) Self-furring Stucco Bases—Self-furring wire lath, expanded metal lath, beveled wood lath or other self-furring base shall be applied directly over Inso Board, stapling or nailing through into the studs.

It is more desirable to place one layer of waterproof paper with 3-in. lap over the Inso Board before the lath is secured.

(2) Non-furring Stucco Bases—(a) Wood furring strips shall be applied vertically over each stud nailing through the Inso Board to the stud. Nail or staple the wood, wire or metal lath to the furring strips.

(b) Crimped band iron, or round iron rods, or metal furring, shall be stapled into the studs through the Inso Board. Wire the metal lath to the furring.

(c) When using self-furring staples or nails these are to be driven through the Inso Board into the studs when applying the lath or wire cloth.

Roofs and Attics

When applying to continuous wood surfaces such as roof sheathing or flooring, lay the edges in moderately close contact and nail with large headed galvanized roofing nails, 1¼ in. long, or 4d blued box nails.

(1) Over Rafters—When Inso Board is to be covered with wood shingles, slate or tile. Nail Inso Board directly to rafters, place over it 1x4-in. horizontal furring strips, and nail through the board into the rafters. Furring strips to be spaced to suit the weather exposure of the roofing material.

(2) Under Rafters—When nailed to the underside of roof rafters, extend the Inso Board to a tight contact with the wall or floor insulation at all points of contact.

Where house is already built, without sidewall insulation, fit Inso Board snugly against the sidewall sheathing or plate and carefully seal all spaces along the eaves to prevent leakage of air to or from the attic.

Inso Lath

Material—Inso Lath is made 48x18 in. with shiplapped edges on the long side.

These Inso Lath are applied horizontally across the framing and must form continuous joints. The end joints must all be made on the framing and joints of each course must be broken with those of the preceding course, cutting the Inso Lath where necessary.

Nailing—Use 1¼-in. nails with ⅜-in. heads, 4d blued box nails or lather's nails, and drive 4 nails, evenly spaced, in each Plaster Base panel at each stud.

Corners and Joints—Arches or curves may be covered by bending the panel to meet such framing. All nailing edges must be supported on framing.

All gaps or narrow spaces must be filled with strips of Inso Board—never with wood strips. Reinforce all exterior corners with galvanized metal corner beads. Interior corners of both walls and ceilings must be reinforced with wire lath or expanded metal lath 6 in. wide, bent at right angles and stapled over with Inso Lath to the wood frame at about 12-in. intervals, to reinforce the plaster.

Plastering—Inso Board *must not be moistened after nailing.* Do not use lime plaster or any mixture of lime for scratch or brown coat—use good gypsum base plaster—1 part to not more than 2 parts of clean, sharp sand.

No wire lath is required over Inso Lath joints. Apply plaster directly to Inso Board pressing it well into the joints. The scratch and brown coat must have a total thickness of not less than ⅜ in. and be thoroughly dry before applying the finish coat. The finish coat should not be more than ⅛ in. thick and the total plaster thickness not less than ½ in. thick.

Rod or darby must span two joists or studs and strokes must always be in the direction of joists or studs.

Be sure that fresh air ventilation is thorough at all times, but do not allow freezing. To close windows and doors while drying plaster, especially where heat is used, is very injurious to plaster, walls, and roof.

Descriptive Booklet

A booklet giving full description of uses of Inso Board and Inso Lath may be had, on application to The Stewart Inso Board Corporation, St. Joseph, Mo.

ARBORITE ALL-WOOD INSULATING BOARD

MANUFACTURED BY
THE WOOD-FIBRE BOARD CORPORATION
SALES AND GENERAL OFFICE
51 East 42nd Street, NEW YORK, N. Y.
MILLS: BRUNSWICK, ME.
SALES AGENTS
ATLANTIC GYPSUM PRODUCTS COMPANY
BOSTON, MASS. NEW YORK, N. Y. PHILADELPHIA, PA.

Products
ARBORITE STANDARD INSULATING BUILDING BOARD.
ARBORITE STANDARD INSULATING LATH.
ARBORITE SPECIAL LOW DENSITY ROOF INSULATION.

Also Arborite Special Low Density Board for refrigerator cabinet, room and car insulation, and other industrial uses. Arborite for sound deadening and acoustical correction.

GENERAL INFORMATION AND PHYSICAL CHARACTERISTICS OF ARBORITE STANDARD BUILDING BOARD AND INSULATING LATH

Raw Materials

Arborite is manufactured solely from high grade peeled pulpwood, *spruce* and kindred species, by a purely mechanical process without the addition of chemicals or waste materials. The finished product, therefore, retains essentially the nature and permanence of sound lumber.

Method of Manufacture

By mechanical grinding the long tough fibres of the pulpwood are first segregated and floated to the felting machines, where they are formed and woven into sheet form on a single cylinder ensuring a homogeneous sheet, and eliminating any splitting tendencies. The Arborite Sheet is then submitted to a fixed pressure between plates and passed through the dryer under constant atmospheric conditions most conducive to proper seasoning. Cutting into standard and special sizes completes the process, the Arborite being then wrapped and stored for shipment.

Weight and Thermal Conductivity

High grade raw materials and improved methods of manufacture are responsible for the exceptionally low density of Arborite. The density of Arborite averages only 14.4 lb. per cu. ft., which is equivalent to a weight of only 600 lb. per thousand square feet of full ½-in. thickness. That density of a material is a comparative indicator of its insulating value is a widely accepted principle, expressed briefly by the U. S. Bureau of Standards as follows: "In general, the lighter the material per unit total volume the better its insulating value per inch of thickness." Thus the 15% to 30% advantage in weight, which is characteristic of Arborite, assures a very distinct advantage in resistance to heat transfer.

Strength

Tests conducted at Columbia University, under the requirements of the Boroughs of New York, demonstrated that Arborite, applied as sheathing in buildings, offers greater resistance to distortion than horizontal wood sheathing, and that the tensile strength of Arborite averaged 216 lb. per sq. in. on five tests. Tests at other laboratories throughout the country have substantiated these results, the ratio of strength to weight for Arborite having been placed at the exceptionally high figure of 75%.

Moisture Resistance

Previous to being felted into a solid homogeneous sheet, the individual fibres of Arborite are thoroughly coated with a waterproofing film, insuring high moisture resistance throughout the finished sheet.

Durability

Bark, rot and all impurities are removed before or during the process of manufacture and there remains in the finished Arborite only sound live wood fibre, which offers no attraction to, and will not harbor, vermin or rodents. Odors will not penetrate, or be retained by Arborite, which is essentially one of the soundest, cleanest and most durable forms of rigid insulation.

Plaster Bond

Tests at Columbia University, New York, N. Y., showed an average bond value between Arborite and gypsum plaster of 2140 lb. per sq. ft.

Uniform Quality

Uniformity of raw material, and continuous testing at all critical points in the process by a trained laboratory staff, make possible the maintenance of high quality Arborite within exceptionally close tolerances.

Appearance

Arborite, with its naturally light cream color and delicately rippled finish, affords a very pleasing effect for interiors without additional treatment, or lends itself readily to all forms of decoration.

Thickness and Size

Arborite Building Board is supplied in standard ½-in. thickness, standard width of 4 ft., and standard lengths of 6, 7, 8, 9, 10, 11 and 12 ft.

Arborite Insulating Lath is supplied in standard ½-in. thickness, standard width of 18 in., and standard length of 48 in., with the long edges shiplapped to prevent heat losses due to open joints.

Special thicknesses, consisting of ½-in. thicknesses firmly stapled or glued together, and special widths and lengths up to 8x20 ft. can be supplied on request.

Continued on next page

Specifications for Application of Arborite All-Wood Insulating Board and Lath

Arborite Board for Sheathing under Stucco, Brick or Stone Veneer, Wood Siding and Shingles

Material—All exterior sheathing shall be Arborite All-Wood Insulating Board ½ in. [1 in.] thick, as manufactured by The Wood-Fibre Board Corporation, Brunswick, Maine.

Framing—Studs, joists, sills and plates shall be framed as in ordinary frame construction, and shall be placed accurately on 12 or 16-in. centres. Where end joints of Arborite are necessary use 2x4-in. headers, cut in between the studs, to provide nailing base for all four edges.

Application—Arborite All-Wood Insulating Board shall be applied vertically to the framework, and set in place so as to allow ample bearing for nailing all edges. Always space adjoining sheets of Arborite ¼ in. apart at sides, top and bottom. Around window and door frames bring Arborite to moderate contact with the frames. *Never force Arborite into place.* Nail an extra strip of Arborite to back of frames to prevent leakage of hot or cold air.

Nailing—Use 1½-in. standard galvanized roofing nails with ⅜-in. heads for ½-in. Arborite Sheathing, and 2-in. nails for 1-in. Arborite Sheathing. Nail Arborite first to intermediate studs, starting at the top, and space nails 6 in. apart; then nail around all four edges spacing nails 4 in. apart and at least ⅜ in. from the edges. Nails shall be driven so that the heads will lie slightly below the surface of the Arborite.

Application of Stucco—Nail wood furring strips vertically through the Arborite into each stud. Apply a metal lath suitable for a 16-in. span in accordance with the specifications of the Associated Metal Lath Manufacturers. If desired, self-furring metal lath may be used and applied direct to Arborite Sheathing. Apply stucco in accordance with manufacturer's specifications.

Application of Brick or Stone Veneer—Anchors shall be spaced to suit the brick or stone courses, and nailed through Arborite into the studs. Brick or stone shall be laid in the usual manner, leaving at least ½-in. space between the Arborite and the stone or brick.

Application of Wood Siding—All types of wood siding shall be applied directly over Arborite, butting all joints on studs. Nail through Arborite into studs, using nails ½ or 1 in. longer than usual, to allow for the thickness of Arborite.

Application of Shingles—Nail 1x2-in. wood furring strips over Arborite at right angles to studs. Space strips as many inches apart as shingles are to be exposed to the weather. Nail shingles to the furring strips, using cut iron nails, preferably zinc dipped, or copper nails.

Arborite Lath as Plaster Base

Material—All plaster base shall be Arborite Insulating Lath, 18x48x½ in. [1 in.] thick with ship-lap edges, as manufactured by The Wood-Fibre Board Corporation, Brunswick, Maine.

Framing—Studs, joists and rafters shall be true and set accurately on 12 or 16-in. centres.

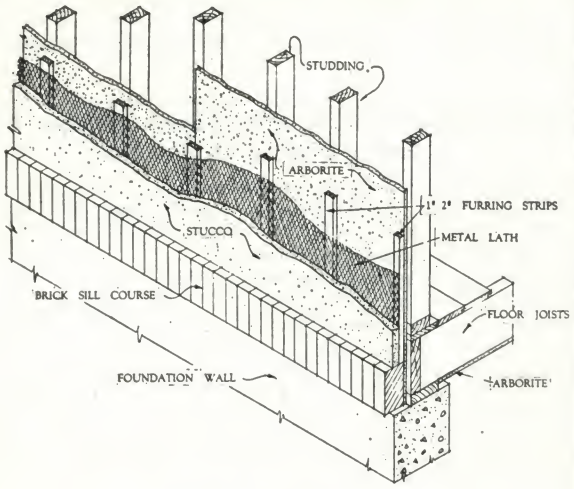
Application—Arborite Insulating Lath shall be applied with the long edges at right angles to the framing, and the vertical joints on each course shall be staggered with the joints of the preceding course. Space sheets ¼ in. apart at all vertical joints and centre these joints on the framing. Bring the ship-lapped joints of Arborite to moderate contact, and also around window and door frames bring the Arborite to moderate contact with the frames. *Never force Arborite into place.* It is not necessary to dampen Arborite Lath before applying.

For details of application see next page.

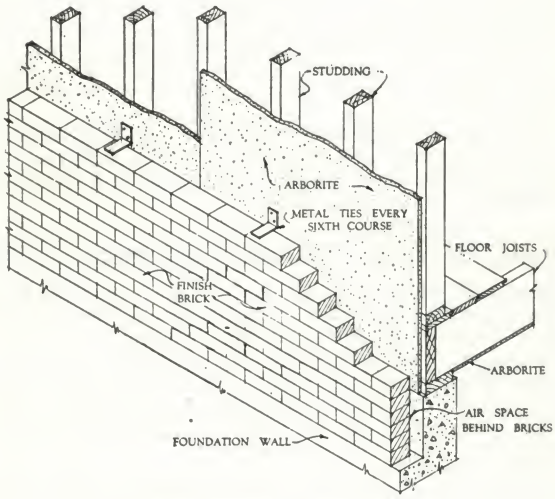
Nailing—Arborite Insulating Lath shall be nailed securely to frame, using 4d common or blued nails for ½-in. lath and 8d common or blued nails for 1-in. lath. Space nails 5½ in. apart, at least ½ in. from ship-lapped edges and ⅜ in. from the ends. Nail first to intermediate studs, then nail the ends.

Preparation for Plastering—At all internal vertical angles and at all corners between ceiling and walls use 8-in. strips of painted metal lath or galvanized wire lath bent at right angles to form two 4-in. legs, and nail or staple lightly at outer edges. Across the corners of all door and window frames staple lightly 8-in. squares of the same material. Use metal corner beads at all external angles. Do not wet Arborite Lath after it is in place.

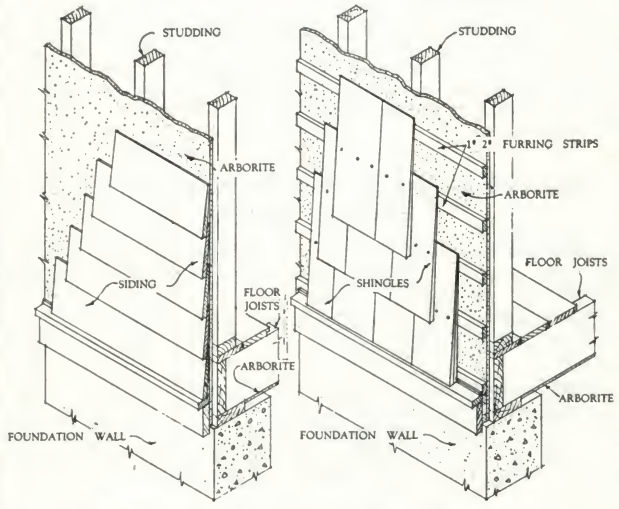
Plastering—Use quick setting gypsum plaster, applied according to manufacturer's specifications. Use 2 or 3 coats having a total thickness of not less than ⅜ in. The brown coat shall be thoroughly dry before applying the finish coat. Use the darby, long enough to span two studs or joists, in the direction of the studding or joists.



STUCCO ON FRAME



BRICK VENEER ON FRAME



WITH SIDING WITH SHINGLES

ARBORITE INSULATING SHEATHING
FOR VARIOUS TYPES OF WALLS

Continued on next page

All rooms shall be well ventilated to allow the plaster to dry. Moisture will not pass through Arborite, and can only be carried off by adequate ventilation. In cold weather, care must be taken to prevent the freshly applied plaster from freezing.

Arborite Board for Interior Finish with or without Paint, Stain or Kalsomine

Material—All interior finish shall be Arborite All-Wood Insulating Board ½ in. thick, as manufactured by THE WOOD-FIBRE BOARD CORPORATION, Brunswick, Maine (left natural, or treated with paint, stain or kalsomine).

Framing, Application and Nailing—(Follow same framing, application and nailing specifications as detailed on previous page for Arborite as sheathing.) Where special paneling effects or chair rails are specified, 2x4-in. headers should be cut in between the framing for nailing base. Where nailheads are not to be covered with wood battens or Arborite Strips, use 1½-in. finishing nails driven at an angle and cover up nailholes by rubbing surface lightly with another small piece of Arborite. Wood battens, where used, should be at least 2 in. wide, or Arborite Strips should be 3 in. wide with edges beveled or slightly rounded with sandpaper.

Finish—Where the natural finish of Arborite is to be used without further treatment, apply panel strips as specified, after allowing paint or stain on the strips to dry thoroughly. Where surface of Arborite is to be treated with oil paint, first apply evenly one coat of any good glue sizing or priming, and allow to dry thoroughly before painting. Apply paint in usual manner. Where stains or kalsomine are used, apply direct to Arborite without preparation, according to manufacturer's specifications.

Arborite All-Wood Insulating Board lends itself perfectly to any form of interior decoration, and detailed instructions for the application of special finishes may be had on application to the manufacturer or sales agent.

Arborite Board for Insulation of Attics and Floors

Material—Insulation of attic and floors shall be Arborite All-Wood Insulating Board, as manufactured by THE WOOD-FIBRE BOARD CORPORATION, Brunswick, Maine.

Framing—Studs, joists and rafters shall be framed as in ordinary frame construction, and shall be placed accurately on 12 or 16-in. centres. Where end joints of Arborite are necessary use 2x4-in. headers, cut in between the framing, to provide nailing base.

Floor Insulation—Apply Arborite over rough floor and under finish floor, bringing sheets to moderate contact with only sufficient nails to hold in place while laying finish floor. (Arborite Insulating Lath with plaster may be used on ceilings to provide additional insulation, or to replace floor insulation.)

Attic Insulation—Walls and ceiling of attic shall be finished with Arborite as per specifications detailed above for Interior Finish or with Arborite Insulating Lath and Plaster (see specifications above). All corner joints of Arborite in attic shall be brought to moderate contact, and all spaces where air leakage might occur along the eaves shall be blocked off with Arborite.

Arborite Board for Insulation of Sloping or Pitched Roofs

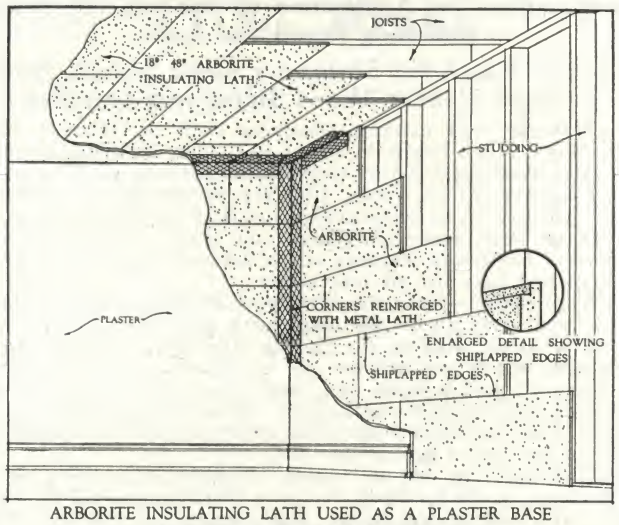
Material—Insulation for roofs shall be Arborite All-Wood Insulating Board, as manufactured by THE WOOD-FIBRE BOARD CORPORATION, Brunswick, Maine.

Framing—Rafters shall be placed accurately on 16-in. centres, and 2x4-in. headers cut in where end joints of Arborite occur.

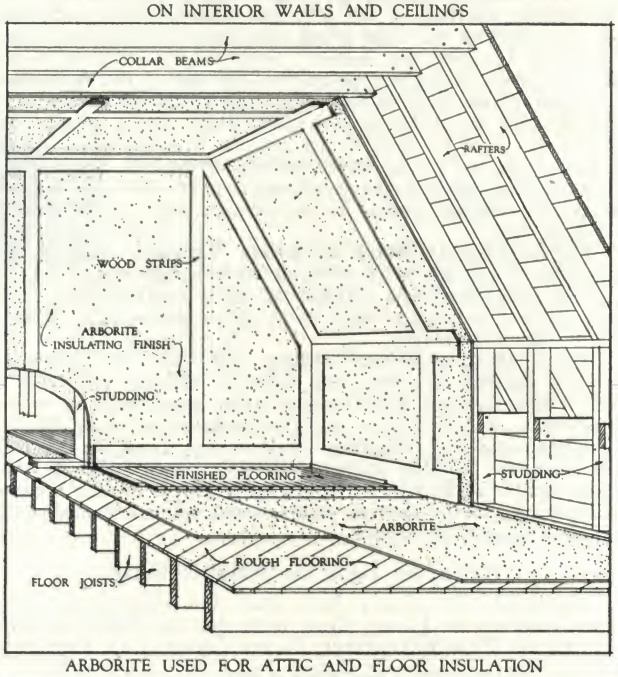
Application—Apply Arborite lengthwise to the rafters, allowing ample bearing for nailing all edges. Space adjoining sheets of Arborite ¼ in. apart. At all vertical projections, and at meeting of roof insulation and wall sheathing Arborite shall be brought to moderate contact. *Never force Arborite into place.*

Nailing—Use 1½-in. standard galvanized roofing nails with ⅜-in. heads, and nail Arborite first to intermediate studs, then around edges, spacing nails 6 in. apart.

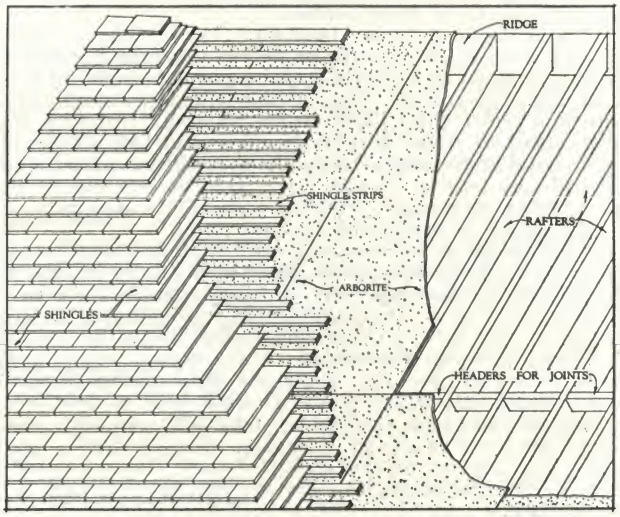
Application of Roofing—Waterproof paper need not be used. Nail 1x3-in. furring strips or ordinary ⅞-in. roof boarding through the Arborite to the rafters, spaced as necessary for the roofing to be used. Apply shingles or roofing to the furring strips or roof boarding in usual manner.



ARBORITE INSULATING LATH USED AS A PLASTER BASE ON INTERIOR WALLS AND CEILINGS



ARBORITE USED FOR ATTIC AND FLOOR INSULATION AND ATTIC FINISH



ARBORITE USED FOR INSULATING A FRAME ROOF

ARBORITE USED AS PLASTER BASE
ATTIC FINISH, ROOF AND FLOOR INSULATION

Continued on next page

ARBORITE SPECIAL LOW DENSITY ROOF INSULATION

Description—Arborite Special Low Density Roof Insulation, a most recent development in the field of rigid insulating materials, is manufactured in the same manner and from the same high grade material as Arborite Standard Building Board. A slight sacrifice in strength has made possible the production of this board of markedly lower density and consequent increased efficiency as an insulator, possessing characteristics which solve in the most economical manner problems of heat losses and condensation.

Density and Strength—The density of Arborite Special Low Density Insulation runs as light as 11.2 lb. per cu. ft., a distinct decrease in weight over many fibre insulating boards produced commercially. The strength is slightly less than that of Arborite Standard Building Board, and is more than sufficient for ordinary handling, or use as roof and industrial insulation.

Conductivity—Heat transmission is common to all materials in varying degrees. The transmission for any one material is expressed by its coefficient of conductivity, or the number of British thermal units transmitted through the material per hour, per square foot, per inch of thickness, per degree difference in temperature.

Hot plate tests conducted by Prof. G. B. Wilkes, Massachusetts Institute of Technology, determined the coefficient of conductivity for Arborite Special Low Density Insulation to be 0.26 B.t.u. per hr. per sq. ft. per inch thick per degree F., the best value ever determined for any rigid type of insulation. Coefficients of conductivity generally assigned to the more common building materials are as follows:

Concrete	8.30	Wood (Yellow pine or fir)	1.00
Brick	5.00	Rigid insulation (fibre)	0.33
Plaster	2.32	Corkboard	0.30
Arborite Special Low Density Insulation			0.26

Thickness and Size—Arborite Special Low Density Roof Insulation is manufactured in solid sheets of full ½ in. thickness, and is supplied in stapled or laminated form in thicknesses up to 3 in.; standard widths and lengths of sheets are 24x47 in. and 24x60 in.

Moisture resistance, durability and other physical characteristics of Arborite Special Low Density Insulation correspond exactly to those of Arborite Standard Building Board previously described.

Specifications for Application on Steel, Concrete, Tile or Wood Deck Roofs

Material—Insulation for roof decks shall be Arborite Special Low Density Roof Insulation [24x47 in. or 24x60 in.] by .... inches thick, as sold by The Wood-Fibre Board Corporation, Brunswick, Maine.

Preparation of Decks—***Steel, Concrete or Tile***—Decks must be dry and swept clean, and, in the case of concrete, well seasoned. If asphalt is used, concrete and tile decks must be primed in the usual manner.

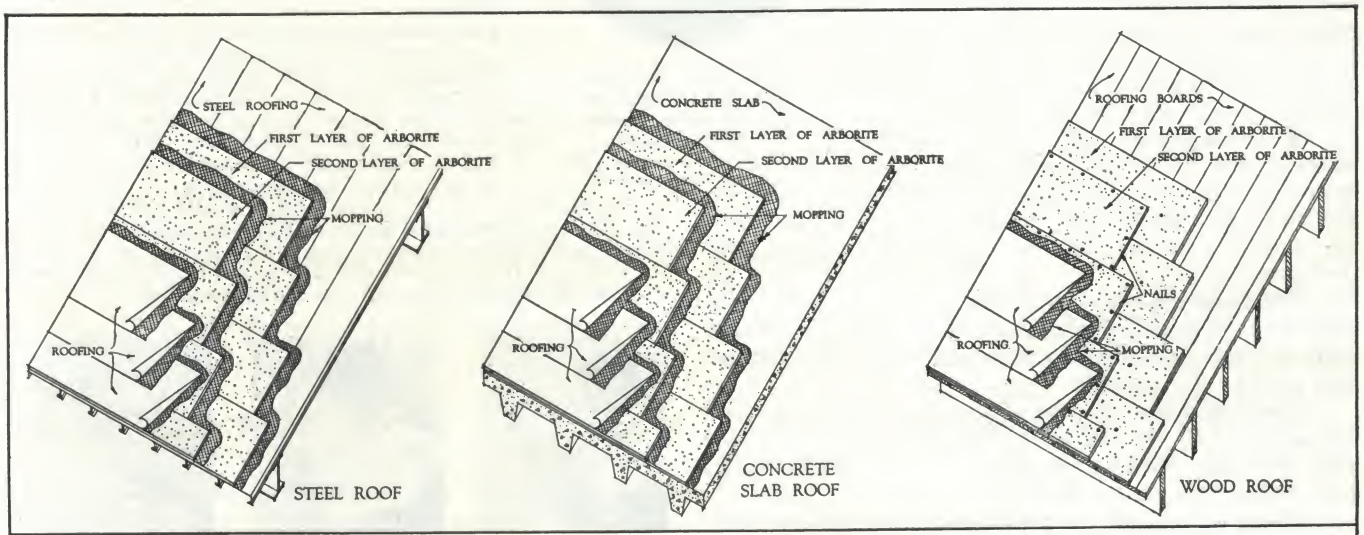
Wood—Material must be seasoned, matched and dressed lumber, well nailed with nails driven flush, or seasoned dressed lumber laid on edge and well nailed, presenting a smooth surface swept clean.

Application of Arborite Special Low Density Insulation—***General***—Arborite Special Low Density Insulation must be thoroughly dry before applying. Adjoining edges of Arborite should be brought to moderate contact, and sheets shall be cut to fit snugly against parapet walls or other vertical projections. *Never force Arborite into place.* Stagger all transverse joints. Do not lay more Arborite Insulation than can be fully protected by roofing in any one day.

Steel, Concrete or Tile Decks—Mop deck with a heavy uniform coat of asphalt (hot roofing pitch may be substituted where deck is tile or concrete), using not less than 30 lb. per square. While asphalt or pitch is still hot, apply Arborite Insulation firmly into place, making sure that all edges are well pressed in. If more than one layer of Arborite is specified, mop the top surface of each layer uniformly with hot pitch or asphalt and embed the succeeding layer thoroughly while mopping is still hot, with joints broken in relation to the preceding layer.

Wood Decks—Where only one layer of Arborite is specified cover the wood deck with a sheet of rosin sized paper or dry felt to prevent pitch dripping through the roof deck. Nail the Arborite directly to the wood deck using 1½-in. standard galvanized roofing nails with ⅜-in. head. Nail first at random in the centre of the board, then on approximately 12-in centres around the edges, and not less than ⅜ in. from the edges. If more than one layer of Arborite is specified, only sufficient nails to hold in place need be used in the first layer. All joints of second or succeeding layers must be broken in relation to the preceding layer, and nails of sufficient length to enter the wood deck at least 1 in., driven flush, shall be used. Nail final layer at random in centre of board, and on approximately 12-in. centres around the edges.

Applications of Roofing—Apply roofing according to architect's and manufacturer's specifications.



ARBORITE ROOF INSULATION ON VARIOUS TYPES OF CONSTRUCTION

ATLANTIC GYPSUM PRODUCTS COMPANY, INC.

Manufacturers of Gypsum and Related Building Products

40 Central Street, BOSTON, MASS.

For Mines, Plants and Branch Offices, see Our Other Section

For Our Other Products, see Manufacturers' Index

A Modern Gypsum Wall Board

ROCKWALL
GYPSUM WALL BOARD

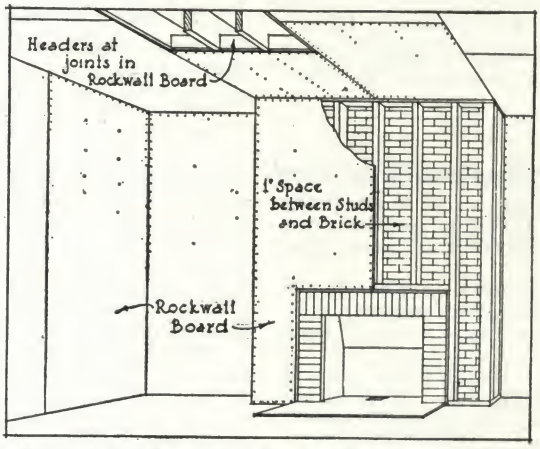
TRADE-MARKS

Rockwall offers in one product the many improvements which have been made in gypsum wall boards. The following features show why Rockwall is popular with architect, workman and owner:

Cream Color Cover—Rockwall has a smooth, light colored surface attractive in itself without further decoration. It is particularly well suited for covering with the light shades of paint so popular today. Special treatment has made the cover hard and practically scuff-proof. Paint spreads easily on the smooth non-absorbent surface and covers exceptionally well. Rockwall is the ideal wall board where looks are an important consideration.

Improved Core—Rockwall has an improved core of purest Nova Scotia gypsum, strong and rigid, yet light enough for easy handling. It eliminates unnecessary weight.

Reinforced Covered Edges—The tough fibre cover is lapped into the gypsum core a full inch to give the greatest possible strength to the nailing edge. Three thicknesses of fibre grip the nail firmly and keep the core from cracking or splitting (see illustration). Edges are square and of identical thickness for easy fitting.



Method of Applying Rockwall Gypsum Wall Board to Walls, Ceiling and Chimney Breast

Reversible—Both Sides Alike—There are no markings on either face of Rockwall to be covered up. Both sides have the same tough, specially treated surfacing. If one side should become accidentally damaged, the board is simply turned and faced the other way. This Rockwall feature saves time, labor and stock and assures uniform finish.

Full Size Section Through Edge of Rockwall Gypsum Wall Board

Showing the reinforced edge and identification

Fire-resistant—The use of Rockwall reduces fire hazard to a minimum. Underwriters' tests prove the incombustibility of Rockwall and make it the ideal wall board to use when fire safety is a consideration. Rockwall is also a poor conductor of heat.

Permanence—The improved gypsum core, reinforced covered nailing edges and tough cover give Rockwall unusual resistance to wear and tear. Its strength and rigidity are notable.

Identification—Rockwall Gypsum Wall Board can be identified by the name "Rockwall" imprinted on the edge of each sheet. (See illustration.) No markings mar either surface of Rockwall.

Sizes—Rockwall is made in sheets 48 in. wide, and in lengths of 6, 7, 8, 9, 10, and 12 ft. All sizes are $\frac{3}{8}$ in. thick.

Application of Rockwall Gypsum Wall Board

Support for Edges—It is important that all edges be supported both longitudinally and crosswise of the framing. This means that blocking (headers) must be used where a joint is necessary.

Application Over Old Plaster—First locate all studs and joists carefully. If plaster surface is fairly straight and solid, Rockwall Board may be applied directly. For plaster in poor condition, cut the plaster along studs and insert furring strips, bringing the face of these strips slightly behind the surface of the old plaster. Make furring strips plumb and straight, shimming where necessary.

Old ceilings can best be handled by nailing ordinary 1x2 furring across joists with 8d nails.

Be sure nails are long enough to get a good grip on stud or joist. Usually 6d nails will be sufficient.

Application Over Brick and Masonry—Brick and Masonry walls should be furred with 2x2-in. strips placed 16 in. on centers. Anchor strips by plugging old walls, or on new work insert strips in the mortar points. Be sure the furring is solidly anchored and evened up. Nail Rockwall directly to strips, placing headers to support all edges.

Finishing and Decorating—After Rockwall boards are in place, it is necessary to fill the joints and spot nail heads before decoration is applied. (Where paneling strips are to be used joints may be left unfilled.)

Use Rockwall Joint Filler or Fabric Joint Sealer for filling and reinforcing the joints. Directions for application are contained in each package.

Painting—Be sure surface is smooth (including joints and nail heads), sandpapering where necessary. Apply two priming coats to the surface, letting the first coat dry thoroughly before applying the second. Then paint with the desired color.

Calcimine—Sandpaper joints as for paint. Apply a single varnish size, then calcimine.

Paneling—Use wood panel strips from 2 to 3 in. wide and $\frac{3}{16}$ to $\frac{5}{16}$ in. thick. Decorate before nailing on the panels. Use 6d finishing nails, spacing about 9 in. apart. Stagger the nails.

Paper—Sandpaper joints as for paint and size as for calcimine. Then apply paper.

Craftex—Be sure joints are filled carefully and reinforced with fabric. Size the taped joints with oil or varnish size. Apply and texture Craftex following standard directions of the Craftex Company, being careful not to bear too heavily with brush or texturing tool when going over the taped joints.

Filling Joint

Applying Fabric Over Joint

Smoothing Fabric into Joint Filler

NATIONAL GYPSUM COMPANY

Gold Bond Wall Making Materials

GENERAL OFFICES
409 Jackson Building
BUFFALO, N. Y.

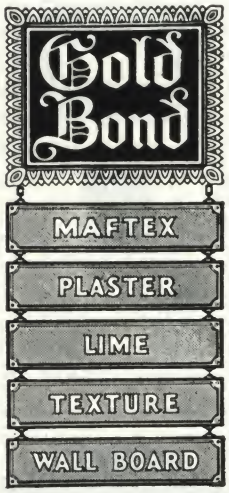
CHICAGO OFFICE, Conway Building

MILLS: CLARENCE CENTER, N. Y., NATIONAL CITY, MICH., LUCKEY, OHIO, CAMDEN, N. J.

Products

GOLD BOND MINERAL WALL BOARD and TILE BOARD; GOLD BOND PLASTER; also Gold Bond Finish Lime, Lath, Sheathing Board, Dry Fill Insulation, Exterior Stucco, Texture Paint and Color Texture.

For Gold Bond Maftex Insulation Board and Insulation Lath see Manufacturers' Index.



Gold Bond Wall Board

Gold Bond Mineral Wall Board is made from newly discovered gypsum strata of unsurpassed purity. It has a new, scuffproof cream colored surface which is easier and more economical to decorate. Both edges on the long side of the board are enclosed.

Gold Bond Wall Board is made by a patented process that creates a cellular core, which makes the board both light in weight and materially stronger, as well as resilient and less subject to breakage in handling. It is fireproof, verminproof and sound retarding.

Sizes—Gold Bond Wall Board is made in 48-in. widths and even foot lengths from 6 to 10 ft.; 12-ft. lengths are available on special order.

Application—Gold Bond Wall Board is applied in accordance with standard panel construction. It is nailed direct to studding and joists in new work or over the old walls in reconstruction. The panel intersections are either filled with Gold Bond Filler or the Gold Bond Tape Joint Method, which covers the joints with a mesh tape embedded in joint cement.

Decoration—Gold Bond Wall Board may be decorated by painting or wallpapering. It is also especially suited for texture finishing by either texture paint or color texture. Write for Gold Bond texturing specifications.

Gold Bond Tile Board

Gold Bond Tile Board possesses all of the advantages of Gold Bond Wall Board, plus the marking of the surface with deep indentations or blocks so that when the board is decorated the effects obtained have the appearance and usefulness of ceramic tile. Write for the new specifications explaining the tone-and-line system for decorating Gold Bond Tile Board.

Gold Bond Plaster

Gold Bond Plaster is made from the superpure gypsum in the recently discovered National gypsum deposits. "The higher the gypsum content, the stronger the resulting plaster," states the United States Bureau of Standards.

Not only is Gold Bond Plaster remarkably high in the purity of its gypsum content, but it is made in modern mills under strict laboratory control, assuring the uniformity and workability of every shipment. As a result of its extreme purity, Gold Plaster goes farther and is therefore more economical—its price being in line with other plasters. It works exceptionally well under the trowel and gives maximum strength in the finished job.

Gold Bond Wall

By producing all the materials entering into standard wall construction under one name, trade-mark and guarantee, the NATIONAL GYPSUM COMPANY is able to guarantee the quality of the material in the completed wall, wherever such walls are built with Gold Bond products. This is in line with the modern concept of the building material business in that "products which are used together, should be made and sold together." There is no divided responsibility, no questions of mutual suitability of material, when walls are built as Gold Bond walls.

Gold Bond Guarantee

The Gold Bond Guarantee, which is issued with every Gold Bond wall-making material, specifically covers the quality of that product and assures that it represents the finest material that can be made. The protection of the Gold Bond guarantee is so far reaching that its service is of especial appeal to the architect. For that reason be sure that your files contain the complete Gold Bond specifications and descriptive data of all Gold Bond products. This authentic data is instantly available upon request.

CERTAIN-TEED PRODUCTS CORPORATION

GYPSUM DIVISION

Manufacturers of Gypsum Wall Board

GENERAL OFFICES
100 East 42nd Street
NEW YORK, N. Y.

For Sales Offices, see Gypsum Plaster pages
For Our Other Products, see Manufacturers' Index

CERTAIN-TEED AND BESTWALL GYPSUM WALL BOARDS

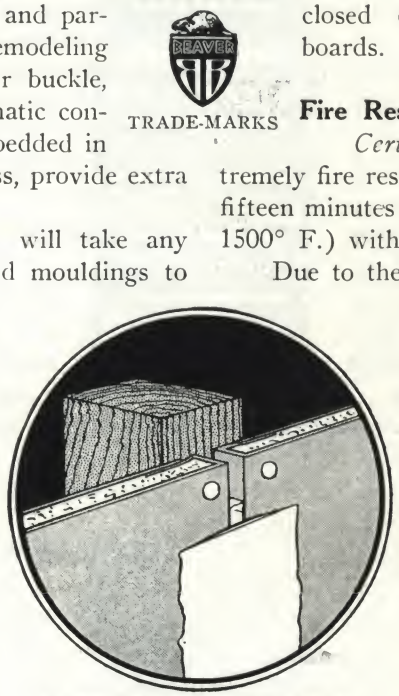
Certain-teed and *Bestwall* gypsum wall boards are made of smooth, solid sheets of gypsum, moulded between sheets of heavy, long fibered paper, and supplied in the following sizes: ⅜ in. thick x 4 ft. wide x 6 to 12 ft. long.

They are used for walls, ceilings and partitions in new construction, and for remodeling and repairing. They will not warp or buckle, and are unaffected by moisture or climatic conditions. Millions of tiny air cells, embedded in the gypsum base by an exclusive process, provide extra and valuable insulating properties.

They produce smooth walls that will take any form of decoration. The use of wood mouldings to form panels in order to cover the joints is unnecessary. If panels are desired, they need not be placed over the joints, as these are filled and leveled to the surface by the use of the plaster joint filler. The boards may be sawed and nailed like lumber and may be applied directly to studs and joists or over old construction.

Both *Certain-teed* and *Bestwall* boards are standard in every respect and will meet all the usual tests for determining the quality and strength of this type of board.

TRADE-MARKS



Square Open Edges at Joints

Certain-teed board is surfaced with a smooth paper of unusual strength, ivory tinted on one side of the board, gray on the other. *Bestwall* board is surfaced with cream colored paper on one side and gray paper on the reverse side of equal strength and fine texture.

Both *Certain-teed* and *Bestwall* boards are known as closed edge boards. This means that the heavy fibre paper finishing the two main surfaces also covers the edges. The enclosed edges give added protection to the boards.

Fire Resistant

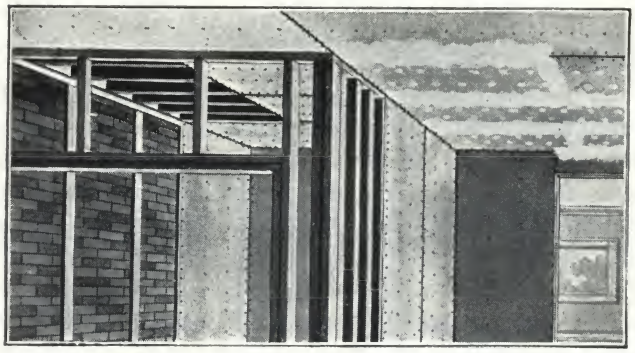
Certain-teed and *Bestwall* boards are extremely fire resistant. In tests, they have withstood for fifteen minutes the heat of a Meeker burner (1200° to 1500° F.) with only slight damage to the surface.

Due to the exceptional fire resistant qualities they are excellently suited for partitions in fireproof buildings.

Application

Certain-teed and *Bestwall* boards are merely nailed to the studs and joists or wood furring strips, joints filled with plaster and painted, kalsomined, or papered. They are easily cut by scoring and breaking, or by sawing.

Boards are nailed on all edges, headers being provided in the framing for the ends, with 3d flat head nails placed at intervals of about 7 inches. They are nailed to the center supports with finishing nails placed about every 10 inches. Plaster Joint Filler is used to fill joints and the holes over countersunk center nails. Boards are then ready for decoration.



Successive Steps

Application

Continued on next page

FILLING THE JOINTS—GYPSUM WALL BOARD

A most important item in applying "Certain-teed" and "Bestwall" Gypsum Wall Boards

Joints and nail heads properly filled and covered do not show after decorating with paint, kalsomine or paper. They are not difficult to fill but careful work is necessary to assure smooth, perfect walls and ceilings. All joints are filled in the same manner, with the two operations of roughing-in and finishing.

Preparing the Joint Filler

Certain-teed or Bestwall Joint Filler should be mixed in small batches in a clean, square pan. Put some clean water into the pan, sprinkle the filler into it and mix to the consistency of ordinary plaster. See instructions on our Joint Filler Container. In applying filler there are two operations—roughing-in and finishing.

Roughing-in the Joints

Use a 12x12 mortar hock and 11-in. plasterer's smoothing trowel.

To put on first coat, little ribbons of filler should be cut from the hock the full length of the trowel and forced firmly into the joints.

The surface of the joint should be kept below the surface of the wall and surplus material should be struck off.

To make joint concave and to rough it up for receiving the finish coat, the trowel should be tipped on end and drawn down the length of the joint, or wash down with water and a kalsomine brush. Then allow to harden before finishing.

Finishing the Joints

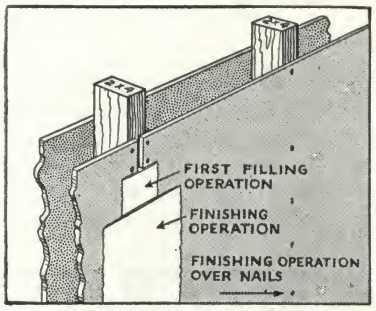
When rough filled joint has set hard, dampen 6 in. each side of joint by sprinkling with clean water. Then mix filler as before and apply to each joint to make an absolutely straight wall, using 11-in. edge of trowel as straightedge across joint. Let set until just about hard, sprinkle again with water and trowel down to a smooth finish.

Finishing Corners and Angles

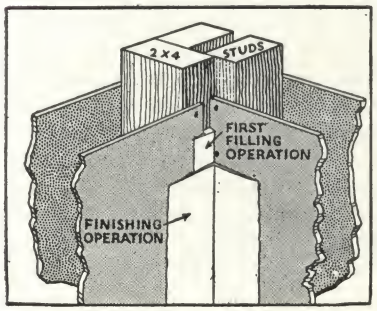
Joints at corners and angles are finished in the same manner as at edges. Where corner beads are not used for external corners, and either slab does not entirely fill out the corner, set a straightedge, or arris, along the face of the board on one side so that it locates the exact position of the finished corner. Fill out the first filling operation with filler flush with the straightedge. When the filler has set sufficiently, remove the straightedge. In the second operation, smooth out to a featheredge as on other joints.

Covering the Nails

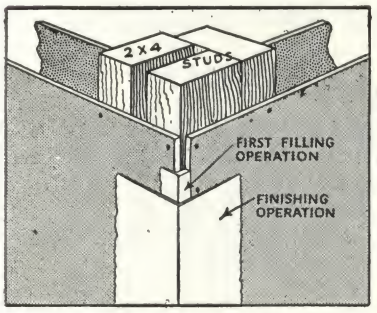
All nails or nailholes should be dampened and spotted with same filler used for joints, leaving surface flush with the board. Nail filling when dry should be sanded to a smooth surface.



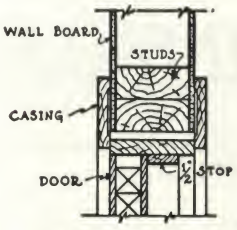
Sidewall Joist



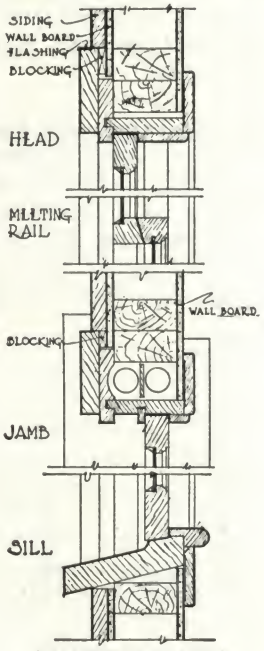
Interior Corner Joint



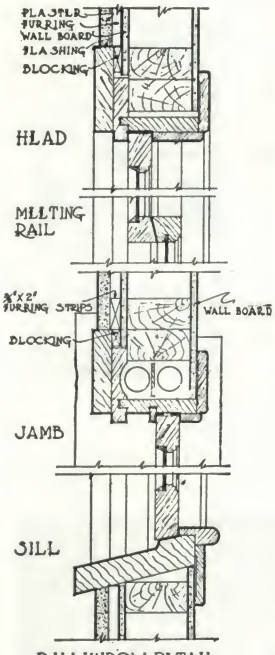
Corner Joint with Bead



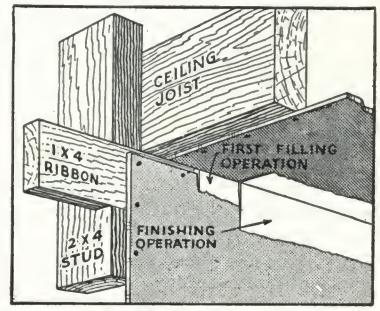
INSIDE DOOR DETAIL
NEW FRAMES



D.H WINDOW DETAIL
½" BOARD USED INSIDE & FOR SHEATHING WITH NEW FRAMES - EXT FINISH - SIDING

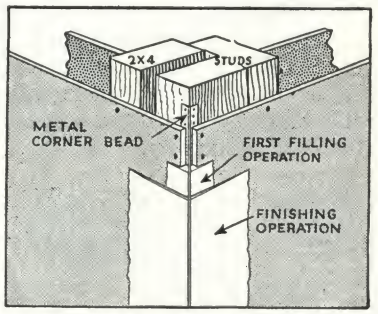


D.H WINDOW DETAIL
WALL BOARD USED INSIDE & FOR SHEATHING WITH NEW FRAMES - EXT FINISH - PLASTER

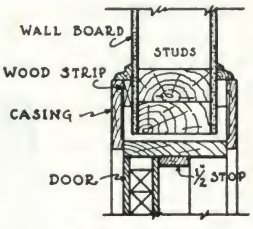


Coved Ceiling Joint

Wall and Ceiling Joint



Corner Joint Without Bead



INSIDE DOOR DETAIL
OLD FRAMES

UNIVERSAL GYPSUM & LIME CO.

Conway Building, CHICAGO, ILL.

SALES OFFICES

CHICAGO, ILL. KANSAS CITY, MO. ATLANTA, GA. ST. LOUIS, MO. MINNEAPOLIS, MINN.
NEW YORK, N. Y. FORT DODGE, IOWA FORT WORTH, TEX. YORK, PA. PITTSBURGH, PA.

Products

GYPSUM and LIME PRODUCTS:

Gypsum Cement Plaster, fibered and unfibered.

Gypsum Wood Fibered Plaster.

Gypsum Prepared Sanded Plaster.

Gypsum Bond Plaster for interior concrete surfaces.

Prepared Trowel and Sand Float Finishes.

Gypsum Gauging Plaster for lime putty finishes, also including Pure White Plasters.

Gypsum Moulding and Casting Plaster.

Exterior and Interior Color Stucco.

Best Bros. Keene's Cement.

Universal and Plymouth Rock Hydrated Finishing Lime (high magnesium).

Universal and Palmer Masons Hydrated Lime.

Palmer Masons Lump Lime.

Spred and Kuver Finishing Ground Lime.

Big Yield Masons Ground Lime.

Universal Plastic Paint.

Gypsum Block, Wall Board, and Lath; Insulex for insulation.

TRADE-MARK

Quality

UNIVERSAL GYPSUM & LIME CO.'s products are manufactured from carefully selected basic materials, scientifically prepared by experienced men. They pass all the requirements of standard specifications of the American Society for Testing Materials and will give satisfactory results if used in accordance with our specifications.

Brands of Universal Gypsum Plasters

Gypsum plasters of each class are marketed under the various brands listed below, all brands of each class being of the same high standard of quality.

‡*Universal
*Iowana
‡*Plymouth
*Acolite
*Nobles
*Crescent
†Empire
†No. 4 Gray
†Sand Float
‡Red Band
‡Higginson's Red Star
§Blue Ribbon
§Higginson's Blue Star

*Hairfibered, unfibered or wood fibered plaster.
†Prepared finish.
‡Gauging or finishing plaster.
§White moulding and casting plaster.

Universal Gypsum Block (Partition Tile)

This gypsum product has an established reputation in the building world through repeated use by architects, contractors and builders. It is fire resisting, heat, cold and sound resisting. Light weight, strong and tough, and erects economically without waste. It is a recognized material for interior, non-bearing partition, column covering and wall furring. These blocks are made on the latest type of automatic machine.

Sizes—Standard 12x30 in., thickness 2 and 3 in. solid; 3, 4, 5 and 6 in. hollow.

Gypsolite

Description—Gypsolite, a finished wall material, is a patented gypsum rock wall board, machine built into large sturdy boards, predried and ready to nail to studding and joists. The special Gypsolite patent process produces a wall board that is very light in weight and has great strength and rigidity, thus facilitating ease of handling and nailing without breaking. Made in lengths of 6 to 12 ft.; widths 32 or 48 in.; uniform thicknesses, ¼, ⅜ or ½ in.

GYPSOLITE WALLBOARD
TRADE-MARK

Advantages—Being of pure rock formation without sawdust or other substitutes, Gypsolite forms a solid and continuous wall of rock that will not warp, shrink, bulge, or crack. It provides better insulation, due to the patented gypsum core which is filled with minute dead air cells. Gypsolite is fire resisting, heat, cold and sound resisting. Gypsolite has great strength, unusual light weight with minimum breakage, assuring a rigid wall surface for all types of interior construction. Adaptable to new construction as well as for repairing and remodeling.

Gypsolite Finisher—Packed in powdered form in handy 5 lb. cartons, and when mixed with water it forms a putty cement which is used for filling joints, nailheads, etc., to form a smooth surface ready for decoration.

Universal Gypsolite Lath

Is produced in the same manner as Gypsolite Wallboard having all its advantages. It forms a perfect backing for gypsum plasters.

Sizes and Thicknesses—¼, ⅜ and ½ in. thick; standard sizes, 16x32 and 16x48 in. bundled. Also, 24x32, 32x36 and 32x48 in. unbundled.

Insulex

Insulex is aerated or cellular gypsum, a fire, vermin and decay proof heat insulation and sound deadener. It is employed on roofs, floors, sidewalks and ceilings of residences, commercial and industrial buildings, and for industrial uses, such as pipe, boiler and tank covering, etc. Insulex is used as a light weight fill for reducing dead load in structures.

INSULEX GYPSUM INSULATION
TRADE-MARK

Insulex is manufactured in precast dried slabs or blocks with a paper covering. The blocks may be easily sawed to fit in place.

BAR-RAY PRODUCTS, INC.

X-Ray Proof Building Specialties

209-213 25th Street
BROOKLYN, N. Y.

Products

BAR-RAY CONSTRUCTION UNITS and MATERIALS in standard and special forms for protection against penetration of X-rays. Used in hospitals, X-ray laboratories and wherever enclosures for X-ray apparatus are required.

General Description

Protection against X-ray is a necessity for all persons in proximity to any apparatus emitting X-rays. Heretofore protective construction has included the use of lead almost exclusively in complicated, cumbersome, uneconomical, and frequently inefficient forms.

With the use of our various types of Bar-Ray units and materials there is available to architects a standard, simplified and scientific method of accomplishing complete protection.

These materials include partition blocks, prepared mortar and plaster, lath, lath nails, operators' windows, doors, glass and other special devices, each and all having protective properties which prevent transmission of X-rays and which provide all required means to completely enclose and isolate spaces containing X-ray apparatus. With the use of our materials and devices there is not the slightest chance of having any places in the X-ray room unprotected, as is so often the case with improvised methods and patchy construction.

We have a material and method to meet every conceivable requirement in a thoroughly scientific manner.

The finished construction is accomplished with a saving of time, space and expense and with 100% efficiency.

In the manufacture of our products, the materials used which effect complete protection are lead or Ray-Proofing compound, which is used as an admixture with masonry materials. Our Bar-Ray Glass is of itself completely ray-proof and is made by a special process in which protective ingredients are combined.

Ventilators, frames, shades and other special devices for light-proofing are made to meet your exact requirements.

Service

X-ray protection is our exclusive business in which our experts are recognized authorities. We offer the services of our staff in the solution of any problem of X-ray protection. Our service, which costs nothing, along with the use of our materials, offers sure protection against a real danger which is not of occasional or fortuitous character but which is present in *every case* and cannot be side-stepped.

We will provide drawings and specifications without charge for the use of our materials.

We will also provide competent supervision for the installation of our products, where required.

Materials

Bar-Ray Lead Insulated Partition Block—A 4x12x12-in. block composed of cement or gypsum in two layers with unpierced sheet lead between, providing a ¾-in. lap on all sides.

Bar-Ray Compound Partition Block—A solid block 4x12x12 in. composed of portland cement or gypsum and containing Ray-Proofing compound.

Note: Blocks are used for both partition and floor work. For floors any usual finish may be applied over blocks.

Bar-Ray Prepared Mortar—A prepared mortar, containing Ray-Proofing compound.

Bar-Ray Prepared Plaster—This is a prepared plaster of special composition containing Ray-Proofing compound, which can be used as an additional protection.

Bar-Ray Lath—This lath is made up with either a standard well-known make of fibrous board lath or with plaster board, backed by sheet lead having a ¾-in. lead lap. It is secured to wood studs or to masonry surfaces by means of Bar-Ray nails which have special lead protection. Finish over lath may be plaster, tile or any other material.

Bar-Ray Operators' Windows—Have Bar-Ray Glass and lead frames with a special opening so detailed as to permit transmission of voice but not X-rays.

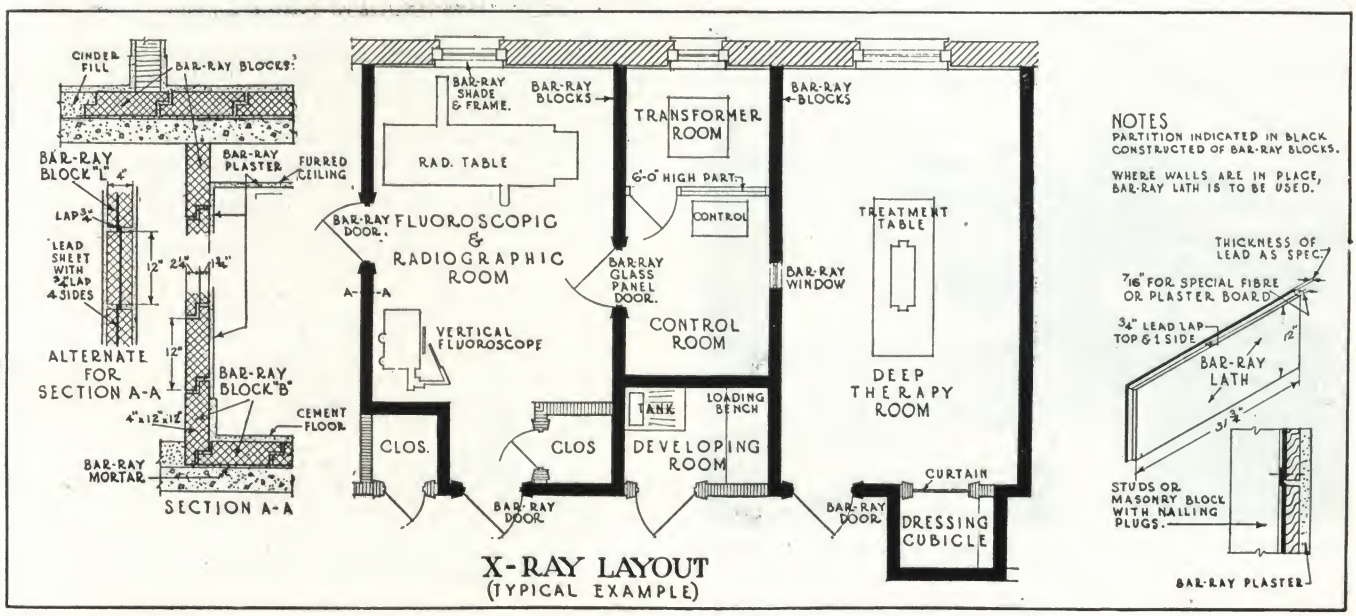
Bar-Ray Doors—Are flush type made in any size and finish specified, containing any thickness of lead specified. With or without glass panel. Continuous sheet of lead is through center of door. Can also be equipped with darkening panel.

Bar-Ray Glass—A glass of special ray-proof composition in any thickness up to 18-21 m.m. Offers most efficient protection, greatest safety and adaptability.

Special Protection Devices—We make special devices and materials such as ray-proof partitions and any other ray-proof material or device to meet special requirements.

Lightproof Ventilators—Lightproof ventilators are made in stock size 12x24 in., other sizes special.

Lightproof Shades and Frames—Are made to meet all special conditions.



ARMSTRONG CORK & INSULATION COMPANY

Manufacturers of Armstrong's Cork Machinery Isolation

935 Concord Street, LANCASTER, PA.

BRANCHES

ALBANY, N. Y.	CHARLOTTE, N. C.	DENVER, COLO.	KANSAS CITY, MO.	OMAHA, NEB.
ATLANTA, GA.	CHICAGO, ILL.	DETROIT, MICH.	MEMPHIS, TENN.	PITTSBURGH, PA.
BIRMINGHAM, ALA.	CINCINNATI, OHIO	GRAND RAPIDS, MICH.	MILWAUKEE, WIS.	ROCHESTER, N. Y.
BOSTON, MASS.	CLEVELAND, OHIO	HARTFORD, CONN.	MINNEAPOLIS, MINN.	ST. LOUIS, MO.
BUFFALO, N. Y.	DALLAS, TEX.	HOUSTON, TEX.	NEW YORK, N. Y.	SYRACUSE, N. Y.
		JACKSONVILLE, FLA.		

MONTREAL, QUE. TORONTO, ONT. WINNIPEG, MAN. LONDON, ENG.

AGENTS

BALTIMORE, MD., JOHN R. LIVEZEY, 526-530 St. Paul Street
LOS ANGELES, CAL., GAY ENGINEERING CORP., 2630 Santa Fe Avenue
NEW ORLEANS, LA., H. T. STEFFEE, 922-930 Tchoupitoulas St.
PHILADELPHIA, PA., JOHN R. LIVEZEY, Glenwood Avenue West of 22nd Street
PORTLAND, ORE., GILLEN-COLE CO., 15th and Overton Streets
SPOKANE, WASH., D. E. FRYER & CO., 1111 Paulsen Building
SAN FRANCISCO, CAL., VAN FLEET-FREEAR CO., 557 Howard Street
SEATTLE, WASH., D. E. FRYER & CO., 1233 Utah Street
WASHINGTON, D. C., JOHN R. LIVEZEY, 902 Woodward Building

Product

ARMSTRONG'S CORK MACHINERY ISOLATION.

See Manufacturers' Index for Armstrong's Corkboard for house and roof insulation, Corkboard for cold storage insulation, Corkoustic for sound-quieting and acoustical treatment, Temlok for house and roof insulation.

Deadening Noise and Vibration

Armstrong's Cork Machinery Isolation is made to deaden the noise and vibration incident to the operation of all types of machines. It provides an economical and thoroughly practicable means of guarding against lowered efficiency, hastened depreciation, irritating noises, and the other natural results of vibration. It is a resilient board, is strong and durable and maintains its physical characteristics indefinitely if properly installed.

Size and Thicknesses

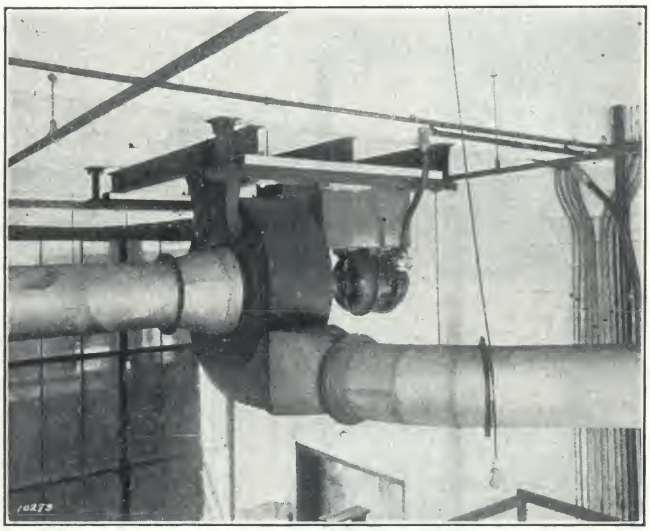
Armstrong's Cork Machinery Isolation is supplied in boards 12 in. wide and 36 in. long, in thicknesses ranging from 1 to 6 in. Other dimensions, less than 12x36 in., can be cut to order. The standard thicknesses are: 1, 1½, 2, 3, 4, 5, and 6 in.

Densities

Armstrong's Cork Machinery Isolation is made in three densities. This is possible because it is a *manufactured* product and, hence, its density is readily controlled and held uniform. The three densities in which Armstrong's Cork Machinery Isolation are made are designated as Light, Medium, and Heavy.

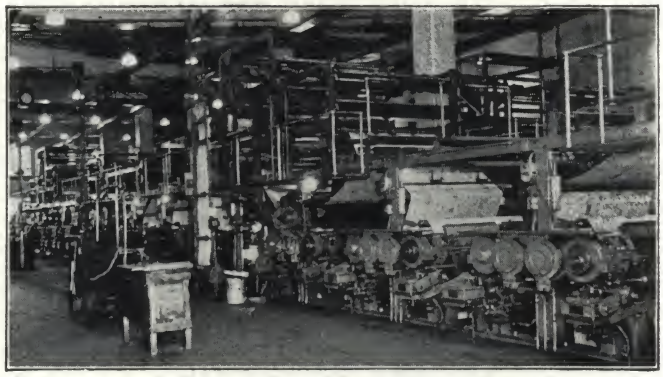
Resilience

The characteristic resilience of Armstrong's Cork Machinery Isolation is unique even among resilient materials. The thousands of minute air cells, which are part of the structure of cork, form a cushion which never loses its "life." Armstrong's Cork Machinery Isolation never hardens or "sets" if loaded within its proper limits.



Armstrong's Cork Machinery Isolation Eliminates Vibration of Blower Fans

Practically any type of machine can be isolated with this cork material



Presses in the Star Newspaper Building, Toronto, Ont.

Cushioned by 8000 sq. ft. of Armstrong's Cork Machinery Isolation, 1½-in. thickness

Durability

Armstrong's Cork Machinery Isolation may be relied upon to serve the purpose for which it is intended as long as the machine is in operation, provided it has been properly used. It is not affected by moisture and is not subject to rot and decay. If applied properly, it will not disintegrate nor change its physical characteristics in any manner.

Methods of Application

Practically any type of machine may be isolated with Armstrong's Cork Machinery Isolation, although the method of application must, of course, vary to accommodate itself to the character of the setting.

There are two general methods of application, both subject to variations. In the first method, involving the "floating slab" principle, the foundation pit is finished with concrete and then lined on both bottom and sides with Armstrong's Cork Machinery Isolation of the proper thickness and density and set in hot asphalt. After a suitable waterproof paper applied in hot asphalt has been placed over the cork, concrete for the foundation proper is poured in. Weight of the foundation increases the static load and helps secure sufficient compression.

In the second method the Cork Machinery Isolation is applied between the machine bed plate and the floor or foundation to which it is fastened. Where the load of the machine is heavy enough in proportion to the area of the base, the machinery isolation may be applied as a continuous layer.

Where Armstrong's Cork Machinery Isolation is used between the machine and the foundation, and is not protected through being applied in channel-irons, it should be covered with light telescoping metal pans, to protect it from abrasion, oil, and chemicals.

The engineers of the ARMSTRONG CORK & INSULATION COMPANY will, without obligation, give you the full benefit of the wide experience of the Company in isolating machines of practically all kinds. Your inquiry may be addressed either to your nearest branch office or agent, as shown at the top of this page, or to the ARMSTRONG CORK & INSULATION COMPANY, Lancaster, Pa.

CORK INSULATION COMPANY, INC.

Manufacturers of Corinco Cork Machinery Isolation

GENERAL OFFICES

154 Nassau Street, NEW YORK, N. Y.

BRANCHES IN THE PRINCIPAL CITIES

IN CANADA: Cork Insulation Company (Canada) Ltd., MONTREAL, QUE., VANCOUVER, B. C.

Product

Corinco Cork Machinery Isolation for reducing noise and vibration of machinery of all kinds. Furnished in varying densities from 1.1 to 1.8. Standard sheets 12x36 in., 1, 1½, 2 and 3 in. thicknesses.

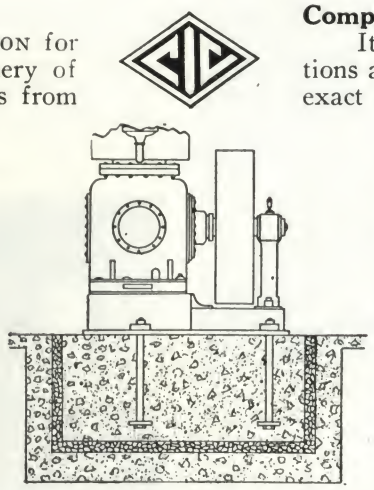
For our pages on Acoustical Correction and Cold Storage Insulation, etc., see Manufacturers' Index.

The Company

For data on nature, size and reputation of organization, see Insulation pages.

Machinery Isolation

Tests conducted at Colgate, Northwestern, Michigan, and other universities have conclusively established excessive noise and vibration as a definite cause of accidents, decreased production and lowered efficiency; while at least one recent court decision has recognized machinery vibration as a basis for a damage suit.



Showing How Machinery Foundations Are Isolated with Corinco Cork Machinery Isolation

The more immediate effects of vibration, however, show clearly the need for corrective measures. Increased wear on machinery, continual interference with delicate adjustments, or even damage to the building itself are among these local results.

The isolation of the machine from the structure of the building by some non-rigid material is naturally the answer. From tests and from experience, certain requisites for an isolation material become apparent.

First, it must be resilient.

Second, it must have great strength in compression.

Third, it must not harden or lose its resiliency under any loading.

Fourth, it must be impervious to moisture and decay.

These requisites immediately pointed to the use of corkboard, which has been tried with signal success. Corinco Cork Machinery Isolation is now in successful use under conditions of every sort.

Compression Calculations before Installation

It is possible to arrive by simple calculations at very accurate conclusions regarding the exact amount and location for Corinco Cork Machinery Isolation. The main point to be borne in mind is simply this: best results are obtained when the isolation is under slight compression, and the thicknesses and density of material required can be readily computed. CIC engineers will gladly make recommendations for the proper installation of this material.

Methods of Installation

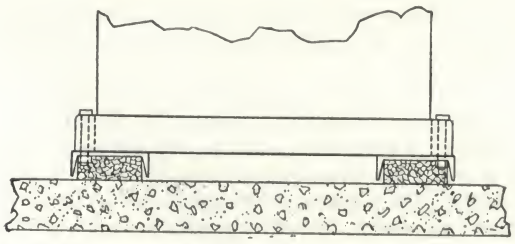
Any sort of machine can be isolated with Corinco Cork Machinery Isolation, and the methods of installation can be varied readily to meet location conditions.

There are two generally successful methods of installation. The first consists of constructing an auxiliary foundation pit with concrete and then lining it on the sides and bottom with the proper thickness and density of Corinco Cork Machinery Isolation. The slabs are laid in hot asphalt, after which the concrete for the foundation is poured directly into the cork lined pit.

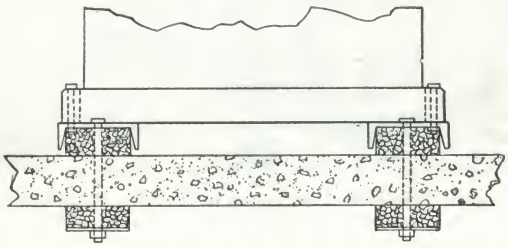
The second installation method consists of placing Corinco Cork Machinery Isolation between the machine bed plate and the floor. Where the weight of the machine is sufficiently great in proportion to the area of its base, a continuous slab of cork may be used. The proper application of this material depends entirely upon the machine to be isolated. Our engineers will be glad to furnish complete information. Catalogue sent on request.

Service

Engineering assistance, samples and prices will be cheerfully furnished by the nearest office of the Cork Insulation Company.



Light Machine Isolated with Corinco Cork Machinery Isolation Placed Direct on Floor to Reduce Sound



Shows Method of Fastening Heavy Machine to Foundation

ARMSTRONG CORK & INSULATION COMPANY

Manufacturers of Armstrong's Corkoustic

935 Concord Street, LANCASTER, PA.

BRANCHES

ALBANY, N. Y.	CHARLOTTE, N. C.	DENVER, COLO.	KANSAS CITY, MO.	OMAHA, NEB.
ATLANTA, GA.	CHICAGO, ILL.	DETROIT, MICH.	MEMPHIS, TENN.	PITTSBURGH, PA.
BIRMINGHAM, ALA.	CINCINNATI, OHIO	GRAND RAPIDS, MICH.	MILWAUKEE, WIS.	ROCHESTER, N. Y.
BOSTON, MASS.	CLEVELAND, OHIO	HARTFORD, CONN.	MINNEAPOLIS, MINN.	ST. LOUIS, MO.
BUFFALO, N. Y.	DALLAS, TEX.	HOUSTON, TEX.	NEW YORK, N. Y.	SYRACUSE, N. Y.
		JACKSONVILLE, FLA.		

MONTREAL, QUE. TORONTO, ONT. WINNIPEG, MAN. LONDON, ENG.

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PHILADELPHIA, PA., John R. Livezey, Glenwood Avenue West of 22nd Street

PORTLAND, ORE., Gillen-Cole Co., 15th and Overton Streets

SPOKANE, WASH., D. E. Fryer & Co., 1111 Paulsen Building

SAN FRANCISCO, CAL., Van Fleet-Freear Co., 557 Howard Street

SEATTLE, WASH., D. E. Fryer & Co., 1233 Utah Street

TACOMA, WASH., D. E. Fryer & Co., 501-502 Provident Building

WASHINGTON, D. C., John R. Livezey, 902 Woodward Building

Product

Armstrong's Corkoustic, for Sound-quieting and Acoustical Treatment.

See Manufacturers' Index for Armstrong's Corkboard for house and roof insulation, Corkboard for cold storage insulation, Cork Machinery Isolation for deadening noise and vibration, Temlok for house and roof insulation.

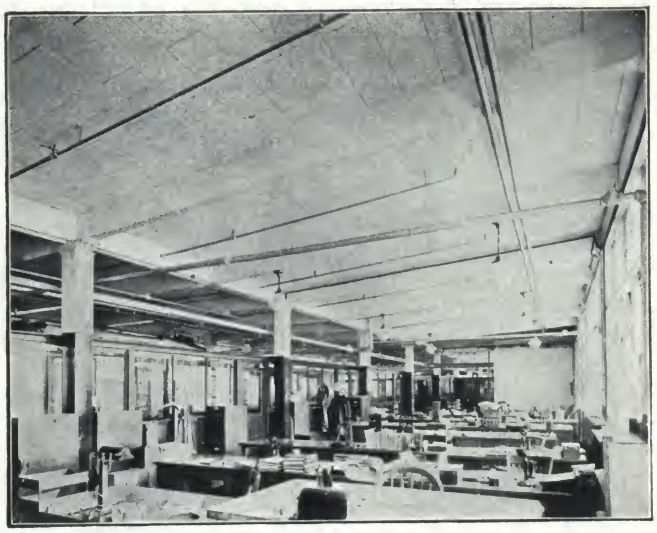
Acoustical Correction

Armstrong's Corkoustic is a cork material, possessing a high sound-absorption coefficient, remarkable decorative possibilities, excellent structural qualities. It is clean and sanitary. Having a high heat insulating efficiency, it serves a double purpose, acting both as a sound-absorbent and as insulation against heat and cold.

Where Acoustical Correction Is Needed—There are two principal classes of structures in which acoustical correction and sound-quieting are most necessary and desirable. The first class comprises auditoriums, churches, schools, theatres, clubs, and similar rooms where conditions necessarily must be such that speech and music can be heard clearly and distinctly by the audience.

Armstrong's Corkoustic, Applied to Ceiling of the Central M. E. Church, Muskegon, Mich.

Sundtand Wenner, Philadelphia, Architect
George E. Lather & Son, Muskegon, Mich., Contractors
Here it provides acoustical treatment and adds charm and dignity



Armstrong's Corkoustic, Applied to Ceiling of General Offices of RCA-Victor Corporation, Boston, Mass.

Corkoustic subdues distracting noises and adds to the efficiency of employees. It also serves as an insulation against heat and cold in this top-floor office space. In this office, the Corkoustic has been sprayed with two coats of white alabastine

The other class of buildings where sound-quieting is needed comprises hospitals, natatoriums, offices, shops, workrooms, factories, etc.—in short, all places where noisy surroundings are objectionable. All the evidence that science has gathered points out that reduction of noise around workers is an economical move and one whose cost will be more than repaid by increased efficiency.

Continued on next page

Armstrong's Corkoustic

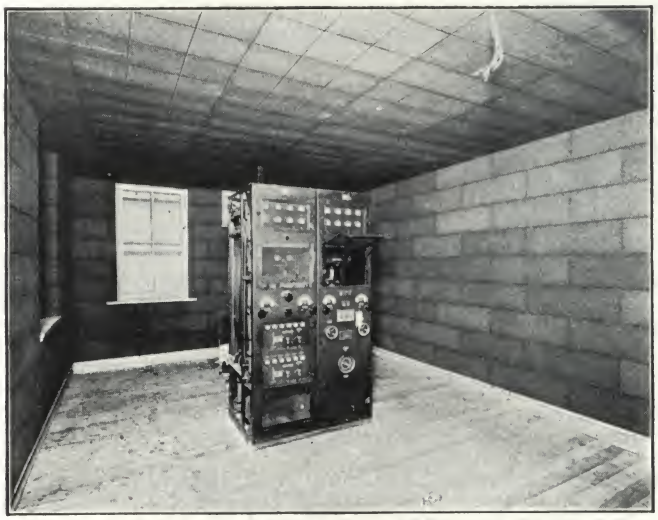
Armstrong's Corkoustic is made of pure cork granules compressed into strong, firm boards. All of the details of manufacture are so regulated that the material produced meets the requirements for sound control work. The most rigid inspection is employed and only material that meets the highest standard is supplied on order.

Sizes, Surfaces and Finishes

Corkoustic is furnished in standard units ranging in size from 12 in. x 6 in. to 12 in. x 36 in. All sizes are available in four thicknesses, 1, 1½, 2 and 3 in.

A choice of two surfaces is given—"sawed" and "sanded." The sawed surface, naturally, is the rougher. While comparatively smooth, it nevertheless has considerable surface texture and a deep rich quality. Sanding of the surface brings out the "grain" between the cork granules and gives the surface a smooth appearance. The sound absorbing efficiency is practically the same for both surfaces.

Corkoustic units are made in two finishes—"beveled" and "regular." In the former the edges are slightly beveled in order to simulate the masonry effect that is often desired. The other finish—"regular" has the edges squared so that they will set tightly together to give the effect of a flat surface. Either finish may be obtained in "sawed" or "sanded" surface and in any of the standard sizes.



Armstrong's Corkoustic Applied to Walls and Ceiling of the Broadcasting Station of St. Louis Police Department

Mauran-Russel & Cromwell, Architects
Kenton Construction Co., Contractor

Decoration of Corkoustic

The wide range of size, surface, and finish of Corkoustic make the decorative possibilities of the material almost without limit, especially in view of the fact that surface decoration in color is thoroughly practical.

The natural color of Armstrong's Corkoustic is a rich neutral brown. When Corkoustic is used in conjunction with dark woodwork often it is left in its natural state.

When a note of contrast is desired, stencilled designs of bright color may be used. Where a lighter all-over color is desired, spray coats of cold water paint are used. This treatment produces a very interesting effect, the dark interstices between the cork granules showing up against the lighter paint color to give an appearance somewhat similar to travertine.

The beveled-edge units of Armstrong's Corkoustic provide for a wide variation of pattern.

Structural Qualities

Armstrong's Corkoustic is easy to handle and apply. It is a strong, firm board. With ordinary care in handling it will not chip, crumble, or fall apart. This adds greatly to the ease and economy of application. The units are light and that, too, makes for easy handling.

Armstrong's Corkoustic to Subdue Clatter of China and Make Conversation Easy in Dining Room of Jacksonville Women's College, Jacksonville, Ill.

Royer, Danley & Smith, Urbana, Ill., Architects
Wm. C. F. Kuhne, Rantoul, Ill., Contractor

The structural strength of Corkoustic is many times greater than it requires to hold it true and rigid after application. After being properly tacked or cemented in place it will hold its form indefinitely without deterioration. Due to the remarkable resistance of cork to moisture and its inertness to temperature fluctuations, Armstrong's Corkoustic never swells, buckles, or warps. It will not decay or rot.

Application

Corkoustic can be readily applied to walls, ceilings and columns. By use of standard methods, it may be applied to any structural surface, either masonry or wood construction.

The Armstrong Cork & Insulation Company contracts to install Corkoustic as competent workmen and trained supervisors are maintained by the Company for this work.

Acoustical Analysis

Corkoustic is a uniform product and its coefficient of absorption always a dependable factor, so that it is comparatively easy to ascertain the exact amount required for acoustical correction under any conditions. Tables and charts, which greatly simplify the calculations and give results that can be depended on to insure satisfactory acoustic conditions in any type of room, along with complete detailed specifications and much other valuable data, are included in our 32-page book, "Acoustical Correction," which will be furnished promptly on request.

Advisory Service

The Armstrong Cork & Insulation Company maintains at all times a staff of experts to assist in the solution of acoustical problems. The facilities of the Company's research laboratories are constantly in use by the Corkoustic Department and a careful study of performance under actual conditions is made at every opportunity. The information and data that have been gathered from a number of years of such study will be applied to any problem upon which you desire advice and assistance. There is no charge or obligation for this service. Get in touch with the branch nearest you or address the Armstrong Cork & Insulation Company, Lancaster, Pa.

ACOUSTICAL CORPORATION OF AMERICA

SUCCESSORS TO M. C. ROSENBLATT, INC.

Mechanical Engineering Consultants and Contractors in Acoustics, Soundproofing, Sound Control and Regulation

10 South 18th Street, PHILADELPHIA, PA.

NEW YORK OFFICE: 11 West 42nd Street

Products

"SILENT-CEAL" the complete suspended ceiling construction.

"CUSHOCEL," "ABSORBEGE," "COFFERIC" and "GOTHIC"—types of acoustical treatments.

Also "Absorbord"; "Porolith," a sound absorbing stone; Quiet-Quite Machinery Isolator, Floor and Partition Soundproofing, laminar type; Soundproof Doors; Automatic Door Threshold Closure, and all Acoustical Materials.

"Silent-Ceal"

This new sound-absorbing ceiling construction is a revolutionary development in acoustical engineering. It is a *complete* suspended ceiling, not a superficial acoustical treatment. It gives the highest sound absorption possible—above 70 per cent for four principal octaves.

It requires no suspension, furring, lath, plastering or painting by others. And because of its steel structure, it is *fireproof*.

"Silent-Ceal" is a ceiling *guaranteed permanent*. In addition, due to its decidedly low cost, it insures an *economy* long desired in acoustical construction.

Full information on "Silent-Ceal" we will gladly furnish on request.

Our Regular Line of Acoustical Treatment

Felt and Membrane Types—***"Cushocel"***—For plane or curved ceilings. This treatment, membrane in contact, gives an over-all finish without joints. It permits of a wide range of form, texture and decorative finish.

"Cofferic"—Primarily, for coffered ceilings. This treatment is self-sealing and requires no lath or plaster behind it.

Fiber Board Types—***"Absorbege"***—For walls and ceilings. This treatment, fabricated of fibre board laminated on edge, gives an unusually high sound absorption, and because of its pleasing texture, permits of a wide range of stone and tile effects, over-all finishes and random patterns and colors.

"Gothic"—Principally for Gothic ceilings and panels. It is non-resonating and allows unusually attractive color effects.

The Organization

ACOUSTICAL CORPORATION OF AMERICA, succeeding M. C. Rosenblatt, Inc., is a pioneer in the field of acoustics, having had sixteen years' uninterrupted experience solely in this work. Members of the organization have been continuously in this line since its inception.

We control the manufacture of several of our materials but have no prejudice toward or against any proven material on the open market which is suitable for acoustical purposes. We deal in all of them but refine them by our own processes.

A Comprehensive Service

Mechanical engineering consultants in acoustics and soundproofing; acoustical and soundproofing contractors; operators under patents of M. C. Rosenblatt, M. E., M.A.S.M.E., F.R.S.A.

Our service covers all of the types. We believe it to be the only service of its kind available—a distinct advantage to the architect. It insures him a type and form of treatment which meets his design and detail requirements exactly.

Plan Analysis

We are able to predetermine all acoustical characteristics and degree of soundproofing from your plans. There is no charge for this service to architects.

Responsibility

ACOUSTICAL CORPORATION OF AMERICA is prepared to show financial responsibility to undertake work of any size or quantity. We have lately completed the largest single contract ever awarded in this field. A guarantee bond will be cheerfully furnished.

References—A Small Representative List

Atlantic City Convention Hall, Atlantic City, N. J., Lockwood, Green & Company, Architects
Ziegfeld Theatre, New York, N. Y., Joseph Urban, Architect
D. A. R. Constitution Hall, Washington, D. C., John Russell Pope, Architect
Church of the Heavenly Rest, New York, N. Y., Bertram Goodhue Associates, Architects
Brooklyn Law School, Brooklyn, N. Y., Bertram Goodhue Associates, Architects
Architects Building, Philadelphia, Pa., Committee of Prominent Philadelphia Architects
William B. Irvine Memorial Auditorium, Philadelphia, Pa., Horace Trumbauer, Architect
Hartford County Building, Hartford, Conn., Paul P. Cret and Smith & Bassett, Architects
1021 Park Avenue Apartments, New York, N. Y., Rosario Candela, Architects
Bryn Mawr Hospital, Bryn Mawr, Pa., Zantzinger, Borie & Medary, Architects
Southern Railway Office Building, Washington, D. C., Waddy B. Wood, Architect
Bell Telephone Company Buildings
Temple University, Philadelphia, Pa., Wm. H. Lee, Architect
Art Museum, Philadelphia, Pa.
RCA-Victor Company, New York, N. Y., and Atlantic City
Montgomery County Courthouse, Norristown, Pa.
Rodeph Shalom Synagogue, New York, N. Y., Chas. B. Meyers, Architect
Metropolitan Opera House, Philadelphia, Pa.
WLTH Radio Studios, Brooklyn, N. Y.

D. A. R. Constitution Hall, Washington, D. C.
JOHN RUSSELL POPE, Architect
GEO. A. FULLER CO., General Contractors

Specifications

It is impractical to prepare standard specifications which will meet every condition. From our analysis of the architect's plans, as previously described, we will prepare and furnish him with a guiding specification to meet his particular problem.

A general specification should read: Acoustical construction for the following spaces ..... shall be in accordance with the standard, quality, construction and materials of the ACOUSTICAL CORPORATION OF AMERICA. The contractor shall submit working details of the acoustical construction showing the relation with all other trades joining or intersecting this work.

CORK INSULATION COMPANY, INC.

Manufacturers of Corinco Acoustical Corkboard and Contractors for Acoustical Correction

GENERAL OFFICES
154 Nassau Street, NEW YORK, N. Y.
BRANCHES IN THE PRINCIPAL CITIES
IN CANADA: Cork Insulation Company (Canada) Ltd., MONTREAL, QUE., VANCOUVER, B. C.

Product

Corinco Acoustical Corkboard for acoustical correction in all types of buildings.

For our pages on Cold Storage Insulation, Machinery Isolation, etc., see Manufacturers' Index.

The Company

For data on nature, size, and reputation of organization, see Cold Insulation pages.

Experience

The correction of acoustics in auditoriums, schools, theatres, convention halls, etc., apartment houses and factories represents the work of the acoustical engineers of the Cork Insulation Company, Inc. Practical experience has been augmented by years of special study and research.

Advantages of Corinco Acoustical Corkboard

Corinco Acoustical Corkboard is used to supply a deficiency in absorption units, or to correct dead spots, interference and reflection.

Corkboard also serves a secondary, though scarcely less important, function in insulating the building against outside temperatures. As auditoriums and buildings of this type are used intermittently, rapid and economical heating is a considerable factor; and cork shows a great advantage in this regard.

Cork is outstanding among building materials for its fire-resistant qualities.

It is slow burning and will not support combustion.

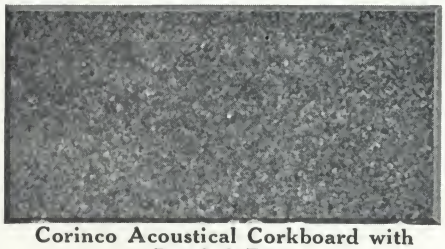
Another important advantage of Corinco Acoustical Corkboard is that it lends itself readily to interesting and attractive decorative effects and permits the architect to express his individuality.

Sizes, Finishes and Surfaces

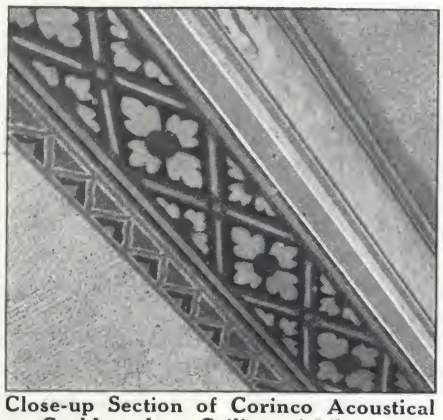
Corinco Acoustical Corkboard comes in standard units ranging from 12x6 to 12x36 in.; and in various thicknesses.

Surface textures are "sawed" and "sanded"—the former being the rougher, with a deep, rich quality; while the latter has a peculiar and pleasing appearance of its own. The surface has no practical effect on the absorption coefficient.

Two finishes are available: Beveled, to simulate masonry; and Standard to provide a smooth wall surface. For best results, the beveled finish is recommended.



Corinco Acoustical Corkboard with Beveled Edge



Close-up Section of Corinco Acoustical Corkboard on Ceiling of Library, Showing Stenciled Design

Unlimited Possibilities for Decoration

The many sizes and surfaces of Corinco Acoustical Corkboard offer the designer a wide range of possibility. The natural color of the board harmonizes well with stained woods, and through the use of cold water paints, many pleasing effects can be obtained. If oil paint is desired we recommend a special acoustical paint, which should always be applied with a spray gun.

Corinco Acoustical Board Is Strong and Easy to Handle

Corinco Acoustical Corkboard is strong and compact. It handles like lumber, and can be cut, sawed and nailed, or set in mortar. No superstructure or membrane is needed to hold it in place. It is unaffected by heat, cold, moisture; and is easy to clean and maintain.

Reasonable in Cost

Corinco Acoustical Corkboard costs less than most other sound-absorbing materials, and is economical to install. Due to its insulating efficiency, it will often pay for itself in heat saved.

Engineering Service

When the structure to be corrected presents a complicated acoustical problem, the designer will do well to consult CIC engineers. The services of CIC's experienced Acoustical Engineers and erection men will greatly reduce the cost of this type of work.

Booklet for Architects

A special booklet on Acoustical Correction will be sent to any architect interested. Please address nearest office.

Acoustical Corkboard Between Ceiling and Beams of Living Room in Fine Residence

Acoustical Corkboard on Ceiling of Library of High School

Acoustical Corkboard on Ceiling of Corridor in High School
(Note caste plaster relief between panels)

R. GUASTAVINO COMPANY

INCORPORATED

Timbrel Arch Construction and Masonry Acoustical Installations

225 West 34th Street
NEW YORK, N. Y.

40 Court Street
BOSTON, MASS.

REPRESENTATIVES

CHICAGO, ILL., Quality Building Products Corp., 165 W. Wacker Drive
CLEVELAND, OHIO, Smitley-Hamilton Co., Chester-Twelfth Building
DETROIT, MICH., Puritan Brick & Tile Co., 5985 Trumbull Street
SAN FRANCISCO, CAL., Albert B. Mann, 417 Crocker Building

R. GUASTAVINO CO. OF CANADA, LTD.
10 Cathcart Street, MONTREAL, CANADA

Products

Products manufactured by us include:

Special Ceramic Tile, glazed and unglazed.

Rumford Ceramic Acoustic Tile, patented.

Akoustolith, in tile and ashlar sizes, patented.

Akoustolith Plaster, patented.

Acoustic Casting Plaster, patented.

Services

The business of this Company is that of designing and installing vaulted ceilings in Timbrel Arch Construction and acoustically correct interiors by means of sound-absorbing masonry materials.

Train Concourse

Passenger Concourse

New York Central Station, Buffalo, N. Y.

Alfred Fellheimer and Stewart Wagner, Architects

Where ideal acoustic conditions and permanency of construction have been achieved by the installation of Akoustolith sound absorbing tile as soffit course to structural tile ceiling vaults.

A Few Recent Notable Contracts in Guastavino Construction

Cathedral of St. John the Divine, New York, N. Y.	Cram & Ferguson, Architects
Riverside Church, New York, N. Y.	Pelton, Allen & Collens, Architects
Chicago University Chapel, Chicago, Ill.	B. G. Goodhue Associates, Architects
Princeton University Chapel, Princeton, N. J.	Cram & Ferguson, Architects
St. Bartholomew's Church, New York, N. Y.	Mayers, Murray & Phillip, Architects
Church of the Heavenly Rest, New York, N. Y.	Mayers, Murray & Phillip, Architects
Temple Emanu-El, New York, N. Y.	Robert D. Kohn, Charles Butler & Clarence S. Stein, Architects; Mayers, Murray & Phillip, Associate Architects
St. Ædan's Church, Jersey City, N. J.	Murphy & Lehmann, Architects
First Church of Christ, Scientist, Cambridge, Mass.	Bigelow, Wadsworth, Hubbard & Smith, Architects
First Unitarian Church, Chicago, Ill.	Dennison B. Hull, Architect
Nebraska State Capitol, Lincoln, Neb.	Mayers, Murray & Phillip, Architects
Grace Cathedral, San Francisco, Cal.	Lewis P. Hobart, Architect; Cram & Ferguson, Consulting Architect
Immaculate Conception Church, Germantown, Pa.	Paul Monaghan, Architect
St. Joseph's Convent, Brentwood, L. I., N. Y.	Murphy & Olmstead, Architects
Christ Church Cathedral, St. Louis, Mo.	Jamieson & Spearl, Architects
U. S. Post Office, Custom House and Courthouse, Duluth, Minn.	Supervising Architect, Treasury Department
Dept. of Commerce Building, Washington, D. C.	York & Sawyer, Architects

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Interior of the
University of Chicago Chapel
Chicago, Illinois

BERTRAM G. GOODHUE
and
BERTRAM G. GOODHUE ASSOCIATES
Architects

A MASONRY ACOUSTICAL INSTALLATION IN COLOR

"AKOUSTOLITH" sound absorbing tile and special colored ceramic and gold tile as a soffit course to constructive Guastavino Timbrel Tile ceiling vaults and ribs

Continued on next page

Guastavino Timbrel Arch Construction

While the GUASTAVINO Timbrel Arch construction is not necessarily required in the installation of our acoustic tiles, many well known buildings which have acoustical treatment have also used this construction with a soffit course of AKOUSTOLITH Tile.

This type of construction was first introduced into this country in 1885 by the late Rafael Guastavino Sr., and the business has been in continuous operation under practically the same personnel for more than forty-five years.

The construction is light and shell-like and especially adapted to the building of arches, domes, arch construction for floors, ceilings and roofs.

Construction of Large Domes

Many of the largest masonry roof and floor domes in this country constructed within the past thirty-five years have been built by the R. GUASTAVINO COMPANY—such well known domes as on the Cathedral of St. John the Divine, span of 135 ft., dome of the University of Pennsylvania Museum, span 90 ft., etc.

Type of Construction

Floor and ceiling vaults and domes are constructed of thin tile 1 in. thick and about 6x12 to 24 in. in length.

They are laid flat in cement mortar and bonded together so as to make a solid and homogeneous mass.

For ordinary spans, the crown of the arch is usually about 4 in. thick. In general, if the vault forms a ceiling only it can be built after the general contractor has installed the constructive floor or roof immediately over it.

When used as a carrying vault it can be installed at such times as conditions of walls and interior finish permit.

Can Be Designed to Carry Any Load

This system of vaulting can be designed to carry any load, from that of private residence to storage buildings and bridge work. Tests for both fire and load have been passed many years since by the New York Building Department and Compression, Shear and Tension Tests made at the Massachusetts Institute of Technology.

While domes or vaults may show exterior as well as interior lines exposed as part of the design, they are also built with an exterior leveling to obtain flat or sloping surfaces. In the case of floor vaults, this is done by "bridges and flatwork" formed by dwarf walls about 24 in. on centers which carry the tile leveling. The air cells so formed are often used for concealing heating and ventilating ducts.

Applicable to Use in Various Architectural Styles

The use of the vault affords a wide range of possibilities in the matter of design. The earlier installations were practically all left with a rough tile soffit, exposed or plastered. In later work glazed and unglazed repressed ceramic tiles carefully pointed were used for the soffit course, culminating in such ornamental ceilings as some in the new Nebraska State Capitol Buildings. Here highly ornamental treatments were used combining polychrome panels of our glazed tile in a RUMFORD (acoustic) tile field. In order to have complete supervision of the decorative glazed tile as well as the acoustic tile, we built our own factory at Woburn, Mass. In this way we can assure architects that not only the construction but our finished materials as well are under our complete control.

On the following page are shown construction details of typical Guastavino vaulted ceilings and illustrations from finished photographs are on the preceding pages.

A Strictly Engineering Problem Worked Out by Our Engineers in Consultation with the Architect

It will be readily seen by examining the detail drawings that we must necessarily work in close co-operation with the architect. For vault, dome or arch work of a constructive nature our engineers will work with the architect to obtain the effect he desires and then design the construction to fit the requirements.

Considerable steel will be saved over old floor arch methods of construction on account of the lightness of the material and possibilities for use over large spaces. Our engineering service is rendered without charge for this work.

Specifications

For typical specifications with AKOUSTOLITH Tile soffit course, see page 7, AKOUSTOLITH Tile Specifications Ceiling Work—(a).

Specifications will be written by us for this work and its relation to other work in the building.

Installation of Our Construction

In order to assure undivided responsibility we install all of our timbrel arch construction with our own mechanics specially trained in this work through many years of experience.

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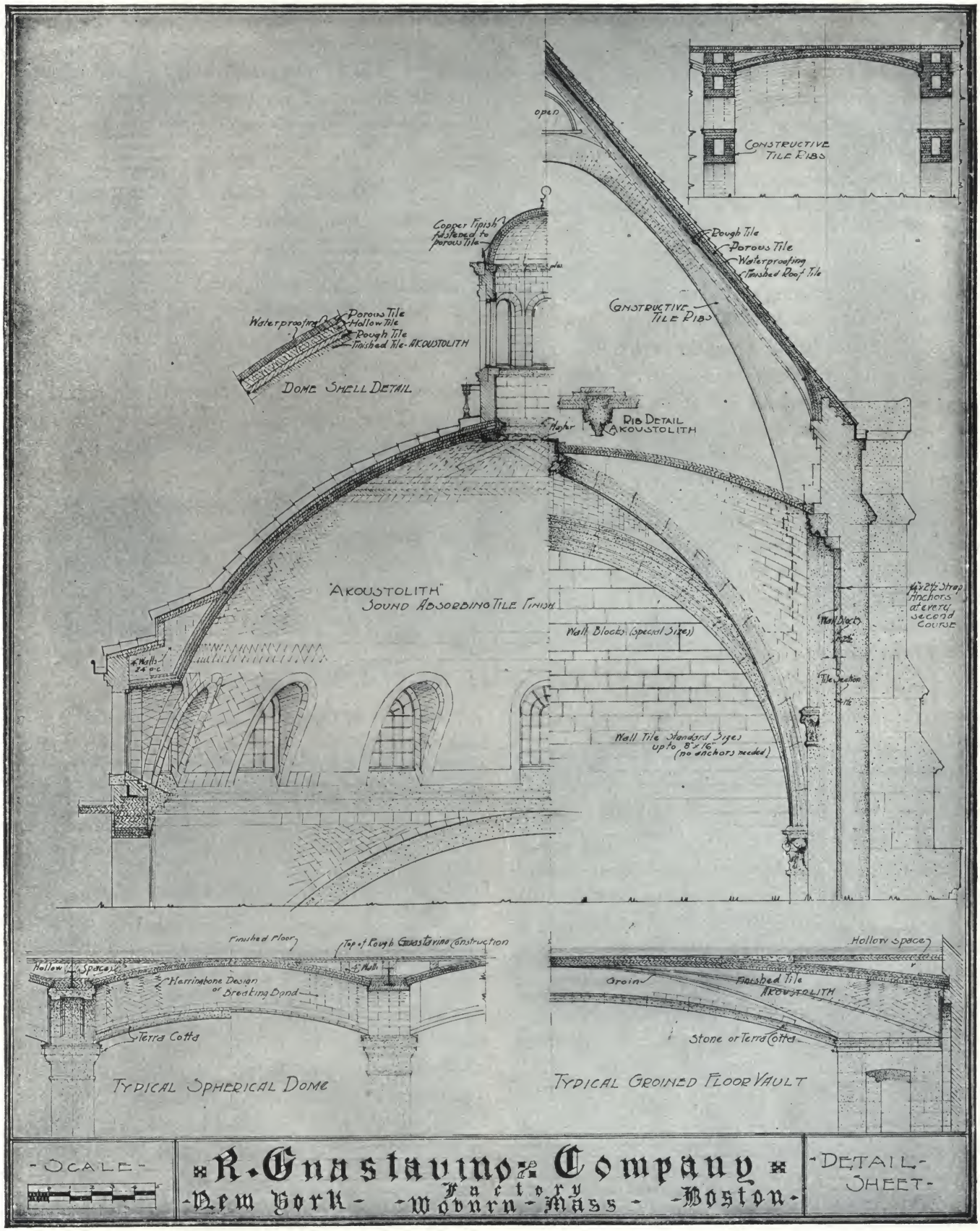

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Acoustic Materials Should Have Architectural Character

When an architect designs an interior it should not be necessary to change its character on account of the necessity for use of acoustical materials. Many otherwise fine interiors have lost their architectural and structural character through the use of incorrect material from an esthetic as well as acoustical viewpoint.

In designing and producing sound absorbent materials, Rafael Guastavino in collaboration with the late Professor Wallace C. Sabine of Harvard University succeeded in producing materials which had great acoustical value as well as architectural, structural and fireproof values. This idea was of the greatest importance and has been so recognized by the architectural profession as witnessed by the number and importance of the works entrusted to us.

If the interior is designed with a masonry character, this character should not be destroyed by the use of acoustic materials but rather enhanced by them. If a plaster interior is desired the material should carry out this effect. If a stone or tile effect is desired these should be produced.

It will be readily noted from the illustrations shown that, under a wide variety of conditions and styles of architecture, the architectural effect desired has been carefully and successfully produced.

Special Materials for Special Purposes

Sometimes it is as unwise to have too much sound absorbing material in a room as it is to have too little. So much depends on the size and shape of the room as well as its architecture, that the selection of the best materials to assure proper acoustics is one requiring mature experience.

In order to take care of practically all conditions we have produced two types of masonry acoustic tiles or ashlar and two of acoustic plaster. We produce glazed and unglazed ceramic tile used in our arches and domes. This latter is the well known original Guastavino tile and has been used for the past 45 years in constructing many of the largest domes and vaulted ceilings in the world.

In some cases where our acoustic tiles have been used we have combined colored tile borders and inserts. All of our finish tiles (glazed, unglazed and acoustic tiles) are made in our own plant and a large variety of colors and designs have been developed.

Where Tile Effects in Ceilings, Arches and Side Walls Are Desired. "Rumford" Tile—"Akoustolith" Tile

"Rumford" Tile—The late Professor Wallace C. Sabine and Rafael Guastavino, through scientific research and experiment, finally produced RUMFORD Tile —the first masonry material of high acoustical efficiency. RUMFORD tile is made in the ordinary tones required for church architecture but being a ceramic product is not as easily controlled as to color and form as AKOUSTOLITH, a later development.

"Akoustolith" Tile—We believe this is the most efficient masonry sound absorbing material on the market (see page 7). It can be obtained in a variety of textures with color range practically unlimited and can be moulded or cast into special shapes as required.

For Side Walls Requiring Stone Character

Where it is desired to carry out the effect of a stone ashlar in sizes up to 15 in. by 30 in. AKOUSTOLITH Ashlar sound absorbing artificial stone should be used. AKOUSTOLITH can be made to match very closely the color and texture of natural stones. (See page 7.)

For Side Walls or Ceilings in Plaster

Where expense is a controlling factor in the selection of acoustic materials or a plaster finish is desired, we suggest:

"Akoustolith" Plaster—A material with high sound-absorbing qualities, which is applied as a finish coat over the ordinary plaster base coat (see page 9). AKOUSTOLITH Plaster can be tinted and textured as desired, but should be used only on plain surfaces and applied with the trowel. Mouldings, ornament, etc., can be cast on the job in our

Acoustic Casting Plaster—This latter material using a gypsum binder can be cast, backed up and set in the usual way for plaster ornament, yet retaining its high acoustical efficiency (see page 10).

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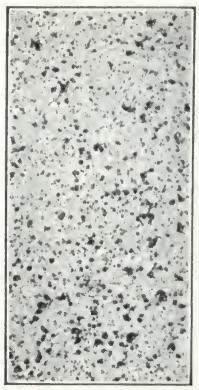
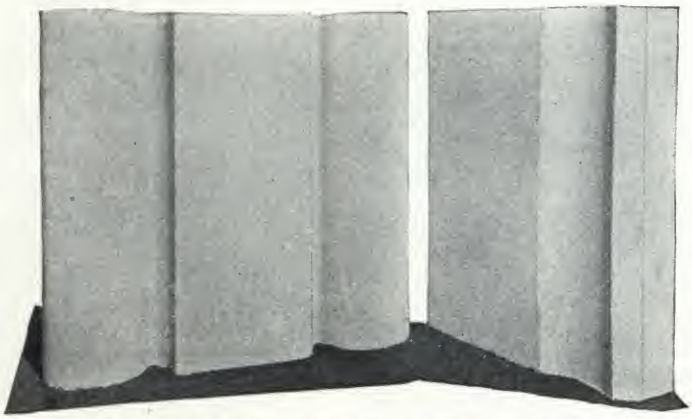
Types of Materials Made by Guastavino



Smooth Unglazed Ceramic Tile



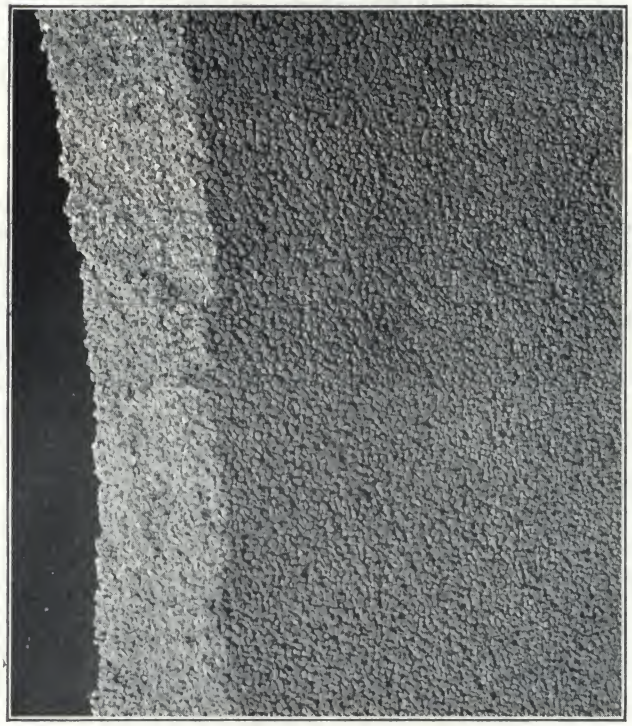
Sections of Ceiling Ribs Cast in "Akoustolith"

Corrugated Unglazed Ceramic Tile

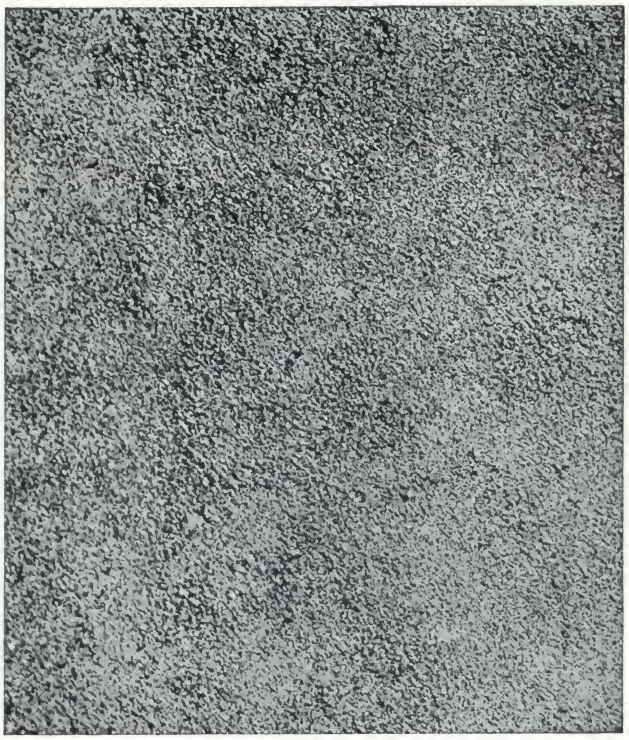
Decorative Glazed Tile Inserts

Ornament Cast in Our Acoustic Casting Plaster

Decorative Glazed Tile Inserts



"Akoustolith" Tile (Broken to Show Structure)



"Akoustolith" Plaster

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Akoustolith

Sound Absorbing Artificial Stone in Tile or Ashlar Form

What "Akoustolith" Is

AKOUSTOLITH is an artificial stone, having a sound-absorbing value greater than any other masonry material.

Its acoustical value was first determined by laboratory tests of the late Professor Wallace C. Sabine at Harvard University and more recently by the United States Bureau of Standards. These latter tests give the efficiency of AKOUSTOLITH Tile, Grade D, 2 in. thick at 59% for a frequency of 512 cycles per second (C^4) and 74% for a frequency of 1024 cycles per second (C^5).

Its Uses

Owing to its light weight and facility of manufacture AKOUSTOLITH is easily adapted to plain or elaborate architectural forms. It is used in tile form on walls, ceilings, arches, vaults and other architectural forms of a constructive nature. In ashlar form it has been used considerably by architects on side walls in imitation of stone work and has been successful in meeting their requirements.

Textures and Colors

It has a fine granular surface and is made in textures similar to that of natural stones or as desired. It is made in colors to closely resemble those of natural stones ranging from gray white through various shades of buff, brown or other colors of the natural stone.

It is genuine masonry, non-combustible and non-smoke producing. It will not warp. Moisture has no effect on its structure and it can be easily cleaned by vacuum or by washing.

Sizes and Weight

AKOUSTOLITH is manufactured in any size from the smaller tile dimensions, 3x6 in.; 4x8 in.; 5x10 in.; 6x12 in. and 8x16 in. usually about 1 in. thick and for this thickness weighs about 4 lb. per sq. ft. This light weight permits AKOUSTOLITH to be used in places where heavier material would be impracticable—for instance, ceiling work.

For wall ashlar, AKOUSTOLITH can be made in any size up to 15x30 in., thickness from 1½ to 2 in. It can also be moulded or cast in the usual architectural forms.

Its Installation

AKOUSTOLITH Tile used on ceilings has primarily been installed in connection with our regular GUASTAVINO Arch Construction, using it as a soffit course and backing up with two or more layers of our rough tile construction. It is also being installed by applying it directly to the soffit of concrete floor slabs or to wire lath and cement plaster ceilings.

For side wall installations it can be cemented directly to any of the many masonry surfaces without scratch coat, if the surface is reasonably true.

We generally do our own installing, but in special cases the material can be purchased f.o.b. factory and set by the general contractor's bricklayers.

Akoustolith Tile Specifications

Ceiling Work

(a) (As Part of GUASTAVINO Timbrel Arch Construction.)

Where indicated on drawings, or as hereinafter specified, the ceilings shall be constructed of Timbrel Tile arches by R. GUASTAVINO COMPANY, New York and Boston, with the soffit of the arch faced with (give size of tile) AKOUSTOLITH sound absorbing artificial stone tile. Tile to be laid in pattern shown.

Arch construction in addition to the soffit course of AKOUSTOLITH Tile shall consist of not less than two layers of good, hard burnt, rough, semi-porous terra cotta tile, ranging from 1x6x12 in. to 24 in. in length. Tile shall be laid in 1 to 2½ mix portland cement mortar and reinforced with steel rods or bars between the courses or between the ends of the tile of the same course as may be necessary.

Centering—The contractor for the above vaulting shall provide and erect all centers required for the installation of his work. Centering shall remain in place until the mortar is set and hard, after which he shall remove all his centering from the building.

Vault Supports—The general contractor shall leave out recesses, or build masonry corbels or brackets in walls as well as any steel necessary for the support of the tile vaulting as shown on the working drawings of the architect and tile vault contractor.

(b) (For Installing AKOUSTOLITH Tile Against Soffit of Concrete Floor Slabs.)

Where indicated on the drawings, or as hereinafter specified, the ceiling or soffit of concrete floor slabs and beams shall be faced with AKOUSTOLITH sound absorbing artificial stone tile as manufactured by R. GUASTAVINO COMPANY, New York and Boston. Tile shall be (give size), laid in 1 to 3 portland cement mortar in patterns as shown, directly against the cement slab and beams. Joints ⅜ in., colored as directed with approved mortar colors.

(c) (For Installing AKOUSTOLITH Tile on Metal Lath Ceilings.)

Note: (For Metal Lath and Furring Specifications.) Where AKOUSTOLITH is specified or indicated on ceilings, beams, etc., the metal lath foundation should be formed of 1 in. standard channels set 12 in. o.c., covered with 3.4 lb. metal lath.

Note: (For Plastering Specifications.) Wherever AKOUSTOLITH Tile is required for finished ceilings the metal lath shall be given two coats of portland cement mortar, the last to be scratched.

Wall Work

Where indicated in drawings or hereinafter specified the side walls shall be finished with Akoustolith sound absorbing artificial stone manufactured by R. GUASTAVINO COMPANY, New York and Boston. This shall be in ashlar (give sizes) of color and texture as selected by the architect, and laid up in pattern as shown on the drawing with a ⅜-in. joint. AKOUSTOLITH ashlar shall be cemented directly against the masonry wall or furring with portland cement mortar.

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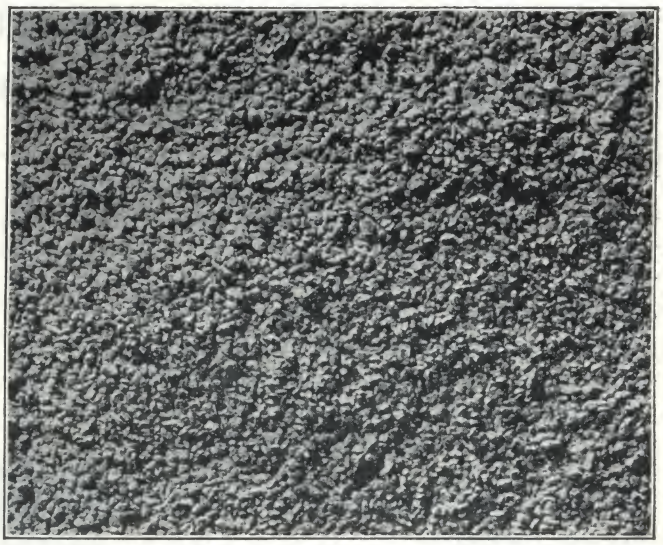
A Few of the Special Textures Obtainable in Akoustolith Tile

No. 1



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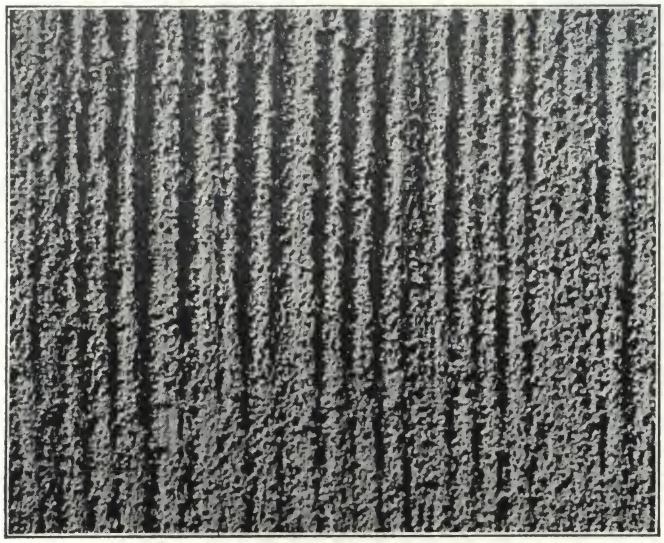

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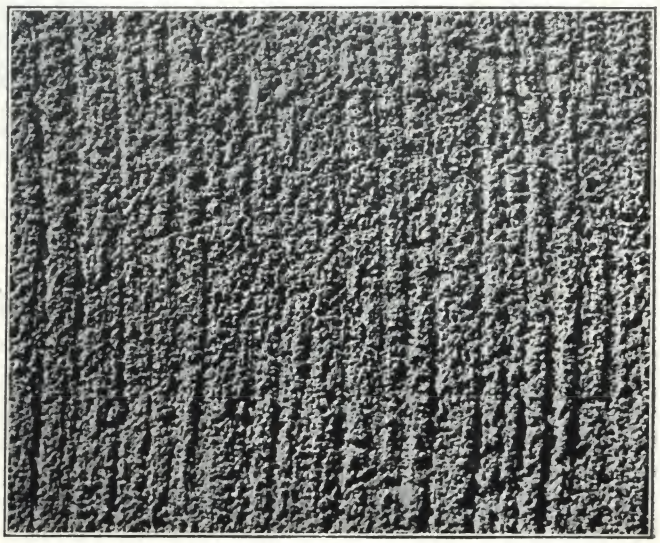

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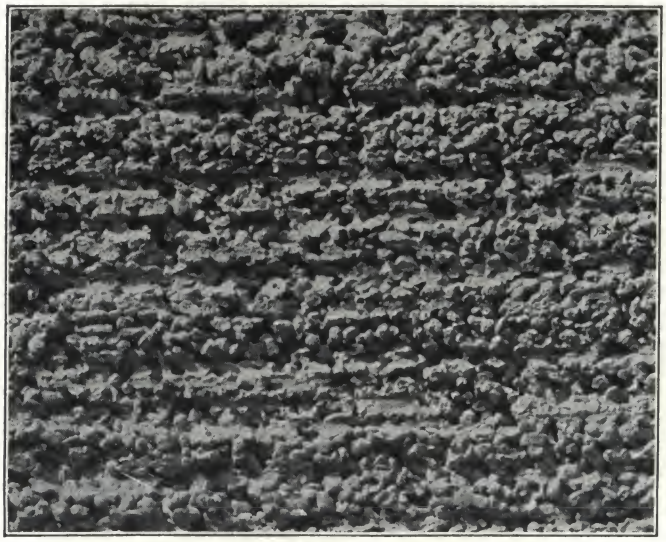

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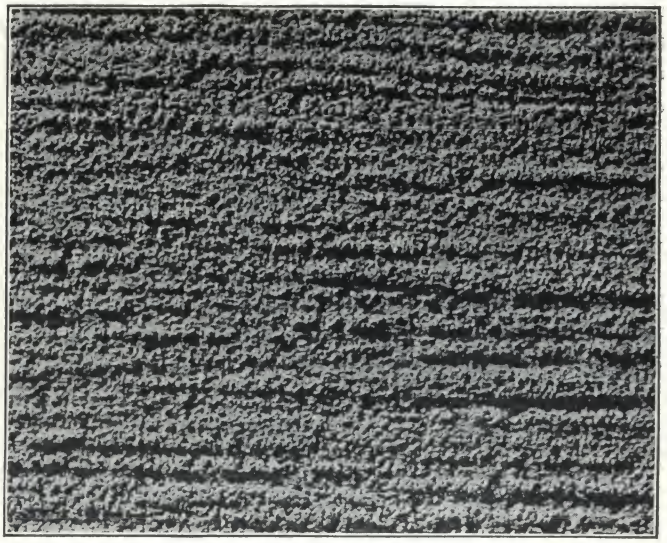


No. 6

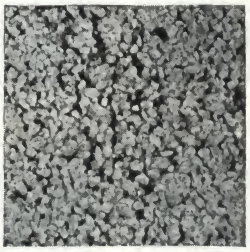
Continued on next page

Akoustolith (Sound Absorbing) Plaster

Having a Sound Absorption Value Many Times Greater Than That of Ordinary Plaster

AKOUSTOLITH Plaster was developed under our patents in answer to a demand for an acoustic material which could be applied with a trowel. It is a light weight masonry material, troweled on as a finish coat over the ordinary ground coats.

It is usually applied ½ in. in thickness with a trowel either on wire lath, brick or hollow tile walls over the usual ground coats. It is our practice to service each job with a competent representative at the starting of installation.



Magnified Photograph of Plaster Texture Showing Porosity

Acoustic Qualities

AKOUSTOLITH Plaster has been tested at Jefferson Physical Laboratory, Harvard University, the Bureau of Standards, Washington, D. C., and other laboratories.

The Bureau of Standards test shows an efficiency of 31% at a frequency of 297 cycles per second increasing to 59% at a frequency of 2890 cycles per second, for AKOUSTOLITH Plaster ½ in. in thickness.

Quantity of "Akoustolith" Plaster to Use Depends on the Acoustic Qualities of Each Particular Job

AKOUSTOLITH Plaster should not be specified indiscriminately for an entire job. The actual amount required will depend on the acoustic quality desired and the condition in the building.

AKOUSTOLITH Plaster is generally recommended to be applied ½ in. in thickness and on this basis will cover from 100 to 110 yards to the ton. If the highest efficiency is not required we suggest the application of AKOUSTOLITH Plaster ¼ in. thick. At ¼ in. thickness the coverage is from 165 to 175 yards per ton and the absorption coefficient 24% at C^4 (512 cycles per second) which it will be noted exceeds other acoustical plasters ½ in. in thickness, making the cost per unit absorption less than with any other plaster and less than the felted or fibrous acoustical correctives.

Where it should be used and the amount of surface necessary must be calculated for each job. In order to help the architect specify the material properly, our engineers will be glad to calculate where it should be used and how much surface will be required for each job.

Granular Construction of the Plaster

Labratory tests and actual installations have proved that mere surface texture does not make an efficient acoustic plaster.

The granular appearance and intercommunicating porosity is the same throughout the entire thickness of AKOUSTOLITH Plaster and is responsible for its high efficiency in absorbing sound. The method of securing this porosity is fully covered by United States patents and consequently equivalent results can be expected with no other plaster.

The texture, on account of the structure of the plaster, is of necessity similar to that of sand finish, but the general surface treatment may be varied as desired.

Note: We do not recommend that AKOUSTOLITH Plaster be used for other than plain surfaces. Mouldings or ornamental work can be cast in our *Acoustic Casting Plaster.*

Color of "Akoustolith" Plaster

In its natural color it is a very light gray, almost white. It can be colored to any shade desired by the use of mortar colors added by the plasterer.

Tinting after installation can be done by either the brush or spray method. Special instructions will be sent on request to cover specific requirements.

Not Affected by Water After Being Installed

AKOUSTOLITH Plaster is not affected or weakened by soaking with water after installation. It can be washed as required, making it unique in acoustical plasters and desirable in hospitals and other locations where sanitation is paramount.

How Distributed

AKOUSTOLITH Plaster is sold direct to the plastering contractor f.o.b. factory, Woburn, Mass., packed in bags, and ready to use with the addition of water only. It can be applied by any intelligent plasterer following the specifications furnished by the manufacturer.

Continued on next page

Notes for Specification Writer Regarding Akoustolith Plaster

For New Buildings

Where AKOUSTOLITH Plaster is to be applied against masonry construction or wire lath the usual heavy scratch coat shall be applied, thoroughly covering irregularities. A brown coat shall be applied if necessary.

The base coats may be composed of either gypsum, portland cement, or lime plaster. The surface on which the binder coat is to be applied shall be thoroughly roughened to provide a proper bond.

When the scratch coat (or brown coat if used) is properly set but still somewhat moist, apply a 1/8 in. binder coat composed of a rich mixture of hydrated lime and sand to be followed immediately with the finish coat of AKOUSTOLITH Plaster (1/2 or 1/4 in. thick as specified), this coat to be applied in strict accordance with the manufacturer's directions.

Over swimming pools or other places where AKOUSTOLITH Plaster is to be applied on walls or ceilings exposed to continuous dampness, the base coats shall be composed of Portland Cement Plaster and applied in accordance with the standard specifications of the Portland Cement Association.

The binder coat shall be of the following proportions by weight: 1/2 part Portland Cement, 1 part Sand, 1/5 part Hydrated Lime. After the base coats have thoroughly dried and obtained their full shrinkage, same shall be dampened with water to stop most of, but not all, the suction. The binder coat shall then be applied 1/8 in. in thickness and followed immediately with one coat of AKOUSTOLITH Plaster, thickness (1/2 or 1/4 in. as specified).

For Old Buildings

The surfaces to be plastered with AKOUSTOLITH sound-absorbing Plaster shall be hacked to remove the old finish coat of plaster, leaving the base coat exposed. The ceiling shall then be thoroughly dampened to stop most of the suction.

Apply the 1/8 in. binder coat of lime and sand mortar and follow immediately with finish coat of AKOUSTOLITH Plaster (1/2 or 1/4 in. thick as specified) same to be applied in strict accordance with the manufacturer's directions.

Specification

Where acoustical treatment is shown on the plans and in the following spaces ..... it shall be AKOUSTOLITH Plaster as manufactured by R. GUASTAVINO COMPANY of New York and Boston, applied (specify thiqkness 1/2 or 1/4 in.) in strict conformity with the manufacturer's directions.

Acoustic Casting Plaster

Our ACOUSTIC Casting Plaster is similar to AKOUSTOLITH Plaster in its acoustic qualities, color and granular texture, but is of a finer grain, more suitable for casting ornament (see page 6). This plaster is also sold direct to the plastering contractor f.o.b. factory, Woburn, Mass., packed in bags and ready to use with the addition of water only. As this plaster uses a gypsum binder; mouldings, ornaments, etc., can be cast, backed up and set by plasterers in the usual manner.

By using our ACOUSTIC Casting Plaster for the ornamental work, either alone or in combination with AKOUSTOLITH Plaster, on plain surfaces as may be required, it is unnecessary to eliminate ornament for acoustical consideration.

Representative List of Akoustolith Plaster Installations

8 buildings for Harvard University, Cambridge, Mass. (The first in 1925—others recently completed.)	Coolidge, Shepley, Bulfinch & Abbott, Architects
2 Telephone Buildings, New York, N. Y.	Voorhees, Gmelin & Walker, Architects
Western Union Building, New York, N. Y.	Voorhees, Gmelin & Walker, Architects
New Jersey Bell Telephone Building, Newark, N. J.	Voorhees, Gmelin & Walker, Architects
Mountainside Hospital, Glen Ridge, N. J.	York & Sawyer, Architects
First National Bank, Stamford, Conn.	B. W. Morris, Architect
American Women's Hotel Swimming Pool, New York, N. Y.	B. W. Morris, Architect
Baldwin School Swimming Pool, Bryn Mawr, Pa.	Allen & Collens, Architects
Harvard Gymnasium Swimming Pool, Cambridge, Mass.	Coolidge, Shepley, Bulfinch & Abbott, Architects
Massachusetts General Hospital, Boston, Mass.	Coolidge, Shepley, Bulfinch & Abbott, Architects
Riverside Church, New York, N. Y.	Pelton, Allen & Collens, Architects
Nebraska State Capitol, Lincoln, Neb.	B. G. Goodhue, Architect
Harvard School of Business Administration, Boston, Mass.	McKim, Mead & White, Architects
Sacred Heart Church, Jersey City, N. J.	Cram & Ferguson, Architects
Melrose Hospital, Melrose, Mass.	Stevens & Lee, Architects
Quincy Hospital, Quincy, Mass.	McLaughlin & Burr, Architects
Radcliffe College Dormitories, Cambridge, Mass.	Perry, Shaw & Hepburn, Architects
Irving Trust Building, No. 1 Wall Street, New York, N. Y.	Voorhees, Gmelin & Walker, Architects

HOUSING COMPANY

ACOUSTICAL DIVISION

Manufacturers of Acoustex, the Decorative Sound Absorbent

40 Central Street, BOSTON, MASS.

ERECTORS IN PRINCIPAL CITIES

For Thermatex Insulation, Framing Steel and Heirloom Panel, see Manufacturers' Index

ACOUSTEX

Products

ACOUSTEX Sound Absorbing Tile for wall and ceiling acoustical treatment.

Engineering Service

An engineering service is maintained for the architect, builder, or owner. A scientific analysis will be made of acoustical conditions in an existing room or of a contemplated construction.

Recommendations for the use and location of the proper amount of treatment will be given without obligation or charge.

Purpose

Acoustex is a decorative, fire-resisting material especially developed and designed to correct the acoustics of auditoriums, churches, lodge halls, gymnasiums, ballrooms, theatres, radio studios, courtrooms, and similar rooms; and to produce quiet and comfort in hospitals, schoolrooms, bank rooms, boardrooms, restaurants, printing rooms, swimming pools, and all other similar places where the desire is to reduce noise to a point where it is not objectionable.

Acoustex, the Decorative Sound Absorbent, is a material which offers every practical advantage of installation and use, and, in addition, brings to the architect a new freedom in acoustical design.

Appearance

Acoustex is characterized by a rich texture which makes a beautiful finish in itself. Acoustex is never monotonous, never out of place. It welcomes the close inspection given a sound absorbent on an office ceiling; fits into the decorative plan of the finest church or auditorium.

Office of The Association of American Soap and Glycerine Products, Inc., New York, N. Y.
Note the Acoustex Tile pattern

Absorption Value

The porosity of Acoustex gives it a high absorption value over the entire frequency range. Tests by recognized authorities show absorption values from 25% to 65% over the critical frequency range from 256 to 2048.

Sizes

Acoustex is furnished in standard tiles 6x12, 12x12, 12x24 and 24x24 in.; also in sheets 2 ft. wide and up to 8 ft. in length, especially suitable for panels.

Three thicknesses are available to meet all absorption requirements: Acoustex 60, 1 in. thick; Acoustex 70, 1½ in. thick; Acoustex 80, 2 in. thick.

Joints

Acoustex Tiles and Sheets have beveled edges.

Decoration

Acoustex Tiles are supplied predecorated. Twelve standard colors are available. Variations from standard colors and stencilled designs furnished upon request.

Design

Acoustex can be installed in any of the popular tile patterns—broken joint, ashlar, basket weave, herringbone, etc. Interesting and beautiful ceiling effects can be secured by varying and combining these patterns, not only in design but color. Other interesting designs can be obtained with the large sheets. Stencilled Acoustex offers further possibilities.

Maintenance

Acoustex presents no problems of maintenance. It can be easily vacuum cleaned. It is redecorated by spray painting. This can be repeated several times without filling its texture or appreciably impairing its acoustic efficiency.

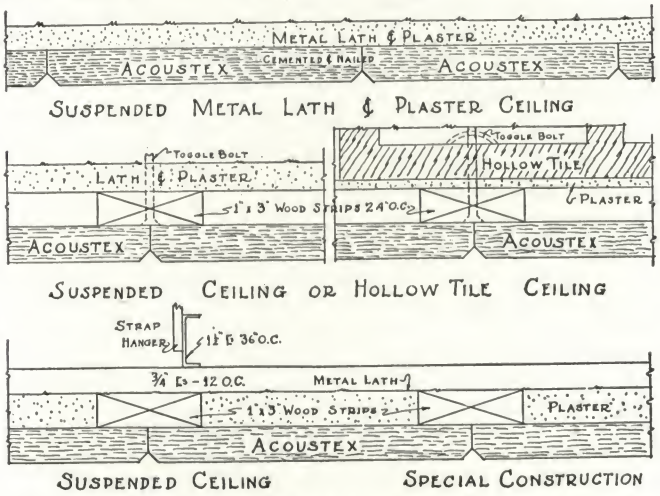
Continued on next page

St. Mary's Church, Lewiston, Me.
O'Connell & Shaw, Architects, Boston

Application of Acoustex

Cementing and Nailing to Plaster—Acoustex is light in weight (approximately 2 lb. per sq. ft. for 1-in. thickness; 3 lb. for 1½-in.; 4 lb. for 2-in.), and where plaster is hard and firm, it may be cemented and nailed to the surface. On new work the brown coat should be leveled to a true, even surface and Acoustex applied, omitting the finish or white coat of plaster. Special insulation cement is spread on the back of each tile. One or two nails driven into the plaster at an angle hold the tile in place until cement is set. Acoustex does not warp, shrink, or swell, and therefore no movement takes place in the tile after it is applied.

Nailing to Wood Strips—When Acoustex is to be applied to old ceilings, and where plaster is not firm enough to support the additional weight, wood furring strips spaced on required centers should be applied by fastening with toggle bolts, and Acoustex can then be nailed to the furring strips. On hollow tile, concrete, or brick, the furring strips may be fastened by the use of expansion bolts or plugs.



SUSPENDED METAL LATH & PLASTER CEILING

SUSPENDED CEILING OR HOLLOW TILE CEILING

SUSPENDED CEILING SPECIAL CONSTRUCTION

METHODS OF APPLYING ACOUSTEX ON CEILINGS

Wood Ceiling Construction—Where armories, churches, or school gymnasiums have planked roofs, Acoustex may be nailed directly to the underside of the planking. In Gothic churches or where ceilings are beamed, Acoustex may be applied in large sheets between the beams and held securely in place by a finish moulding.

Special Uses

Acoustex can be adapted to many kinds of special construction to save material and labor costs. It was used in the auditorium of the Boston & Maine Terminal as a form for a poured gypsum roof. It can also be used in special construction, eliminating lath and plaster.

Specification

Where acoustical treatment is shown on the plans, it shall be Acoustex as manufactured by the Housing Company, Acoustical Division, 40 Central Street, Boston, Mass., and shall be applied by their certified contractors in accordance with detailed specifications.

Acoustex Erectors

Acoustex is sold through experienced erectors only, thus assuring a satisfactory and permanent installation.

Acoustex erectors are located in all principal cities. Should one not be available in your locality, write direct to Housing Company, Acoustical Division, 40 Central Street, Boston, Mass. Catalogues and further information for your files furnished on request.

Representative Acoustex Installations and Their Architects

Edward B. Smith & Company, Philadelphia, Pa., A. H. Brockie, Philadelphia

Agricultural National Bank, Pittsfield, Mass., Halsey, McCormack & Helmer, New York

First Stamford National Bank, Stamford, Conn., Benj. W. Morris, New York

Cleveland Stock Exchange, Cleveland, Ohio, Fox, Duthie & Foose, Cleveland

Babson Institute, Wellesley College, Wellesley, Mass., owner

Westminster Church, Albany, N. Y., Delano & Aldrich, New York

Muhlenberg Chapel, Allentown, Pa., Frank R. Watson, Philadelphia

Cathedral of St. John the Evangelist, Spokane, Wash., Whitehouse & Price, Spokane

Charlotte Hungerford Hospital, Torrington, Conn., Crow, Lewis & Wick, New York.

Mountainside Hospital, Glen Ridge, N. J., York & Sawyer, New York

Smith College, Northampton, Mass., Ames & Dodge, Boston

Oaklane Review Club, Oaklane, Pa., Trout & Truscott, Philadelphia

Boston & Maine Industrial Building, Boston, Mass., Funk & Wilcox, Boston

New York Times Building, Brooklyn, N. Y., Albert Kahn, Detroit

Canadian National Broadcasting Studios, Halifax, N. S., John S. Archibald, Montreal, Canada

JOHNS-MANVILLE

EXECUTIVE OFFICES
292 Madison Avenue, NEW YORK, N. Y.

For Branch Offices, see Section on Wall Tile

Products

JOHNS-MANVILLE ACOUSTICAL TREATMENT AND SOUND ISOLATION.

Also Packings for all purposes; Refractory Cements; Waterproofing and Dampproofing; Asbestos Ebony; Asbestos and Asphalt Roll Roofing; Rotproof Roofs; Asbestos products of all kinds.

For the following Johns-Manville products, see Manufacturers' Index: Shingles, Built-up Roofing, Celite for concrete and mortar, Home Insulation, Insulating Board and Plaster Lath, Insulations, Tile Flooring, Transite, Flat and Corrugated, Wall Tile.

JOHNS-MANVILLE ACOUSTICAL TREATMENT AND SOUND ISOLATION

Johns-Manville is prepared to supply a solution to any problem involving the control of sound in buildings. This includes the quieting of offices, banking rooms, stenographic rooms, bookkeeping departments, telephone rooms, school and hospital corridors, etc.; the attaining of good hearing conditions in theatres, auditoriums, churches, lecture and concert halls, courtrooms, etc., and the isolation of sound so that it will not be transmitted through walls, floors or ceiling from one room to another. Problems involving sound isolation require an entirely different method of treatment, in no sense interchangeable with the methods employed in acoustical correction. With the increasing number of large buildings, housing scores of various activities, the necessity for adequate sound insulation between rooms and floors becomes increasingly apparent. Johns-Manville now presents the J-M (formerly Stevens) System of Sound Isolation as the latest addition to this service on sound control. For specifications and further details see pages following.

Exact calculation can be made of the degree of quieting possible to obtain and the results measured and checked with accurate measuring apparatus. Performance reports on Johns-Manville installations are available showing improvement effected by this quieting treatment, the increased efficiency of employees and the results in savings in dollars and cents.

Johns-Manville has had more than twenty years' experience in acoustical work, dating from the retaining of the late Wallace Clement Sabine of Harvard University as consultant. During this period Johns-Manville Engineers employing Johns-Manville acoustical materials have successfully undertaken problems of every type involving reverberation, echo, distortion, resonance, faulty distribution, etc.

The materials employed have been developed for specific purposes. There has been no adapting or making over of products designed for other uses in order that they might be exploited as an acoustical material. Where a need for an acoustical treatment having certain characteristics of finish or sound absorption has developed, a search has been made until such a material has been found or invented. As the science of acoustics has progressed, the Johns-Manville line has been improved to keep abreast with demand. The new and exacting acoustical requirements of sound film and radio broadcasting studios and talking movie treatres have been met.

Co-operation of our Acoustical Engineers with the architect has always been the keynote of J-M Acoustical Service. Particularly in the sketch stage of design is such co-operation desirable, as early study generally makes possible the attainment of ideal rather than simply acceptable acoustics. In the case of existing structures, Johns-Manville Acoustical Treatment can be successfully applied to interiors with little or no mutilation of their architectural lines, and with no visible alteration in shape or size.

Adaptability

One of the outstanding advantages of J-M Acoustical Materials is their adaptability to practically any architectural requirement. Large unbroken areas, panels, plane, curved or coffered surfaces may be treated. The resulting surfaces may be continuous similar to a plaster treatment or jointed as where tile are used. Square or rectangular tiles applicable in ashlar, herringbone, basket weave, etc., patterns are procurable.

Every material in the J-M Line is permanent, sanitary and readily cleaned. With few exceptions they can be washed with soap and water and repainted with the greatest facility.

Color and Texture

The decorative effects procurable in the use of J-M Acoustical Materials, both in color and texture, are almost unlimited. The natural and interesting textures of the materials themselves may be utilized or their surfaces may be treated to produce the effects obtained through the use of the more familiar forms of interior finish. Solid colors, patterns, stenciled decorations, special border effects, wood graining, etc., are attainable. Almost any textural effect obtainable in plaster as well as wood and metal treatments is possible. Johns-Manville has always made it a point of pride that their acoustical materials make their own contribution to the decorative scheme.

Efficiency

In sound absorbing efficiency these materials are equally preeminent. There is a material for any degree of absorption required, from Sanacoustic Tile, with the highest absorption, on down the list. In addition, Johns-Manville has conducted a great deal of research on the variation of absorption with frequency, so that each J-M Treatment is especially adapted to the class of sound sources with which it has to deal.

Fire Resistance

Another important characteristic of J-M Acoustical Materials is their resistance to fire. Each one has been developed with this requirement in mind. As a result, Johns-Manville offers in Sanacoustic Tile the only acoustical material which has to date been passed by the National Board of Underwriters as being without fire hazard. Other J-M materials—Nashkote, Nashtile, Rockoustile, etc.—are so nearly incombustible that they are accepted for fireproof buildings by building departments universally.

Continued on next page

Sanacoustic Tile

Sanacoustic Tile

Johns-Manville Sanacoustic Tile is a sound-absorbing interior finish that consists of a perforated metal container utilizing J-M Asbestos Akoustikos Felt or J-M Banroc Wool as the sound-absorbing element. The tile are made in six standard styles and sizes, permitting a great variety of patterns. They are supported by steel furring T's which may be economically fastened to any type of structural support. When installed in buildings during the course of erection, metal lath and plaster may be omitted.

The surface of J-M Sanacoustic Tile is finished in baked enamel which gives it a very high light reflecting value and a sanitary surface which may be easily cleaned with a damp cloth or sponge. It may be repainted or decorated without impairing its sound-absorbing efficiency. Any decorating media may be used to secure any desired effect.

It is particularly adapted to offices, hospitals, restaurants and schools. Under excessive humidity conditions, such as are encountered in swimming pools, kitchens and sterilizing rooms, the tile and supporting members are made of aluminum, and under these conditions there is absolutely no danger of corrosion either of the tile or the sound-absorbing element.

Sanacoustic Tile finishes may also be obtained in flat perforated sheets. By this means it is possible to use various of the new commercial metals and alloys, or to obtain panel effects with imitation wood veneering, etc.

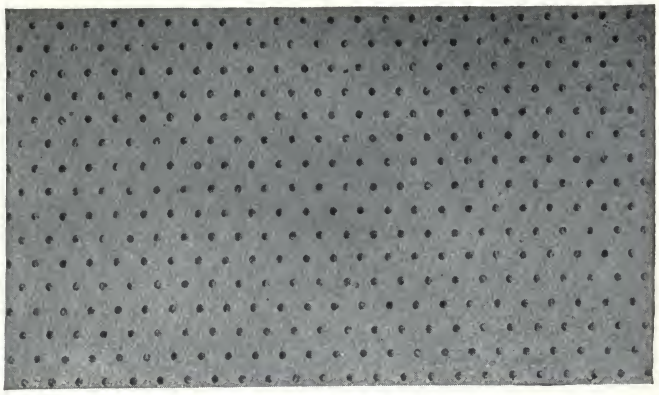
Nashkote

Nashkote is a system of building up a sound-absorbing interior finish on the job. It consists in the application of a highly efficient acoustical felt to an ordinary structural backing, and the finishing of the exposed surface of the felt with various types of finishes, depending upon the architectural requirements.

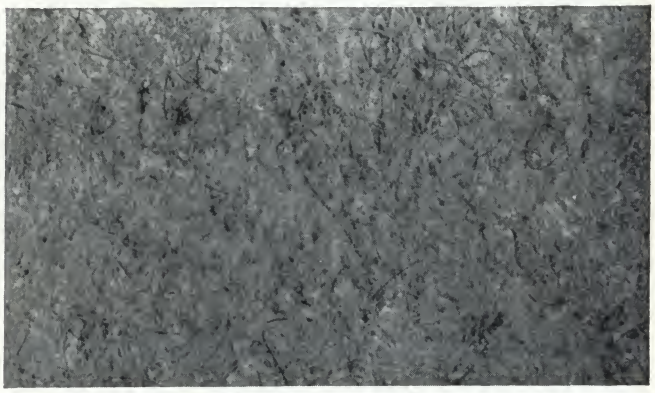
Nashkote may be applied over areas of any size without the necessity of paneling or coffering. It is a most adaptable type of sound-absorbing interior finish.

Nashkote Type A—In this type a fabric of sheer muslin is cemented to the surface of the felt and painted with a washable oil paint. It has the finished appearance of a painted hard wall plaster surface upon which any type of decoration or murals may be painted. After this the surface is perforated by mechanical means to provide any predetermined acoustical efficiency without loss to the decorative value of the finish.

Nashkote Type B—In Type B the finished fabric cemented to the surface of the felt is an oilcloth, perforated in a variety of interesting patterns. The perforations do not detract from the appearance, but rather add a fine feeling of texture. The surface may be washed or decorated without an appreciable effect upon the sound-absorbing efficiency of the material.



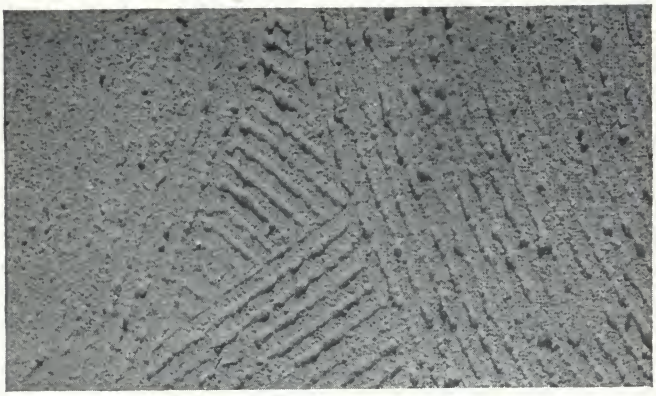
Nashkote B-D45



Nashkote C—White-faced Akoustikos Felt

Nashkote Type C—Utilizes a white surfaced felt in which the decoration where desired is applied directly to the surface of the felt. It is excellent for high ceilings in churches, armories and auditoriums where sound-absorbing efficiency, economy and decorative value demand equal consideration.

Nashkote Type F—In this type the finished fabric consists of a pre-decorated membrane such as dyed burlap, brocades, cretonnes, Japanese grass cloth or awning cloth. These fabrics may be applied as competently upon the acoustical felt as on a plastered surface.

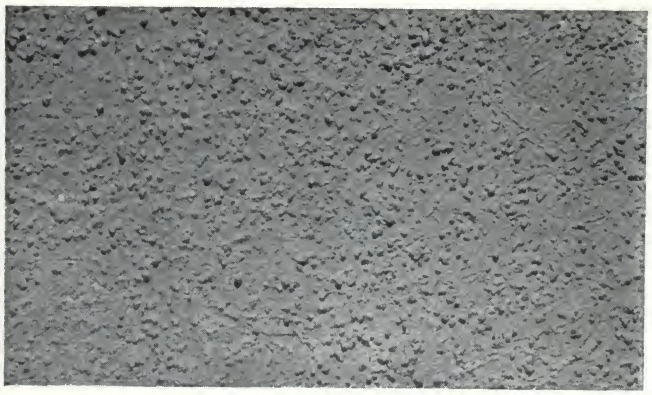


Nashkote A1S—Swirled Finish

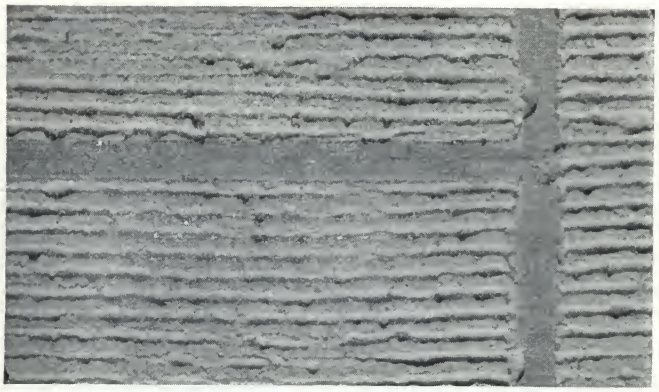
Nashkote A1S—A sheer muslin fabric is cemented to the surface of the felt and painted with a sand and oil or sawdust and oil paint to simulate a sand finished plaster surface. This type of finish is employed to obtain caen stone effects and interesting swirl textures.

Other finishes of Nashkote A1S shown on the following page.

Continued on next page



Nashkote A1S



Nashkote ACS—Caen Stone Finish

Nashtile

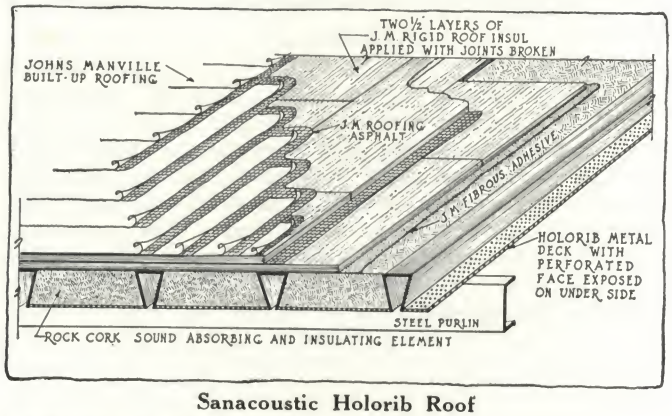
Nashtile

Nashtile consists of specially prepared asbestos and hair felt, punched and sized to form semi-rigid tile in standard sizes with or without beveled edges. The surface of the tile is finished with a mineral aggregate cemented directly to the felt with a waterproof cement. Color may be secured either through the natural color of the aggregate or the surface can be finished with lacquer. The tile may be laid up in cement against any kind of a structural backing, to form an unlimited variety of patterns. The surface of the tile may be washed or scrubbed or relacquered by the brush or spray method. The sound-absorbing efficiency is very high.

Rockoustile

The name "Rockoustile" describes the material perfectly. This newest addition to the Johns-Manville line of acoustical materials is an acoustical tile in which the principal constituent is rock wool. In the process of manufacture it is compressed into a block sufficiently rigid to be easily installed, yet with enough porosity to make it a highly absorptive acoustical finish.

Rockoustile presents a pleasingly variegated surface and can be obtained in a variety of colors. It is cemented in place with a special Johns-Manville Asbestos Cement. It is manufactured in several different sizes and can be adapted to a wide variety of patterns and designs.



Sanacoustic Holorib Roof

Sanacoustic Holorib Roof

This product is an adaptation of the familiar steel roof deck unit wherein extraordinarily high sound absorption characteristics are added to the well established advantages of this type of construction. It utilizes the perforated metal feature of J-M Sanacoustic Tile on the exposed interior surface, filling of J-M Rock Cork as the sound absorbing element, two layers of J-M Insulating Board as heat and cold insulation in addition to that provided by the Rock Cork, the whole being weatherproofed on the exterior surface with J-M Asbestos Built-up Roofing. It may be used wherever steel roof deck construction is applicable. It is a combination of materials which have individually and successfully proven their worth over a period of time.

Sanacoustic Holorib

This product utilizes the large unit possibilities of a perforated Holorib metal deck plus the highly efficient sound absorbing qualities of rock wool, providing all the exceptional qualities of Sanacoustic Tile in large units with a corresponding saving in cost of installation. The product is obtainable in lengths up to 10 ft. and the finished appearance is that provided by long narrow panels rather than square or rectangular tiles.

Short Form Specification for Furnishing and Applying Johns-Manville Acoustical Treatment

Work Included—The work contemplated under this specification shall include all materials, labor, equipment and service necessary for and reasonably incidental to the installation of Johns-Manville Acoustical Treatment to..... (State in detail, surfaces to be covered. See Note 1.) as shown on drawings or herein specified.

(Include the following paragraph if other than the standard finish is desired):

The decorating of the acoustical treatment shall be..... .....(State whether "included" or "excluded." See Note 2.)

(Omit the following paragraphs if no mouldings are to be used):

The furnishing and installing of mouldings adjoining the acoustical treatment shall be..... (State whether "included" or "excluded.")

Work Not Included—Other contractors will furnish and install the following work as specified under other divisions and other specification text which this contractor shall read so as to ascertain what is called for therein. (See Note 3.) (The paragraphs which do not apply to the job at hand are to be omitted.)

(a) Unless otherwise specified, furnish and install the

Continued on next page

special decoration on all exposed surfaces of the Acoustical Treatment, as specified under ..... (State where specified.)

(b) Unless otherwise specified, furnish and install all mouldings adjoining the acoustical treatment, as specified under ..... (State where specified.)

(c) Prepare concrete surfaces to receive the Nashkote, Nashtile or Rockoustile types of treatment by finishing with a neat coat of portland cement and sand, brought to a true level, as specified under.....(State where specified.)

(d) Prepare tile or masonry surfaces to receive Nashkote, Nashtile or Rockoustile types of treatment by finishing with plaster brought to a true level, as specified under..... (State where specified.)

(e) Prepare furred ceiling surfaces to receive Nashkote, Nashtile or Rockoustile types of treatment by finishing with scratch and brown coats of plaster, brought to a true level and floated reasonably smooth, as specified under..... (State where specified.) (A white putty coat may be substituted in place of the brown coat, if desired.)

Prepare furred ceiling surfaces to receive the Sanacoustic Tile type of treatment, omitting all metal lath and plaster but furnishing and installing hot rolled steel plasterer's channels or angles, rigidly and securely suspended to a uniform surface 1⅜ in. above the finished ceiling surface. Such channels or angles shall be spaced not to exceed 4-ft. centers. Similar channels or angles shall also be placed 4 in. from all walls, beams and other projecting surfaces which are parallel to the direction of the channels or angles, as specified under..... .....(State where specified.)

(f) Prepare wood framing to receive Nashkote, Nashtile or Rockoustile types of treatment by spacing members not to exceed 18-in. centers, as specified under..... (State where specified.)

Prepare wood framing to receive the Sanacoustic Tile type of treatment by spacing the members not to exceed 4-ft. centers, as specified under.....(State where specified.)

(g) Set all electrical outlet boxes flush with the finish surface of the acoustical treatment, as specified under..... .....(State where specified.)

Materials and Workmanship—All work under this Specification and Contract shall be executed in strict conformity with the "Standard Specification of JOHNS-MANVILLE for the Furnishing and Applying of Acoustical Treatment," which Standard Specification is hereby declared and made a part of this specification with the same force and effect as if written herein in full.

The work shall be done by JOHNS-MANVILLE or an authorized and approved Contractor for Johns-Manville Acoustical Materials.

Type of Acoustical Treatment—Acoustical Treatment shall be.....(State type designation, thickness and, in the case of tile, size and standard or special color of units, design to be followed in applying, and whether square or beveled edge tile are desired. See note 4.)

Note 1: Acoustical or sound absorbing materials vary in sound absorbing efficiency with variations in the physical properties of the material, and the character of the finished surface. The Architect or Engineer should confer with the J-M Acoustical Engineer; determine the type of sound absorbing material best adapted, from an architectural and decorative standpoint, for the project; have an analysis made showing the location and number of square feet of surface area necessary to treat with the material selected in order to obtain the results desired; and indicate clearly on the drawings or in the specifications the location and amount of surface area to be treated.

If Sanacoustic Tile employing a sound-absorbing element 2 in. or greater in thickness is to be used, consult the J-M Acoustical Engineer for special specification.

Note 2: The decorating of the acoustical treatment where other than the standard finish is desired *may* be done by other contractors. In this event the Architect or Engineer should, in conference with the J-M Acoustical Engineer, determine the type of decoration best adapted for the purpose and specify the medium to be used.

Where it is desired that composition ornament be installed on the face of the acoustical treatment, the Architect should so specify or show on the drawings. He should confer with the J-M Acoustical Engineer to determine the manner in which such ornament shall be supported and specify under what contracts the work is to be divided.

Note 3: Johns-Manville Nashkote, Nashtile and Rockoustile types of Acoustical Treatment may be looked upon as a finish veneer requiring a structural backing. Being flexible or semi-rigid in form, the finish surface of these types of acoustical treatment will be only as smooth in contour as the structural backing.

Johns-Manville Sanacoustic Tile may be utilized as a structural veneer, in which case the Sanacoustic Tile Supporting Tees when applied to cement, hollow tile or masonry, may be shimmed to take up irregularities in the surface of the structural backing. On furred ceilings the Sanacoustic Tile Supporting Tees may be wired or clipped to the plasterer's channels or angles and the Sanacoustic Tile and sound-absorbing element contained therein will, under these conditions, constitute a complete substitution for the metal lath and plaster.

Note 4: In addition to the foregoing it will be necessary to specify the following:

If Nashkote Type F is to be used, specify the finish fabric desired. If to be "as selected," a limiting cost per yard should be specified.

If Sanacoustic Tile or Type MTP is to be used, specify whether metal parts are to be steel or aluminum.

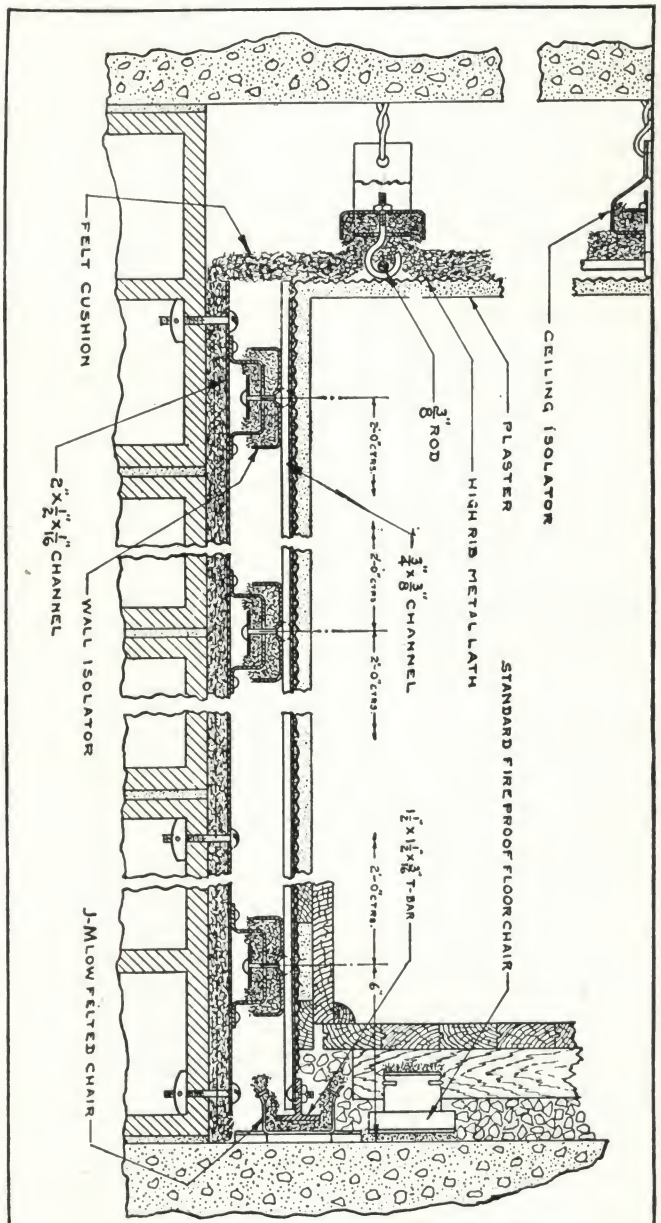
If the treatment involves the use of wood furring strips or mouldings, specify whether they are to be plain or fireproofed.

If wood or metal mouldings are to be included in connection with the treatment, the size, type and profile of such mouldings should be specified as shown on the drawings.

Johns-Manville System of Sound Isolation (Formerly Stevens System of Sound Proofing)—Sound isolation is the process of preventing sounds generated in one part of a building from passing to another part through partitions or other members of the structure. Sound waves either pass directly through these structures or set them in vibration. In the latter case the vibrating structure reproduces the sound on the opposite side. With this in mind it becomes obvious that one of two things must be done to prevent sound transmission. Either the structure must be built so massively that the sound waves cannot set it into vibration, or else the surface must be so isolated from the substructure that it is free to vibrate of itself without transmitting the vibrations.

The J-M System of Sound Isolation employs a series of patented isolators. These devices are placed between the exposed face of the structure and the substructure to prevent vibrations from being transmitted. The shock absorbing action of these isolators is usually aided by a layer of sound-absorbent material. This system provides a series of materials having different densities, each of which offers new resistance to the passage of the waves.

Among its more common applications may be mentioned the insulation of ballrooms, kitchens and laundries in hotels, bowling alleys in clubs or combination theater buildings, lodge buildings, apartment buildings, broadcasting studios, etc.



J-M SYSTEM OF SOUND ISOLATION FOR PARTITION FLOOR AND CEILINGS IN FIREPROOF CONSTRUCTION

Continued on next page

Four of the largest groups of broadcasting studios in the country are built throughout with Johns-Manville sound insulating walls, floors and ceilings.

J-M Isolators consist of steel "chairs" or clamps lined with cattle hair felt. Different designs are used for the various floor, wall and ceiling constructions. Special combinations are designed for use under machinery to prevent the vibration from being transmitted to the supporting structure.

The system is flexible. It has been used for more than a decade in all types of buildings with notable success, including the most modern fireproof constructions.

Specifications furnished on application.

TABULATION OF VARIOUS TYPES OF JOHNS MANVILLE ACOUSTICAL MATERIALS

TYPE DESIGNATION	FOUNDATION REQUIRED	SIZE OF UNITS	LIMITATIONS OF SURFACE CONTOUR	CHARACTER OF FINISHED SURFACE	SOUND ABSORBING MEDIUM	FIRE RISK	UPKEEP REQUIRED	OVER ALL THICKNESS	WEIGHT PER SQUARE FOOT	SOUND ABSORBING EFFICIENCY AT 512 CYCLES	ADAPTED FOR
NASHKOTE TYPE A PERFORATED AFTER ERECTION	BROWN OR PUTTY COAT OF PLASTER FLOATED SMOOTH CONCRETE WITH LEVELING COAT OF PLASTER OR CEMENT WOOD SHEATHING PLASTER BOARD INSULATING BOARD FLAT SHEET STEEL WOOD STUDS OR JOIST 12" 16" 18"	NO LIMITATIONS	NONE	SMOOTH OIL PAINT	ASBESTOS AKOUSTIKOS FELT	FIRE RESISTANCE APPROVED BY BUILDING DEPARTMENTS UNIVERSALLY	WASH OR REPAINT AND PERFORATE	1/2"	7 oz	43	AUDITORIUMS CHURCHES THEATRES COURT ROOMS WHEREVER A HIGH QUALITY FINISH IS REQUIRED TO MATCH PAINTED PLASTER
								3/4"	10 oz	53	
								7/8"	13 oz	67	
NASHKOTE TYPE AIS				PAINTED SAND FINISH PLASTER				1/2"	8 oz	.31	
								3/4"	11 oz	.38	
								7/8"	14 oz	.46	
NASHKOTE B 316				PERFORATED OIL CLOTH 3/16 DIA HOLES			WASH OR PAINT	1/2"	8 oz	.40	OFFICE HOSPITAL RESTAURANT AND GENERAL QUIETING
								3/4"	11 oz	.53	
								7/8"	14 oz	.70	
NASHKOTE B 332				PERFORATED OIL CLOTH 3/32 DIA. HOLES				1/2"	8 oz	.43	
								3/4"	11 oz	.53	
								7/8"	14 oz	.67	
NASHKOTE B 085				PERFORATED OIL CLOTH .085 DIA. HOLES				1/2"	8 oz	.36	
								3/4"	11 oz	.47	
								7/8"	14 oz	.60	
NASHKOTE B 068				PERFORATED OIL CLOTH .068 DIA. HOLES				1/2"	8 oz	.39	
								3/4"	11 oz	.48	
								7/8"	14 oz	.63	
NASHKOTE B 045				PERFORATED OIL CLOTH .045 DIA. HOLES				1/2"	8 oz	.39	SAME AS ABOVE AND ALSO FOR AUDITORIUM WORK.
								3/4"	11 oz	.49	
								7/8"	14 oz	.64	
NASHKOTE TYPE C				WHITE FACED FELT SIZED UNIQUE FINISH TEXTURE			WASH OR PAINT WITH SPRAY	1/2"	7 oz	.31	HIGH AUDITORIUM CHURCH OR ARMORY CEILINGS.
								3/4"	10 oz	.42	
NASHKOTE TYPE F				BURLAP REP BROCADE AWNING CLOTH OR ANY DYED FABRIC			DRY OR VACUUM CLEAN	1/2"	8 oz	.35	ALL TYPES OF AUDITORIUM CHURCH THEATRE WORK WHERE FABRIC FINISH IS DESIRABLE.
								3/4"	11 oz	.49	
								7/8"	14 oz	.65	
								1 1/2"	21 oz	.72	
								1 3/4"	28 oz	.76	
								3"	42 oz	.77	
NASHTILE		6" x 12" 12" x 12" 12" x 24" 9" x 18" 18" x 18" SPECIAL SIZES		AN INDIVIDUAL TEXTURE NOT UNLIKE TRAVERTINE			WASH OR SPRAY WITH LACQUER	3/4	13 oz	.38	ALL TYPES OF AUDITORIUMS FOR QUIETING WHERE TILE PATTERNS ARE DESIRED
SANACOUSTIC TILE	NO LIMITATIONS	12" x 12" 12" x 24" 8" x 16" 16" x 16"	FLAT WALLS OR CEILINGS VAULTS OF LARGE RADIUS	ENAMELED PERFORATED METAL TYPE 068 PERFORATIONS	ROCK WOOL	FIREPROOF	WASH OR PAINT ANY MEDIA.	1 1/4"	STEEL 2.5 LB ALUM 2.0 LB	.82	QUIETING OF EVERY TYPE PROCURABLE IN ALUMINUM BEING PARTICULARLY ADAPTED FOR USE IN NATATORIUMS KITCHENS DISHWASHING ROOMS (CORROSION PROOF) THE 4" THICKNES FOR RADIO OR SOUND FILM STUDIOS
								1 1/4"	STEEL 5.2 LB ALUM 4.7 LB		
								4"			
								4"			
ROCKOUSTILE	SAME AS NASHKOTE	6" x 12" 12" x 12" 12" x 24" 9" x 18" 18" x 18" SPECIAL SIZES	NONE	AN INDIVIDUAL TEXTURE NOT UNLIKE TRAVERTINE	ROCK WOOL	FIRE RESISTANCE APPROVED BY BUILDING DEPTS UNIVERSALLY	CLEAN WITH VACUUM CLEANER OR SAND PAPER	1"	2.0 LB	.62	ALL TYPES OF AUDITORIUMS FOR QUIETING WHERE TILE PATTERNS ARE DESIRED

THE KORFUND CO., INC.

Specialists in Soundproofing and Vibration Isolation

231 East 42nd Street, NEW YORK, N. Y.

BALTIMORE, MD.
BOSTON, MASS.
BUFFALO, N. Y.
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CHICAGO, ILL.
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CLEVELAND, OHIO
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LOS ANGELES, CAL.
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OSWEGO, N. Y.
KANSAS CITY, MO.
PHILADELPHIA, PA.
PITTSBURGH, PA.
ST. LOUIS, MO.
PORTLAND, ME.

Products

ABSORBIT, soundproofing and sound deadening for walls.
ABSORBO-PHONE, sound and vibration-proofing for floors.
KORFUND BASE, strips of natural cork permanently bound in steel frame.
KORFUND VIBRO-DAMPER, an isolating device with adjustable springs.

KORFUND PRODUCTS
DEADEN VIBRATION & NOISE
TRADE-NAME

Literature

The Importance of Isolating Vibration and Noise—Bulletin "B."
Absorbit and Absorbo-Phone Bulletin.
Korfund Base—Bulletin "A."
Korfund Vibro-Damper Bulletin.
Any of the above bulletins sent on request.

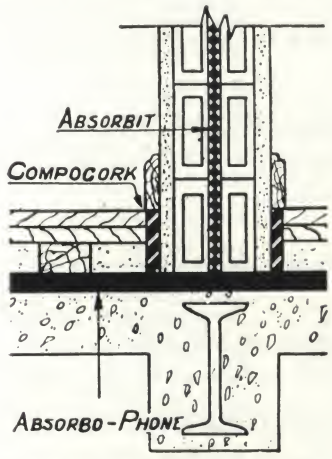
SOUNDPROOFING MATERIALS

Absorbit for Walls

Absorbit is inexpensive and simple to install. It comes in standard size, 48x24x¾ in. thick. It is easy to handle and can be readily cut with an ordinary handsaw. It is waterproof and verminproof, odorless, and will not disintegrate, crack, bind or buckle.

Absorbit consists of three layers of specially selected fibrous materials, impregnated with asphaltum and laminated together.

Absorbit's three layers are so placed that they form staggered air spaces. The sides and edges of each sheet of Absorbit are sealed with asphaltum so that the staggered air spaces form dead air cells which are absolutely sound deadening.



Absorbit Installed Between Two Hollow Tiles with Absorbo-Phone Beneath Finished Floor

Tests

Copies of tests made on Absorbit and Absorbo-Phone, proving their unusual sound insulating qualities, will be sent upon request.

Absorbo-Phone for Floors

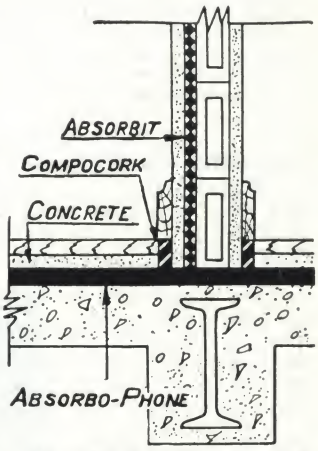
Absorbo-Phone is an unusually effective and inexpensive insulation for floors.

Absorbo-Phone is delivered in standard plates 25x36x1 in. Its construction consists of a frame of natural cork with a low density filler. A heavy coating of asphalt emulsion is spread over both sides of the plates and then covered with a high grade asphalt felt.

This unique combination and arrangement of materials makes it an incomparable product, excelling in soundproof and waterproof qualities.

Absorbo-Phone is nonporous, highly resilient, of low density and an absolute non-conductor of noise. Absorbo-Phone is practically everlasting and permanently guarantees a soundproof floor.

Any kind of finished floor can be placed upon Absorbo-Phone without reducing its insulating properties.



Absorbit Installed Beneath Plaster on One Side of Hollow Tile Wall and Absorbo-Phone Beneath the Finished Floor

MACHINERY ISOLATION

Korfund Base

Made of carefully selected natural cork, cut in strips and planed to perfect dimensions. The cork, without artificial binder, is set in frames of heavy reinforced steel. They are then treated with a non-volatile heavy oil.

Korfund Base should be used for machines which require heavy concrete foundations or cause severe horizontal vibrations. It may be arranged either underneath the concrete foundation or under a timber base.

Korfund Vibro-Damper

A simple, sturdy, inexpensive unit easily attached to the foot of isolated machines. Requires no special foundation. The efficiency of the damper for deadening vibration and noise is obtained by a scientific combination of a noise-absorbing material and suitable elastic springs.

The damper can be used for all types of machines except those which require anchoring to heavy foundations. Built in five sizes to sustain loads from 50 to 10,000 lb.

MACOUSTIC ENGINEERING COMPANY, INC.

Acoustical Engineers and Manufacturers of Macoustic

EXECUTIVE OFFICES

Union Trust Building, CLEVELAND, OHIO

BRANCH OFFICES

NEW YORK, N. Y. ATLANTA, GA. CHICAGO, ILL. PHILADELPHIA, PA. WASHINGTON, D. C. SAN FRANCISCO, CAL.

CANADA: Macoustic Engineering Co., Ltd., New Birks Building, MONTREAL, QUE.

District Sales Representatives in All Principal Cities

Product

Macoustic, a Sound Absorbing Plaster—developed in 1920—is an economical, practical, smooth working, fibrous, highly porous material for acoustical correction. Sold only on a basis of producing correct acoustical conditions as predetermined by an impartial engineering survey.

REG. U. S. PAT. OFF.
Patents Pending

Organization and Service

Established ten years, national in scope, the organization has pioneered in the field of architectural acoustics. Deals exclusively with engineering problems, involving acoustics of theaters, churches, auditoriums, broadcasting studios, and noise reduction in banks, offices, schools, hospitals, etc.

Engineering Service—This organization sells primarily satisfactory acoustical results—the product Macoustic is merely one of several important factors in the securing of desired results—a means to an end. Each project requires a careful acoustical analysis by trained engineers to determine whether acoustical treatment is necessary, and if so, where it should be applied, and in what quantity. Proportions and contours and their effect upon acoustical conditions must be carefully studied. Sound foci, echoes, undesirable concentration of sound must be eliminated through proper application of acoustical material. Recommendations for application of acoustical material must be made with due regard for practicability, economy, and decorative architectural features. This acoustical analysis is made from architect's drawings by our competent engineering staff and submitted to the architect for approval.

This advisory service involves no charge or obligation to the client.

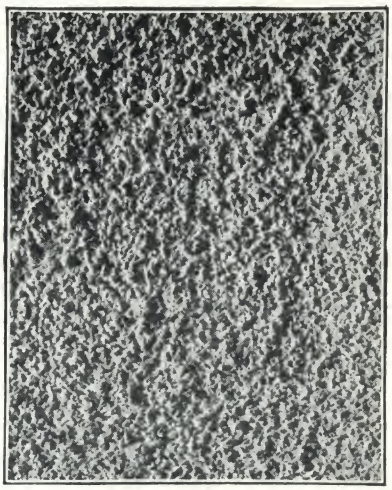
Distinctive Features of Macoustic

Practicability—Macoustic *"goes on like plaster."* Mix with water and apply in exactly the same manner as ordinary plaster—same tools—no special skill necessary. Apply ½ in. thick over usual brown coat. Finish with surface texture to produce required absorption value.

Low Cost—The cost of Macoustic is lowest per unit of area and per unit of absorption. Application cost is lowest, because of easy working qualities, low weight, minimum handling, negligible droppage, maximum coverage.

Permanence—Macoustic is fireproof, verminproof—not an added hazard.

Decorative—Wide range of texture and color combinations. Supplied integrally colored in standard shades, or may be decorated after application. Can be lined off in ashlar or other patterns.



One of Many Pleasing and Artistic Macoustic Finishes

Specifications

Use the following: Macoustic, to be applied on all surfaces specified and recommended by the manufacturer's Engineering Department, and in accordance with manufacturer's standard application instructions.

Sound Absorption Efficiency

Macoustic as tested by the Sound Laboratory of the United States Bureau of Standards, Washington, D. C., shows the following absorption coeffiecients with standard textures:

Texture	Frequency—Cycles per second 512	1024	2048	4096
Float	.19	.21	.26	.27
No. 1 stipple.....	.22	.37	.41	.55
No. 2 stipple.....	.31	.39	.58	.65

Additional Data

For more complete information write for the Macoustic Catalogue, which includes illustrations in color of textures and comprehensive list of typical installations. Samples gladly submitted upon request.

Typical Macoustic Installations

Building and Location	Architect
National Broadcasting Co. Studios, Chicago, New York, Washington, D. C., San Francisco, Cal.	
John Hancock Insurance Co., Boston, Mass.	Parker, Thomas & Rice
State Mutual Life Bldg., Worcester, Mass.	Parker, Thomas & Rice
St. Ignatius Church, Cleveland, Ohio	Edw. T. P. Graham
D. A. R. Bldg., Washington, D. C.	John Russell Pope, New York
Brooklyn Law School, Brooklyn, N. Y.	Bertram Goodhue Associates
Bell Telephone Bldg., Montreal, P. Q.	Barrot & Blackader
Bell Telephone Bldg., Atlanta, Ga.	Marye, Alger & Vinour
Holy Name Church, East Orange, N. J.	Meginnis & Walsh, Boston
Equitable Trust Co., New York, N. Y.	Walker & Gillette
Salvation Army Bldg., New York, N. Y.	Voorhees, Gmelin & Walker
City Hall, Atlanta, Ga.	G. Loyd Preacher & Co.
Public Auditorium, Cleveland, Ohio	
Brearly School, New York, N. Y.	Benj. W. Morris
Gateway Theatre, Chicago, Ill.	Rapp & Rapp
Childs Restaurant, New York, N. Y.	Pruitt & Brown
Stauffer Restaurants, Pittsburgh, Pa., Philadelphia, Pa., Cincinnati, Ohio	Hadlow, Hughes, Hicks & Conrad, Cleveland
First Presbyterian Church, New Rochelle, N. Y.	John Russell Pope, New York
Botany-Zoology Building, Duke University, Durham, N. C.	Horace Trumbauer, Philadelphia
Loew's Theatre, Akron, Ohio	John Eberson, New York
Capital Theatre, Halifax, N. S.	Murray Brown, Toronto
Plaza Theatre, El Paso, Tex.	W. Scott Dunne, Dallas
Pitkin Theatre, Brooklyn, N. Y.	Thos. W. Lamb, Inc.
United Hospital, Port Chester, N. Y.	Hood, Godley & Fouilhoux, New York
Herman Kiefer Hospital, Detroit, Mich.	Albert Kahn, Inc.
Henry Ford Museum, Dearborn, Mich.	Robt. O. Derrick
State Teachers College, Buffalo, N. Y.	Wm. E. Haugard, Albany
Monticello School, Cleveland, Ohio	John H. Graham
University Club, Philadelphia, Pa.	Grant Simon
Paramount Theatre, Brooklyn, N. Y.	Rapp & Rapp, New York
Bell Telephone Bldg., Milwaukee, Wis.	
Church of the Saviour, Baltimore, Md.	Frohman, Robb & Little, Washington
U. S. Post Office, Fargo, N. D.	J. A. Wetmore, Washington
U. S. Post Office, Asheville, N. C.	J. A. Wetmore, Washington
Physics Bldg., Fordham University, New York, N. Y.	Emil Perrot
Convention Hall, Asbury Park, N. J.	Warren & Wetmore, New York
University of Tennessee, Knoxville, Tenn.	Barber & McMurry
McMaster University, Hamilton, Ont.	W. L. Sommerville, Toronto
Northern Vocational School, Toronto, Ont.	Board of Education
St. Andrews School, Middletown, Del.	Arthur H. Brockie, Philadelphia
Public School No. 10, Brooklyn, N. Y.	Walter C. Martin
Lady Beck School, London, Ont.	L. E. Carrothers, London
Central High School, Trenton, N. J.	Sibley & Licht, Palisade, N. J.
Publix Theatre, Denver, Col.	Rapp & Rapp, Chicago
Continental Theatre, Muskegon, Mich.	C. Howard Crane, Detroit
Monkland Theatre, Montreal, Que.	D. J. Crighton
Granada Theatre, Montreal, Que.	E. A. Doucet
Fox Film Bldg., New York, N. Y.	Jos. J. Furman
Gallery of Fine Arts, Columbus, Ohio	Richards, McCarty & Bulford
Ocean City Theatre, Ocean City, N. J.	Ritter & Shay, Philadelphia
Grasslands Hospital, New York, N. Y.	Walker & Gillette
American Insurance Bldg., Newark, N. J.	J. H. & W. C. Ely
Country Club, Dayton, Ohio	Louis Lott
Tileston School, Boston, Mass.	Desmond & Lord
Lake Placid Club, Lake Placid, N. Y.	Wm. G. Distin, Saranac Lake

UNITED STATES GYPSUM COMPANY CONTRACTING DIVISION

Architectural Acoustics

Noise Abatement and Sound Control

300 West Adams Street, CHICAGO, ILL.

For Sales Offices see Sweet's Manufacturers' Index for U.S.G. Catalogue on Roof, Floor and Partition Products

RESEARCH, DEVELOPMENT AND SERVICE

Research and Development

All U.S.G. Sound Absorption and Sound Insulation materials and Systems are the result of directed research at the Building Materials Laboratory of the UNITED STATES GYPSUM COMPANY. This laboratory is associated with and located at the Lewis Institute of Technology in Chicago and covers 10,000 sq. ft. of floor space on four floors of a modern building, especially equipped for research and testing. The research work is carried out under the direction of trained physicists and chemists, architectural engineers and investigators, comprising a personnel of some fifty individuals. Here new materials and methods are produced and tested and improvements developed.

The fundamental nature of the laboratory's approach to any problem is well illustrated by the following: Three years ago they were asked to develop an acoustical absorbent of great efficiency which as well would be incombustible, withstand all the hazards of building construction and occupancy, equally adaptable to new or existing structures, and one which would be decorative and appropriate to any architectural treatment—Acoustone is that product.

The laboratory is unique in possessing the only complete sound chamber, owned and maintained by a manufacturer of acoustical products; a carefully calibrated acoustical measuring stick to use during the development of acoustical products and as a guide to the scientists who are developing them. It is also used for control tests on the company's output, so that the acoustical absorption and insulation afforded by the acoustical products of the UNITED STATES GYPSUM COMPANY is constantly maintained equal or superior to the published determinations of recognized acoustical laboratories.

Service

The UNITED STATES GYPSUM COMPANY maintains a fully competent corps of acoustical engineers, completely equipped to assist architects on any problem requiring sound absorption, acoustical correction or sound insulation. They render this service, without charge and without obligation, in advance of construction or will gladly advise corrective methods for existing buildings in which sound difficulties are experienced.

In auditoria this service includes analysis of the effect of curved or other sound concentrating surfaces, and investigation for objectionable echoes. In each case it indicates changes in design where they seem advisable. Where the reverberation is too great for comfort, recommendations are made for economically covering the necessary areas with acoustical absorbents.

Because the UNITED STATES GYPSUM COMPANY handles all phases of the problem and provides, not only materials for sound absorption, but also a complete system for the insulation of sound, architects are assured that absorption materials will not be recommended where sound insulation is required or vice versa. See U.S.G. System of Sound Insulation, page 6.

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SOUND ABSORBENTS

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U.S.G. SYSTEM OF SOUND INSULATION

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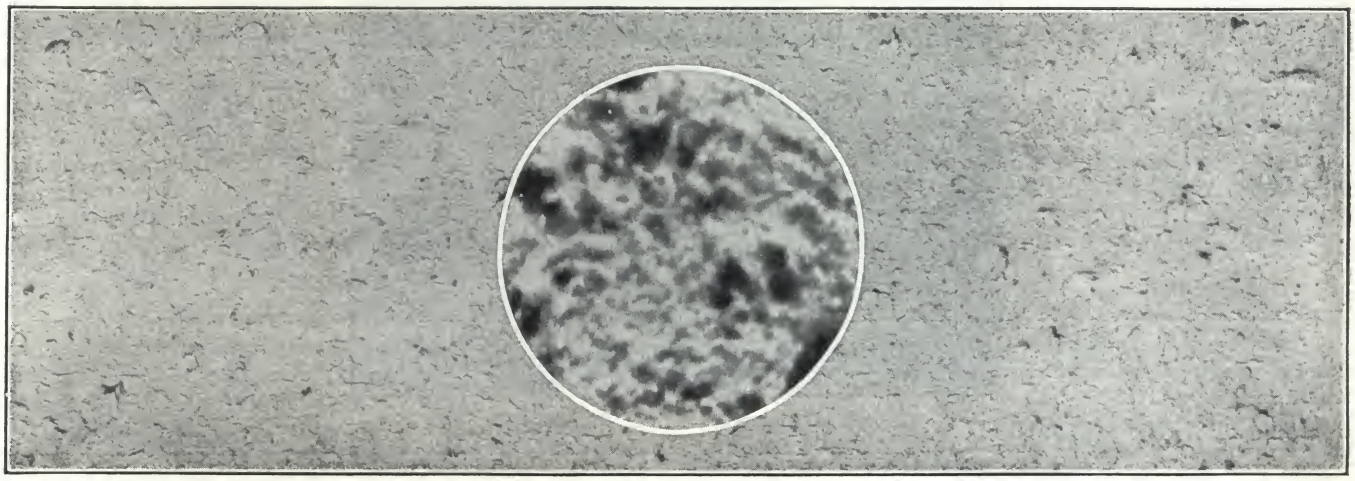
ACOUSTONE—Actual Size Showing Texture and Enlargement Showing Porosity



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ACOUSTONE—U.S.G. ACOUSTICAL TILE

Composition

Acoustone is formed from filaments of specially processed stone. Its extremely fine, almost microscopic, porosity (See page 1) provides an unusually high degree of sound absorption.

Outstanding Decorative Appearance

In addition to its high degree of acoustical efficiency, it is outstanding in its decorative effect. The surface texture is quite similar to travertine stone, surpassing it, however, in the richness and warmth it supplies through a wider range of color tones. From the viewpoint of design, it is adapted to harmonious, unobtrusive inclusion in any decorative scheme. Ashlar masonry walls for interiors can be constructed with Acoustone facings that are as beautiful as natural stone. Interiors in the modern trend may be delightfully handled in tile with a metallic lustre in many shades and colors. The wide variety of shapes likewise adds flexibility—the tile may be laid up in many interesting patterns. There are no disconcerting mechanical effects—colored borders, cornices in relief, and modified coffered work are easily obtained. Joints between tile units may be accented with a V profile or suppressed as desired.

Absorption

Tests expressed in percentages of sound absorbed made at Riverbank Laboratories (Dr. Paul E. Sabine) Geneva, Ill.

Tile	Pitch C3 (256 d.v.)	Pitch C4 (512 d.v.)	Pitch C5 (1024 d.v.)	Pitch C6 (2048 d.v.)
No. 46 (½")	.19	.46	.55	.48
No. 62 (¾")	.30	.62	.64	.55
No. 60 (1")	.41	.60	.64	.53

The No. 62 (¾") is used in most installations.

Colors

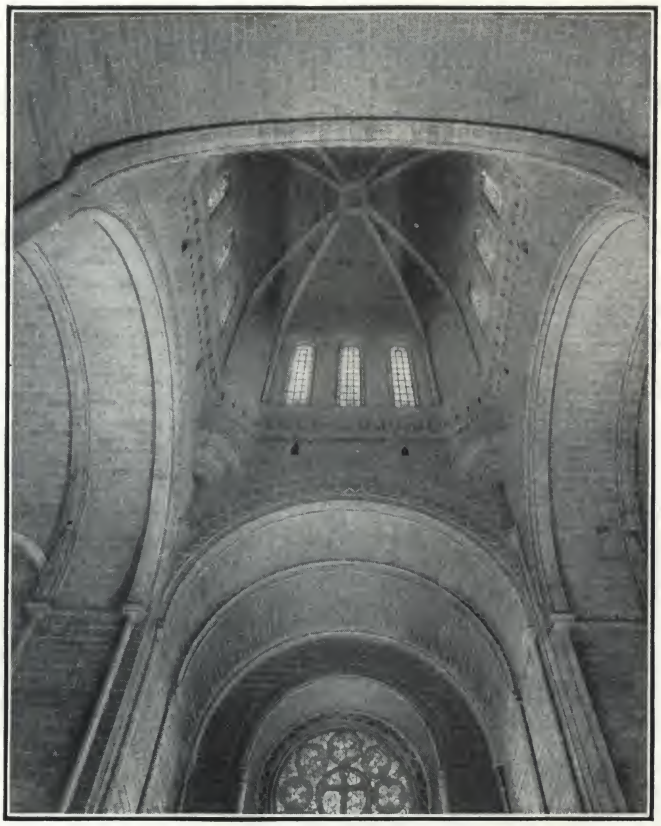
Tiles are furnished in light-reflecting white or cream. Special colors will be made to order. If for any reason changes in color or effect are desired, the tile surfaces may be brush or spray painted with any of the brushing or spraying lacquers. Sprayed lacquers, containing bronze powders in suspension, give the tile the appearance of being plated with the metal used. Exhaustive tests have proven that painting with lacquer does not reduce the acoustical efficiency or absorption of the tile. Oil paint, diluted with equal parts of thinner, may be brush applied without significant reduction in absorption.

Thicknesses

Acoustone is made in three thicknesses, ½ in., ¾ in., and 1 in. each with its particular absorption coefficients.

Sizes

Tiles are made in the following standard rectangular sizes: 6x6 in., 6x12 in., 12x12 in., 9x18 in. Special shapes and sizes may be obtained when required.



Church of the Holy Child, Philadelphia, Pa.
GEO. I. LOVATT, Architect
Acoustone laid in ashlar pattern with struck joints matching in texture and random color the native stone walls

Incombustible

Since it is made solely from specially processed stone filaments, it is incombustible.

Light Weight

Due to its extremely light weight, it is safely and permanently cemented over plaster in both new and old work.

Easily Cleaned

The complete and thorough cleaning of the porous structure of Acoustone with an ordinary vacuum cleaner thoroughly evacuates any foreign matter that may become lodged in the tile. Accumulations of grease and dirt on the surface of the material are easily removed by the same method, restoring the original color and appearance. The cost of such cleaning is much less than the cost of decorating an equal area of wall or ceiling; and the wear on the tile, incidental to the cleaning, is so negligible that no appreciable difference is made either in its appearance or sound absorbing ability after twenty-five years of half-yearly cleanings.

Durable

Because Acoustone is made from especially processed stone, it does not deteriorate with age.

Sanitary

Acoustone offers complete sanitation. It is inorganic, durable, completely cleanable. It provides an aseptic, readily and cheaply cleaned sound absorbent for hospitals and sanitoria.

Installation and Guarantee

The manufacture, installation and acoustical design of Acoustone is entirely under the control and is the sole responsibility of the United States Gypsum Company.

This policy enables the purchaser to buy a result without reference to the manner in which the result is obtained. It definitely fixes the responsibility with the United States Gypsum Company as it frees the purchaser or the architect from all details, engineering and installation.

Such a policy, of course, means that the United States Gypsum Company will refuse to install Acoustone where satisfactory results will not be obtained.

The company is prepared to make the installation of Acoustone in busy offices, banks, restaurants, brokers' offices, hospitals, etc., at times so that there will be no interruption in the usual routine.

For this work only trained and experienced mechanics are employed, who will carefully protect the walls, floors and furnishings against damage during the installation.

Economical

Acoustone is not expensive to install. It costs more than ordinary wall and ceiling decorating, but by eliminating redecorating costs, over a period of years, the expense is less.

Continued on next page

SPECIFICATIONS—ACOUSTONE

LONG FORM

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

(1) Work Included

Note: *List and locate all walls and ceilings to be covered with Acoustone. If more than one thickness of Tile is used, specify the thickness for the various areas.*

(2) Base

Acoustone shall be applied direct to plaster or similar smooth surface.

Note: *On existing work Acoustone is applied over any firm, standard plaster finish.*

(3) Acoustical Treatment Material

(3a) Acoustical treatment material shall be Acoustone *(½-in.) (¾-in.) (1-in.)* thick and of colors selected by the architect.

(3b) Joints between Tiles shall be *(a V formed by accurately beveling the tile edges) (as detailed) (specify).*

(3c) Ceiling borders shall be of Acoustone *(specify size).*

(3d) Cornices shall be formed of acoustical material in exact accordance with detailed profiles.

(3e) Tiles on walls and fields of ceilings shall be of size, shape and disposition as shown on the various details and approved shop drawings.

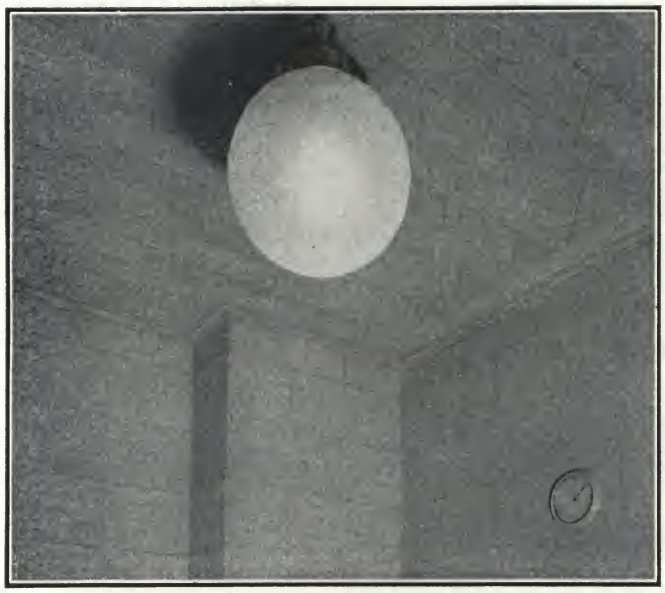
(4) Application of Acoustone

(4a) Acoustone shall be completely erected by the UNITED STATES GYPSUM COMPANY of sizes, colors and pattern shown on the drawings and details.

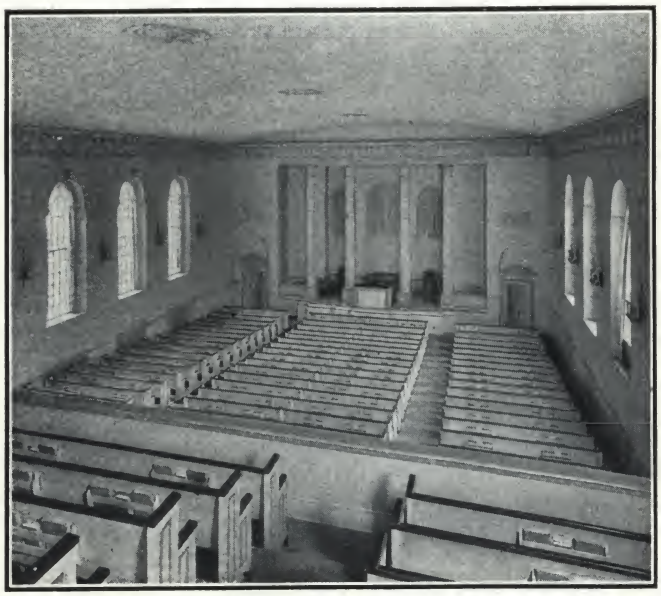
(4b) The Tile shall be laid close, accurately cemented in position in full conformance with the manufacturer's specifications.

SHORT FORM

The contractor shall allow the sum of $..... to cover the cost of acoustical treatment, using Acoustone to be furnished and erected by the UNITED STATES GYPSUM COMPANY as directed and approved by the architect.



Green Acoustone in Various Shades
WMAQ Broadcasting Station, Chicago Daily News Building
DETAIL STUDIO C. HOLABIRD & ROOT, Architects



Sabinite Acoustical Plaster
First Church of Christ, Scientist, Montclair, N. J.
CHARLES O. FAULKNER, Architect C. WILLARD WANDS, Associate

SABINITE ACOUSTICAL PLASTER

Composition

Sabinite Acoustical Plaster is a permanent, reasonably priced, sound-absorbing plaster which is substituted, over the standard scratch and brown coats, for the usual hard, sound-repellent plaster finishes. It absorbs sound because of its great multitude of tortuous, minute passages, which have their start in tiny openings at its surface. In these passages, inherent in the material, sound is repeatedly reflected, losing energy to heat and friction.

Thickness

It is applied ½-in. thick in two successive coats, each ¼-in. thick, with the usual plasterer's tools.

Absorption

Tests expressed in percentages of sound absorbed made in 1930 at Riverbank Laboratories (Dr. Paul E. Sabine), Geneva, Ill.

Pitch C3 (256 d.v.)	Pitch C4 (512 d.v.)	Pitch C5 (1024 d.v.)	Pitch C6 (2048 d.v.)	Pitch C7 (4096 d.v.)
.20	.31	.39	.38	.43

Appearance

It presents the same appearance as a sand floated plaster finish.

Colors

Sabinite is furnished in white and four standard colors or tints; ecru, ivory, cream, buff. Special colors will be furnished on orders exceeding 5 tons. On small orders where special colors are required it may be integrally tinted on the job. It can be painted or decorated after application without loss of efficiency. (See specifications.)

Incombustible

Composed of inorganic aggregates bonded together with gypsum plaster, long known as a fireproofing material, it is incombustible.

Durable

Sabinite Plaster is as rugged and durable as the ordinary sand float finish. It is unaffected by dampness and does not shrink or swell with climatic changes.

Continued on next page

Sanitary

Because it contains no vegetable or animal matter, Sabinite is sanitary. Like any gypsum plaster it is vermin proof and the pores are too small to admit flies or other insects. It may be disinfected or washed when necessary.

Distribution

Sabinite is made at the principal mills of the UNITED STATES GYPSUM COMPANY, conveniently located for lowest transportation costs and quick delivery.

Application

It is applied by the plastering contractor in lieu of the usual finish. Its installation is always supervised by an experienced representative of the UNITED STATES GYPSUM COMPANY.

Covering Capacity

One ton of Sabinite applied in two coats, each ¼-in. thick, will cover a surface of from 70 to 75 sq. yds. The average plasterer can apply 100 sq. yds. of Sabinite to full specifications in 12 hrs. To mix this material, including delivery to the mechanic, requires but 7 hrs.

Easy to Apply

Nothing but water is added to make Sabinite ready for application. It spreads with a trowel from the hawk, like ordinary plaster and bonds easily and firmly to the base coat.

Economical

The low cost of the material, ease of application and excellent covering capacity, coupled with its relatively high sound absorption, makes Sabinite a most economical material.

SPECIFICATIONS—SABINITE ACOUSTICAL PLASTER

Note: *Notes are explanatory or advisory only and should not be included in the specifications.*

(1) Work Included

Note: *List and locate all walls and ceilings to be covered with Sabinite Acoustical Plaster. If different colors of standard integrally tinted Sabinite are used, specify the colors for the various areas.*

(2) Grounds

On walls, in addition to the usual grounds set for the scratch and brown coat plaster base, set additional ½-in. thick grounds to assure proper thickness of the Sabinite and form nailing for wood trim, etc. All corner beads shall be set to conform to the increased plaster thickness.

(3) Acoustical Treatment Material

(3a) Acoustical Treatment material shall be Sabinite Acoustical Plaster as manufactured by the UNITED STATES GYPSUM COMPANY.

(3b) Sabinite shall be integrally tinted by the manufacturer at the mill.

(3c) Sabinite shall be tinted as directed on the job by the inclusion of dry color in amounts not to exceed 25 lbs. per ton of Sabinite. The usual precautions for handling colored plaster shall be observed.

Note: *Integrally tinted Sabinite should be a shade lighter than the same color would be in paint because the texture of Sabinite casts a slight darkening shadow.*

(4) Scratch and Brown Coat Base

All walls and ceilings to receive Sabinite shall be given a scratch and brown coat of gypsum plaster containing not more than two parts of sand by weight to one part of plaster. The scratch coat shall be thoroughly broomed before the brown coat is applied. The brown coat must be deeply raked after straightening.

Application of Sabinite

The application of Sabinite shall only be made under the supervision of the Service Department of the UNITED STATES GYPSUM COMPANY and after the plasterers have received full individual instructions.

To the dry base coat, first apply one ¼-in. coat of Sabinite mixed in accordance with the manufacturer's direction, adding water only to the material as supplied. The first coat shall be straightened with a darby and thoroughly broomed with a clean broom as soon as the water leaves the surface, the broom to be kept clean of all droppings and aggregate during the operation.

The second coat shall be floated with a clean cork float to an even and porous surface.

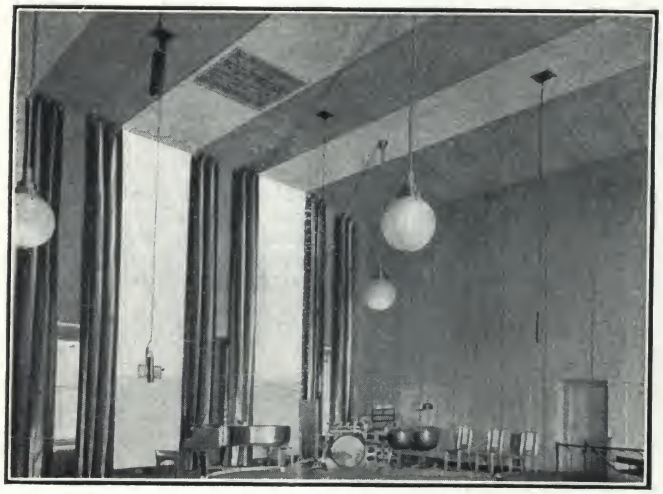
PAINTING SABINITE

Spray Painting

Sabinite may be spray painted. Depending on the conditions and the effects desired, the UNITED STATES GYPSUM COMPANY will make definite recommendations as to the paint or spraying lacquer and the type of spraying equipment best adapted. They will also furnish complete specifications covering the application.

Brush Painting

The only paint for brush application approved for use over Sabinite is Phon-O-Lite, a U.S.G. product. Phon-O-Lite may be tinted to any desired shade from the natural white by adding color ground in oil. The UNITED STATES GYPSUM COMPANY will furnish complete specifications covering application adapted to the particular conditions.



Studio A, WMAQ, Broadcasting Station, Chicago Daily News Building
HOLABIRD & ROOT, Architects
Silver and blue Acoustone

Employees Cafeteria in Large Chicago Bank
FROST & HENDERSON, Architects
White Acoustone stained to harmonize with old pine woodwork

Continued on next page

WHERE ACOUSTICAL CORRECTION IS NECESSARY

Auditoria

The use of sound absorbing materials on the walls or the ceilings of auditoria reduces the reverberation time to a proper level, so that hearing is made perfect at every seat location. Consideration should, of course, be given to designing the room so as to secure an ample and even distribution of sound. Concentration and dead spots, which result from improper reflecting walls or ceilings, will not be present if inclined and curved surfaces are properly handled.

Gothic churches invariably will require treatment.

In school auditoria and gymnasia, reverberation times should be lower than those in churches and theatres.

Many architectural forms, particularly domes and elliptical curves, are apt to concentrate sound, producing areas of greater volume in some parts of the room and consequent areas of low volume in other parts.

No general rule can be given by which these difficulties are to be avoided, but acoustical engineers can usually suggest slight changes in the radii of curved surfaces and better angles for flat surfaces which will provide a more even distribution of sound.

Business Offices

Acoustical treatment will reduce the noise level in an office from one-third to one-tenth. Everyone appreciates a quiet place in which to think. In an acoustically treated office the noise produced by jangling phone bells, strident buzzers, and paper-thumping typewriters ceases to be a distraction. Tests have proved also that the quieting of offices makes for greater efficiency. The acoustical treatment of office buildings and noisy work-rooms pays for itself through the elimination of misunderstandings, the reduction of errors, and the lessening of fatigue.

"The experiments on office conditions seem to indicate that in some instances a move to a quieter work-place may be as good as a rest, there being a difference of 19 per cent in the energy expenditure increment following working in a noisy as compared with a quieter environment. Men and women seemed to be similarly affected, while the more skilled typists were adversely affected in output to a greater extent than were the mediocre typists."

Hotels and Restaurants

In hotels, corridors are noise conveyors. Quiet guest rooms may be secured by treating the corridor ceilings with acoustical treatment. Many of the sounds occurring in guest rooms, and which seem to be transmitted through partitions, really come over the doors and through the transoms from the halls.

Ceiling treatment, particularly in restaurants, lunch rooms and coffee shops, is recommended as the clatter of dishes and the rattle of silverware is annoying to guests. It is also advisable to apply a sound absorbent on ceilings in kitchens and sculleries.

The ballrooms and large meeting rooms of hotels used for conventions and other purposes are notoriously bad for speech. The use of sound absorbents on the ceiling usually suffices to correct such conditions.

Hospitals

In the treatment of hospitals it is wise to apply acoustical absorbents to the ceiling, and in many cases to the side walls of corridors. It is more necessary to do this than to apply the material in the wards and rooms themselves unless the hospital is located on a noisy street where sound absorbents on the ceilings will reduce the noise which would otherwise cause discomfort to the patients. The noises caused by the wheeling of trays of food, the clatter of dishes, and disturbances in patients' rooms escape into the corridors and are carried into all of the rooms leading from the corridor. The introduction of acoustical treatment in the corridor will absorb this noise, making all the rooms leading from it quiet and restful. In hospitals it is quite common as well to treat ceilings and side walls of the labor and delivery rooms. It is excellent practice to apply treatment to the ceilings of all sculleries, kitchens and pantries which directly connect with portions of building used by patients.

Trust Department, Northern Trust Co., Chicago, Ill.
FROST & HENDERSON, Architects
Paneled ceiling in various shades and sizes of Acoustone

Facts Concerning Absorption Percentages

Architects should know that laboratories in determining the coefficients of absorption of materials submitted for analysis do not all use the same yardstick. For example, we find the same sample of material which tested 61% at C4 at the Riverbank Laboratories, testing 65% at another widely used laboratory and 58% at a third. In order to equitably compare various acoustical products, the architect should compare figures of the same observer.

Too much stress should not be laid on the relative coefficients of absorption, particularly when the problem is that of quieting. In an office 30x50 ft., with a 12-ft. ceiling, a difference of ten points in the absorption coefficient of the absorbent used produces less than a decibel (the least audible difference in loudness the human ear can detect) of difference in the noise level.

To illustrate: if the reduction in noise level caused by a 60% absorbent in this room is 5.1 decibels, a 70% absorbent produces a reduction of 5.6 decibels. Such a difference is undistinguishable by the ear, yet the difference in price of the material will frequently be as much as 10 or 15 cents per sq. ft. In this connection, the architect is reminded that the use of a low coefficient absorbent over a wider area is generally more desirable than the use of a high-coefficient material on a concentrated area. It is the exception in auditoria where an absorbent of maximum coefficient is required.

Sound Insulation vs. Sound Absorption

The architect should differentiate between sound insulation and sound absorption. The former has to do with preventing the passage of sound through walls, floors, ceilings, and other structural parts of the building. Sound absorption, on the other hand, has to do with the control of sound within a room, either reducing reverberation so that speech and music are properly heard, or reducing the noise level in the room to a minimum. Although sound-absorbing materials will in some measure reduce the amount of sound transmitted through walls and floors, their value as sound insulators does not warrant their expense.

Another point which often causes confusion of mind is that the intensity of sound as measured by physical standards does not represent the loudness of the sensation that reaches the senses. Loudness — the aural sensation of intensity—is roughly proportional to the logarithm of the physical intensity. As well, no means are known of separating the amount of sound that passes through a sound absorbent and that which is actually absorbed (killed) by it; but even if 50% of the sound were completely annihilated, the remaining 50% would usually be sufficiently intense to permit of ordinary conversation being heard through walls. In order to stop effectively the passage of objectionable sound through walls, floors and ceilings, sound insulation must be much more effective than this.

This insulation the qualified acoustical engineer can provide. It can be done in existing buildings, although it is best done during construction. Moreover, for the reason that vent ducts, piping, etc., carry sound and must be insulated, sound insulation should be the work of one contractor, who can be made responsible for the result.

See U.S.G. Sound Insulation, page 6.

Continued on next page

U.S.G. SYSTEM OF SOUND INSULATION

ELEMENTS

(1) U.S.G. System of Sound Insulation for Walls, Floors and Ceilings in Fireproof Construction.

(2) U.S.G. Sound Insulative Machine Bases for isolating vibration and noise in Machine Equipment.

(3) U.S.G. System of Sound Insulation for Floors in Non-fireproof Construction.

(4) Thermofill for Pipe Chases, Shafts, etc.

(5) U.S.G. Sound Insulative Door.

THE U.S.G. SYSTEM OF SOUND INSULATION IN FIREPROOF CONSTRUCTION

Purpose

To prevent the passage of sound from one room to another.

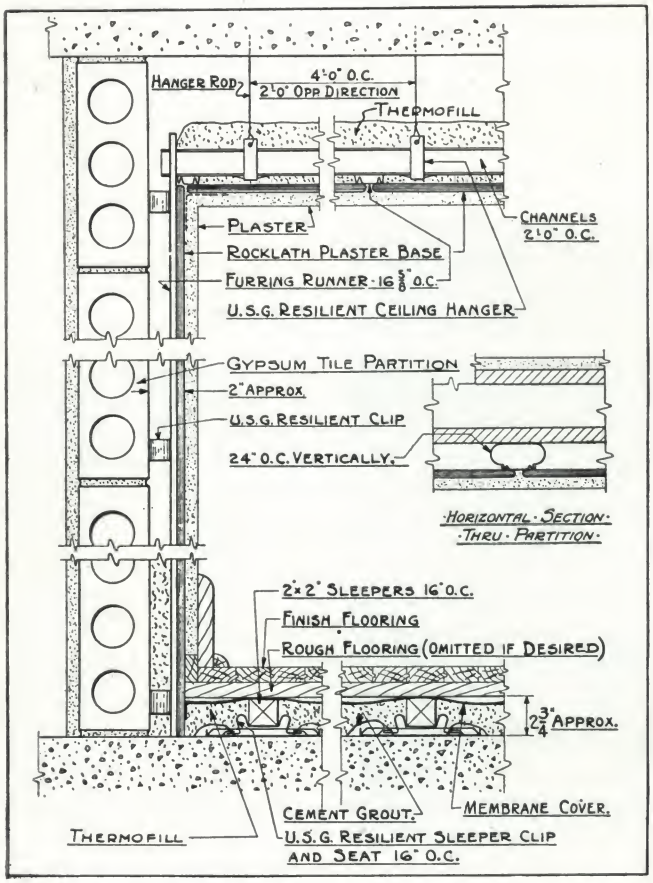
Theory and Description

Sound passes through a wall, floor or ceiling by vibrating it as a diaphragm. In the case of a wall, the sound strikes it and sets it into vibration. The vibrating wall sets up new sound waves, reduced in intensity on the opposite side. The U.S.G. System of Sound Insulation is built upon the principle of providing a wall in which one side can vibrate while the other side does not. This is accomplished by constructing a furred surface supported on springs. These springs act as "snubbers" in reducing the amount of vibration of the surface, and because of their resiliency, prevent the remaining vibration from passing through to the opposite side.

Advantages

The U.S.G. System of Sound Insulation possesses the following advantages over other methods of sound insulation.

1. **Permanence**—The efficiency of this construction, being primarily obtained by steel spring devices is maintained permanently.



Detail Section of U.S.G. Sound Insulative Floor, Wall and Suspended Ceiling Constructions

2. **Fireproofness**—Only incombustible materials, steel and gypsum are employed.

3. **Economy**—Because of its simplicity of construction, the U.S.G. System of Sound Insulation offers a maximum of efficiency at a reasonable cost.

Sale and Installation

The U.S.G. System of Sound Insulation in Fireproof Construction is sold and installed only by the UNITED STATES GYPSUM COMPANY which assures undivided responsibility for the results. All work is installed by trained mechanics under strict supervision.

Installations

A few representative installations of the U.S.G. System of Sound Insulation are:

New National Broadcasting Studios, Chicago, Ill., Graham, Anderson, Probst & White, Architects

Paramount Talking Picture Studios, New York, N. Y.

Apartment Building, 1242 Lake Shore Drive, Chicago, Ill., Robert S. DeGolyer, Architect

Apartment Building, 2000 Lincoln Park West, Chicago, Ill., McNally & Quinn, Architects

Apartment Building, 136 W. 55th Street, New York, N. Y., Schwartz & Gross, Architects

Apartment Building, 98 Riverside Drive, New York, N. Y., Geo. F. Pelham, Architect

Valley Hospital, Sewickley, Pa., Schmidt, Garden & Erickson, Architects

Medinah Athletic Club, Chicago, Ill., Walter W. Ahlschlager, Inc., Architects

La Salle-Wacker Building, Chicago, Ill., Holabird & Root and A. N. Rebori, Architects

Items Furnished and Installed in the U.S.G. System of Sound Insulation (See detail, page 7)

Ceilings—Resilient Ceiling Saddles, 1½-in. Channel Runners, Furring Runners, Rocklath, Thermofill.

Note: *We do not include plaster or hanger rods. Hanger rods should be furnished by others, 2x4-ft. centers.*

Walls—Resilient Wall Clips, Furring Runners, Rocklath, Cornerite.

Note: *We do not include tile walls or plaster.*

Floors—Resilient Sleeper Chairs with tie wire and grout, Wood Sleepers, Thermofill, Paper Membrane.

Note: *We do not include the sub or finished flooring.*

Space Required by the U.S.G. System of Sound Insulation

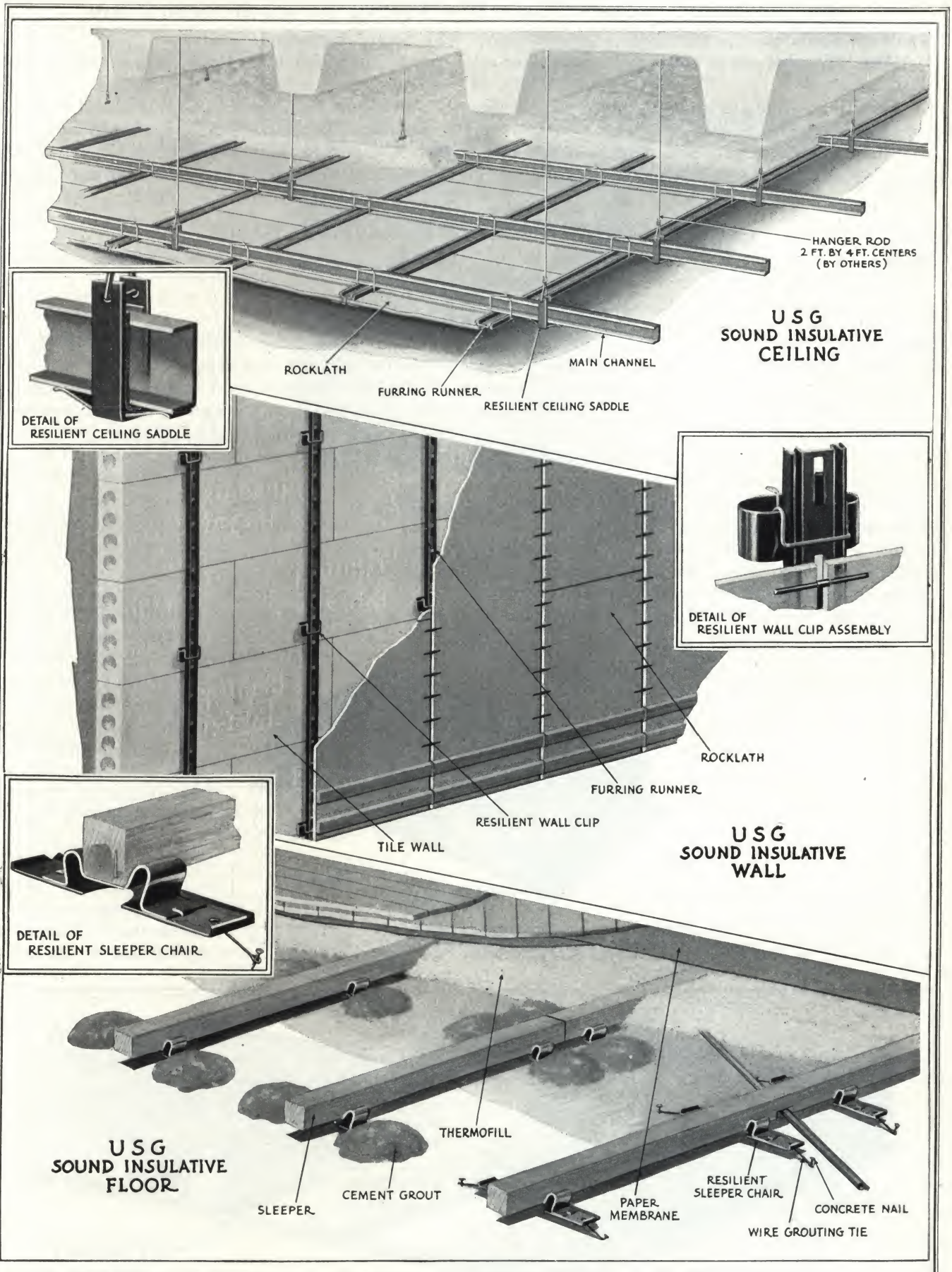
Ceiling—Not less than 6 in. to the bottom of the Rocklath. One side only of the wall will be treated.

Walls—2⅛ in. from the face of tile wall to outside face of Rocklath. Ordinarily treatment is required only on one side of the wall.

Floor—2¾ in. from the top of the floor slab to the top of the wood sleepers.

See page 8 for specifications.

Continued on next page



DETAILS OF THE U.S.G. SYSTEM OF SOUND INSULATION

Continued on next page

SPECIFICATIONS (SHORT FORM) U.S.G. SYSTEM OF SOUND INSULATION

(1) Work Included

Note: *Here list and locate clearly on the plans as follows:*

Partitions—Indicate by heavy black line on the side to be insulated.

Floors and Ceilings—Indicate on room schedules and by notations on floor plans and sections.

(2) Sound Insulation

(This specification should be listed under a separate heading of "Sound Insulation.")

The sound insulation as above listed and as shown on the plans shall be the U.S.G. System of Sound Insulation, furnished and installed by the UNITED STATES GYPSUM COMPANY, 300 West Adams Street, Chicago, and 220 East 42nd Street, New York.

U.S.G. SOUND INSULATIVE MACHINE BASES

Purpose

To prevent the transmission of noise and vibration of motors and machines in buildings.

Description

The UNITED STATES GYPSUM COMPANY Sound Insulative Machine Base has been especially designed for use under machinery of all kinds to stop vibration and noise.

Its construction is essentially that of a rigid platform supported on very sensitive steel springs as is shown in the accompanying illustrations. These resilient springs "absorb" the noise and vibration of the machine so that practically none enters the floor upon which the machine rests. The platform has no continuous connection of any kind with the floor except through the resilient springs. The action of the springs in the base might be likened to those in an automobile, where the vibration and shock on the wheels is absorbed instead of being transmitted to the body of the car.

Uses

The bases are for use under fans, motors, pumps, elevator motor generators, and control panels, oil burners, printing presses or any piece of equipment that is a source of vibration or noise.

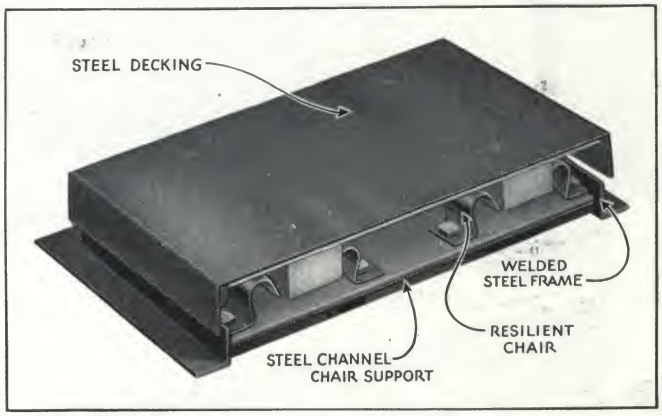
Advantages

The U.S.G. Sound Insulative Machine Base possesses the following advantages:

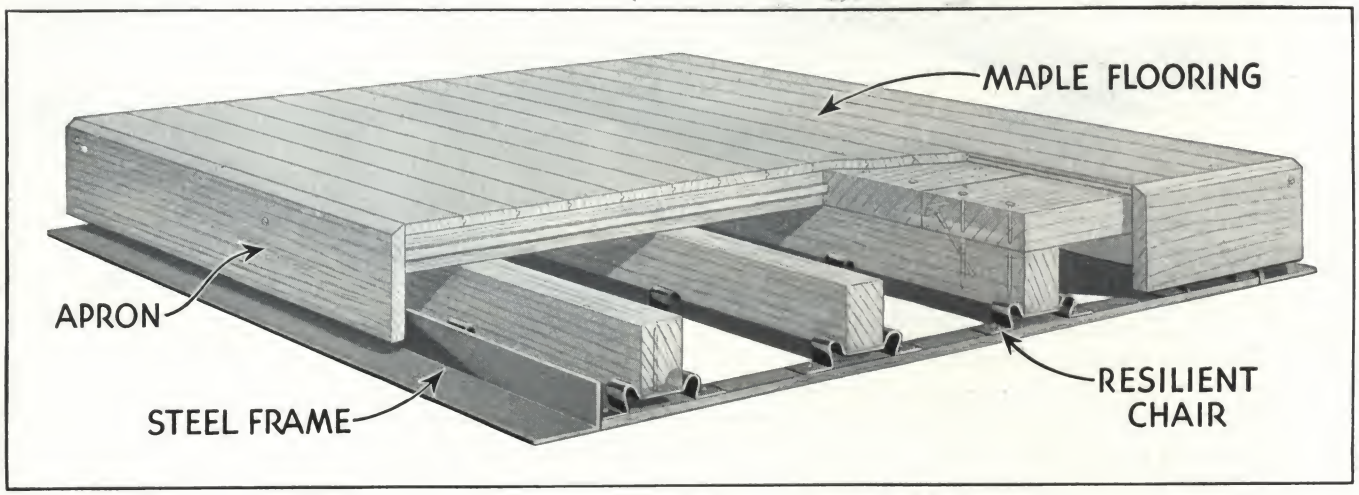
(1) **Adaptability**—Each base is especially designed and built for the piece of equipment that it is to support. The number of springs is determined by the load of the machine. The standard base has a platform of wood planking with a maple flooring finish. A concrete top is also furnished where desired. For use under oil burners, or other equipment requiring incombustible materials, the base is made of steel and asbestos as is shown in the illustration.

(2) **Economy**—By the use of this base, equipment can be placed in that part of the building most desirable from the standpoint of efficiency and economy, without regard as to possibility of disturbances to adjacent parts of building.

(3) **Installation**—The bases are sold completely fabricated, ready to receive the machine. The location of the machine is clearly indicated on the platform, so that installation consists of merely lag screwing the base to the floor, and bolting machine to platform.



Above: Non-combustible Steel Platform Machine Base
Below: Standard Wood Platform Machine Base



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THERMOFILL FOR PIPE CHASES, ETC.

Purpose—To prevent pipes from carrying sound, fill the chases with Thermofill and keep pipes free from all floor slabs and partitions in so far as possible.

Thermofill is a dry, flocculent material of light weight, which acts as an effective sound deadener. It is easily installed and is low in cost. See our page on Insulation Products.

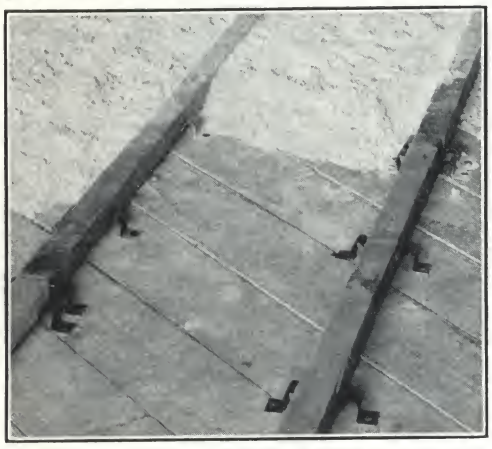
U.S.G. SYSTEM OF SOUND INSULATION FOR FLOORS IN NON-FIREPROOF CONSTRUCTION

Description

The U.S.G. System of Sound Insulation is also adapted to use on floors in wood joist construction. It is designed to furnish a high degree of sound insulation in non-fireproof buildings at a nominal cost.

Its use is particularly desirable in apartment buildings of this type of construction, because of the ease with which sounds travel from one apartment to another.

Today with almost every family possessing a radio, piano or other musical instruments adequate sound insulation is essential to the comfortable occupancy of the building.



For this type of construction the United States Gypsum Company will either contract for the complete installation or it will sell the materials (Thermofill and Resilient Sleeper Chairs) for erection by others.

This construction will require 2¼ in. from the top of the rough floor to the top of the wood sleepers.

Items Furnished by the United States Gypsum Company

Resilient Sleeper Chair, Thermofill, Sleeper (Erected Contracts only), Paper Membrane (Erected Contracts only).

Note: *We do not include the sub or finished flooring.*

U.S.G. SOUND INSULATIVE DOOR

Description

The United States Gypsum Sound Insulative Door employs the same principle used in the United States Gypsum System of Sound Insulation.

The two sides of the door are "floating" panels supported on resilient spring devices, which allow either side of the door to vibrate under the action of sound without the vibrations passing through to the other side.

Advantages

1. **Fire Retarding**—Sheets of steel and asbestos on the inside of the door make it resistive to fire.

2. **Light in Weight**—The door, because of its construction, weighs but slightly more than standard 1¾-in. flush panel doors of the same size.

3. **Regular Hardware**—No special hardware is required with these doors. The ordinary standard knob and lock set operates with this door the same as with a regular door. The undesirability of special lever handle hardware is generally recognized and a sound insulative door which operates with standard hardware fills a long felt want.

4. **Effectiveness**—The door is built upon the scientific principle of preventing the diaphragmatic vibrations of one side of the door from being transmitted to the opposite side. Its sound insulative efficiency is, therefore, remarkably high.

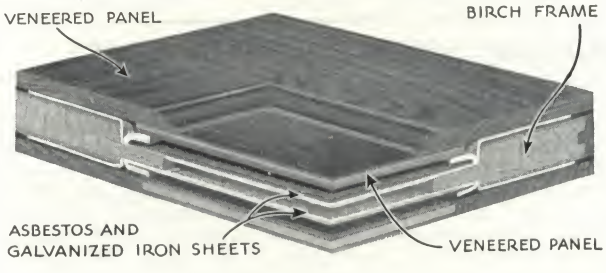
5. **Economy**—This door, although it possesses unusual advantages in a "soundproof" door, actually costs less than "clumsy" and less efficient doors used in the past. It is priced to permit its widespread use in hotels and apartment houses.

Materials and Design

The doors are furnished standard in birch, unfinished, in either flush or paneled construction. Other wood veneers or any special design of panels can be furnished at slight additional cost.

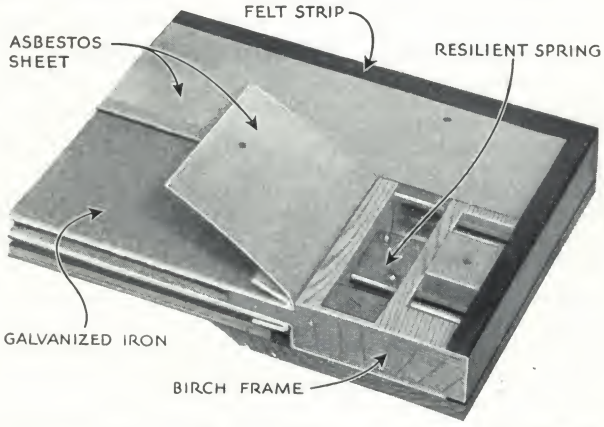
Special Items Furnished

Special stops with rubber gaskets and threshold are furnished with the door. Since no special jambs, trim or hardware are required, none are included.



Above

Section of U.S.G. Sound Insulative Door



At right

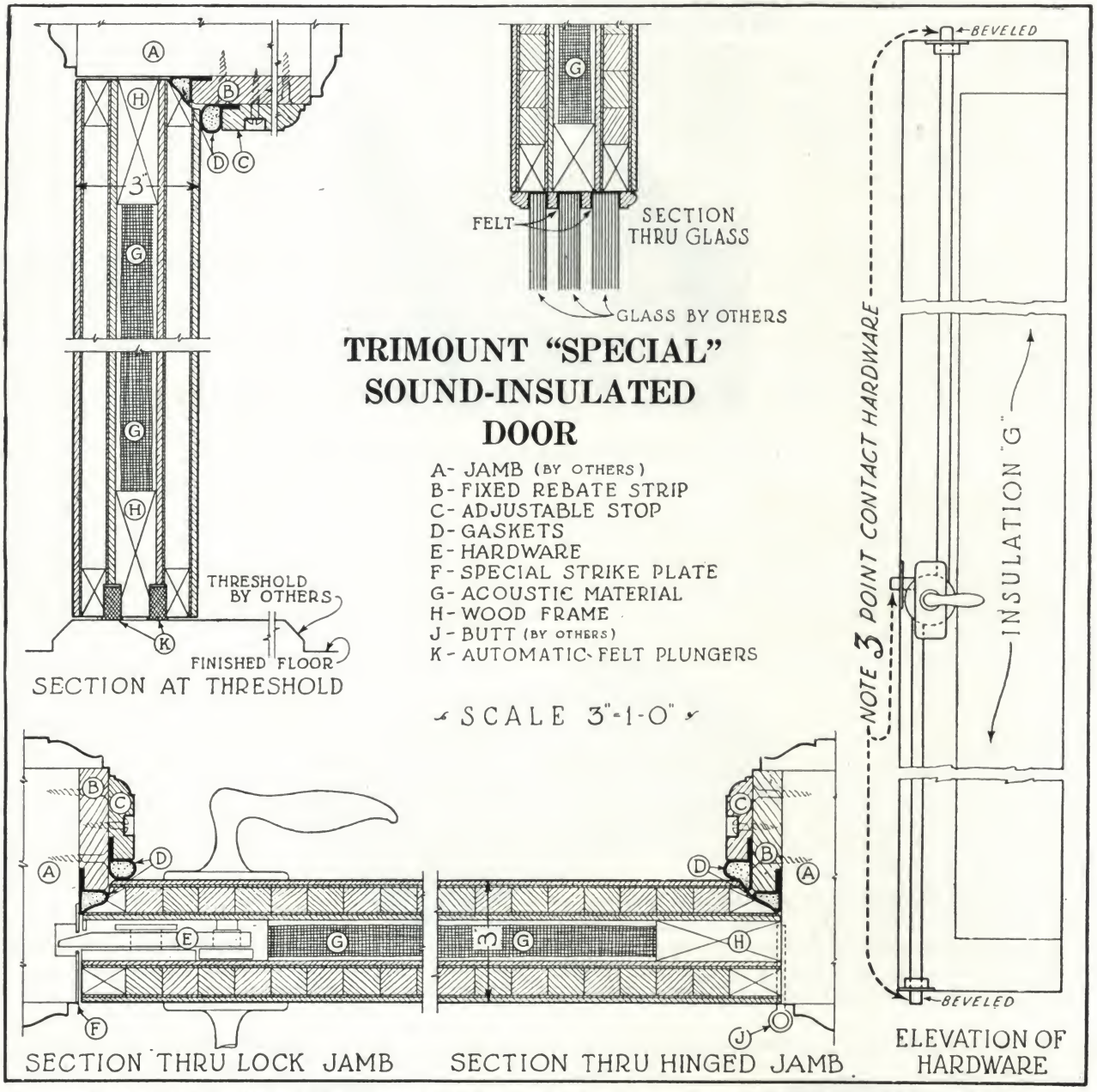
One Panel Removed Showing Interior Construction

THE COMPOUND AND PYRONO DOOR CO.

Manufacturers of Trimount Sound Insulated Wood Doors

ST. JOSEPH, MICH.

For the Branch Offices, see our other Catalogue
For Key-Veneered and Pyrono Fireproof Doors, see Manufacturers' Index



TRIMOUNT "SPECIAL"—TRIMOUNT "REGULAR" SOUND-INSULATED DOORS

The Trimount Sound-Insulated Door can be veneered with any kind of wood, and in types similar to ordinary doors. It may have either raised or flat panels, and flush or raised mouldings. We recommend, however, that the flush type of door be used wherever possible. Thin panels are susceptible to vibration, therefore the paneled type of door does not so nearly meet the requirements of solidity, massiveness, or weight, which are prime requisites of soundproofness. It will be noted from the accompanying drawings that we manufacture two distinct types of sound-insulated doors; the Trimount "Special," which is a treatment of the sound-retarding problem where the highest practicable sound retardation is desired and the expense warranted, and the Trimount "Regular," which is a comparatively inexpensive treatment of the problem, but highly efficient.

Trimount "Special"—Built up of two separate doors held apart with a marginal frame providing a space filled with acoustic flax, making a total thickness of 3 in. (can be furnished 3½ in. thick if desired). Specially designed hardware is built into the door and by the operation of a heavy bronze lever handle, throws three bolts into beveled strike plates, drawing the door tightly into its gaskets. These strike plates have an adjustable feature and are installed near the top and bottom and at the center of the jamb. A double line of gaskets surrounds the sides and top of the door opening, set into special stops as detailed. The outer stop is furnished with adjusters, which have a slot permitting an in or out adjustment of the gasket in its relation to the edge of the door. The edge of the door is rabbeted with a contour which accommodates the inner line of gaskets and makes possible a wide area of contact between door and gasket. Two self-leveling felt strips set in galvanized steel channels seal the bottom of the door. By means of a projecting plunger at the hinge edge of the door, they are automatically raised or lowered as the door is operated.

The salient features of the Trimount "Special" Door are—thickness, 3 in.; double line of gasket; double bottom closer strips; three-point contact hardware.

Continued on next page

Trimount "Regular"—Constructed on same principle as Trimount "Special" Door except that thickness is 2⅝ in. One-point contact hardware of turnbuckle type is used and a single line of stops and gaskets and a single bottom closer strip.

Types—Trimount Sound-Insulated Doors, either "Special" or "Regular," may be arranged for glazing with double or triple lines of glass, or may be fireproofed by the Pyrono Process. They may be hung in the usual manner in wood frames or in metal frames. If metal frames are used, self-threading screws are furnished for attaching the stops, so that no tapping for the screws is necessary.

What Is Furnished—We furnish the doors, the special hardware, the stops, with screws and stop adjusters, the gaskets, the automatic bottom closer strips. Wood jambs, if required, can be furnished.

What We Apply—In the Trimount "Special" Door, the three-point contact bolts are built into the door. In the Trimount "Regular" Door, the single contact latch and strike plate are furnished but not applied. If we furnish the jambs, stops and gaskets are applied and the door fitted. If jambs are not furnished by us, the carpenter hanging the door applies the stops and gaskets. We apply the bottom closer strips.

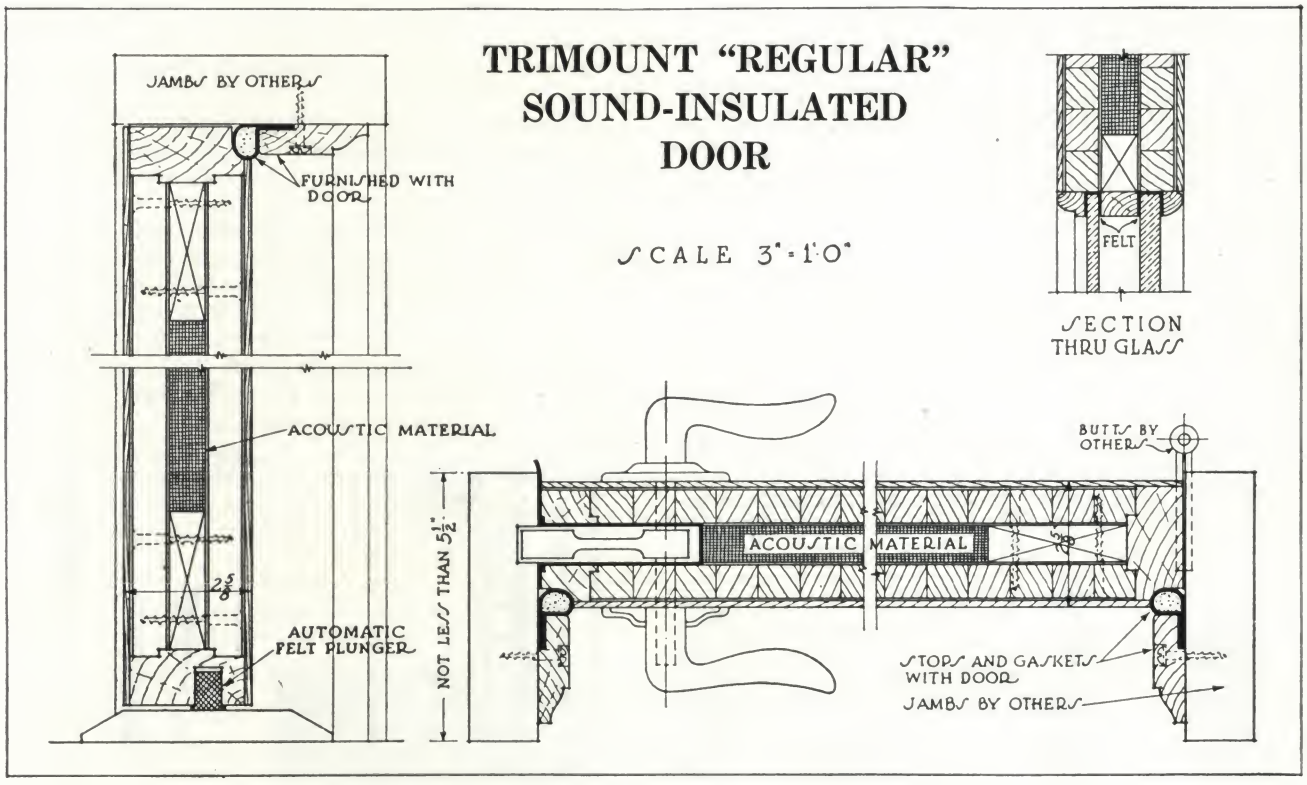
What We Do Not Furnish—Locks and hinges are not furnished. Any ordinary lock can be used, but provision must be made for the extra thickness of the door. Any substantial hinges may be used, but longer screws than usual are desirable on account of the weight of the door. Trimount "Special" flush doors weigh approximately 160 lb. Trimount "Regular" flush doors weigh approximately 140 lb.

Time Required for Manufacture—Six weeks is the normal time desired for manufacture, but emergencies can be met as the need for closer co-operation arises. We specialize on service that serves.

Advantages of Trimount Door Construction—Trimount doors are massive and solidly constructed, operating with hardware that is foolproof and cannot get out of order. The greatest possible area of contact between the door and its gaskets is provided. Gaskets and bottom closers are so arranged that they can be replaced or adjusted at negligible expense of time or money.

How to Specify—Doors as indicated on the plans to be Trimount "Special" [Trimount "Regular"] Sound-Insulated Doors, as manufactured by The Compound and Pyrono Door Co. of St. Joseph, Michigan. Doors shall be furnished complete (with jambs if desired) with all special hardware, stops, gaskets and bottom closers, excepting butts and locks which shall be furnished by others.

Information Required for Estimate—State definitely whether Trimount "Special" or Trimount "Regular" sound-insulated doors are desired; size of openings; design of doors (whether flush or paneled); single or pairs of doors; kind of wood for face veneer; swing of doors; width of jambs. If fireproofing is desired, it should be so stated. If glass openings are required, state size of openings. If jambs are required, so state.



Some Recent Installations and Their Architects

National Broadcasting Co. Studios, Merchandise Mart, Chicago, Ill., Graham, Anderson, Probst & White
National Broadcasting Co. Studios, New York, N. Y., Raymond Hood
Columbia Broadcasting Co. Studios, Washington, D. C., Columbia B. C. Co. Engineers
Crosley Radio Broadcasting Studios, Cincinnati, Ohio, S. Hannaford & Sons
Radio Broadcasting Studios WGN, Chicago, Ill., Howells & Hood
Radio Broadcasting Studios WBT, Charlotte, N. C., WBT Engineers
New York University, New York, N. Y., James Gamble Rogers
Massachusetts General Hospital, Boston, Mass., Coolidge, Shepley, Bulfinch & Abbott
Lying-In Hospital, Boston, Mass., Coolidge, Shepley, Bulfinch & Abbott
Eastman Kodak Co., Rochester, N. Y., Stevens Sound-Proofing Co.
Civic Opera House, Chicago, Ill., Graham, Anderson, Probst & White
Cooley School Addition, Detroit, Mich., Donaldson & Meier
Cadillac Motor Co., Engineering Building, Detroit, Mich., Albert Kahn
Concert Hall, Dupont Estate, Longwood Garden, Pa., E. W. Martin
Fine Arts Building, Tulsa University, Tulsa, Okla., H. C. Hibbs
Baker Library Addition, Boston, Mass., McKim, Mead & White
Johns Hopkins Hospital, Baltimore, Md., John H. Hampshire, Inc., Contractor
United Research Corp. Laboratories, New York, N. Y., Stevens Sound-Proofing Co.
Music Building, University of North Carolina, Chapel Hill, N. C., Attwood & Nash, Inc.

THE EVANSTON SOUND PROOF DOOR

IRVING HAMLIN, PATENTEE AND MANUFACTURER
1500 Lincoln Street, EVANSTON, ILL.

TELEPHONE
GREENLEAF 1975

Products

SPECIAL DOORS to RETARD TRANSMISSION of SOUND:

The Evanston Sound Proof Door—one door to an opening.

Hamlin's Combined Sound Proof and X-Ray Proof Door.

Hamlin's Double Doors—two of the above to an opening.

Hamlinized Folding Partitions—many of above to an opening.

Evanston Sound Proof Door

Construction—A sectional door, containing deadening quilt 7/8 in. thick. Held together by invisible means, without disfigurement of plugged screw holes. Looks like any other door except for its European form of handle—a rotating lever instead of knob.

Genuine hair felt is the deadening quilt. It extends throughout almost the entire area of the door, under stiles and rails except for the space occupied by the mechanism, and to within 1 in. of the edges of the door.

The function of the internal mechanism, operated by one-quarter rotation of the handle, is to hermetically seal the cracks between the door, the floor and the frame. It is of steel, strong and massive, with the pivotal connections riveted and not bolted. There are no springs to wear out and break.

Ordinary doors shrink, swell and warp under varying degrees of steam heat and midsummer dampness. This door retains its virtue, no matter how much it may shrink or swell, as it is purposely trimmed so that its ultimate swelling will never be great enough for it to stick in the frame, while the special felt-mounted stops (1 in. thick) at all times fill the cracks, preventing drafts of air and passage of sound, dust, odors and light.

The threshold opening is sealed by a movable member, the other three openings by mere compression of the door against the felted stops. This movable "felt-board" is massive and strong, bearing upon its lower edge a generous roll of felt covered by strong canvas. When under compression it is 1½ in. wide by ½ in. thick. The illustration shows a raised threshold, but same is not necessary.

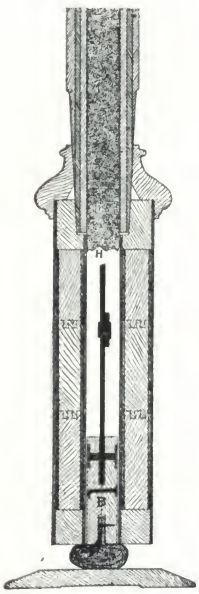
Made in any style of flush or sunken panels. Each section is a completely built-up 7/8-in. door in the core and veneer manner of the best Wisconsin door mills. Panel doors have 1/8-in. veneers, while flush doors are done in the cross-banded manner. The completely fabricated doors therefore in effect are 7-ply and 11-ply respectively, and 2⅝ in. thick. Your own jambs are usable and should measure at least 5½ in. across the face—flat, not rabbetted.

The sound proofing methods combined with ample and thorough application of sheet lead and rearrangement of handles, provide a perfectly acceptable noise proof and X-Ray proof treatment of X-Ray rooms in hospitals.

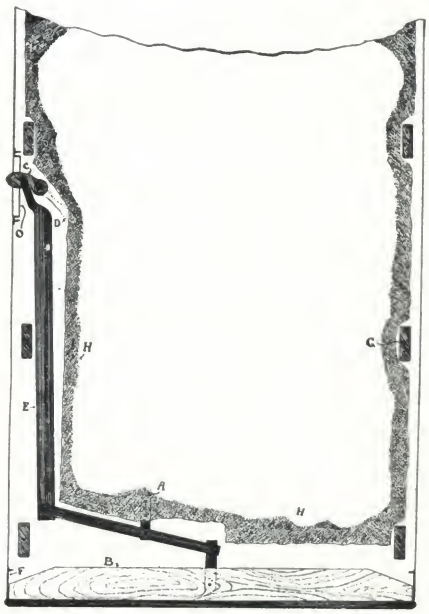
Double doors are furnished for openings up to 9 ft. wide.

Metal covered fire resisting doors are furnished, constructed in the "kalamein" manner on the outside, while the interior can be provided with asbestos in addition to deadening quilt. Thus there is a quadruplex association of materials of differing densities—metal, wood, asbestos and quilting—the varying densities in juxtaposition being a standard now declared by men of science to be very desirable for sound deadening.

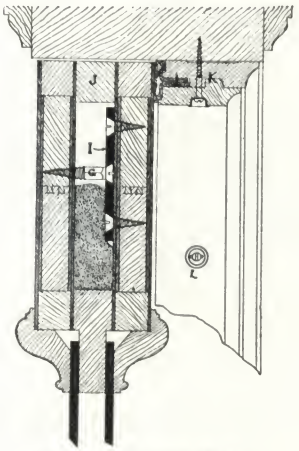
In some cases these doors have been treated internally with galvanized iron or sheet steel—not as a fire retardant, but to supplement the sound deadening quilt,



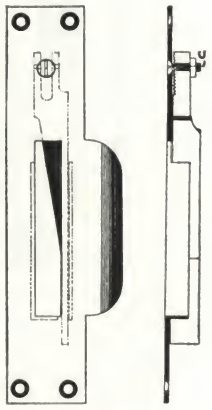
Section Through Bottom Rail



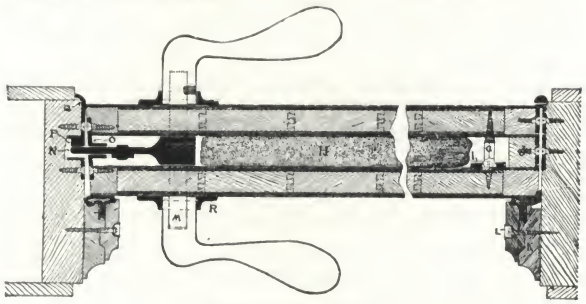
Vertical Section Showing Operating Mechanism



Section Through Head



Strike Plate



Horizontal Section

Details of the Evanston Sound Proof Door

Continued on next page

the hard resonant metal serving to reflect backwards into the soft quilt the sounds that have penetrated the wood.

These doors are offered as models of beauty, of thorough construction and of high efficiency in retarding sound—not of course one hundred per cent efficient, as only a steel safe door perhaps thus could be.

Operation—When door swings, handle is in diagonal upward position. Close the door, push handle one-quarter turn downwards, causing the latch to engage with the wedge in the strike-plate, thus forcing the door against the stops as a refrigerator door is clamped into its seat.

Coincidentally the canvas protected felt-board moves downward to the threshold, all being securely held by mere frictional resistance between latch and the long inclined surface of the wedge. Part of the inner mechanism is a counterweight to prevent felt-board from dragging when the door swings. Stops are adjustable in and out, while the length of thrust in the felt-board is varied by the up or down re-fastening of the wedge in the strike plate. These two adjustments permit of correct initial placement and of readjustment in after years if required. The inner mechanism is steel, with riveted pivotal connections, strong and simple, and without springs.

Uses—There are about 3000 doors, some of them in use for a dozen or more years, in over 350 buildings comprising music schools, music salesrooms, hospitals, physicians' offices, committee rooms, private offices, bedrooms, bathrooms, "movie-talkie" studios, radio broadcasting studios, telephone booths, prison cells, jury rooms, testing rooms, and the like.

How Sold and Installed—Illustrated catalogue and list of installations are sent upon request, and from it you may find installations in your neighborhood for inspection. The catalogue contains a model specification for the ordinary use of architects, while a very full and exhaustive specification for use of civic, State and Government buildings will be furnished on request.

Wisconsin mills furnish the woodwork, and the doors are fabricated, crated and shipped from Evanston. Your local contractor trims and hangs them from printed instructions.

Each prospective installation is figured upon its own basis. All installations are "special," and there is no price list. No doors are kept in stock. Your request for an estimate should, therefore, come well in advance of your requirements. Request for estimate should give number of doors of each size, the kind of wood, and some indication of panels and moulding.

Orders should be sent well in advance of requirements, as the woodwork is not obtainable at short notice. Quick shipment, however, is done by obtaining woodwork from mills so specializing, but at higher cost.

On the Pacific Coast, a manufacturing and sales agency is established to cover Washington, Oregon and California.

If your door frames are to be of metal, your metal frame contractor should obtain in advance templates and instructions for metal cutting to take the special stops and hardware.

Hamlinized Folding Partitions

The Evanston Sound Proof Door is used for wide and high openings—the kind commonly known as folding partitions. A dozen successful installations are now in evidence, and a list of same will be sent upon application.

The superiority of the Hamlinized form is very obvious. The old forms are visual barriers only, while this new form introduces not only sound deadening construction of the doors themselves, but closes the openings above and below and about the sides. It is well known that the open cracks about a door are the great offenders, and that distressingly large volumes of sound get through.

The type of door adapted to the Hamlinized treatment is where the doors are hinged in pairs and pushed across the opening, each pair independently of the others, but linked together in each other's grasp by wide and shallow tongue and groove joints. The latching mechanism protrudes upward from the top of the door, engaging with the strike-plate and its wedge in the head jamb. The doors are 3⅛ in. thick.

In lieu of the 5-in. permanent lever handle (see illustration of the door) each of these folding doors has a flush bolt head to which is applied a removable handle for operating the mechanism that moves the felt-board to the floor and pushes the top edge of the door sidewise against the felt mounted stop at the head jamb. This is a necessary substitution, as otherwise the protruding handles would not allow of a compact folding of the doors.

The suspension hardware used is the Topping Manufacturing Company's "Easyfold," which has been re-designed in a thoroughly successful way to the Hamlinized requirement, namely an "off-center" application of the hangers and guides so as not to interfere with the centered inner mechanism and movable felt-board peculiar to the Evanston Sound Proof Door. Complete drawings are available upon application, showing details of construction of the doors, the jambs, hangers, guides, etc., and their adaptation in the new Hamlinized manner.

Estimates—Estimates are made for complete installations, or for the doors and hardware only, for installation by your local contractor. Request for estimate should give the size of opening, kind of wood, approximate indication of panels and mouldings and should show whether doors are to fold into pockets or to be exposed at the jambs, also if they are to be parted in the center of the opening and fold both ways, or all to fold in one direction.

Hamlinized Folding Partition
One of five used by the Cleveland, Ohio, Chamber of Commerce, on the fourteenth floor of the Terminals Tower Building
GRAHAM, ANDERSON, PROBST & WHITE, Chicago, Ill., Architects

DOOR AND WINDOW EQUIPMENT

Accurate Metal Weather Strip Co.....B2686–2689
Aeroshade Co. B2795
American Rolling Screen Co.....B2713
Andel & Co.....B2786
Athey Co. B2784–2785
Athey Cloth Lined Weatherstrip Co.....B2690
Baker, W. J., Co.....B2714
Bostwick-Goodell Co. B2798–2799
Burlington Venetian Blind Co.....B2800–2801
Ceco Weatherstrip & Screen Products, Div. of Concrete Engineering Co., Inc.—
Weatherstrips B2691
Window Screens B2715
Chamberlin Metal Weather Strip Co., Inc.—
Fly Screens B2716–2723
Weatherstrips B2692–2693
Chase Brass & Copper Co., Inc.....B2780
Cincinnati Fly Screen Co.....B2724–2725
Columbia Mills, Inc.—
Venetian Blinds B2802–2805
Window Shades B2788–2789
Diamond Metal Weather Strip Co.....B2694
Disappearing Roller Screen Co.....B2726–2728
du Pont de Nemours, E. I., & Co., Inc.....B2787
Gilbert, Walter B., & Co.....B2781
Hartshorn, Stewart, Co.....B2790–2791
Higgin Mfg. Co.—
Fly Screens B2734–2743
Weatherstrips B2695
Hough Shade Corp.....B2796
Ideal Ventilator Co.....B2782
Interstate Shade Cloth Co.....B2792
Invincible Weather Guard Co., Inc.....B2696–2697
Jamestown Screen & Mfg. Co.....B2744–2745
Johnson Metal Products Co.....B2746–2747
Kane Mfg. Co.—
Fly Screens B2748–2753
Venetian Blinds B2806–2808
Weatherstrips B2698–2699
King, John, & Son, Ltd.....B2793
Kloes, F. J., Inc.....B2822–2825
Macklanburg-Duncan Co. B2704
Monarch Metal Weatherstrip Corp.....B2700–2703
Morrison-Skinner Co. B2729–2733
National Metal Products Co.....B2705
Niagara Metal Weather Strip Co.....B2706–2707
Orange Screen Co.....B2754–2755
Phenix Mfg. Co.....B2756
Reese Metal Weather Strip Co.....B2708–2711
Rolling Screens, Inc. B2772–2773
Rolscreen Co. B2757–2770
Rowles, E. W. A., Co.....B2794
Sager Metal Weatherstrip Co.....B2712
Simon Ventilighter Co., Inc.....B2810–2811
Swedish Venetian Blind Co.....B2812–2813
V-W Ventilator Co.....B2783
Warren Shade Co.....B2809
Watson Mfg. Co.—
Fly Screens B2774–2779
Venetian Blinds B2814–2815
Western Venetian Blind Co.....B2816–2819
Wilson, J. G., Corp.....B2820
Woodweb Shade Mfrs., Inc.....B2797
Yardley Screen & Weatherstrip Co.....B2821
Zero Weather Stripping Co., Inc.....B2771

ACCURATE METAL WEATHER STRIP CO.

MAIN OFFICE AND FACTORY
216 East 26th Street
NEW YORK, N. Y.

REPRESENTED IN ALL THE PRINCIPAL CITIES OF THE UNITED STATES, CANADA AND EUROPEAN COUNTRIES

Products

ACCURATE METAL WEATHER STRIPS are adapted to all types of wood, metal or metal covered windows and doors—manufactured of zinc, copper, bronze or brass, cut and formed across the grain.

ACCO-LASTIC CAULKING COMPOUND applied to window and door openings between framework and masonry—making a weathertight joint when setting brass thresholds and special brass saddles.

ACCO-AUTOMATIC DOOR BOTTOMS for interior doors—sealing the opening between doors and saddles.

BRASS SADDLES—Special types which are weatherproof; also plain or fluted tops, various widths.

For Casements and French Doors, Special Brass Saddles (all widths) and Brass Channel Water-Bar applied at the sills and are *guaranteed* watertight.

TRADE MARK
ACCURATE
REG. U.S. PAT. OFF

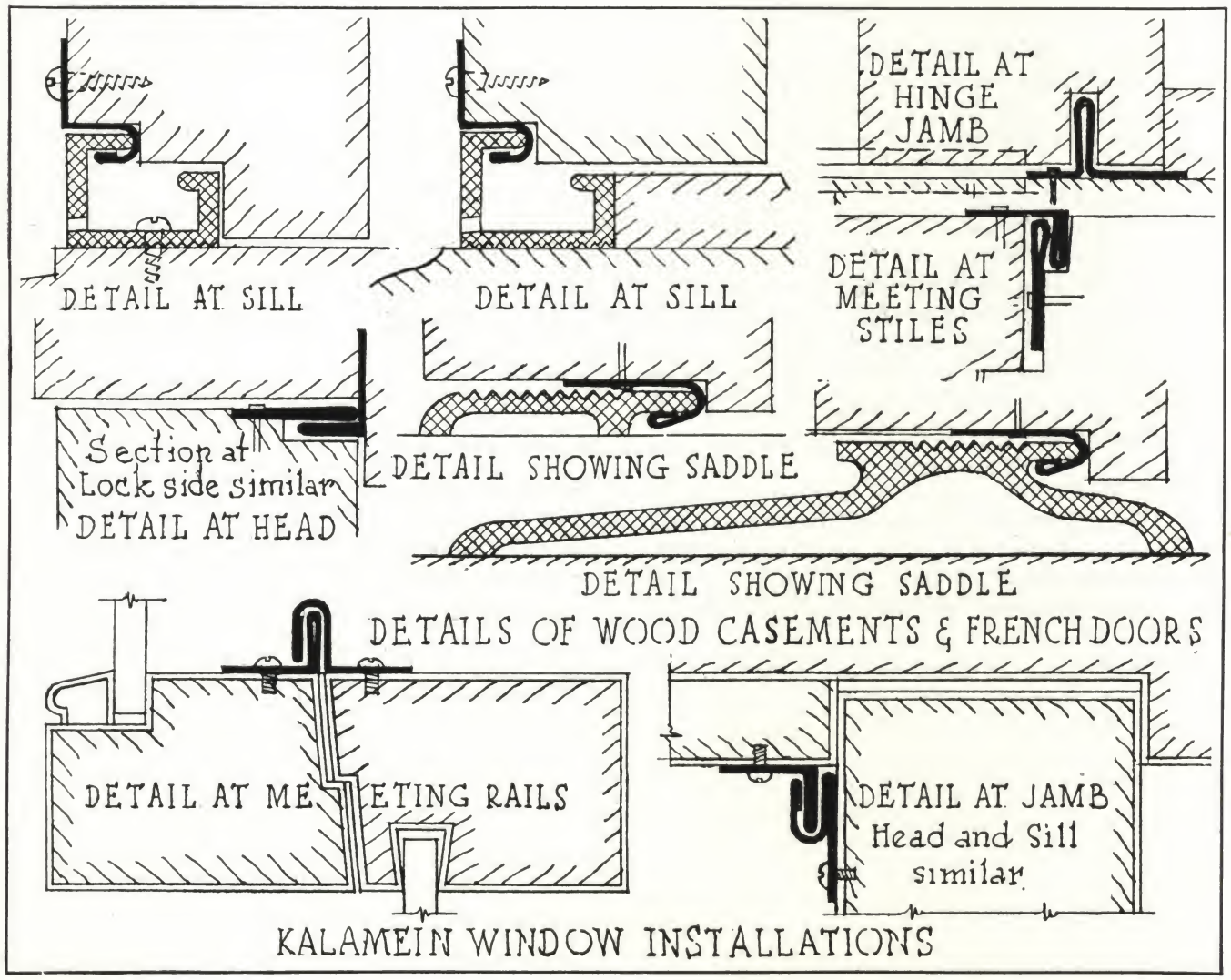
Service

We own and operate our plant at 216 East 26th Street and have been manufacturing metal weather strips since 1900. We maintain factory branch representatives in principal cities and carry a full line of equipment to execute prompt and efficient service.

Architectural Department

Architects are invited to make use of our Engineering Department. Inquiries in regard to special conditions cheerfully considered and practical suggestions and recommendations made.

Inquiries should be sufficiently complete to enable us to fully understand conditions and result desired.

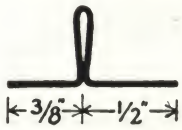
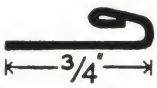
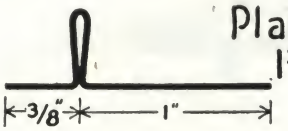
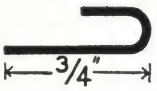
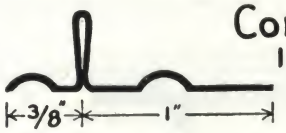
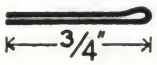
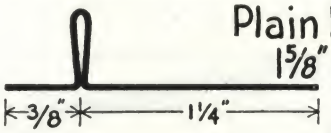
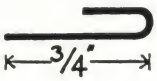
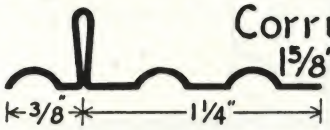
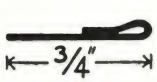
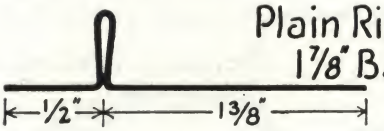
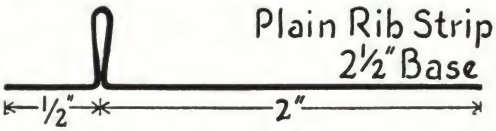
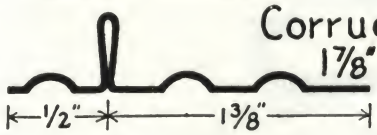
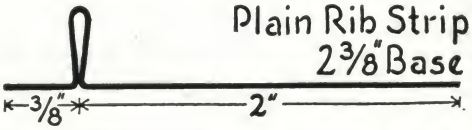
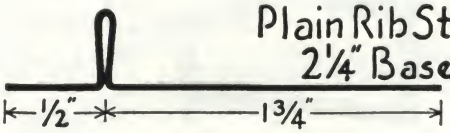
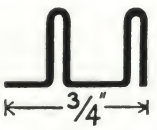
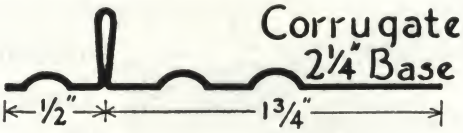
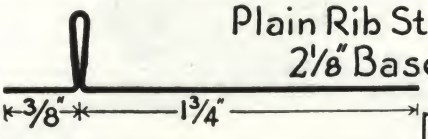


Continued on next page

DOUBLE HUNG EQUIPMENT

ACCURATE ACCURATE

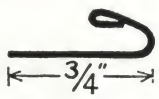
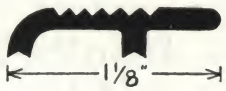
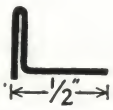
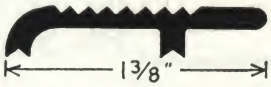
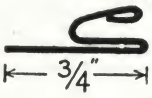
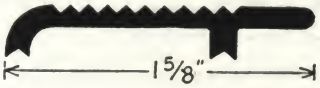
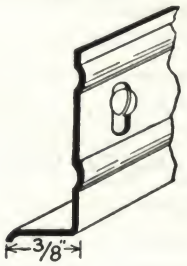
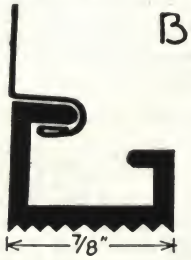
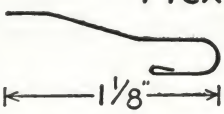
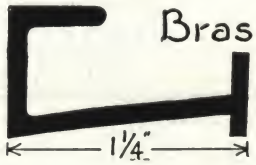
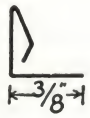
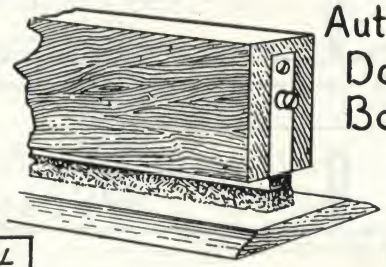
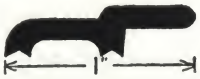
All Rib Strip is made of #9 Gauge Sheet Zinc, cut accross the Grain.-#12 Gauge Zinc Stock to order.

1		Plain Rib Strip 7/8" Base	7		Meeting Rail Hook
2		Plain Rib Strip 1 3/8" Base	7A		Meeting Rail Hook
2C		Corrugated 1 3/8" Base	8		Meeting Rail Flat Strip
3		Plain Rib Strip 1 5/8" Base	8A		Meeting Rail Flat Strip
3C		Corrugated 1 5/8" Base	8B		Meeting Rail Flat Strip
4		Plain Rib Strip 1 7/8" Base	9		Plain Rib Strip 2 1/2" Base
4C		Corrugated 1 7/8" Base	10		Plain Rib Strip 2 3/8" Base
5		Plain Rib Strip 2 1/4" Base	11		Simplex Type
5C		Corrugated 2 1/4" Base	11A		Channel #16 Gauge Zinc Liner #9 Gauge Zinc
6		Plain Rib Strip 2 1/8" Base	12		#16 Gauge Sill Drilled and Countersunk

FULL SIZE DETAIL

Continued on next page

ACCURATE CASEMENT AND DOOR EQUIPMENT ACCURATE

16	 Threshold Hook	25	
17	 Single Base	26	
18	 Kalamein Equipment #11 Gauge Zinc	27	
19	Zinc Liner #11 Gauge Zinc		 Brass Ell
20	Zinc Liner #9 Gauge Zinc	29	 Brass Channel Water Bar
21	 Flexible Bronze Hook	29A	 Brass Channel Water Bar
22	 Lock Strip *Standard Package of 100*		 Automatic Door Bottom
24			

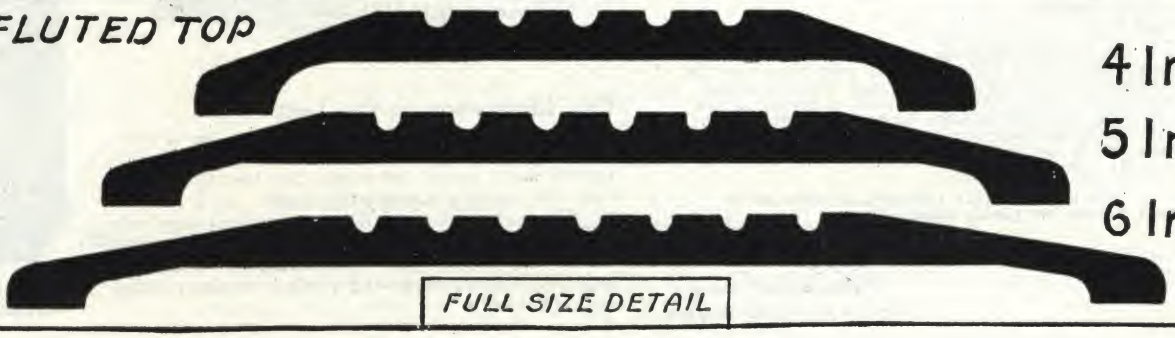
FULL SIZE DETAIL

Continued on next page

ACCURATE

BRASS SADDLES

ACCURATE

28		4¼ In.
30		3½ In.
31		4 In.
32		5 In.
33		6 In.
34		4¼ In.
	PLAIN TOP	4 In. 5 In. 6 In.
	FLUTED TOP 	4 In. 5 In. 6 In.

FULL SIZE DETAIL

ATHEY CLOTH LINED WEATHERSTRIP CO.

Cloth Lined Metal Weatherstrip—Sealtite Caulking Compound

6035-6045 West 65th Street, CHICAGO, ILL.

BRANCHES AND AGENCIES

NEW YORK, Underwood Richards, 103 Park Avenue
HARTFORD, Hartford Wire Works, 90 Allyn Street
DETROIT, LeSage & Co., 1720 12th Street
LOUISVILLE, H. A. Bohn, 814 Baxter Avenue
BUFFALO, Howard T. Cary, 1831 Hertel Avenue
MEMPHIS, Chears Floor & Screen Co., 884 Adams Avenue
MONTREAL, Cresswell Pomeroy, Ltd., 3989 St. Ambroise Street
DALLAS, C. M. Donovan, Burt Building
TORONTO, Cresswell Pomeroy, Ltd., 2 Grosvenor Street
DAYTON, Glaw Manufacturing Co., 515 East Herman Avenue
PITTSBURGH, Moyer & Stewart, 725 Park Building
ST. PAUL, W. S. Metal Company, 910 Builders Exchange
OMAHA, Wentworth Lew, Inc., 415 Karbach Block
MILWAUKEE, S. & W. S. Willer, 477 40th Street
CHICAGO, Wilson & Scott, 30 No. Michigan Avenue
PHILADELPHIA, Wolfe & Adams, 1600 Arch Street
YOUNGSTOWN, Youngstown Hardware Co., 154 W. Rayen Avenue
ST. LOUIS, John C. Wasson, 563 Paul Brown Building

For our pages on Disappearing Skylight Shades and Window Shades, see Manufacturers' Index

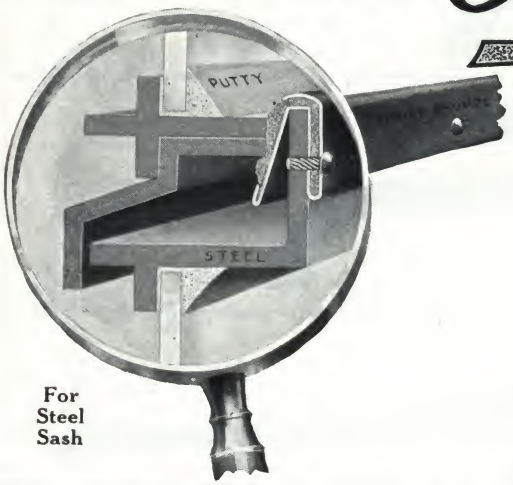
ATHEY CLOTH LINED METAL WEATHERSTRIP

Athey Cloth Lined Metal Weatherstrip was invented in 1911 and each year since that time has shown an increased output. It is the only weatherstrip on the market with a cloth to metal contact. This method is smooth in operation, prevents all rattle and is a perfect seal against infiltration of dirt as well as cold air. We have innumerable shapes for all types of windows, all with the same principle of cloth to metal contact.

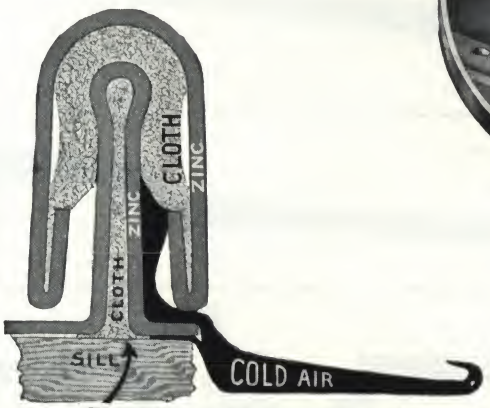
The cloth lined metal type is made *only* by this company. Write or consult our agents for literature and details.

Athey

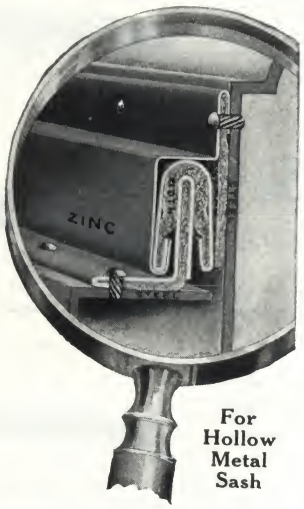
CLOTH LINED WEATHERSTRIPS



For Steel Sash



THREE TIMES ACTUAL SIZE
For Wood Sash



For Hollow Metal Sash

Department of Public Welfare
City of St. Louis

Office of
Director of Public Welfare
329 Municipal Courts Bldg.

February 16, 1929.

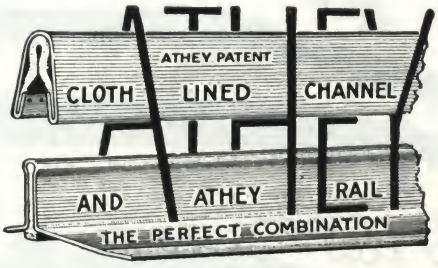
The Athey Company,
Gentlemen:--

You will perhaps be glad to know that through the weather-stripping job handled by your people at the City Sanitarium recently, we were able to discontinue the use of one 350 horse-power boiler, a saving to the City of about $1500.00 a month in coal. We were also able to cancel an order for about $2000.00 worth of blankets, which had been requisitioned for use during the present winter.

Feeling that this information would be of interest to you, we gladly submit it.

Yours very truly,

H. L. Dalsheimer
Director of Public Welfare.



This Illustration at the Left

Shows the largest sanitarium in the United States which has been operated—the main building for sixty years, the wings for twenty years—with this enormous waste of fuel.

The entire cost of the weatherstripping was absorbed by the savings in fuel, blankets and janitor service in the first winter. A $30,000 boiler was eliminated—the cloth to metal contact accomplished it.

Double Hung Wood Sash

CECO WEATHERSTRIP & SCREEN PRODUCTS

DIVISION OF THE CONCRETE ENGINEERING CO., INC.

Manufacturers of Metal Weatherstrips

1926 South 52nd Avenue
CHICAGO, ILL.

Consult Telephone Directory for Local Address in any City

Product

CECO METAL WEATHERSTRIPS.

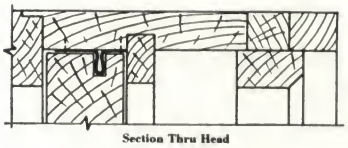
For Ceco Metal Frame Window Screens, see Manufacturers' Index.

Ceco

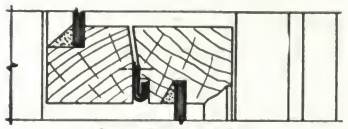
TRADE-MARK

Ceco "Slide Lock" Weatherstrip

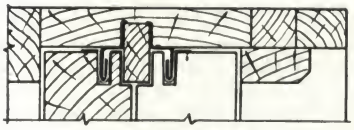
A proved product, offering many important new advantages in design and operation. When installed, Ceco "Slide Lock" Weatherstrips are *fully concealed.* No metal can be seen from the inside or the outside. Metal to metal contact—*metal sliding on metal*—insures easy operation of windows at all times. Good, weathertight installations assured, regardless of warpage, because of maximum flexibility. Ceco "Slide Lock" Weatherstrips are installed by authorized Ceco dealers or direct factory branches. Complete information may also be obtained from Concrete Engineering Company offices in principal cities.



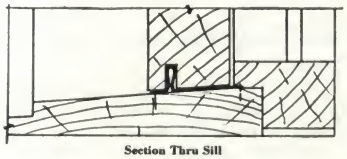
Section Thru Head



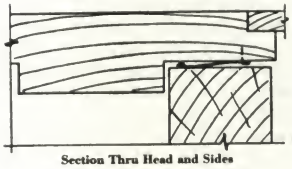
Section Thru Meeting Rail



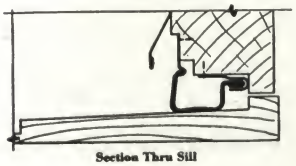
Section Thru Jambs



Section Thru Sill



Section Thru Head and Sides



Section Thru Sill

For Double Hung Windows

Ceco "Slide Lock" weatherstrip stops not only direct infiltration but all leakage into sash cord pockets and upward into interior at meeting rail. See details. Both members of the "slide lock," one along side of parting bead and the other along the cover edge of sash, snugly interlock. Sash operates as an inseparable part of parting bead without binding or sticking when sash is raised or lowered. Sash may be quickly removed from frame without removing weatherstrip. Interlocked "U" shaped strips on lower and upper meeting rails form a perfect weatherproof joint. All other types of standard, plain or corrugated equipment also made and installed where desired.

For Inswinging Casements

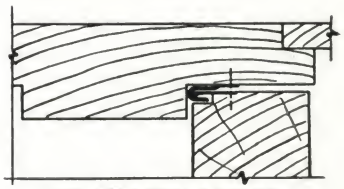
See detail. New improved rolled brass channel trough for bottom with two interlocking strips make a double barrier to water and wind. Interlocking strips are of finest spring bronze. Top and sides equipped with standard spring bronze strips. Trough also furnished in rolled zinc or solid extruded brass.

For Outswinging Casements

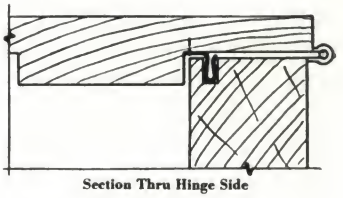
Interlocking rolled brass bottom and spring bronze interlocking hook make the simplest and most weatherproof equipment.

Easily applied; out of the way and damage-proof.

Bottom also made in zinc or solid extruded brass if desired.



Section Thru Head and Lock Side

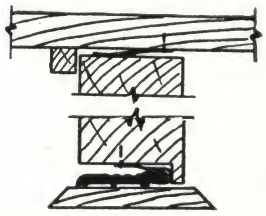


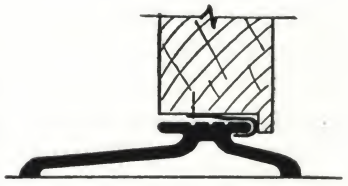
Section Thru Hinge Side

For Doors

See detail. Solid brass interlocking threshold with concealed spring bronze interlocking hook. Recommended for all residential work.

Spring bronze standard top and side equipment.

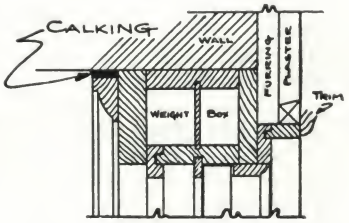




Ceco Calking Cement

A scientifically prepared plastic calking compound which never dries, runs, cracks, hardens or pulls away. It forms a perfect bond with any surface—wood, metal, cement, stone or composition. It is made in a variety of ten standard colors which will harmonize with any exterior.

Quickly and easily applied with Ceco Compression Gun, used by authorized Ceco representatives everywhere.



Specification Manual

New loose-leaf, standard AIA size Manual giving complete Weatherstrip and Calking specifications will be mailed on request.

CHAMBERLIN METAL WEATHER STRIP COMPANY, INC.

DETROIT, MICH.

FACTORIES: DETROIT, MICH. and PERU, ILL.

DISTRICT FACTORY BRANCHES

AKRON, OHIO	CINCINNATI, OHIO	FLINT, MICH.	MINNEAPOLIS, MINN.	RICHMOND, VA.
ATLANTA, GA.	CLEVELAND, OHIO	HARRISBURG, PA.	NASHVILLE, TENN.	ST. LOUIS, MO.
BALTIMORE, MD.	COLUMBUS, OHIO	INDIANAPOLIS, IND.	NEWARK, N. J.	SAN FRANCISCO, CAL.
BOSTON, MASS.	DALLAS, TEX.	JACKSONVILLE, FLA.	NEW HAVEN, CONN.	SCHENECTADY, N. Y.
BUFFALO, N. Y.	DAVENPORT, IOWA	KANSAS CITY, MO.	OMAHA, NEB.	SOUTH BEND, IND.
CHAMPAIGN, ILL.	DAYTON, OHIO	LONG ISLAND CITY, N. Y.	PHILADELPHIA, PA.	TERRE HAUTE, IND.
CHARLESTON, W. VA.	DENVER, COLO.	LOS ANGELES, CAL.	PITTSBURGH, PA.	TOLEDO, OHIO
CHARLOTTE, N. C.	DES MOINES, IOWA	LOUISVILLE, KY.	PORTLAND, ORE.	WASHINGTON, D. C.
CHICAGO, ILL.	DETROIT, MICH.	MEMPHIS, TENN.	PROVIDENCE, R. I.	WILKES BARRE, PA.
		MILWAUKEE, WIS.		

SALES OFFICES IN 60 OTHER CITIES OF THE UNITED STATES

Products and Services

CHAMBERLIN METAL WEATHER STRIPS (of cold-rolled bronze, spring bronze, brass or zinc) including their installation by Chamberlin factory branch mechanics, for every type of wood, metal or metal covered window or door. Prompt delivery of any specially designed equipment in any standard or special gauge.

CHAMBERLIN PLASTI-CALK, including its application by Chamberlin factory branch mechanics, around window and door frames and also for pointing up masonry joints.

BRASS PULLEY HOLE COVERS for the lower sash pulley holes to reduce pulley hole leakage.

CHAMBERLIN IN-DOR-SEALS, or Automatic Door Bottoms, for sealing the bottom cracks of interior doors, including bedroom, closet, kitchen, basement, bathroom and attic doors.

CHAMBERLIN SILL-DOR-SEALS, or polished, extruded brass thresholds, to weather-seal the bottoms of every type of exterior door; polished brass KICK PLATES and PUSH PLATES for doors.

For the standard CHAMBERLIN BRONZE and ALUMINUM ROLLING SCREEN, for the FENESTRA-CHAMBERLIN ROLLING SCREEN, for ROBBINS WOOD and HOLLOW METAL SCREENS installed by Chamberlin branches, see Manufacturers' Index.

Chamberlin Equipment for All Types of Openings

Space does not permit showing details of a complete line of Chamberlin Weather Strips.

Chamberlin facilities enable the handling of any special requirement. Among the more general types of openings not shown here Chamberlin can equip the following:

Double hung steel windows; pivot windows; hollow metal windows; transoms; steel casements; projected and pivoted steel windows, etc.

For Double Hung Windows

Equipment 100 is a development of 37 years of weather stripping representing time-tried designs. The tongue allows for expansion and contraction without losing a sealing contact. Corrugations of side strips insure easy operation and perfect installation.

Meeting rail strips are strong, while meeting rail blocks give added efficiency. All metal is ample in width so as to be kerfed wherever possible.

For In-opening Casements—Chamberlin Interlocking

Equipment 300 is a most efficient weather strip for this type of window. At the hinge and latch sides the interlocking weather strip seal is placed to check wind-driven rain as far to the outside as possible. This outside interlocking equipment meets the unusual demand for protection against heavy water leakage. It is efficient against air and dust leakage as well.

Rain drips and astragals are a part of the installation of all Chamberlin casement equipments.

For Out-opening Casements—Chamberlin Interlocking and Spring Bronze

Equipment 500, for out-opening casements, forms a strong interlocking seal against rain and air leakage. Should be used particularly when windows are set flush with outside walls.

For Outside Doors—Interlocking

Equipment 800 with interlocking weather strips is unquestionably a superior equipment for doors. Zinc can be used but for sake of appearance cold-rolled bronze is preferable. Equipment 800 is recommended in cold-rolled bronze. All door installations include a Sill-Dor-Seal, an interlocking brass threshold for sill. For rear and side entrance doors Nos. 869 or 869-A is recommended; for front entrance doors wider sills are used.

Sill-Dor-Seals—Interlocking Brass Thresholds

Can be securely fastened or anchored to either wood, stone or metal sills so as to interlock with a hook when doors are closed. Whether interlocking or spring bronze is used at head and sides a hook and a Sill-Dor-Seal is used at the sill.

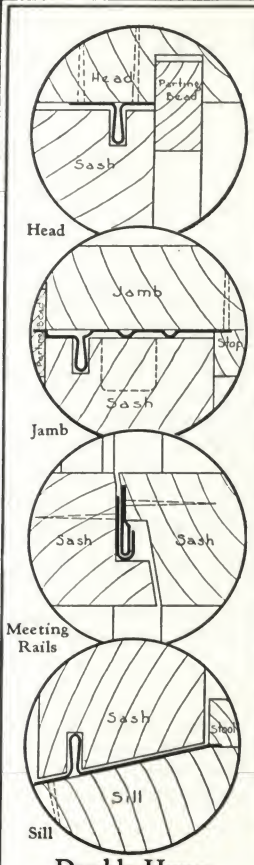
Automatic Door Bottoms—In-Dor-Seals

Silent acting, automatic, ingeniously hidden in the bottoms of doors, they do not interfere with rugs, mats, runners or carpets. A thick but soft piece of felt is lowered an instant before the door is entirely closed and is raised an instant after the door opens. They are mechanically correct. Needed on bedroom, bathroom, kitchen, basement, closet and attic doors. Also in schools, dormitories, hospitals, hotels and private offices.

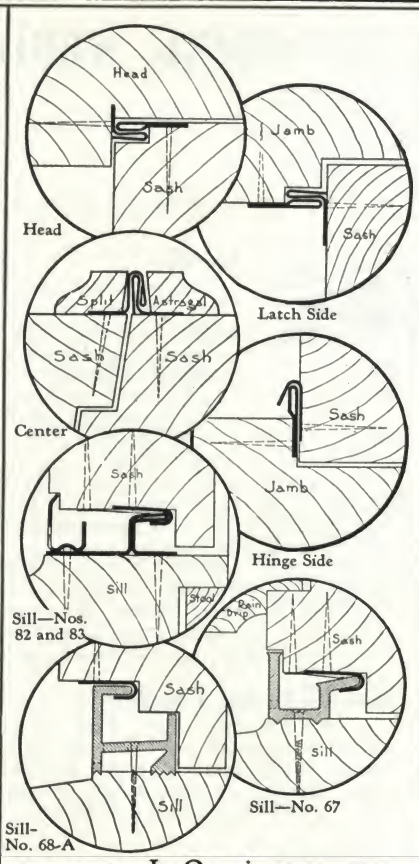
Catalogues and Specifications

Weather Strips, 35p6 (old number 19e14). Plastic-Calk, 19e16. Rolling Screens, 35p1 (old number 19e15). Catalogues are standard in size according to the filing system requirements of the American Institute of Architects. Chamberlin catalogue material is of practical aid to the architect and builder and will be mailed upon request, either from the general offices in Detroit, Michigan, or from any Chamberlin factory branch.

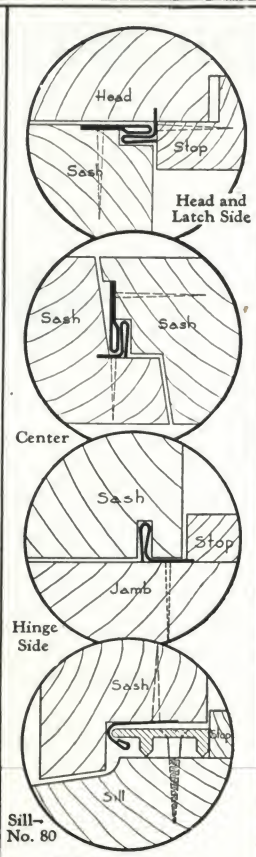
Continued on next page



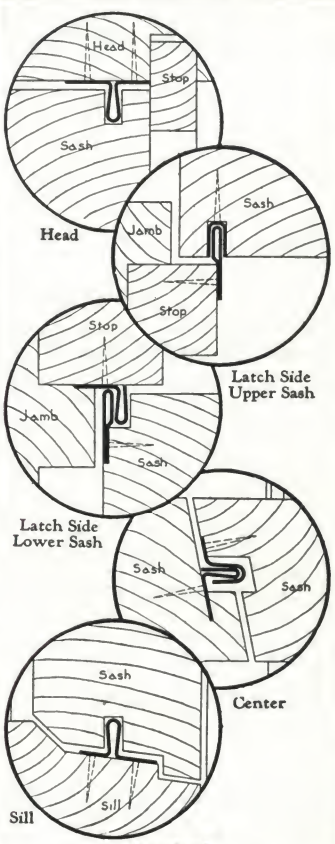
Double-Hung Windows
Equipment No. 100



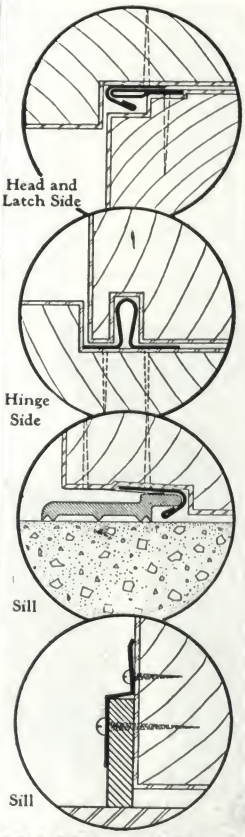
In-Opening Casement Windows
Equipment No. 300



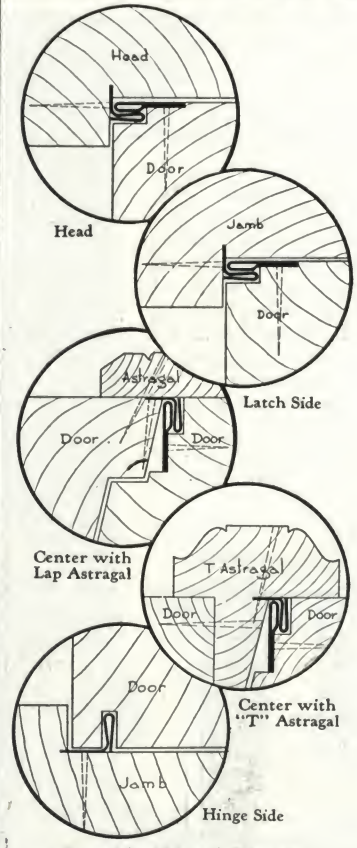
Out-Opening Casement Windows
Equipment No. 500



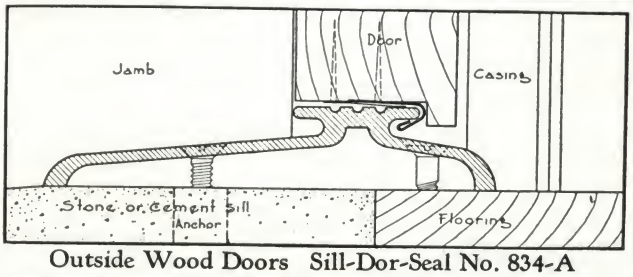
Austral Windows
Equipment No. 600



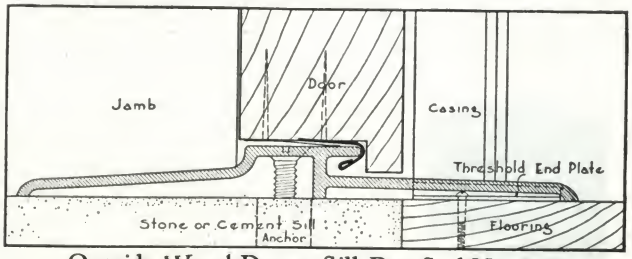
Metal Covered Doors
Equipment No. 800-BS



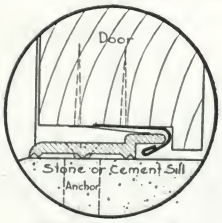
Outside Wood Doors
Equipment No. 800



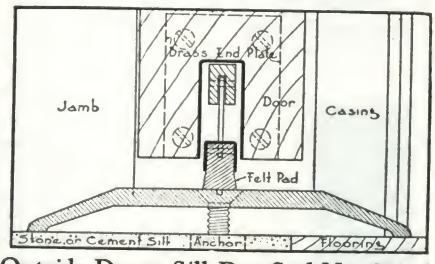
Outside Wood Doors Sill-Dor-Seal No. 834-A



Outside Wood Doors Sill-Dor-Seal No. 836



Sill-Dor-Seal
No. 869-A



Outside Doors Sill-Dor-Seal No. 813-A with Automatic No-Dust Bottom
Automatic In-Dor-Seals furnished for Inside Doors

HALF SIZE DETAILS OF CHAMBERLIN METAL WEATHER STRIPS FOR WINDOWS AND DOORS

THE DIAMOND METAL WEATHER STRIP CO.

COLUMBUS, OHIO

FACTORY BRANCHES

COLUMBUS, OHIO — CINCINNATI, OHIO — OMAHA, NEB.

Diamond Dealers Are Located in Principal Cities of the United States

Products

DIAMOND METAL WEATHER STRIPS.
DIAMOND GUN and HAND TOOL CALKING COMPOUND.

PRACTICAL METAL THE DIAMOND WAY WEATHER STRIPPING

TRADE-MARK
(Reg. U. S. Pat. Off.)

Diamond Metal Weather Strips

We manufacture over 100 different metal weather strips of zinc, spring bronze, brass and aluminum, including six for double hung windows, five for doors, and four for casement windows. We do not believe that one type of weather strip can meet all requirements, and therefore add new strips from time to time as they are developed for specific needs.

The latest addition is the "Diamond Corrugated Flexible" for double hung windows described below.

Special Features—***Flexibility***—Diamond Metal Weather Strips are so made as to adjust themselves to meet and overcome the objections of sticking and binding, caused by the warping, swelling and shrinking of sash, and by the swelling of parting stops and dividing strips which are exposed to the weather.

Removability—Diamond Weather Strips are made so that, if necessary, double hung windows may be removed easily.

Weatherstripping Advantages

Diamond Metal Weather Strips cut fuel bills 20% to 40%, by keeping out the cold which would otherwise creep in through unprotected doors and windows. They reduce cleaning bills by preventing dust and dirt coming in. Health is protected by permitting proper ventilation without dangerous drafts. Window rattle is eliminated and the noise of outside traffic is deadened. Windows always open and close freely.

Service

Guaranteed installations are available all over the United States by our licensed dealers. All material is applied by skilled mechanics under the personal supervision of these dealers who will gladly furnish estimates on any work you may have.

Write to the home office for the address of the dealer near you. We have over 500 Diamond Dealers in the United States and are adding to this number as we find proper representation.

A practical Engineering Department is maintained for solving difficult problems in weatherstripping. Blue print details, specifications and descriptive circulars are furnished to architects and builders on request.

We invite direct factory installation for those in the vicinity of our plant at Columbus, Ohio.

If no dealer is located near you, we can supply material for your jobs with installation instructions. Shipments are made immediately on receipt of orders.

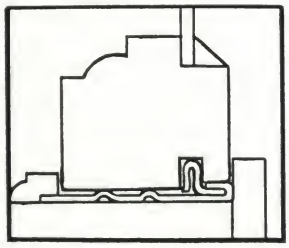
Manufacturing Facilities

This company has been manufacturing and installing weather strips for over 20 years. The plant is equipped with special machinery to produce accurately a finished product in large volume. A high standard of efficiency is maintained both in the manufacture and installation.

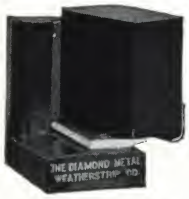
Guarantee

All Diamond Metal Weather Strips are unconditionally guaranteed against defects in workmanship and materials for the life of the building in which they are installed.

Thousands of buildings in the United States and Canada have been equipped with our products. A list of installations is yours for the asking.



Rib Type



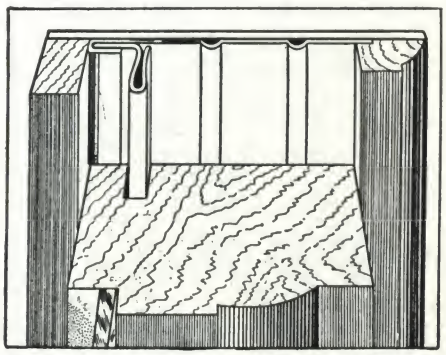
Brass Sill Plate for Doors

Craig Waterproof Channel Bar for Casements

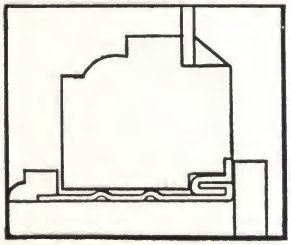
The New Diamond Corrugated Flexible Strip

The New Diamond Corrugated Flexible Strip for double hung windows, illustrated below, combines the outstanding advantages of the popular Diamond Equipment, namely flexibility and removability, with the well-known advantages of the corrugated rigid strip, namely ease of sliding and triple contact. This strip is usually installed as a rib strip, but in addition can be installed as an interlock giving metal to metal contact if required. The strip itself is the same in either case, the installation alone is different.

Insure your client permanent satisfaction by specifying this new improved Diamond Weather Strip.



The New Diamond Corrugated Flexible Strip



Interlocking Type

Removable Feature of Diamond Flexible

THE HIGGIN MANUFACTURING CO.

All-metal Weatherstrips

NEWPORT, KY.

SALES AGENCIES IN FIFTY OF THE LARGER CITIES THROUGHOUT THE COUNTRY

Look up our Local Office in Telephone Directory, or write to Newport, Ky., for information

Product

ALL-METAL WEATHERSTRIPS, made to order.

For Higgin Window and Door Screens and Access Panels, see Manufacturers' Index.

LOCAL REPRESENTATIVE

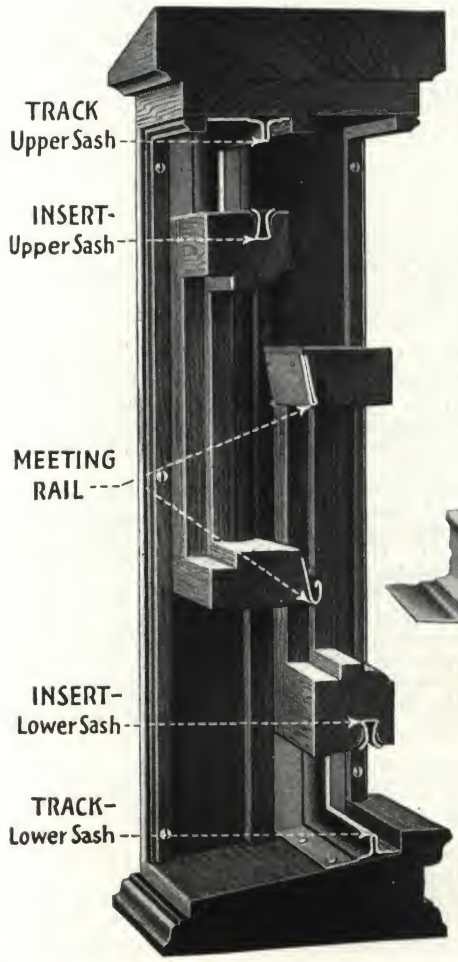
HIGGIN
ALL METAL
WEATHERSTRIPS

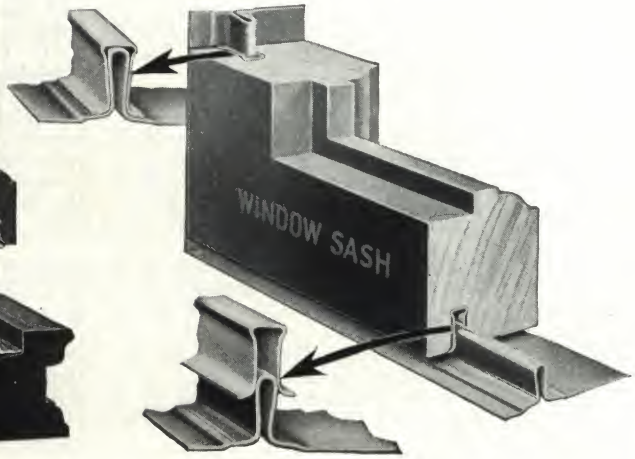
Higgin All-metal Weatherstrips

Complete Equipment—The complete equipment for sliding windows (see illustration) consists of two strips, one of which is attached to the window frame and is made with a ⅜-in. tongue or raised portion that forms a track on which the sash slides. This track is usually made of zinc, but bronze may also be used.

The other strip, called the insert, is made of very light spring bronze, and is inserted in a groove made in the sash and slides on the track strip. The spring flanges of the insert lightly contact with the tongue of the track and effectually seal the aperture. As the insert is higher than the tongue of the track there is no chance for it to cut the insert.

At the meeting rail a zinc hook is attached to the lower rail of the upper sash and a zinc flat strip to the upper rail of the lower sash in such manner that as the sashes are closed the strips interlock, sealing up the opening completely.





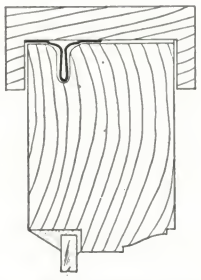
Plain Equipment—The plain equipment, consisting of the track strip only can be furnished at less cost, if desired, but it is not so effective as when the insert strip also is used.

Other Types of Equipment

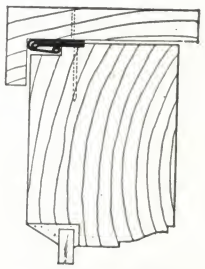
In addition to weatherstripping for double hung windows, a complete line of other strips is manufactured. There are a number of installations which may be had for casement windows opening in and out, details of which can be provided. Higgin inswinging casement trough and other strips make possible the use of this type window which once was so popular but difficult to make weathertight.

There is also an equipment for every type of door, exterior or interior.

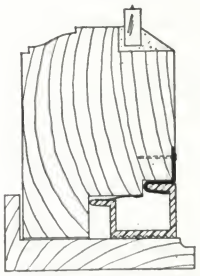
Complete details, estimates or other information will be cheerfully furnished.



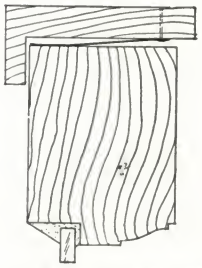
Rib track as shown above is used at hinge side for in and out opening casements.



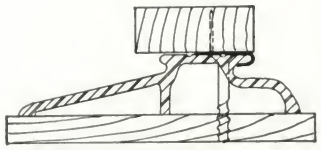
Section showing hook and flat strips used at top, bottom and meeting stiles on out opening casements and at top and meeting stiles on in opening casements.



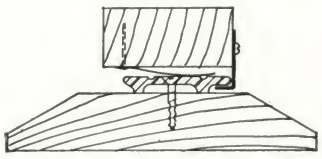
The trough strip above for in opening casements is but one of a complete line for this purpose.



Spring bronze is generally used at sides and tops of doors.



⅞x4¼-in. threshold for main entrance doors



There are a number of smaller thresholds similar to that illustrated above which can be used for secondary door openings.

FOUNDED 1911

ORIGINAL CONTROL AND MANAGEMENT

INVINCIBLE WEATHER GUARD CO., INC.

Bedford and Snyder Avenues
BROOKLYN, N. Y.

Product

METAL WEATHER STRIP to meet any condition or style of window or door.

Foreword

This brief outline and these drawings are here chiefly for the information of architects. It is our hope that this presentation will induce confidence in our product. It is our intention that, as in the past nineteen years, such trust is proven justified.

Guarantee—No Time Limit

Invincible Weather Guard has since its introduction become a nationally recognized product, and amply justifies the title, "All Ways the Best."

Types

There is a type of Invincible Weather Guard to suit every requirement. Some of the more usual of these are detailed on the following page.

Features

Simplicity—Strong and simple in design, avoiding all complicated or spring mechanisms.

Ease of Operation—All parts firmly anchored to frame or sash, and operating with usual action of window or door.

Permanence—Unaffected by weather, using non-ferrous metals.

Reliability—We are completely responsible because our entire line is produced in our factory under the original control and management.

Importance of Proper Installation in Weather Strip

The success of probably no other branch of building construction depends upon careful and expert installation, as the weatherstripping of windows and doors.

Experience has shown that often too much importance is placed in this or that particular design, and not enough in its proper application.

The protective qualities sought in weather strip can be obtained only by proper design and materials, properly fitted and set. *There can be no substitute for careful work.*

Invincible Weather Guard is the result of years of experience in the design, manufacture, and *installation* of weather strip. When properly installed on windows and doors, it provides a simple, permanent and effective protection against drafts, dust and rain.

Specification

All exterior wood windows and doors shall be equipped with metal weather strip as manufactured and installed by the INVINCIBLE WEATHER GUARD CO., INC., and as indicated in SWEET'S ARCHITECTURAL CATALOGUES, Twenty-fifth Edition.

Prominent Installations

BUILDING	ARCHITECT	BUILDER
Barclay Hotel, Philadelphia, Pa.	J. E. R. Carpenter, New York, N. Y.	Day & Zimmerman Eng. Co., New York, N. Y.
Geo. Innes, Jr. High School, Montclair, N. J.	Starrett & Van Vleck, New York, N. Y.	Carlson Co., Montclair, N. J.
Wilmington Hospital, Wilmington, Del.	York & Sawyer, New York, N. Y.	Wm. M. Francis Co., Wilmington, Del.
New Breakers Hotel, Palm Beach, Fla.	Schultze & Weaver, New York, N. Y.	Turner Construction Co., New York, N. Y.
First Presbyterian Church, Pottsville, Pa.	Cram & Ferguson, Boston, Mass.	F. W. Van Loon, Philadelphia, Pa.
Vincent Astor Residence, New York, N. Y.	Mott B. Schmidt, New York, N. Y.	Saxton-Gerard Co., New York, N. Y.
Fordham University, New York, N. Y.	Robert J. Reilly, New York, N. Y.	P. J. Carlin Construction Co., New York, N. Y.
McKinley Technical High School, Washington, D. C.	A. L. Harris, Washington, D. C.	Geo. Hyman Construction Co., Washington, D. C.
Residence of Mayor Walker, New York, N. Y.	Le Roy P. Ward, New York, N. Y.	Columbus Contracting Co., New York, N. Y.
Philadelphia Art Club, Philadelphia, Pa.	Day & Klauder, Philadelphia, Pa.	F L. Hoover & Sons Co., Inc., Philadelphia, Pa.
Roosevelt Hotel, Pittsburgh, Pa.	Webber & Wurster, Philadelphia, Pa.	Landau Bros. Construction Co., Inc., Pittsburgh, Pa.
Brook Club, New York, N. Y.	Delano & Aldrich, New York, N. Y.	Saxton-Gerard Co., New York, N. Y
Vanderbilt Country Club, Deepdale, L. I., N. Y.	Warren & Wetmore, New York, N. Y.	Wharton Green Co., New York, N. Y.
Montauk Yacht Club, Montauk, L. I., N. Y.	Walker & Gillette, New York, N. Y.	Cornell Bros., Woodmere, L. I., N. Y.
Hotchkiss School, Lakeville, Conn.	Cass Gilbert, New York, N. Y.	Jas. Stewart & Co., Inc.
Valeria Home, Cortlandt, N. Y.	Delano & Aldrich and Chas. H. Higgins, New York, N. Y.	Chas. H. Higgins, New York, N. Y.
Grasslands Hospitals, Mt. Pleasant, N. Y.	Walker & Gillette, New York, N. Y.	Butler-Reisdorff Co., New York, N. Y.
U. S. Post Office, Utica, N. Y.	Jas. A. Wetmore Washington, D C.	A. C. Samford, Montgomery, Ala.
Lakeville Country Club, Great Neck, L. I., N. Y.	A. F. Gilbert, New York, N. Y.	H A Harris Co., New York, N. Y.
Winfield Scott Hotel, Elizabeth, N. J.	W. L. Stoddart, New York, N. Y.	Deakman & Wells Co., Jersey City, N. J.
National Bank Building, Philadelphia, Pa.	W. H. Lee, Philadelphia, Pa.	Wark Co., Philadelphia, Pa.
DeWitt Clinton Hotel, Albany, N. Y.	C. Howard Crane, New York, N. Y.	Albany-Metropolitan Corp., New York, N. Y.
High School of Commerce, New York, N. Y.	Board of Education, New York City	Stevenson & Cameron, New York, N. Y.
James Madison High School, Brooklyn, N. Y.		Turner Construction Co., New York, N. Y.

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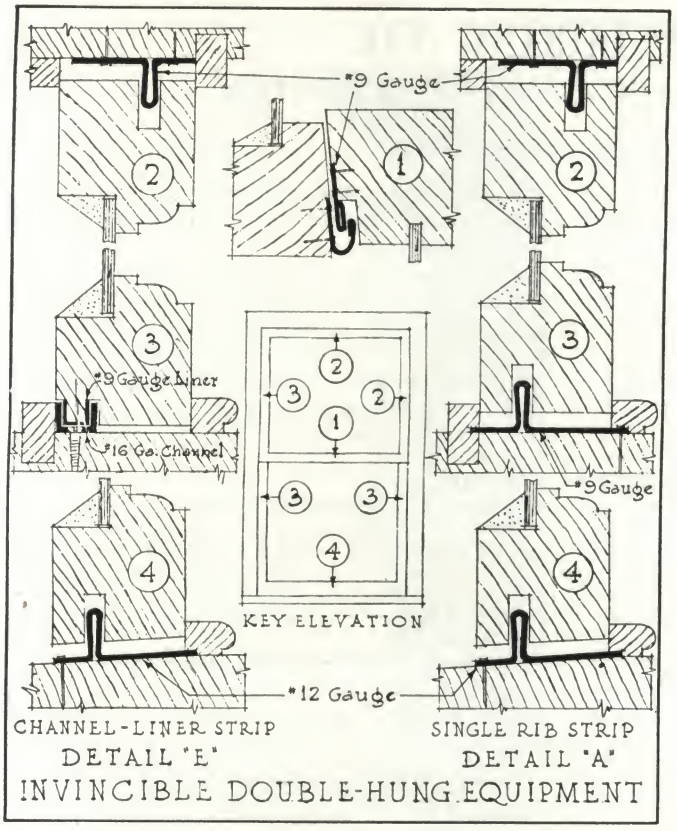
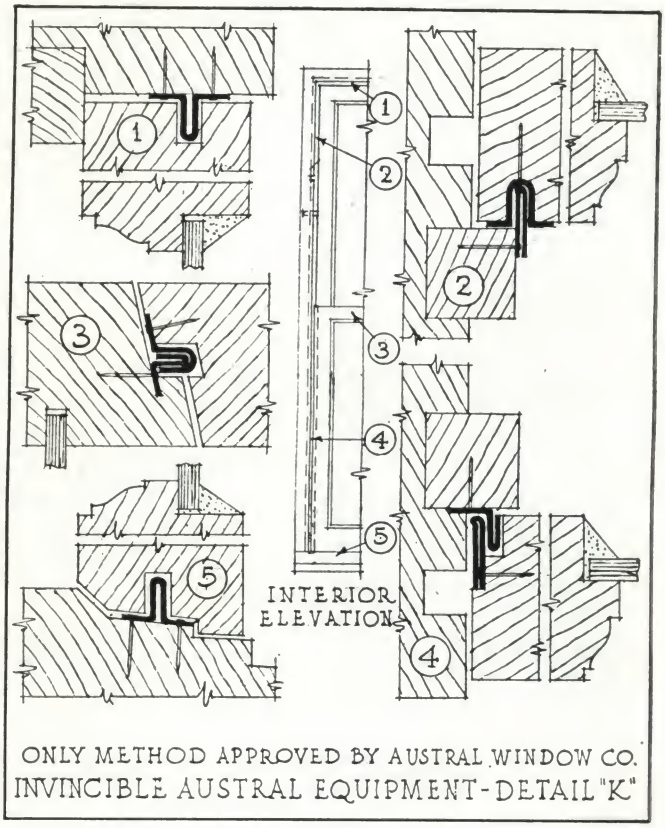
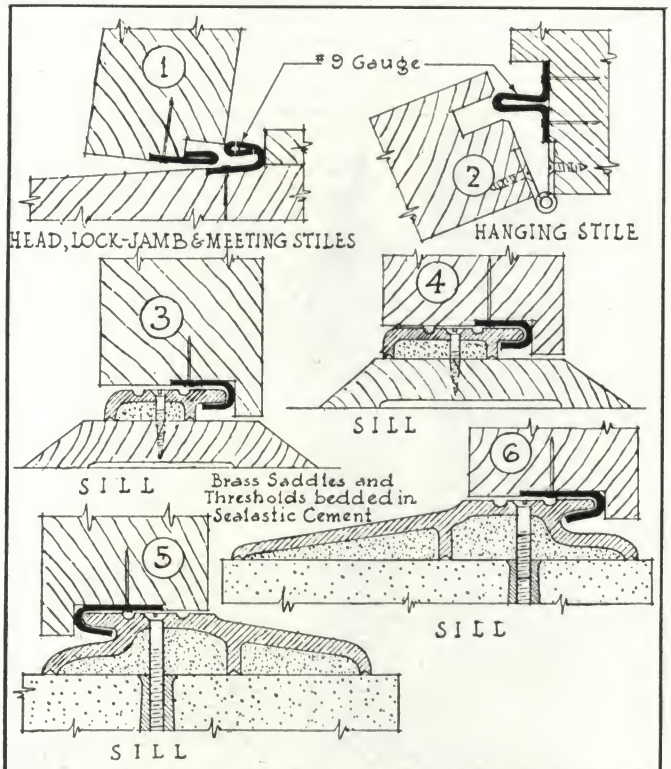


INVINCIBLE DOUBLE-HUNG EQUIPMENT

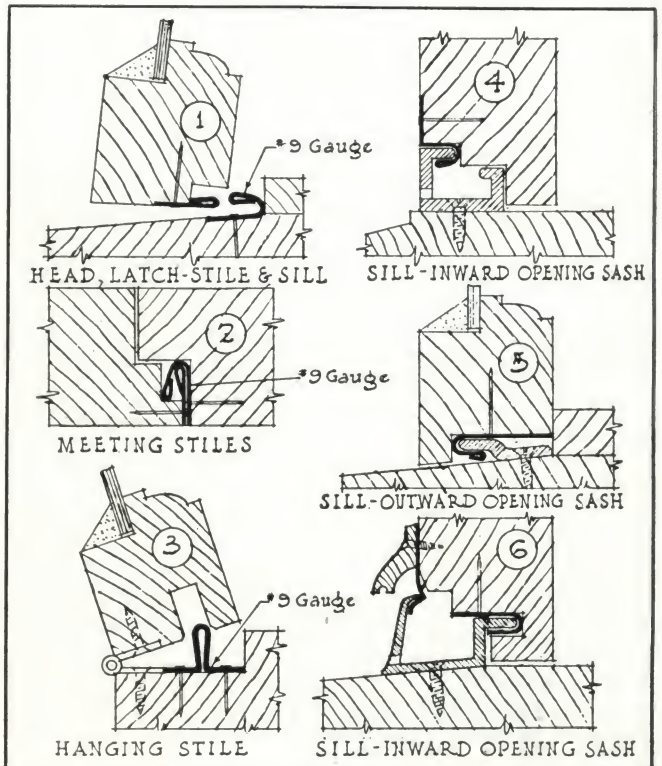


ONLY METHOD APPROVED BY AUSTRAL WINDOW CO.

INVINCIBLE AUSTRAL EQUIPMENT-DETAIL "K"



INVINCIBLE DOOR EQUIPMENT-DETAIL "D"



INVINCIBLE CASEMENT EQUIPMENT-DETAIL "C"

HALF FULL SIZE DETAILS SHOWING APPLICATION OF INVINCIBLE WEATHER GUARDS

KANE MANUFACTURING CO.

Manufacturers of "Kane Quality" Metal Weatherstrips

KANE, PA.

DISTRIBUTORS IN ALL PRINCIPAL CITIES

Product

ALL-METAL WEATHERSTRIPS and ACCESSORIES of zinc, brass, bronze, copper and aluminum.

For our pages on Wood and Metal Frame Insect Screens and Venetian Blinds, see Manufacturers' Index.

"Kane Quality" All-metal Weatherstrips

These weatherstrips effectively bar the wind and dust, conserve heat and promote comfort without detracting in the least from the beauty of the woodwork or the attractiveness of the door or window where they have been installed.

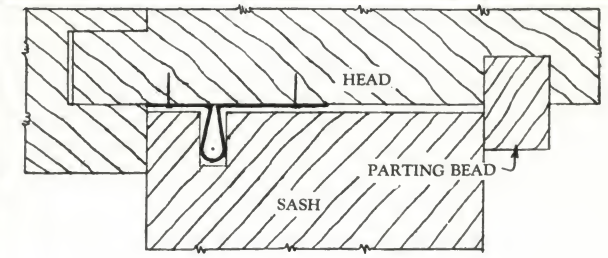
Their thickness, shape, method of application, the metal itself, and every detail connected with their manufacture and installation have been determined only after years of painstaking observation and experiment. The simplicity, ruggedness and practicability of all Kane types of weatherstrip are apparent at a glance and offer advantages that pay for the installation in a short time.

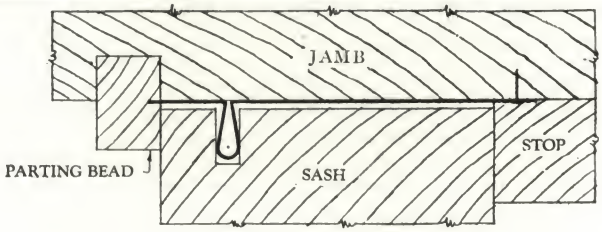
MATERIALS AND INSTALLATION

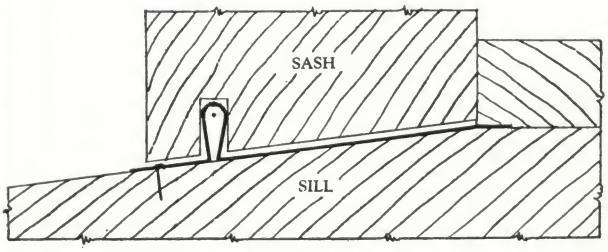
"Kane Quality" Metal Weatherstrip consists of a heavy beaded zinc strip, securely inserted in the sash channel in such a manner as to permit the beaded portion of the strip to project into and engage with a narrow groove which is planed in the bottom and sides of the lower sash and the top and sides of the upper sash of double hung windows.

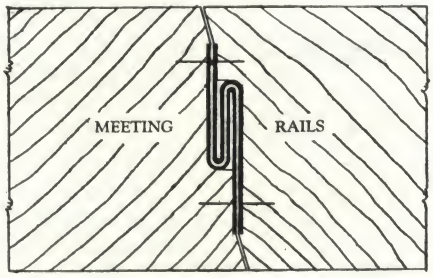
For the center a special interlocking strip is provided, thus forming a bond that effectually keeps out air, dust and dirt.

The sill, head and meeting rail strips should be nailed very close, about 1½ in. on centers. The side strips need very few nails, only enough to keep them from riding up and down, as joint is made by kerfing the strips into the parting beads on both upper and lower sash.

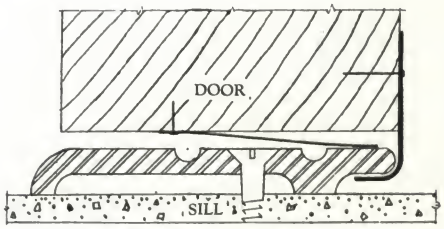




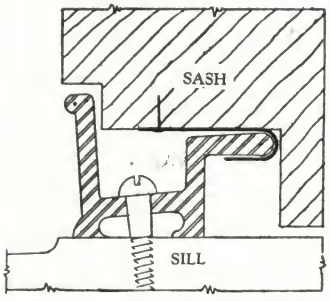




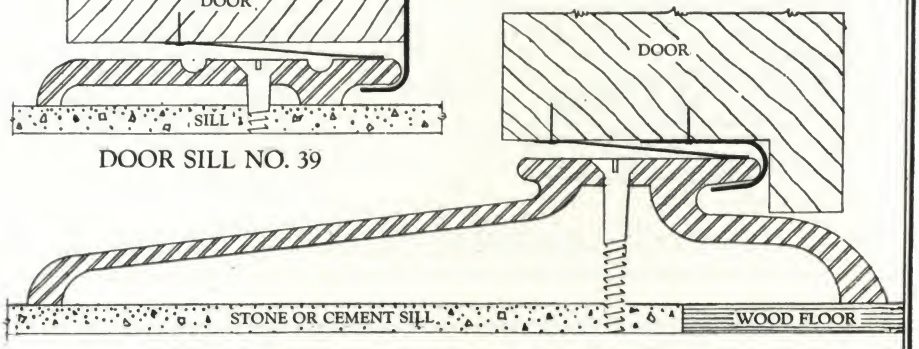
DOUBLE HUNG WINDOW DETAILS



DOOR SILL NO. 39



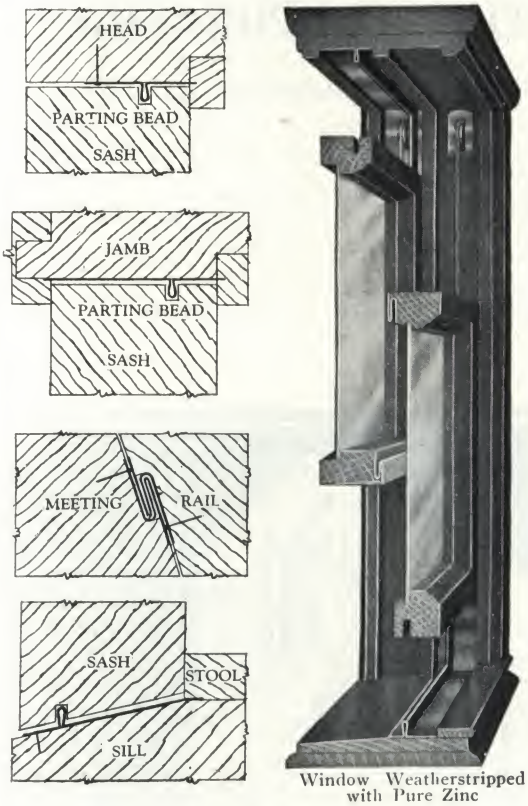
NO. 23 CHANNEL FOR IN-OPENING CASEMENT



DOOR SILL NO. 40

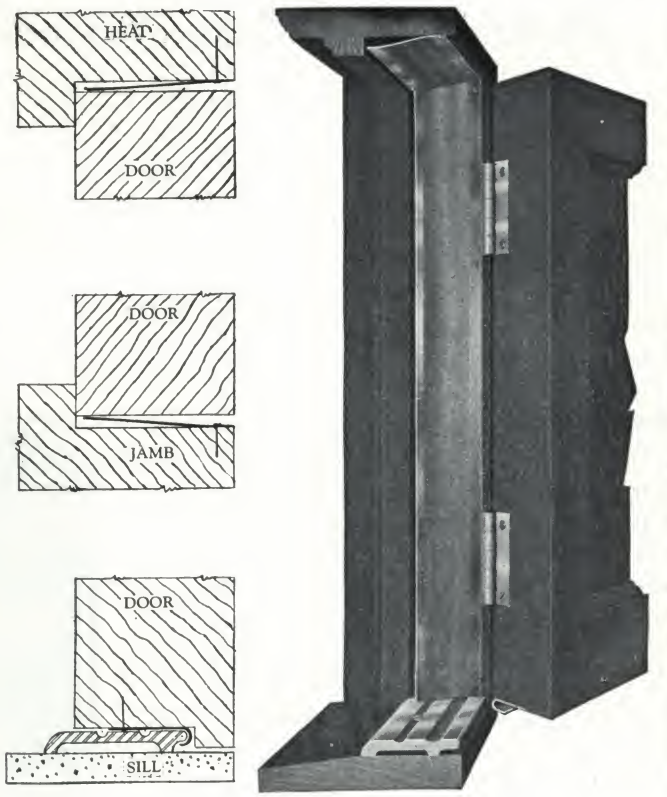
DETAILS OF "KANE QUALITY" METAL WEATHERSTRIPS

Continued on next page



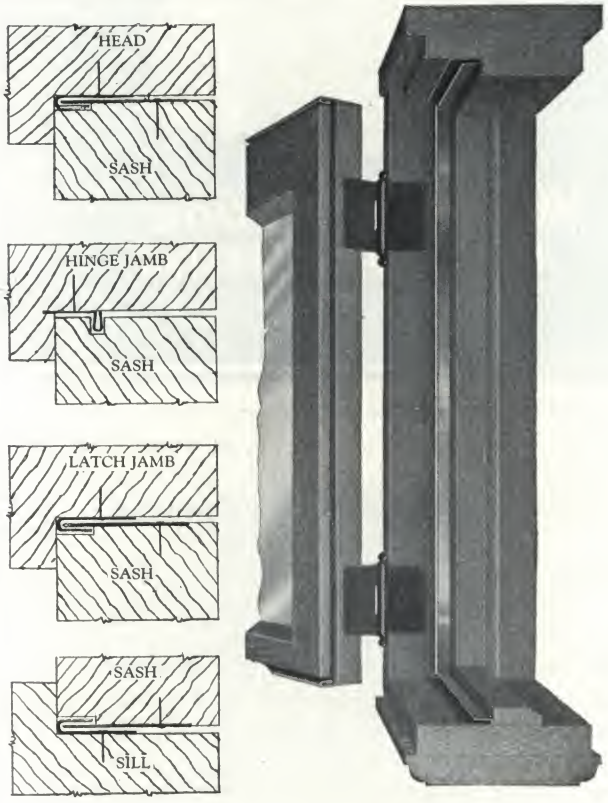
Window Weatherstripped with Pure Zinc

DOUBLE HUNG WINDOWS

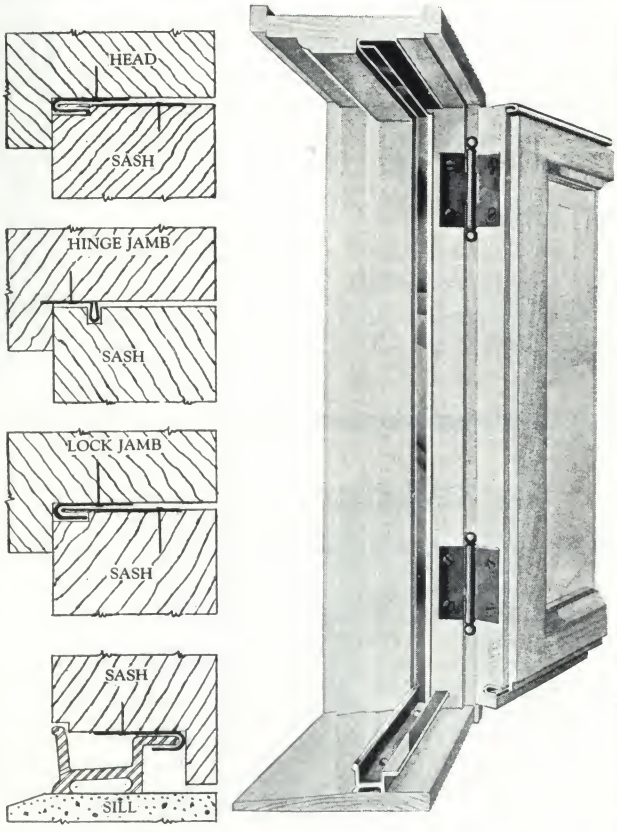


Door Weatherstripped with Spring Bronze; Threshold of Solid Brass

DOORS



CASEMENTS OPENING OUT



CASEMENTS OPENING IN

MONARCH METAL WEATHERSTRIP CORPORATION

ASSOCIATE COMPANY GENERAL WEATHERSTRIP COMPANY

GENERAL OFFICE AND FACTORY
5020 Penrose Street
ST. LOUIS, MO.

EASTERN OFFICE: 101 Park Avenue, NEW YORK, N. Y.

Monarch Metal Weatherstrip

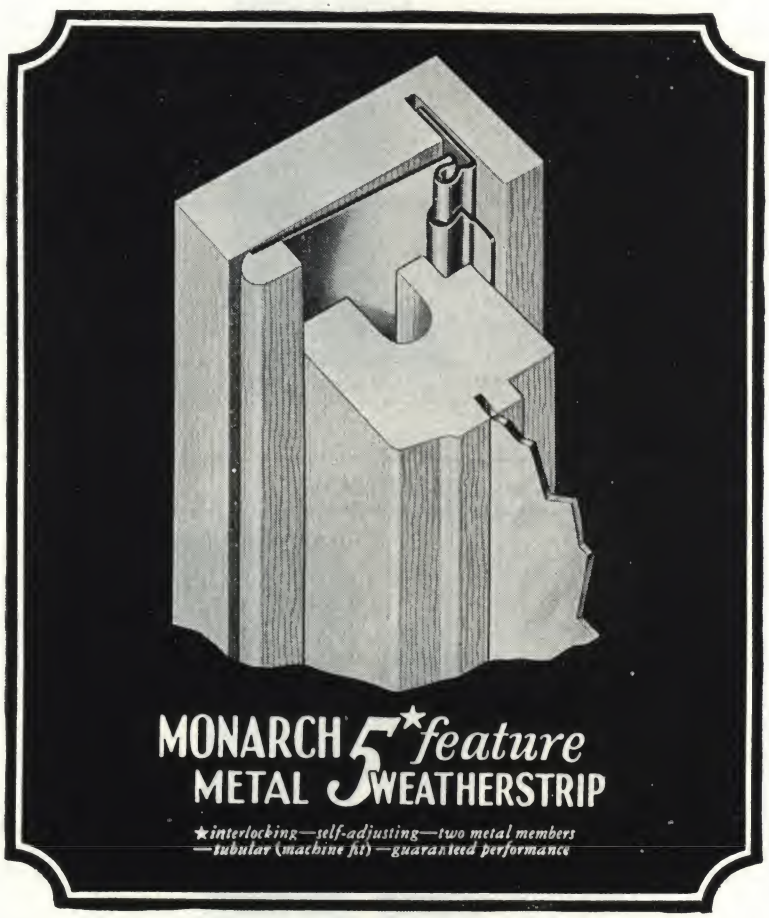
Monarch Metal Weatherstrip is manufactured for practically every type of wood, metal or metal covered window or door. It is made from the highest grades of material, such as cross grained zinc, "Monarch Specification" bronze, rolled or extruded brass. It is characterized by its unique metal to metal contact (in the majority of equipments) giving an accuracy inbuilt with precision machinery at the factory and not dependent alone on the skill of the installation mechanic.

Monarch Elastic Calking—Seals window and door frames with the most permanent type of calking compound.

Monarch Pulley Hole Shields—Overcome "elsewhere leakage."

Monarch Automatic Drop Bottoms—For interior door weatherstripping.

Monarch Extruded Brass Thresholds—For all requirements.



Organization

The Monarch Sales and Service Organization extends to our 150 points in the United States and Canada. Both salesmen and installation mechanics have been carefully trained in their respective capacities by a field staff of experienced executives and engineers. Such field instruction is being constantly carried on—resulting in the high standard of weatherstrip performance and satisfaction that Monarch has won for itself. Monarch salesmen are well qualified in the technique of weatherstrip applicable to any type of window or door (wood or metal). They are equally proficient in calculating heat losses from reliable infiltration data and consequent savings effected by its correction.

Service

The Monarch Company is proud of the satisfaction that exists among its 600,000 and over users. In a large measure the usual complaints that arise in weatherstrip installations are noticeably absent where Monarch is installed. This is due to the fact that Monarch possesses a full floating metal to metal seam, as contrasted with a rigid type of barrier. Monarch's lifetime performance guarantee is backed up by the Company at 150 service points and by a substantial organization as well.

Continued on next page

Financial Responsibility

THE MONARCH METAL WEATHERSTRIP CORPORATION has close to 500,000 in invested capital and its direct factory licensees have an additional investment in the Monarch Metal Weatherstrip business of over three-quarter million dollars. Close co-operation and well organized field supervision has effected the closely knitted organization standing jointly responsible for all Monarch installations and service.

Personal interest that every direct factory licensee has in our joint business results in fewer changes than take place in the average organization with salaried employees.

Heat Loss Surveys Show Monarch's Return on the Investment—Monarch Knows and Guarantees Weatherstrip Performance in Definite Terms

Definite Standards—

In keeping with the trend in the building industry, Monarch has pioneered and introduced a standard for the sale of weatherstrip that definitely labels its quality and performance. Instead of being content with laboratory tests on new windows that do not take into consideration the conditions as they would exist after years of service—it has developed accurate scientific and informative data based on *commercial conditions.* The more popular equipments, in both the Monarch and its associated company's line of General Equipment, are labeled with a definite factor. This performance factor takes into consideration "a large safety factor"; the rating is based on the amount of air leakage through the weatherstrip after it has undergone the extreme effects of shrinkage and swelling, expansion and contraction, weathering, wear, etc. In addition, the factor of effort for operation of the window under swollen conditions is computed.

Test Data Obtained Under Commercial Conditions—

The illustrations on this page show the type of tests that have been conducted by outside and unbiased authorities, providing the basis for our reports. In connection with heat loss reports, this company is *willing to guarantee* a definite performance on all of its equipments in terms of cubic feet of air leakage per foot of crack, per mile of wind velocity. Such guarantee is made for the life of the building. (See guarantee.)

A Service for Architects and Engineers—

Architects and engineers generally recognize the largest single heat loss in the average building is that of infiltration, whether the windows or doors are of wood or metal construction. Likewise it is the most troublesome of all heat losses, because it is variable, whereas transmission and radiation losses are practically constant, regardless of the velocity of the wind.

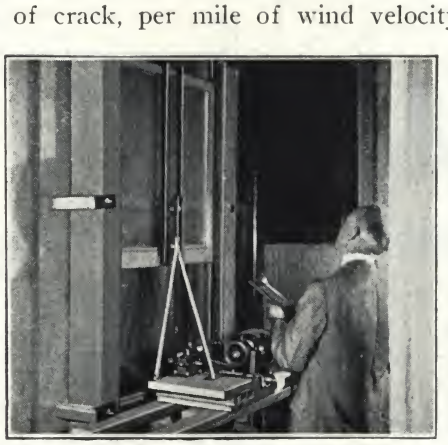
Monarch heat loss surveys will definitely show any architect or engineer the saving in fuel and other benefits that Monarch Metal Weatherstrip can effect in dollars and cents, showing annual net return on the investment. These heat loss charts have been approved by leading outside authorities and are based on the most conservative of data. They are supplied to any architect or engineer on any projected or existing building, without obligation.

Monarch knows beforehand what its weatherstrip will accomplish.

MONARCH HEAT LOSS DATA

Full Information on Fuel Savings upon Request

CITY	Prevailing Wind Direction	SOFT COAL SAVED PER FT. CRACK CAULKING APPLIED	WOOD DOUBLE HUNG	WOOD SINGLE AND DOUBLE	
				DOORS	CASEMENTS
Atlanta, Ga.,	N. W.	5.36	14.40	52.74	27.21
Atlantic City, N. J.,	N. W.	7.83	21.02	76.97	39.72
Baltimore, Md.	N. W.	4.90	13.16	48.18	24.86
Boston, Mass.,	N. W.	10.00	26.85	98.30	50.73
Buffalo, N. Y.,	N. W.	16.62	44.62	163.34	84.29
Chicago, Ills.,	S. W.	15.12	40.60	148.65	76.71
Cleveland, Ohio	S. W.	12.69	34.07	124.72	64.36
Columbus, Ohio	S. W.	7.33	19.67	72.04	37.17
Denver, Colo.,	S. E.	5.96	16.00	58.59	30.23
Detroit, Mich.,	S. W.	12.03	32.31	118.28	61.04
Duluth, Minn.,	S. W.	1351	36.27	132.80	68.53
Evansville, Ind.,	S. W.	5.59	15.03	55.02	28.39
Fort Smith, Ark.,	N. E.	4.09	10.95	40.09	20.68
Green Bay, Wisc.,	S. W.	14.28	38.34	140.37	72.44
Indianapolis, Ind.,	S. W.	9.20	24.69	90.40	46.65
Kansas City, Mo.,	N. W.	7.07	18.97	69.45	35.84
Knoxville, Tenn.,	S. W.	3.78	10.16	37.20	19.19
Little Rock, Ark.,	N. W.	4.45	11.93	43.68	22.54
Louisville, Ky.,	S. W.	5.90	15.84	57.99	29.93
Lynchburg, Va.,	N. W.	3.30	8.85	32.43	16.73
Memphis, Tenn.,	N. W.	4.50	12.09	44.27	22.84
Milwaukee, Wisc.,	N. W.	11.56	31.04	113.64	58.64
Minneapolis, Minn.,	N. W.	12.50	33.55	122.84	63.39
New Haven, Conn.,	N. W.	7.84	21.05	77.08	39,78
New York, N. Y.,	N. W.	10.33	27.73	101.51	52.39
Oklahoma City, Okla.,	N. W.	6.64	17.82	65.26	33.67
Pittsburg, Pa.,	N. W.	10.44	28,03	102.61	52.95
Philadelphia, Pa.,	N. W.	8.03	21.56	78.94	40.74
Portland, Ore.,	S. W.	3.99	10.71	39.23	20.25
Portland, Me.,	N. W.	9.81	26.32	96.37	49.73
Raleigh, N. C.,	S. W.	3.68	9.87	36.16	18.66
Richmond, Va.,	S. W.	4.22	11.33	41.51	21.42
St. Joseph, Mo.,	N. W.	7.07	18.97	69.45	35.84
St. Louis, Mo.	N. W.	8.14	21.84	79.97	41.27
Salt Lake City, Utah,	S. E.	3.84	10.33	37.81	19.51
Seattle, Wash.,	S. E.	5.74	15.43	56.49	29.15
Sioux City, Ia.,	N. W.	12.37	33.22	121.63	62.77
Springfield, Mo.,	S. E.	7.89	21.18	77.55	40.02
Springfield, Ills.,	N. W.	8.04	21.58	79.01	40.77
Washington, D. C.,	N. W.	5.05	13.57	49.68	25.64



Wear Test

Swelling and Shrinkage Test

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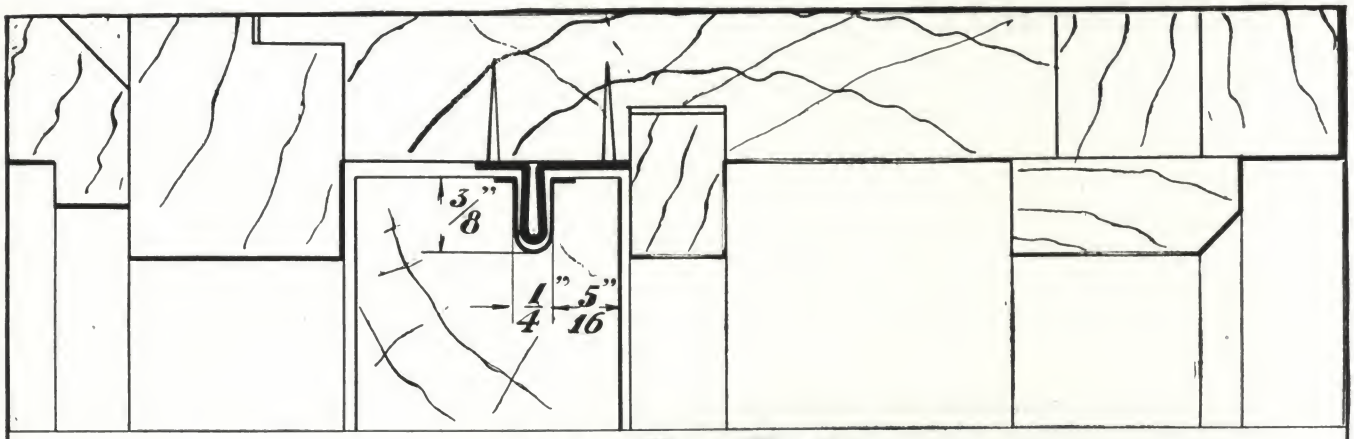
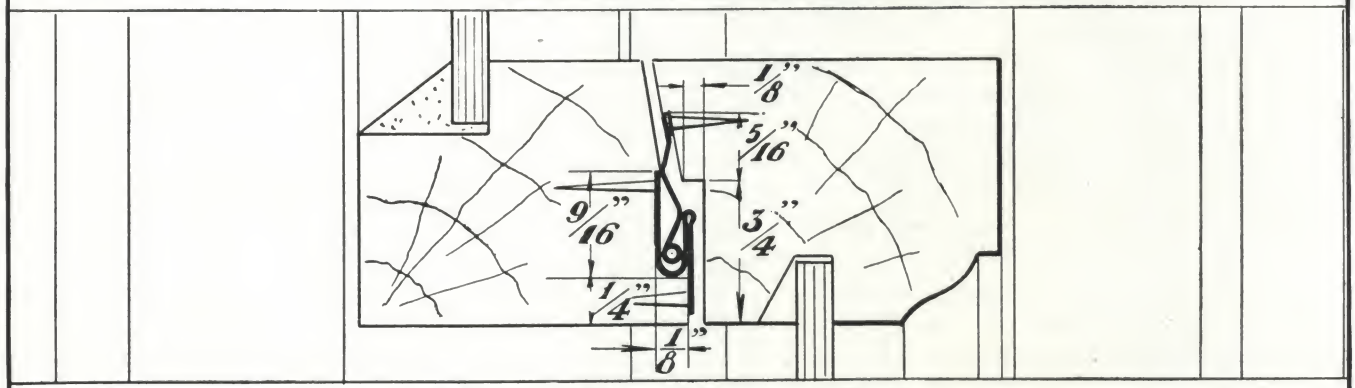
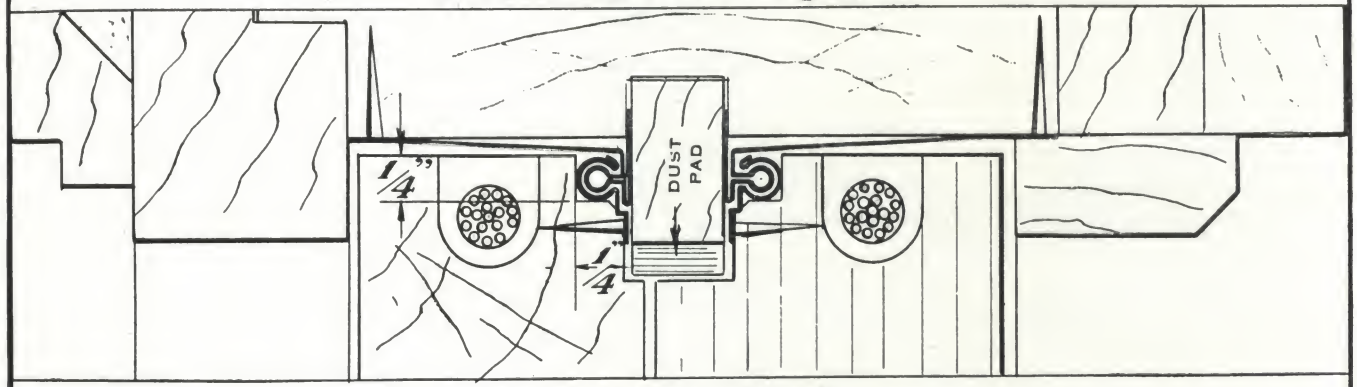
Monarch 400 Guaranteed Performance—Leakage not exceeding .7 cu. ft. per ft. of crack, per hour, per mile of wind velocity.



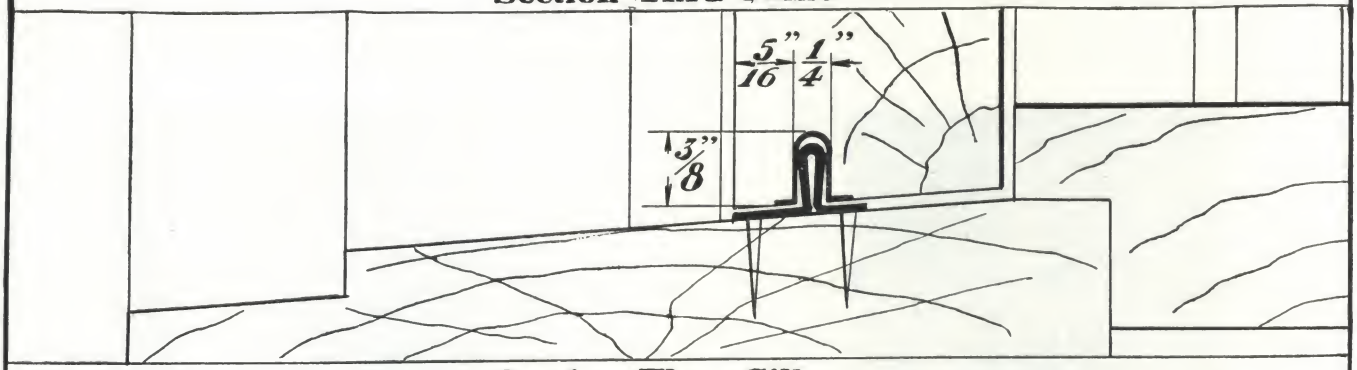
Section Thru Head



Section Thru Meeting Rail



Section Thru Jamb



Section Thru Sill

MONARCH JAN., 1928	FULL SIZE DETAIL DOUBLE HUNG WINDOW—SHOWING APPLICATION OF MONARCH TWO-MEMBER SELF-ADJUSTING WEATHER STRIP	MONARCH EQUIPMENT No. 400

Continued on next page

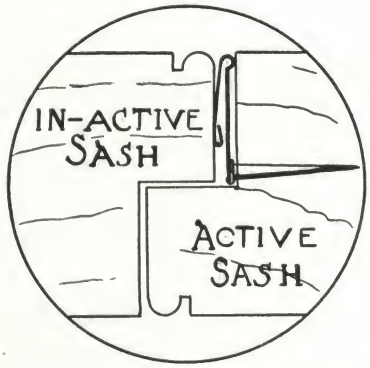
Representative Monarch Metal Weatherstrip—Over 125 different types to meet practically all conditions.

No. 39 and 47 Interlocking Monarch bronze equipment for in-opening casements, lock side and head.

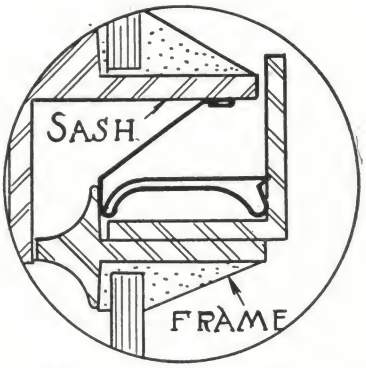
No. 147 and 149—Interlocking Monarch bronze equipment for in-opening casement, hinge side.

No. 155—A three-point contact extruded brass sill for in-opening casements.

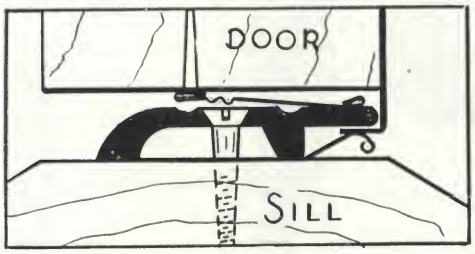
No. 115—A three-point contact rolled brass sill for in-opening casements.



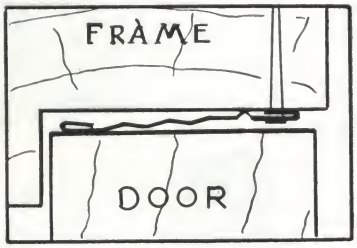
No. 133—Monarch cushion bronze equipment for rabbeted meeting stiles of door and casements.



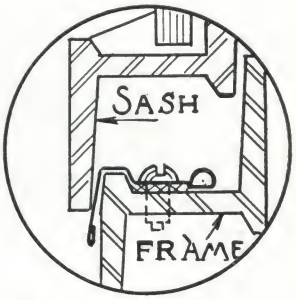
Monarch steel window equipment for center pivot sash.



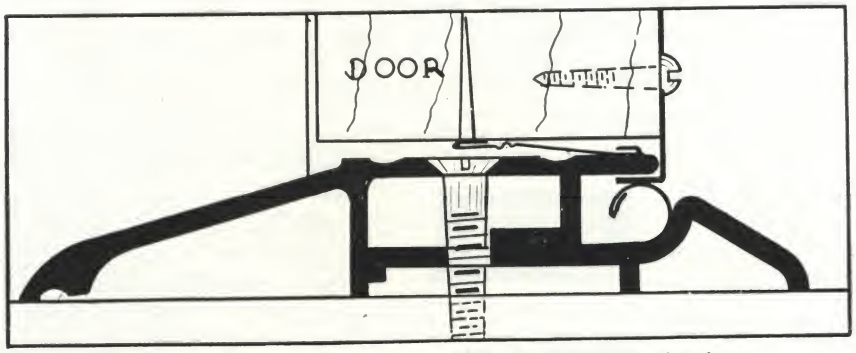
No. 175—A three-point contact extruded brass sill for in-opening doors.



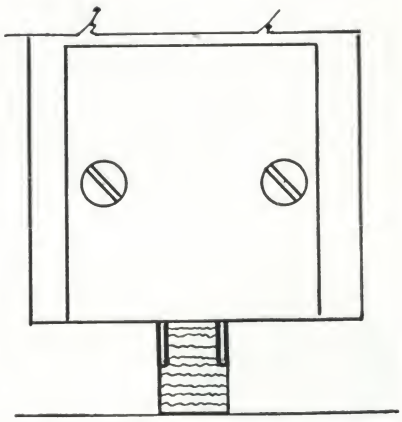
Monarch exclusive angular fluted bronze — to overcome vibration — for doors and casement windows.



Monarch outside contact equipment for steel casements.



No. 187—A three-point contact extruded brass sill for in-opening doors



No. 293—Monarch automatic drop bottom

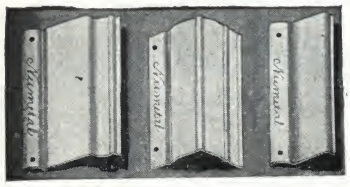
FULL SIZE DETAILS

MACKLANBURG-DUNCAN COMPANY

Manufacturers of Numetal Weatherstrips

OKLAHOMA CITY, OKLA.

COMPLETE STOCKS CARRIED BY LEADING HARDWARE, LUMBER AND BUILDING SUPPLY DEALERS EVERYWHERE



Style "A" Style "B" Style "D"

Our Three Standard Styles

Styles "A," "B" and "D" strips are furnished in any lengths required.

The three styles and widths of strips, as shown, serve every requirement for doors, double hung windows and casement windows, regardless of the thickness of the sash.

Style "A" strip, 1¼ in. wide, is used on the sides of windows, bottom of lower sash, sides and tops of door frames and top of upper sash.

Style "B" strip, 1⅛ in. wide, is used on the meeting rail of double hung windows and on bottom of doors.

Style "D" strip, ⅝ in. wide, is used on the rabbeted sections of casement windows and doors or may be used any place where styles "A" and "B" strips would be too wide to apply

(M-D) Numetal

TRADE MARK REG U S PAT OFF

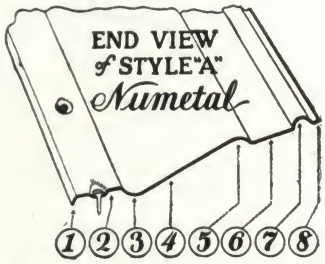
WEATHER STRIPS

for Windows & Doors

PATENTED

Numetal is made of specially prepared Numetal Bronze, meets every weatherstrip requirement, and is easily and quickly installed without grooving sash or frame. Highly recommended and specified by many architects. Contractors and builders say Numetal is a "most efficient and practical type of permanent weatherstrip."

Complete Stocks Carried by Leading Hardware and Lumber Dealers Everywhere



Eight Exclusive Features of Numetal Patented Weatherstrips

(1) Turned edge clings to surface. No buckling between nails. Dirt cannot pass under strip.

(2) Strip is nailed through embossed zone with heads below surface.

(3) Oval surface allows strip to flex as window is moved.

(4) On doors, this section provides smooth surface for door to slide over.

(5 and 7) The two beads make two points of contact on window sash, forming "dead air" space (6), keeping out cold air, rain, dust, dirt and noise.

(8) Turned edge prevents gouging into frame when strip is fully compressed. Also eliminates vibration and "whistling"

Style "E" Door Bottom Strip

Width 1½ in. A combination of heavy brass and heavy moth-proofed felt. Slotted holes allow for adjusting of strip. Furnished with solid brass screws. Each strip is lacquered.

Style "E" door bottom strips are furnished in standard lengths

(Patent Pending)

Style "F" Solid Brass Threshold, Interlocking

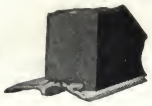
1⅛, 1¼ and 1½-in. widths. Furnished in standard lengths complete with holes drilled, screws and hook.

They can be furnished with either reinforced concealed hook, as shown at right or with the exposed hook, shown below at left

Style "FX" Solid Brass Threshold, Interlocking

Below at right

In 3½ and 4¼-in. widths. Furnished in any length specified, with concealed hook. Holes drilled; screws furnished. These thresholds eliminate the necessity of a wooden threshold and will never have to be repaired or replaced



Style "FXX" Solid Brass Threshold

Without the hook, in 4, 5 and 6-in. widths. Fluted top. Furnished in any length specified with holes drilled and screws furnished

Left

Window shows application of Numetal weatherstrips. Numetal makes windows positively weatherproof and meets every requirement

Numetal Meets Every Requirement

Right

Door shows Numetal Weatherstrip installation. This door is equipped with Numetal Style "E" Door Bottom Strip

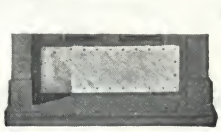
Style "EX" Door Bottom Strip

Width, 1½ in. A combination of heavy moth-proof felt and heavy brass with a combination drip cap which prevents water, ice or snow from coming in contact with felt. Holes slotted for adjusting. Furnished in standard lengths

(Patent Pending)

Kick Plates

Polished and lacquered, 6, 8, 10 and 12-in. widths. Holes drilled and screws furnished



Right

Drip Caps

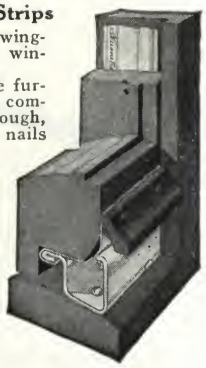
Used on bottoms of doors and casement windows. 20 gauge, 1¼ in. wide. Furnished in either zinc or brass, in any length. Holes punched; nails furnished

Style "G" Trough Strips

For bottoms of inswinging casement or French windows.

Style "G" strips are furnished in any length complete with heavy zinc trough, front and rear hook, nails and screws.

In the majority of cases, our three standard styles of strips "A," "B" and "D," can be used successfully on the bottom of both in-swinging and out-swinging casement windows; however, we can furnish the trough strip, for bottoms of inswinging windows



Sash Plugs

Width $\frac{7}{8}$ in., length 3 in. Cold air and dust always blow in through the hole that is left at the meeting rails where they are cut out for the blind stop. The patented sash plug shown at the left will close this opening. Inexpensive and quickly applied

NATIONAL METAL PRODUCTS CO.

HOME OFFICE

PITTSBURGH, PA.

Products

NATIONAL ONE-PIECE BRASS WATERPROOF THRESHOLDS and SILLS.

XXX FIGURE 135 CASEMENT EQUIPMENT.

NATIONAL No. 1 and 2 DOUBLE RIB METAL WEATHERSTRIP.

COLUMBIA No. 1 SINGLE RIB METAL WEATHERSTRIP.

COLUMBIA No. 2 SINGLE RIB METAL WEATHERSTRIP including Sash Member.

Fig. 144 National Threshold Equipment for Doors

Furnished in 4 and 5-in. widths.

Does away with incoming drafts, storm water, etc.

Drainage is over a zinc liner, through weep holes at the base.

An L-member is faced on the inside with felt, making a close and watertight fit.

Tripping is prevented through the arch shaped design which guides the feet over the edge.

Dirt, etc., will not jamb the interlocking members due to easy cleaning.

Correct engineering design and features makes this National Threshold outstanding.

XXX Fig. 135 Casement Equipment

This channel member is exceedingly heavy and has weep holes with shutters thereon to permit of the water running out but not in.

Note the one-piece drop or water table with beveled edges which guides the lip of the channel into same.

Our National Fig. 131-132 Z and L equipment for sides and tops will absolutely stop rain inleakage at these points.

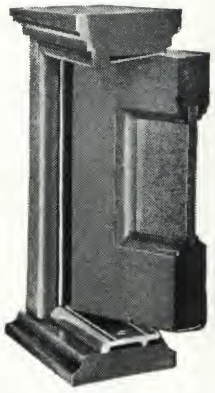
National No. 1 Double Rib Window Equipment

Double protection is derived by the interfitting double members on sides and head, which make it impossible for infilterage of cold, dirt, noise, etc.

Interlocking Y & J at the meeting rail gives positive protection here, while our B sill member, which is formed of extra heavy zinc, withstands rough usage. It is screwed on the frame and not nailed.

Columbia No. 1 and 2—Consists of a single rib and can be installed with or without liners in the sash.

National Brass Sill Equipment



Furnished in 1, 1½, 1⅞ and 4¼-in. sizes. This equipment is used where there is no water leakage and is very efficient, but does not have the many fine features of our Fig. 144 National Thresholds as shown.

The 1, 1½ and 1⅞-in. sizes are placed on the wood carpet strip while the 4¼-in. size replaces this complete wood strip.

Special Features of National Products

Keep out cold, rain, dust, sounds, etc.

May be installed in old as well as new buildings.

Eliminate rattling of sash and doors and enable same to open and close easily.

Do not disfigure the woodwork, but will give years of satisfactory service, and the first and only cost is moderate.

Years of direct application have proven National Products among the best.

NIAGARA METAL WEATHER STRIP CO.

GENERAL OFFICES AND FACTORY
37 West Tupper Street, BUFFALO, N. Y.
Dealers in Principal Cities of United States and Canada—See Classified Telephone Directories

Products

Manufacturers of NIAGARA METAL WEATHERSTRIP for windows and doors; CRAIG BRASS and ZINC CHANNEL BARS and NIAGARA EXTRUDED BRASS and ALUMINUM CHANNEL BARS for sills of inward opening casements; NIAGARA BRASS THRESHOLD PROTECTION STRIP and BRASS SADDLES for doors.

Niagara Metal Weatherstrip, the Only Reinforced Metal Weatherstrip Made for Double Hung Windows

Niagara metal weatherstrip, of which a full size section is shown below, is made of No. 26 U. S. standard gage, cross grain zinc, reinforced with hardwood. On account of this wood reinforcing it will bear the weight of a heavy man without buckling. This is especially desirable on the sills of windows, as it is on the window sill that most weatherstrips collapse. It is, however, also used on the heads and jambs of double hung windows.

Niagara Equipment for Weatherproofing Double Hung Windows

For the head, sill and length of each sash on each jamb, specify Niagara Reinforced Metal Weatherstrip.

For the meeting rails, specify Niagara Non-collapsible Meeting Rail Strip. Note the double thickness of zinc at the contact surface of the meeting rail strip.

Niagara Equipment for Weatherproofing Inward-opening Casements

For the head, lock side of jamb for single casements, and for meeting stiles of double casements, specify Niagara Interlocking Bronze Hook and Flat. A cheaper zinc hook is also made but the flexible bronze hook is recommended.

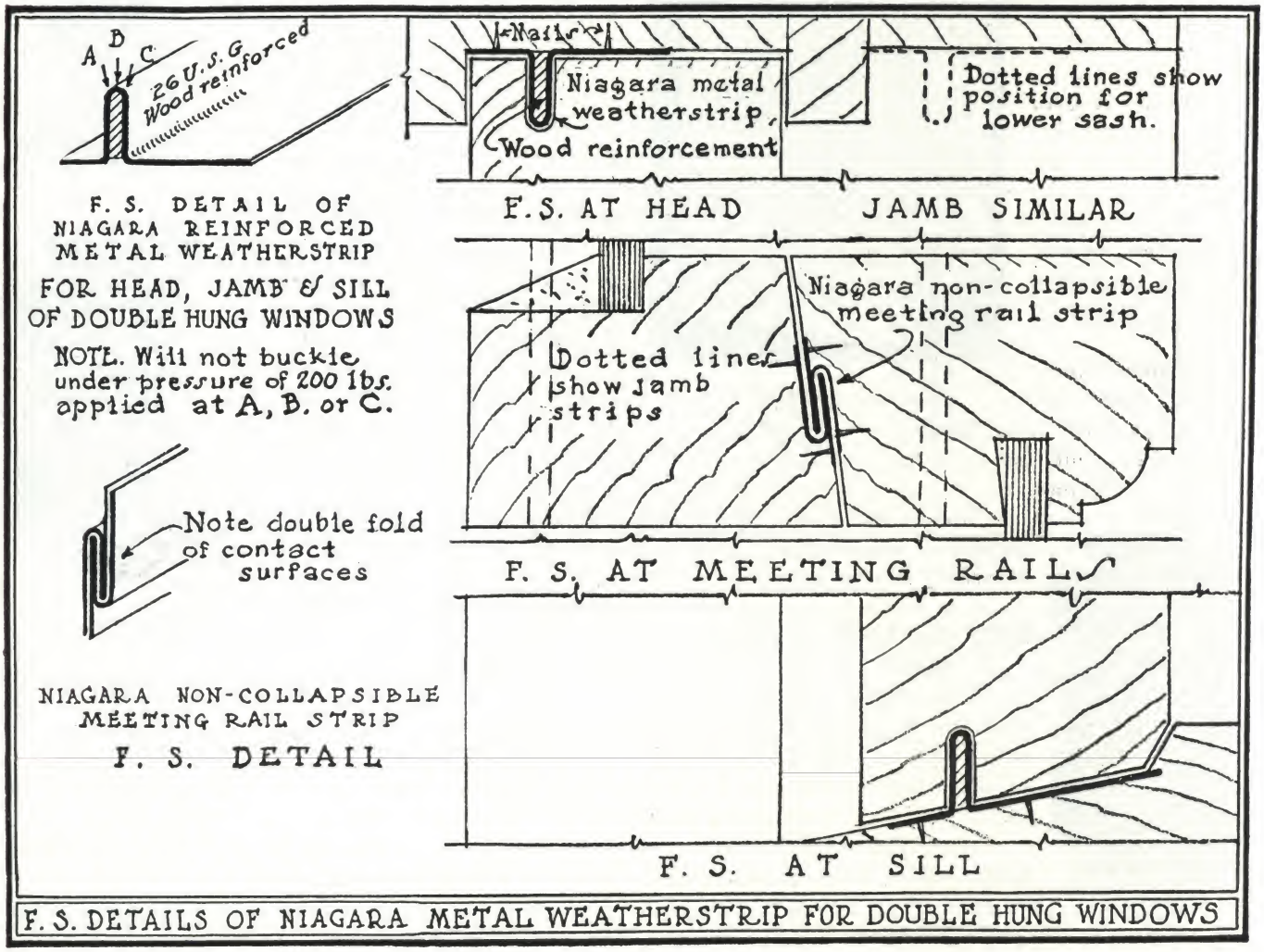
For the hinge side of jambs specify Niagara Metal Weatherstrip.

For the sill, specify the Craig Brass or Zinc Channel Bar and Drip, or the Niagara Extruded Brass or Aluminum Channel Bar and Bronze Hook.

Niagara Equipment for Weatherproofing Doors

For the jambs and head specify Niagara Spring Bronze Weathering, or if an interlocking equipment is desired specify same as for inward opening casements.

For the sill specify either the Niagara Brass Threshold Strip or the Brass Saddle and the Brass Ell Weatherstrip, set according to details. The threshold strip is generally used on wood sills and the brass saddle on stone or concrete sills.



F. S. DETAILS OF NIAGARA METAL WEATHERSTRIP FOR DOUBLE HUNG WINDOWS

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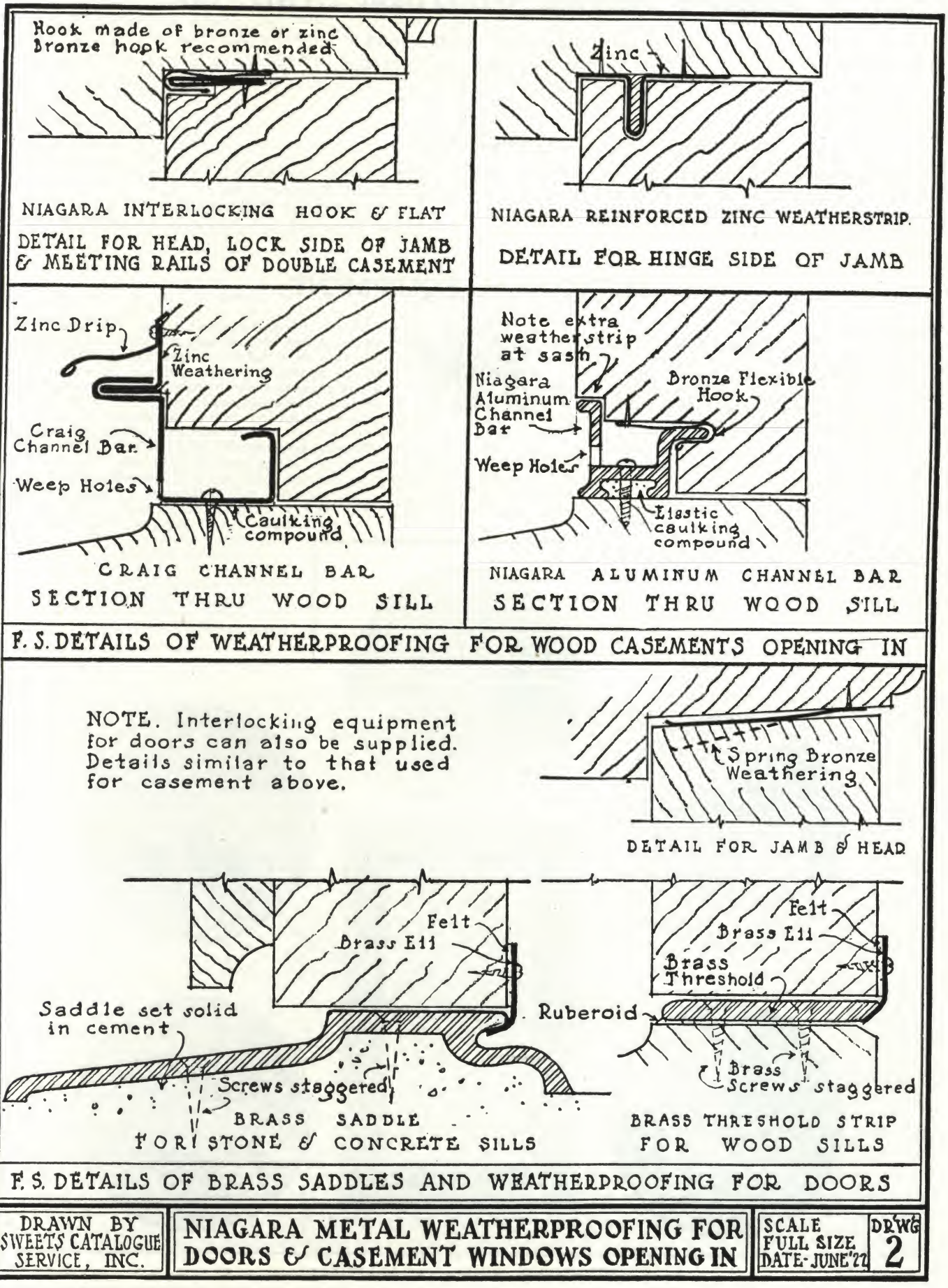

Hook made of bronze or zinc
Bronze hook recommended
NIAGARA INTERLOCKING HOOK & FLAT
DETAIL FOR HEAD, LOCK SIDE OF JAMB & MEETING RAILS OF DOUBLE CASEMENT
Zinc
NIAGARA REINFORCED ZINC WEATHERSTRIP.
DETAIL FOR HINGE SIDE OF JAMB
Zinc Drip
Zinc Weathering
Craig Channel Bar
Weep Holes
Caulking compound
CRAIG CHANNEL BAR
SECTION THRU WOOD SILL
Note extra weatherstrip at sash
Niagara Aluminum Channel Bar
Bronze Flexible Hook
Weep Holes
Elastic caulking compound
NIAGARA ALUMINUM CHANNEL BAR
SECTION THRU WOOD SILL
F. S. DETAILS OF WEATHERPROOFING FOR WOOD CASEMENTS OPENING IN
NOTE. Interlocking equipment for doors can also be supplied. Details similar to that used for casement above.
Spring Bronze Weathering
DETAIL FOR JAMB & HEAD
Felt
Brass Ell
Saddle set solid in cement
Screws staggered
BRASS SADDLE FOR STONE & CONCRETE SILLS
Felt
Brass Ell
Brass Threshold
Ruberoid
Brass Screws staggered
BRASS THRESHOLD STRIP FOR WOOD SILLS
F. S. DETAILS OF BRASS SADDLES AND WEATHERPROOFING FOR DOORS
DRAWN BY SWEETS CATALOGUE SERVICE, INC.
NIAGARA METAL WEATHERPROOFING FOR DOORS & CASEMENT WINDOWS OPENING IN
SCALE FULL SIZE
DATE- JUNE '22
DRWG 2

REESE METAL WEATHER STRIP CO.

117 South 10th Street
MINNEAPOLIS, MINN.

PRODUCTS

REESE FLEXO-SEAL EQUIPMENT for double hung windows (patented and patents pending).

REESE ADJUSTO-SEAL EQUIPMENT—self-adjusting interlocking equipment for casements and doors (patented).

WATERPROOF CASEMENT CHANNELS; also Spring Bronze; Brass Pulley Covers.

EXTRUDED BRASS THRESHOLDS.

REESE PLASTO-SEAL CAULKING COMPOUND.

FLEXO-SEAL EQUIPMENT

Features

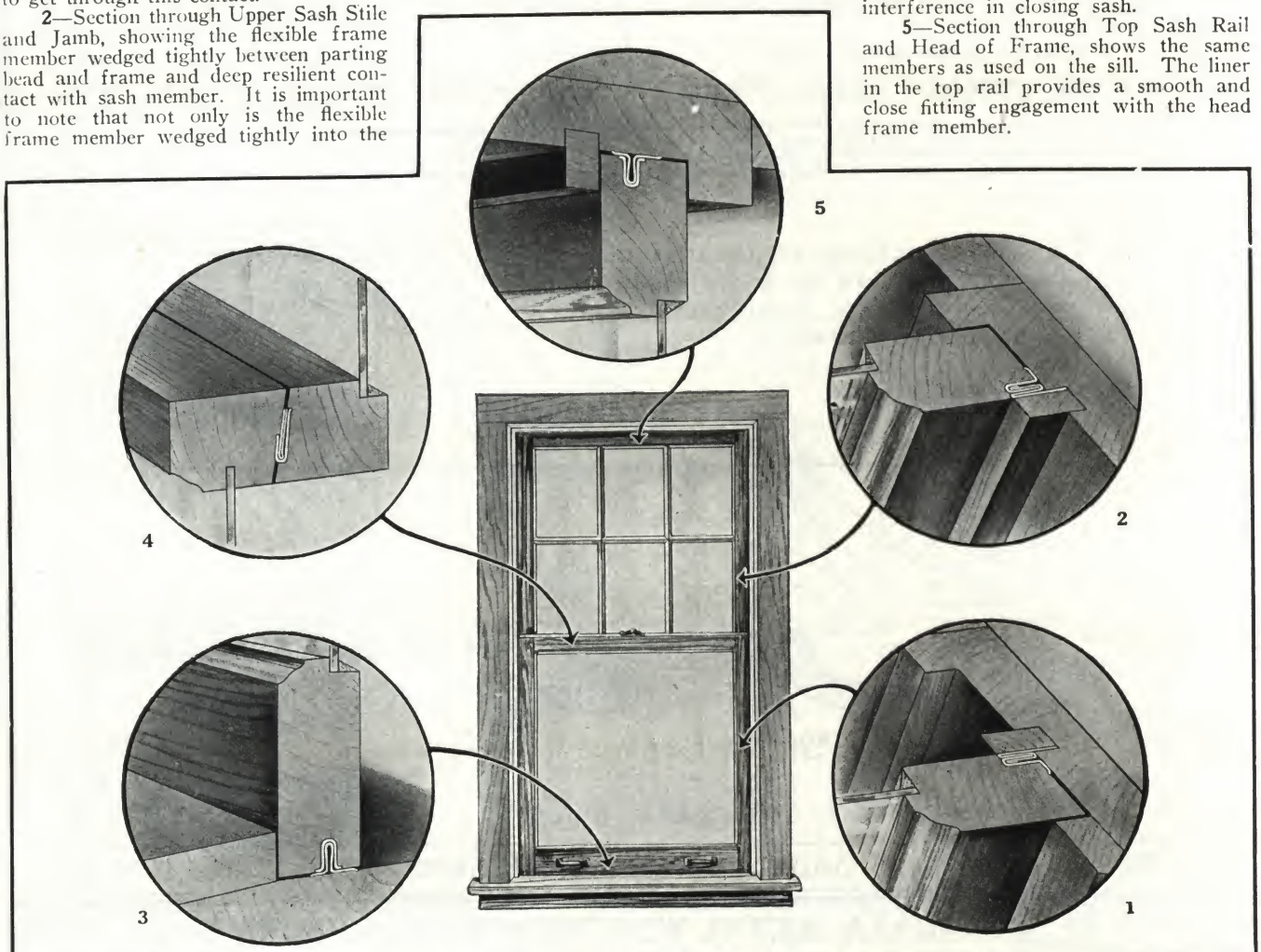
1—Section through Lower Sash Stile and Jamb, showing the flexible, accordion-like, Flexo-Seal frame member interlocked with sash member. A continuous seal past sash cord slots. Full ½-in. interlocking contact with sash against jamb—that is, nearly double the usual adjustment for sash shrinkage. The flexible accordion-like member readily *yields* to the pull of a warped sash, conforming to its bowed surface without damage to the weatherstrip and without loss of efficiency. Because of this exclusive feature these members are made to fit with machine precision, more closely than in any other weatherstrip installation. Observe the length of air travel necessary for cold air to get through this contact.

2—Section through Upper Sash Stile and Jamb, showing the flexible frame member wedged tightly between parting bead and frame and deep resilient contact with sash member. It is important to note that not only is the flexible frame member wedged tightly into the frame by the parting bead, but that the edge of the nailing flange on the sash member is turned in to hug the wood tightly between nailing. The nailing of this member is at right angles to the strain caused by warpage, so that warpage cannot pull either member out of proper position or loosen them up, thus permitting leakage behind the strips.

3—Section through Bottom Rail and Sill, showing turned flanges of sill strip, gripping the sill between nails, and interlocking with smooth fitting liner in sash rail.

4—Section through Meeting Rail, showing the trouble-free Flexo-Seal meeting rail equipment. Sturdy members, accurately made and properly fitted in sash, avoid buckling due to sash warpage and consequent interference in closing sash.

5—Section through Top Sash Rail and Head of Frame, shows the same members as used on the sill. The liner in the top rail provides a smooth and close fitting engagement with the head frame member.



FLEXO-SEAL EQUIPMENT FEATURES

Continued on next page

Notes: *In our Flexo-Seal installation, parting beads are attached to frame with screws, making sash removal an easy and natural operation. Remove two screws on left-hand side to remove lower sash, and one additional screw to remove upper sash.*

Closure pads are used at the ends of the meeting rail to close the space between face of parting bead and the end of meeting rail.

Flexo-Seal Laboratory Tests

Tests were made on double hung windows at the University of Wisconsin Laboratory at Madison, Wis., and figures quoted on air leakage are from the tabulation of test results furnished to us.

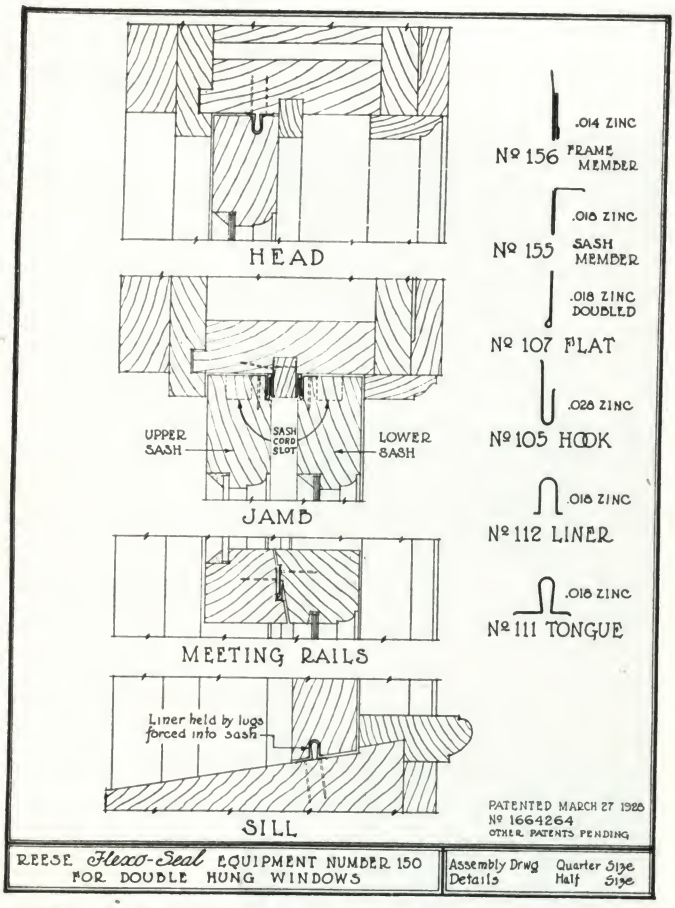
An average condition is a window with ⅛-in. crack between the edge of the sash and the frame and with a clearance of $\frac{3}{32}$ in. between sash and stops. Such a window measuring 3 ft. wide and 6 ft. high, containing 21 lin. ft. of crack subject to weatherstrip application, showed a leakage through these cracks of 1806 cu. ft. per hour at 15 miles (the average) wind velocity. The same window equipped with our standard installation of Flexo-Seal equipment showed a leakage of only 246 cu. ft. per hour. This is only one-half to one-third as much leakage as through ordinary weatherstrips. However, the main consideration is not the greater original efficiency of Flexo-Seal Equipment, but the fact that built-in adjustment for sash shrinkage and warpage maintains the efficiency of the equipment throughout the life of the building without sacrificing ease of operation of the window.

SPECIFICATION FOR FLEXO-SEAL

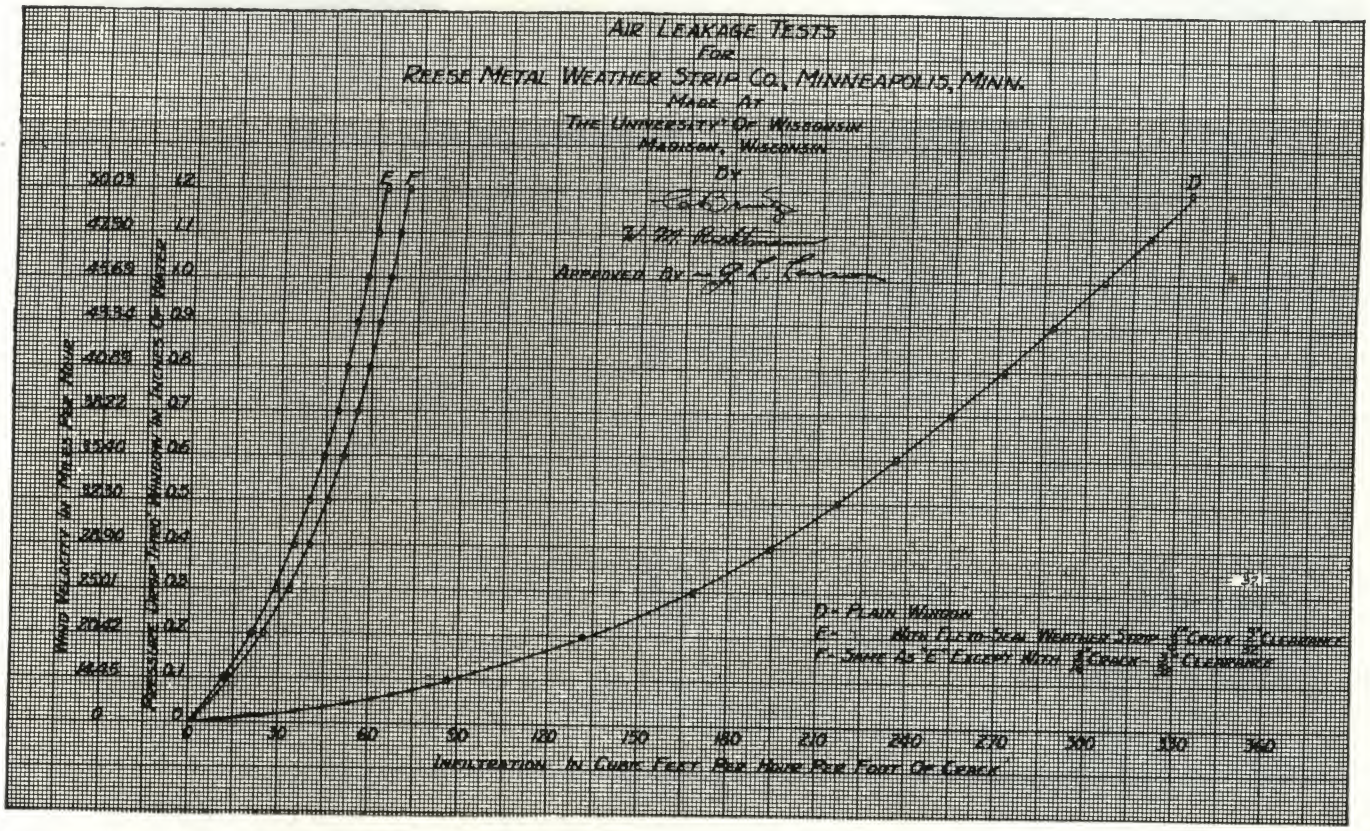
All double hung windows shall be equipped with Reese Flexo-Seal Equipment, as applied by the manufacturer or his authorized dealer. Jamb strips shall have ½-in. interlocking contact with sash against jamb to amply allow for sash shrinkage, and the design shall permit easy sash operation in case of warpage of sash ⅛ in. out of plane surface. Meeting rail, head, and sill shall have two-piece interlocking members.

Unless otherwise specified, all members shall be made of sheet zinc cut across grain, and of thickness specified in published details.

Alternate for Flexo-Seal in Bronze: All members shall be cold rolled from commercial bronze of thicknesses specified in published details.



Flexo-Seal Equipment Requires No Special Sash Detail



Note: How can you expect economical heating costs or proper control of ventilating systems without Flexo-Seal to assure you that the cracks, too, are closed when the windows are closed?

Continued on next page

ADJUSTO-SEAL EQUIPMENT

Patented

A True Self-adjusting, Interlocking Equipment for the Jamb and Heads of Casements and Doors

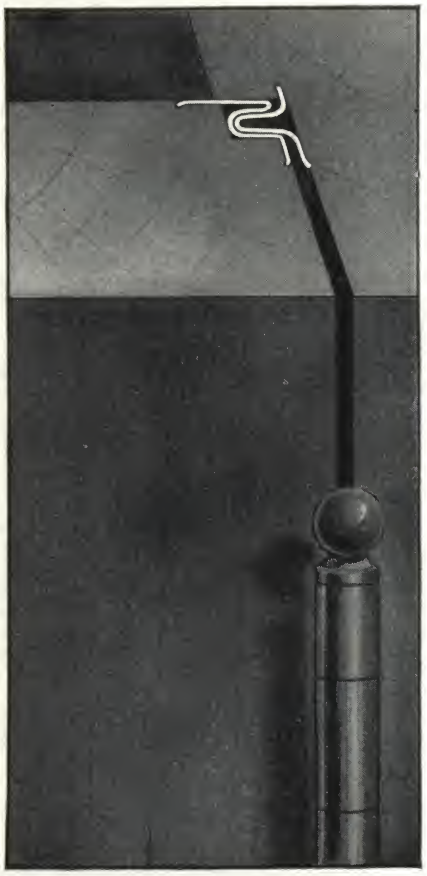
In casement windows (or doors) the entire shrinkage occurs on the lock side of the opening, since the hinges hold the sash in their original position at the hinge side. The sash must be fitted loosely in order to clear the jamb in opening and closing. When shrinkage occurs, one easily sees through the resulting crack. Air leakage is considerable, even when the crack is not visually apparent.

A Sash Never Attains a Fixed Size

Even old sash will swell in damp weather and shrink in dry weather, with resulting variation in the size of the cracks between the frame and the sash. It is a seldom considered and interesting note that shrinkage and swelling occur mainly while the sash is closed, for the simple reason that it may be closed for weeks at a time and opened only for hours at a time.

A Permanent Self-adjusting Seal

Adjusto-Seal Equipment is made only of rust-free materials of low (not spring) temper, either zinc or bronze. The design is such that the interlocking contact is preserved without change regardless of the shrinking or swelling of the sash. This equipment differs entirely, both from the old style rigid interlocking equipments in which the nails frequently pull loose due to shrinkage, and the later spring type interlocking equipments, which are necessarily made of metal too light to avoid damage, and which produce hard closing sash or doors, due to the combined friction of the spring tension and friction of interlocking members.



Around the sides and top of the sash, the strong *double nailed* sash member, with its two burred-edge nailing flanges, grips the sash firmly and *cannot be pulled off by a strain in any direction.* The sash member never fails to make accurate interlocking contact with the members on the frame.

Observe the wide mouth of the frame member on the lock side, its cam surfaces shaped to pull the member automatically into proper alignment if its position should be moved through any cause while the sash is open. Observe how the frame members are located within the lee of the frame, and how all water is stopped at the very outside. Sash or doors equipped with Adjusto-Seal are less prone to swell during prolonged rains.

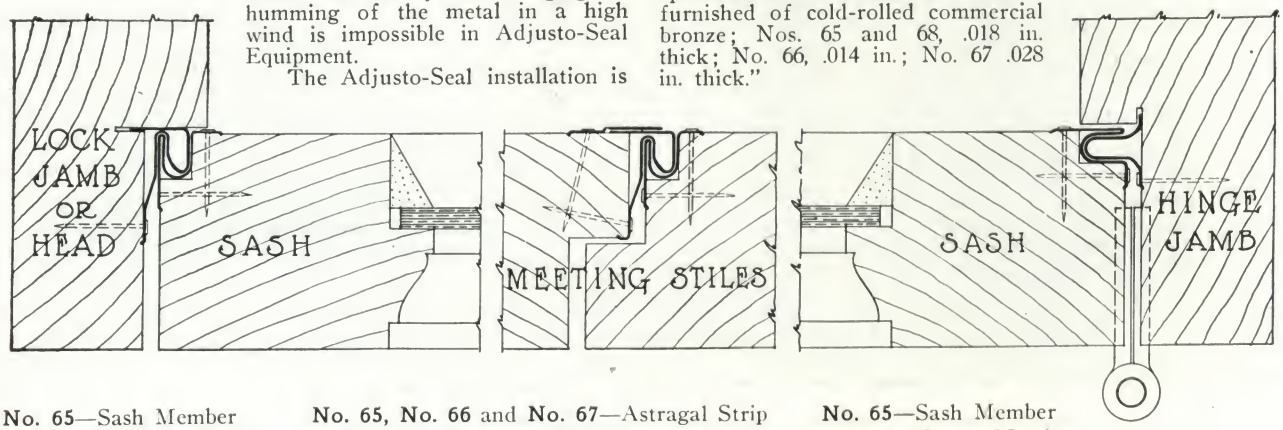
The equipment at the hinge jamb carries a continuous line of contact past the hinges, without either cutting off the sash leaf of the hinge or omitting the weatherstrip in passing the hinges. The frame member on the hinge side is kerfed into the frame as shown. Air and water are given no opportunity to blow in at the hinges, as will happen in spring bronze installations if the frame leaf of the hinge is not perfectly flush with the jamb. Singing or humming of the metal in a high wind is impossible in Adjusto-Seal Equipment.

The Adjusto-Seal installation is good looking, when noticed at all, as its moulded lines, recessed in the shadow of the frame rabbets, present the clean and neat appearance of a studied and workmanlike job.

Specification for Adjusto-Seal

Sides, tops, and meeting stiles of all casement windows (and doors) shall be equipped with Reese Adjusto-Seal Equipment. Frame member on hinge jamb shall be kerfed to form air and water seal continuous past butts, and shall be formed with outer radius to interlock with sash member. Frame member on lock jamb and head shall be self-adjusting to shrinkage of sash, kerfed into frame for air and water-seal. Sash members shall be double-nailed at right angles to prevent pulling loose on nails. Both frame and sash members shall be continuous past locks.

Note: Unless otherwise specified, Adjusto-Seal Equipment will be furnished in zinc. If desired of bronze, add to above specification: "All members shall be furnished of cold-rolled commercial bronze; Nos. 65 and 68, .018 in. thick; No. 66, .014 in.; No. 67 .028 in. thick."



No. 65—Sash Member
No. 66—Frame Member

No. 65, No. 66 and **No. 67**—Astragal Strip
Prefix above numbers BR for bronze strip

No. 65—Sash Member
No. 68—Frame Member

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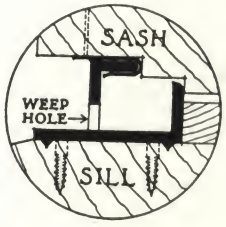
CASEMENT SILL EQUIPMENTS

Scale One-half Full Size

For 1⅜ or 1¾-in. Inswinging Sash

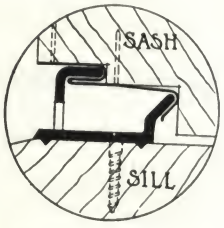
Patented



No. 201—Extruded Brass Sill Strip
No. 202—Brass Sash Hook

For Inswinging Sash 1¾ In. or More in Thickness

Patented



No. 205—Extruded Brass Sill Strip
No. 206—Bronze Sash Hook

For Inswinging Sash Any Thickness

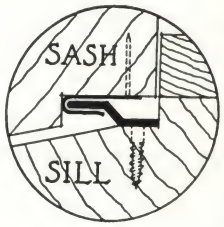
Patent Pending

Either Zinc or Bronze

No. 241—Rolled Trough
No. 242—Sash Hook
No. 243—Base

For Outswinging Sash

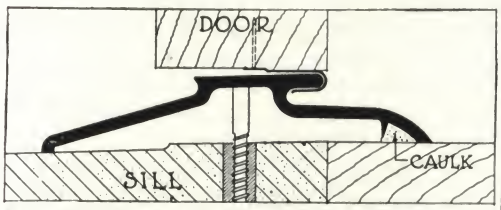
Either Zinc or Brass



No. 221—Formed Sill Strip
No. 222—Sash Hook

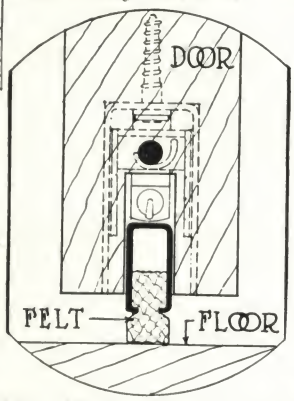
DOOR SILL EQUIPMENTS

Scale One-half Full Size

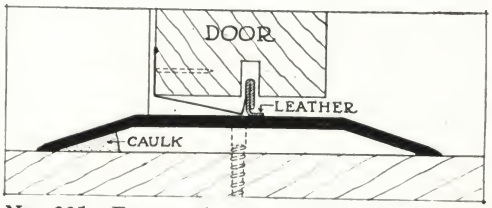


No. 301—Extruded Brass Sill 4x1⅛ in.
No. 302—Brass Hook Strip

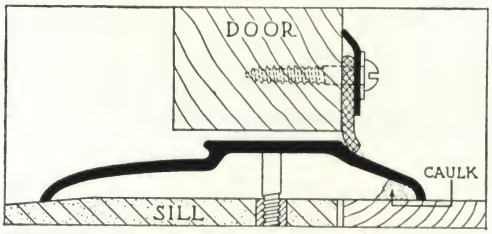
Note: *Either concealed hooks or surface angles No. 313 may be specified. No. 302 Hook Strip fits all interlocking thresholds.*



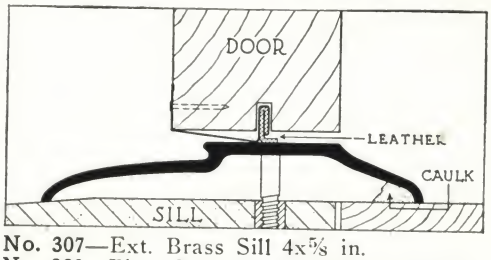
No. 318—Automatic Door Button



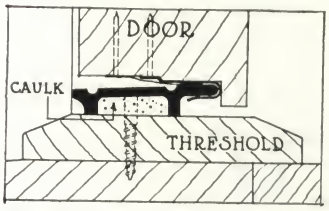
No. 305—Extruded Brass Sill 4 1/16x⅞ in. (May be used in combination with No. 320 as shown or No. 325.)



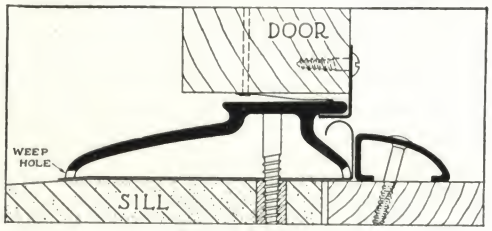
No. 307—Extruded Brass Sill 4x⅝ in.
No. 325—Surface Door Strip



No. 307—Ext. Brass Sill 4x⅝ in.
No. 320—Phos. Bronze and Leather Bottom



No. 310—Ext. Brass Sill 1½x 7/16 in.
No. 311—Brass Door Hook
No. 312—Bronze Insert

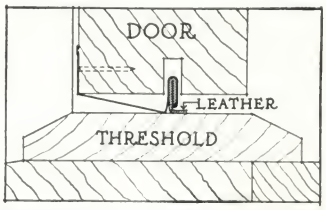


Patent Pending

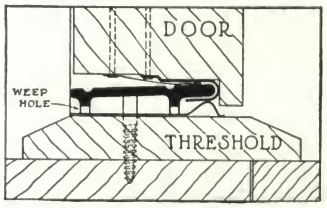
No. 368—Extruded Brass Sill 3x1⅛ in.
No. 370—Brass Drainage Strip
No. 371—Drawn Brass Moulding 1x½ in.
No. 313—Brass Surface Door Angle
No. 372—7/16x7/16 in. Brass Angle, used with carpets, instead of No. 371.

No. 378—Like 368, except 1⅛ in. high
No. 380—Drainage Strip for No. 378
No. 381—Extruded Brass Moulding ⅞x¾ in.
No. 382—½x1⅛ in. Brass Angle, used with thick lined carpets, instead of 381 Moulding

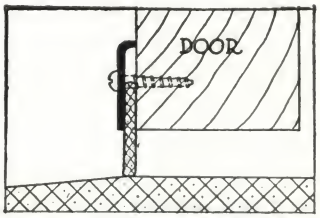
No. 308—Extruded Brass Sill Like No. 310 except 1⅛ in. wide



No. 320—Phosphor Bronze and Leather Bottom



No. 310, No. 311, No. 312, No. 314—Brass Drainage Strip



No. 325—Brass and Rubber Belting Door Bottom

SAGER METAL WEATHERSTRIP CO.

Manufacturers of Metal Weatherstrips
2531-2533 Homer Street
CHICAGO, ILL.

Products

SAGER METAL WEATHERSTRIPS for doors and double hung and casement windows, including Sager All-metal Interlocking Parting Bead, and Sager Leakproof Casement Strip.

SOLID BRASS DOOR THRESHOLDS.

Sager All-metal Interlocking Parting Bead

This equipment for double hung sliding windows embodies every desirable feature of a weatherstrip, *plus an exclusive method of absolutely eliminating all air seepage during life of weatherstrip.*

To explain, Fig. 1 shows inadequacy of ordinary type of weatherstrip after shrinkage in sash has taken place; sash and bead are not in contact, consequently air seeps in. Many architects recognize this and advise installation of strips after building is two years old. Patently, this is impractical and expensive, depriving owner of building of two years benefit of weatherstrip installation.

Fig. 2 shows how Sager parting bead stops the air at the source before it gets in back of the sash. Despite shrinkage, contact is still perfect; sash can not spread from parting bead because of their interlocking.

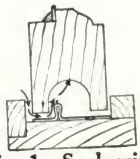


Fig. 1. Sash with Common Type of Strip Installed

Note leakage of air when sash has shrunk from the parting bead

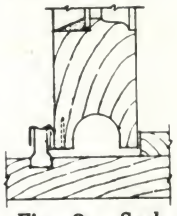


Fig. 2. Sash After Shrinkage with Sager All-metal Interlocking Parting Bead Installed

Contact is still perfect and has not been affected by this shrinkage

Another exclusive feature is that both sash are tracked entire height of frame making them rattleproof when open as well as when shut.

Sager Leakproof Casement Strip

Consists of a metal tongue attached to the bottom of the sash in such manner as to contact with the metal trough.

This fortification will hold back the water in the hardest storm.

Specifications

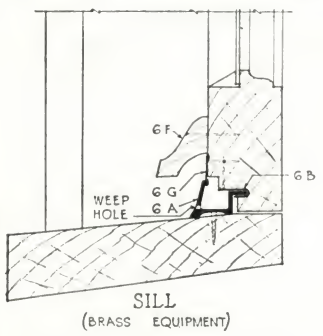
Double Hung Windows—All exterior double hung windows to be equipped with Sager interlocking parting bead zinc strip. In accordance with details and as manufactured by the SAGER METAL WEATHERSTRIP Co., Chicago, Ill.

Casement Windows—All exterior inswinging casement windows to be equipped with Sager brass [zinc], [wood] watertight bottoms, spring bronze [zinc interlocking] strip on top and sides. In accordance with details and as manufactured by the SAGER METAL WEATHERSTRIP Co., Chicago, Ill.

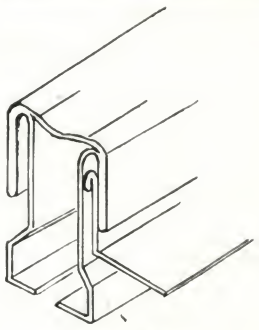
Doors—All exterior doors to be equipped with Sager brass threshold and spring bronze [zinc interlocking] strip on top and sides. In accordance with details and as manufactured by the SAGER METAL WEATHERSTRIP Co., Chicago, Ill.

Catalogue

Details with key numbers and samples sent on request.



Casement Sash



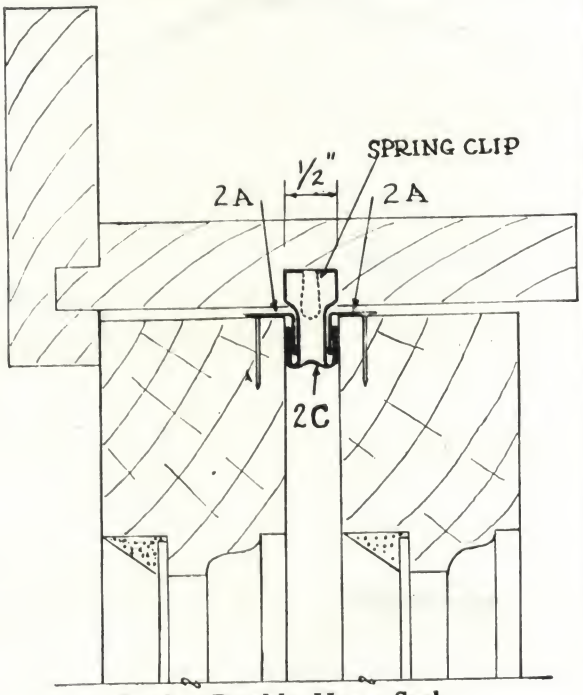
2B—2C

Isometric view showing method of securing interlocking parting bead to frame.

Note:

Jamb detail at right shows Parting Bead No. 2-C, where dimension shown is ½ in. Should this dimension be larger or smaller, see Stock List for proper number. Interlocking Bar No. 2-A always same size.

Detail at right shows equipment in 1¾-in. sash, but same equipment can be applied to any thicknessed sash.



Jamb—Double Hung Sash

DETAILS OF SAGER METAL WEATHERSTRIP EQUIPMENT

AMERICAN ROLLING SCREEN CO.

7701 Avalon Avenue

CHICAGO, ILL.

Product

Manufacturers of ALL-METAL ROLLING WINDOW SCREENS, all features of our own design, and fully patented.

The Company

We are pioneers in the field of rolling screens, and our perfected screen is the result of many years of experience in the exclusive manufacture of rolling fly screens.

Guarantee

American Rolling Screens are fully guaranteed against defects in material and workmanship and any defective screen or part will be replaced.

Materials

The boxes, bottom rail and side guides of our standard screen are made up of lead-coated terne plate and delivered unpainted, unless standard color lacquer is specified. Our screen is also made up of solid bronze when ordered.

Wire Cloth

16-mesh, copper bronze wire cloth, with double selvage edge, woven specially for rolling screens, is adopted as standard and recommended as the most suitable for rolling screens. Alumina wire may be substituted if desired, also finer mesh wire may be furnished for special uses.

Bottom Rail

The bottom rail is a special feature of our screen, being adjustable as to width. It is equipped with a felt bumper on the bottom to insure a tight seal between the rail and stool. It is very rigid, will not bow up in the center on wide openings, and is clamped to the screen wire with small brass bolts. It holds the wire out to the extreme edges and can be easily removed in case the wire is accidentally damaged.

Lock

The screen may be easily raised or lowered with one hand and is automatically locked down by concealed latches within the guides, which are easily adjusted as to height, an adjustment which is very necessary where the stool is slightly warped or uneven.

Springs

Our springs are of highest grade music wire, wound to our own specifications for various size screens, packed in a non-running grease and fully guaranteed for the life of the screen.

Rollers

The tempered steel tubing on which the screen cloth rolls is 1¼ in. in diameter, has a welded lap, making it oil tight and very rigid, and has a small groove along one side for holding the wire cloth. This is an important feature, as there are no chunks of solder for the cloth to slide over while rolling and no chance for damage to the cloth from acid used in soldering. It also affords easy removal of the cloth. These rollers are fitted with bronze bushings which are accurately turned on a screw machine, insuring a perfect fit and smooth operation.

Boxes

Our standard box is 2⅝x2⅝ in., although boxes of various sizes and shapes, as 2⅝x2 in., 2x2 in. and 3x3 in. may be detailed for special uses.

Guides

The No. 3 guide is our standard and is suitable for most installations, although the No. 1 or No. 2 guides may be used where necessary. We also make other shapes and sizes to fit in with your details.

Detailing

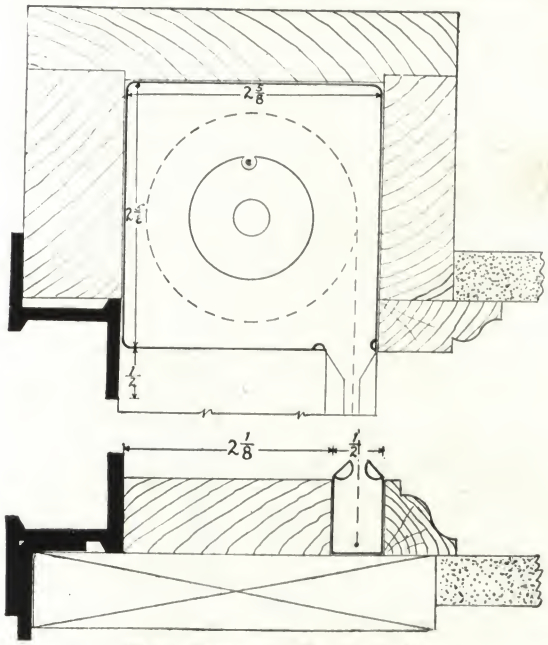
Our screen is adaptable to almost any opening. The details here shown are merely suggestions. If they do not fit in with your plans we will gladly furnish details that will.

Sizes

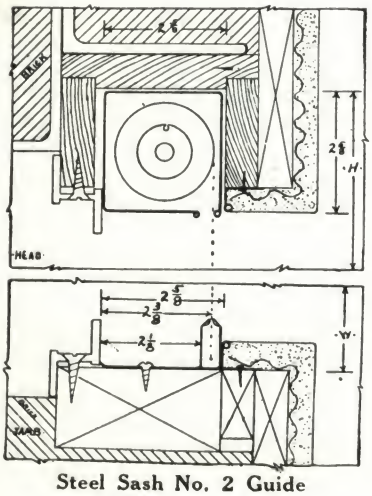
American Rolling Screens are made to fit openings 10 to 61 in. wide and up to 9 ft. high. The extremely narrow screens should not be more than 6 ft. high.

Standard Specifications

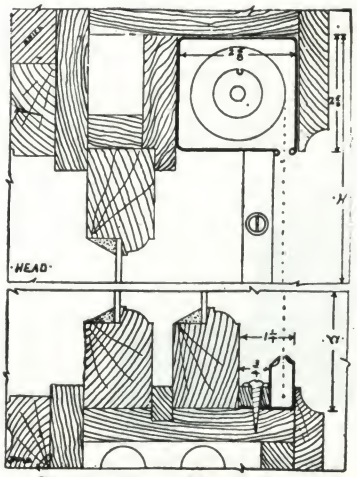
Rolling Screens as manufactured by the AMERICAN ROLLING SCREEN CO. of Chicago, Ill., complete with 16-mesh copper bronze wire cloth, rustproof metal trimmings, adjustable rails, concealed adjustable latches, flexible bumpers, and fully guaranteed as to material, workmanship and operation.



Steel Casement No. 3 Guide



Steel Sash No. 2 Guide



Double Hung No. 1 Guide

THE W. J. BAKER COMPANY

All-metal Window Screens

NEWPORT, KY.

Products

BAKER'S IMPROVED ALL-METAL WINDOW SCREENS.

Also manufacturers of high grade Door Screens and Metal Weatherstrips.

Co-operation with Architects

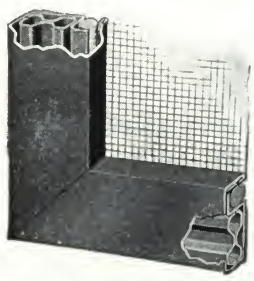
Baker offers new ideas, new materials, and flexibility in harmonizing with the treatment desired by the architect. Many years of experience in the manufacture of screens are at the service of the architect and builder. The Baker representative in your vicinity will not consider you obligated in the least, should he have the privilege of explaining Baker construction to you. We will gladly put him in touch with you if you do not know him.

Baker's All-metal Window Screens

Baker's improved all-metal window screens are designed to replace the old style, inconvenient and unsightly wood frame screens. *They are made to order only, to fit openings.*

These screens are constructed so the greatest possible strength is secured without excessive weight. The frames are made from heavy cold rolled steel well galvanized with pure zinc, or from bronze. They are spot-welded for the entire length giving great strength. Neat, narrow metal frames are practically invisible in the window and admit a free passage of air and light. The corners are reinforced by inserting two corrugated angle corner braces as shown in the illustration. The galvanized solid rod which holds the wire screen cloth firmly in place is also illustrated. To rewire the screen it is only necessary to remove the rod, insert the screen cloth beneath, and press it firmly back in place.

Wire Cloth may be woven either from bronze wire or steel galvanized wire which is black enameled after weaving. Standard insect cloth for high grade screens is 16-mesh but may be had in finer mesh when desired. Rolling screens are furnished with 16-mesh bronze wire only, with extra warp wires woven in to make the edges 32-mesh for about ⅜-in. from each edge. Bronze wire cloth is rust-resisting and most durable.



Smooth Frame Welded Type Screen

Screens are made up from measurements of the actual openings. All parts, except the screen cloth, are heavily ducoed to match the trim to any color desired.

Baker screens are made in the four types described in next column.

The New Baker Rolling Type Screen—This screen becomes a permanent part of the window and need never be taken down. When not in use it is rolled up in the box by a spring roller.

The guides are screwed to the roller box and the whole screwed securely to the casement sash or wood jamb. The light binder rail on the bottom of the screen cloth is felt-lined on the underside to prevent marring the sill. An inconspicuous, positive lock holds the screen down when not in use and is released by a touch to roll it up.

The screen is always instantly available or as quickly rolled up out of the way when not wanted.

Baker Hinged Screen—Can be swung back out of the way while the window is being cleaned and is easily removed for winter storage. By using steel mullions the ventilators, or movable sash, only may be screened, thereby reducing cost and eliminating fly pockets which are always created when dead spaces or immovable lights are screened. Steel mullions become a permanent part of the sash; the screen only being lifted out for winter storage.

Baker Multiple Passing Screens—Casement windows opening outward may be screened in most satisfactory manner with multiple passing screens sliding easily and noiselessly past each other in guides. The screens are made to fit closely at the intersections to prevent even a line of light between them.

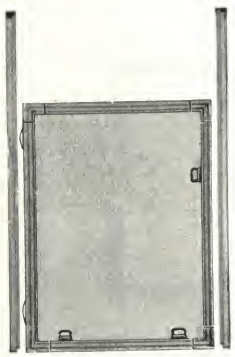
When such screens pass horizontally they operate in extruded brass track fitted to the sill and the bottom rail of the screen is rounded to fit the track.

For narrow casement openings the vertical passing screen makes a very neat installation operating like the horizontal, except as to direction.

Baker Screens for Double Hung Windows—For this type of window it is more practical to have screens outside the sash. There are two types of Baker Screens especially desirable for such windows—the sliding screen and the hinged screen.

The sliding screen covers only half the window but runs in a metal track the full height of the opening and may be used either for the lower or upper half of the opening.

The hinged screen swings either from top or side and covers the entire opening.



Sliding Screen Showing Guides

CECO WEATHERSTRIP & SCREEN PRODUCTS

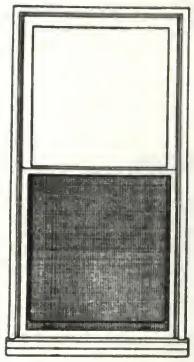
DIVISION OF THE CONCRETE ENGINEERING CO., INC.
Manufacturers of Metal Frame Window Screens
1926 South 52nd Avenue, CHICAGO, ILL.
Consult Telephone Directory for Local Address in any City

Product

CECO METAL FRAME WINDOW SCREENS.

For Ceco Metal Weatherstrips, see Manufacturers' Index.

Ceco
TRADE-MARK



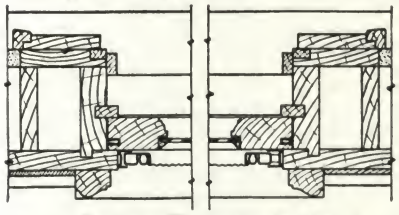
Half Sliding Metal Frame Screen for Double Hung Windows

Ceco Metal Window Screens

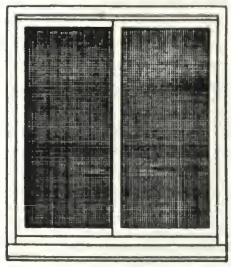
For all common types of double hung sash, casement sash (both inswinging and outswinging types) and pivoted sash, all of which are made to order and installed by Ceco Service men. All frames easily rewirable by ordinary mechanics.

Materials Used—Ceco screens are made of heavy electro galvanized steel coated with enamel; also made of heavy rolled bronze. Bronze screen wire, 16-mesh, is the standard for Ceco screens. 18-mesh or finer can be furnished when required.

Ceco Corner Construction—The corners of Ceco window screen frames are reinforced by a heavy No. 16 gauge channel shaped section of cold rolled steel. This corner brace prevents any tendency toward warping or twisting so common in poorly constructed screens.

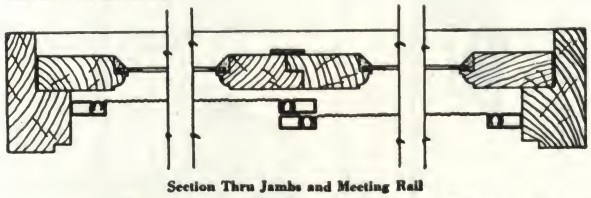


Section Through Jambs

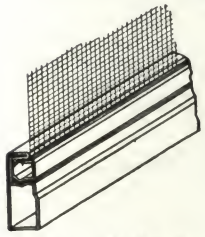


Twin Horizontal Sliding Screens for Casement Windows

Easily Rewired — Ceco metal window screens can be easily rewired merely by removing the inner member or spline from the corners inward. The wire is then stretched in the usual way and the spline tapped back into place.



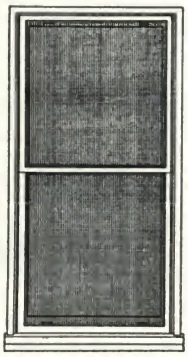
Section Thru Jambs and Meeting Rail



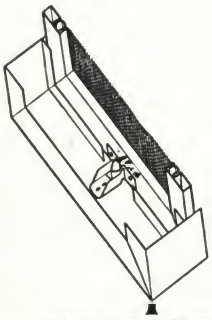
Section Detail of Ceco Frame Construction

Types of Ceco Metal Screens

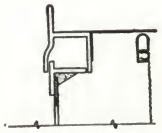
—For double hung windows, screens may be full height, hinged or half sliding. Half sliding screens are set in metal guides. These guides are fastened on outside stops and extend the full height of the window. For casement windows, screens may be full height, stationary, double horizontal sliding or hinged at the top or side.



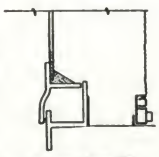
Twin Vertical Sliding Screens for Double Hung Windows



Details of Catch at Bottom

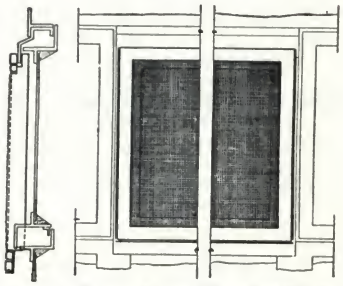


Section Thru Head



Section Thru Sill

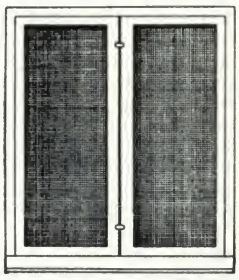
Commercial Projected-out Steel Sash



Commercial Projected-in Sash

Ceco Super Service

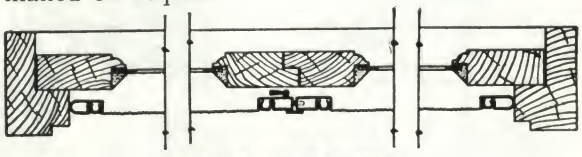
The central location and most modern manufacturing equipment of our Chicago plant assures prompt delivery and accurate, careful workmanship. Ceco Engineers are ready to give prompt, intelligent service on all matters pertaining to metal window screens and are anxious to render their service in assisting the architect in meeting his special problems in the screen line.



Pivoted Screens for Double Casements

Specification Manual

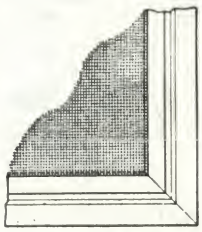
New loose-leaf, standard AIA size manual giving complete weatherstrip and calking specifications will be mailed on request.



Section Thru Jambs and Meeting Rail

Information and Samples for Drafting Room

For details and samples of any type of Ceco Metal Weatherstrips or Ceco Metal Frame Window Screen equipment, write manufacturer or telephone local dealers.



Detail of Screen Construction

CHAMBERLIN METAL WEATHER STRIP COMPANY, INC.

Manufacturers of Standard Chamberlin Bronze and Aluminum Rolling Screens and of the Fenestra-Chamberlin Rolling Screens

DETROIT, MICH.

FACTORIES: DETROIT, MICH. and PERU, ILL.

DISTRICT FACTORY BRANCHES

AKRON, OHIO	CINCINNATI, OHIO	FLINT, MICH.	MEMPHIS, TENN.	PORTLAND, ORE.
ATLANTA, GA.	CLEVELAND, OHIO	HARRISBURG, PA.	MILWAUKEE, WIS.	PROVIDENCE, R. I.
BALTIMORE, MD.	COLUMBUS, OHIO	INDIANAPOLIS, IND.	MINNEAPOLIS, MINN.	RICHMOND, VA.
BOSTON, MASS.	DALLAS, TEX.	JACKSONVILLE, FLA.	NASHVILLE, TENN.	ST. LOUIS, MO.
BUFFALO, N. Y.	DAVENPORT, IOWA	KANSAS CITY, MO.	NEWARK, N. J.	SAN FRANCISCO, CAL.
CHAMPAIGN, ILL.	DAYTON, OHIO	LONG ISLAND CITY, N. Y.	NEW HAVEN, CONN.	SCHENECTADY, N. Y.
CHARLESTON, W. VA.	DENVER, COLO.		OMAHA, NEB.	SOUTH BEND, IND.
CHARLOTTE, N. C.	DES MOINES, IOWA	LOS ANGELES, CAL.	PHILADELPHIA, PA.	TERRE HAUTE, IND.
CHICAGO, ILL.	DETROIT, MICH.	LOUISVILLE, KY.	PITTSBURGH, PA.	TOLEDO, OHIO
		WASHINGTON, D. C.	WILKES-BARRE, PA.	

SALES OFFICES IN 60 OTHER CITIES OF THE UNITED STATES

Also Local Representatives and Installers for Flat Screens Manufactured by

ROBBINS MANUFACTURING COMPANY, CHICAGO, ILL.

Products and Services

Standard types of CHAMBERLIN BRONZE and CHAMBERLIN ALUMINUM ROLLING SCREENS including their installation by Chamberlin branch mechanics; FENESTRA - CHAMBERLIN ROLLING SCREENS including their installation on Fenestra sash by Chamberlin branch mechanics.

ROBBINS WOOD and METAL SCREENS (pages 5-8).

For Chamberlin Weather Strips, see Manufacturers' Index.

Practical Advantages of Rolling Screens

Chamberlin Rolling Screens are practical and efficient. This type of screen is particularly adaptable to the proper screening of out-opening casements; in many cases it is also practical for double-hung windows of wood or steel.

In actual use the advantages of rolling screens consist of the following features: (1) They are a permanent convenience because they eliminate the annual trouble and expense of installation, storage and repair. (2) They furnish maximum screening service by being available and out of sight at a moment's notice. (3) They operate like a window shade. (4) They store themselves in a clean, dry and weatherproof housing. (5) They simplify the hanging of draperies and curtains. (6) They eliminate the considerable wear and tear on drapes that is usually the problem with inside screens that are pivoted or hinged. (7) During a rain windows are closed and rolling screens are therefore raised, which eliminates the spattering of rain through dusty screen wire. (8) When windows are closed, rolling screens are raised, admitting a maximum amount of daylight. (9) No under-sill sash operators are necessary. (10) Windows are easily accessible for cleaning purposes. (11) Awnings can be operated from the inside. (12) When windows are equipped with "health" glass, rolling screens are rolled up out of the way to insure the maximum benefit of the sun's rays.

Construction and Installation

Chamberlin Bronze and Chamberlin Aluminum Rolling Screens are specifically designed and manufactured to bring to the building industry rolling screens that will insure maximum durability and efficiency by virtue of the non-corrosive and highest grade metals that are used in their manufacture and also by virtue of the mechanical accuracy employed in the assembly and the final installation by Chamberlin factory trained mechanics.

Metal—The metal of the housing and guides is furnished in solid (not plated) cold-rolled, antique finished bronze, or in a cold-rolled aluminum alloy in a natural finish.

Painting—This is unnecessary, particularly in the case of the dark, antique finished bronze rolling screen. However, if painting is done by a painting contractor, care must be exercised to prevent clogging of channels.

Housing—Exceptionally compact; 2 in. in diameter for most screen sizes—maximum 2¼ in. for screens over 70 in. in height; wire cloth opening to have hemmed edges and a heavy weatherproof felt baffle to clean wire during operation and to keep insects out of housing.

Roller—21 gauge, solid brass tubing, perfectly aligned and revolving on ¼-in. rolled steel shaft; roller is packed with a special protective lubricant having a 300 degree melting point.

Bearings—Special Doehler die-cast, rustproof bearings at each end of roller to insure smooth rolling.

Spring—Runs entire length of roller; adjustable for tension and is made of specially drawn, oil-tempered, heavily tinned piano wire, inclosing an auxiliary spring tube to prevent binding of the main spring on shaft.

Guides—Have channels $\frac{15}{16}$ in. deep in most cases and can be concealed between ¾-in. divided wood stops. Guides are made of two members—one member to be of solid spring bronze to hug the netting to not only insure insect-tightness, but smooth and uniform operation, and to prevent the screen from slamming

Awnings Are Easily Accessible

It is easy to get at awnings from the inside when windows are equipped with Chamberlin Rolling Screens

Windows Are Easily Cleaned

With Chamberlin Rolling Screens all the extra work of fumbling with the screens is eliminated

Hanging of Drapes a Simplified Problem

In the operation of Chamberlin Rolling Screens curtains and drapes are never disturbed

Daylight Windows

A 16-mesh screen wire will keep out nearly a third of the daylight. Therefore, on dark, rainy days when windows are closed Chamberlin Rolling Screens can be raised to admit a maximum amount of light

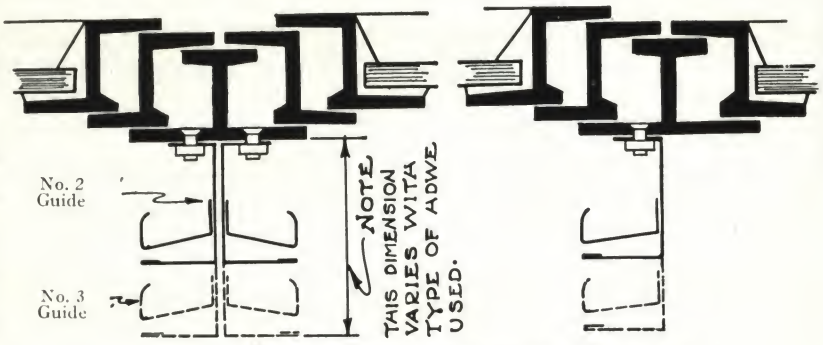
Continued on next page

up against the housing. This spring bronze member is also adjustable in tension so as to hold the drawbar at any desired point. The rigid guide member automatically interlocks with the drawbar at all times.

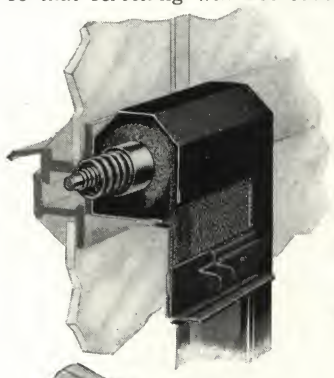
Wire Cloth—Made of specially annealed, non-crystallizing, 16-mesh, solid bronze anaconda wire with *five* extra strands for selvage reinforcement. The full width of the upper edge of the cloth is soldered to the roller.

Operating Bar and Catch—A rigid, two-piece, flanged, adjustable type and is provided with automatic or spring bolt side catches. A weatherproof felt insert between the operating bar and window stool avoids damage to the stool and keeps out all insects.

Installation of Housing and Guides—Generally speaking, Chamberlin recommends screening ventilating sash only, by placing the housing so that screening will not cover stationary lights or transoms. Toward this end the Chamberlin Rolling Screen housing and guides are designed to permit unobtrusive installations.

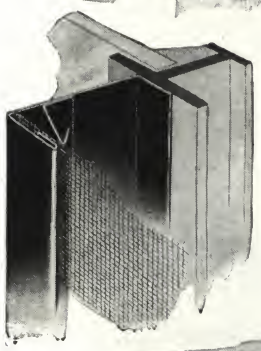


Detail Illustrating an Application of Guides
(Half size)
All jambs must be parallel



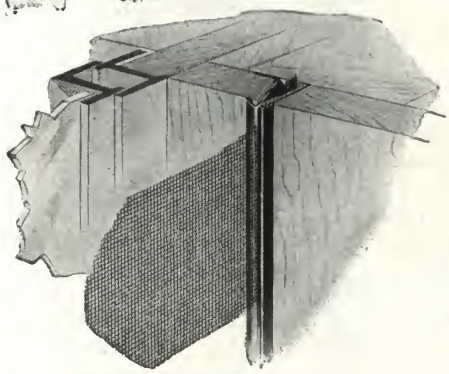
Housing Mounted on Transom Bar

The design and compactness of the Chamberlin Rolling Screen housing permits a neat and unobtrusive installation at the transom bars of steel casements. This means screening ventilating sash only, eliminating the handling of an unnecessarily large screen, avoiding fly pockets and saving money



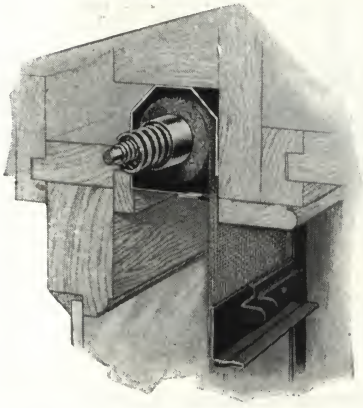
Visible Installation of Guides

The two-angle member of the Chamberlin Rolling Screen guide is made of spring bronze. This member prevents the operating bar of the screen from slamming up against the housing when the screen catch is released. With an up and down motion of the screen it also deflects the selvage edge of the screening back into the guide whenever the netting is accidentally pushed out



Concealed Installation of Guides

By installing the guide, which is $\frac{15}{16}$ in. deep, between $\frac{3}{4}$-in. divided wood stops the guide is practically concealed



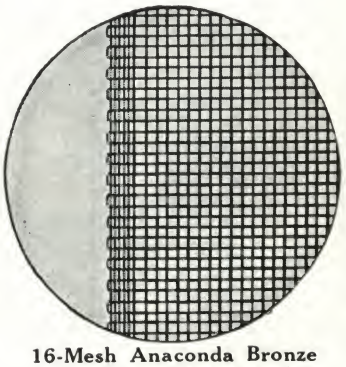
Concealed Housing

This drawing illustrates the simple manner in which the frame head can be detailed to permit a concealed installation of the housing in the case of either casement or sliding windows

Dimension Notation

The dimension notation above simply means that if a two-sash bay is to be screened with a single screen, the deeper guide is necessary to permit the screen to clear the hardware if one sash is to be closed when one is open. A $\frac{5}{8}$-in. clearance must be allowed on steel jamb for bolting screen guide to frame.

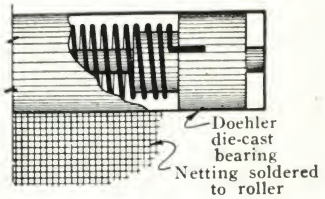
Special Note: A single screen can be used on a two-sash bay, but a separate screen for each sash eliminates the formation of a fly pocket and is, therefore, a more satisfactory arrangement.



16-Mesh Anaconda Bronze Wire with Five-strand, Reinforced Selvage Edge
(Full size illustration)

End Section of Roller in Chamberlin Bronze, Aluminum and Fenestra-Chamberlin Rolling Screens

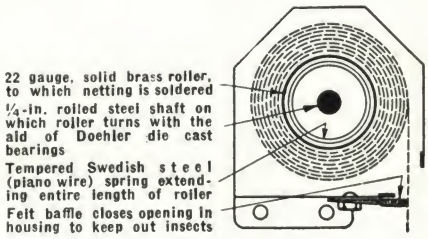
A special rustproof Doehler die-cast bearing is used (instead of the customary wood or steel bearing) to overcome all wearing at this point and any binding that would interfere with a satisfactory operation of the screen



Housing Mechanism of Chamberlin Bronze, Aluminum and Fenestra-Chamberlin Rolling Screens

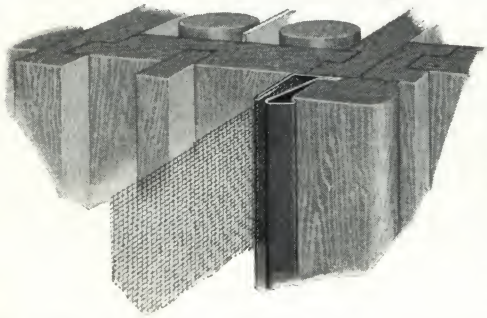
(Half size)

The Chamberlin Rolling Screen housing is 2 in. wide or 2¼ in. wide if screen exceeds 70 in. in height



Complete Details

More complete details may be obtained by consulting your local Chamberlin branch or the Architectural Relations Department at our General Offices in Detroit, Mich.



Channel Acts as Inside Stop

A No. 1 channel is used for double hung roll screen installations. This channel is mounted on the frame, as shown, acting as the inside stop for the lower sash. The regular wood stop is trimmed down or moved away to make room for the channel

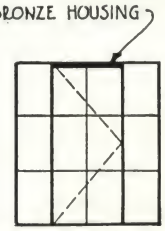
Continued on next page

TYPICAL OUT-OPENING STEEL CASEMENTS WITH RECOMMENDED EQUIPMENTS AND MOUNTINGS FOR CHAMBERLIN ROLL SCREENS

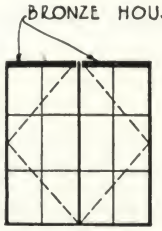
Single Casement Fully Ventilated
Use single roll screen at head

Single Casement with Fixed Transom
Use single roll screen mounted at transom bar

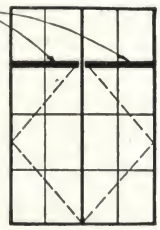
Single Casement with Hinged Transom
Use single roll screen mounted at head



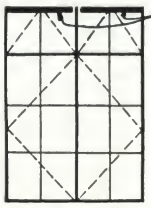
Single Casement with Fixed Side Lights
Use single roll screen over casement only



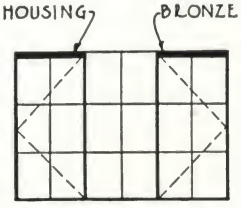
Two Single Casements or One Double Casement Fully Ventilated
Recommended use of two single roll screens, optional one double roll screen



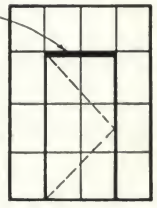
Two Single Casements with Fixed Transoms
Use two single roll screens mounted at transom bar



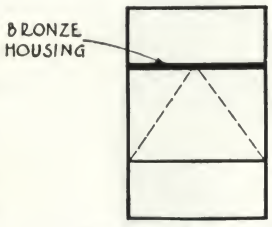
Two Single Casements with Hinged Transoms
Use two single roll screens mounted at head



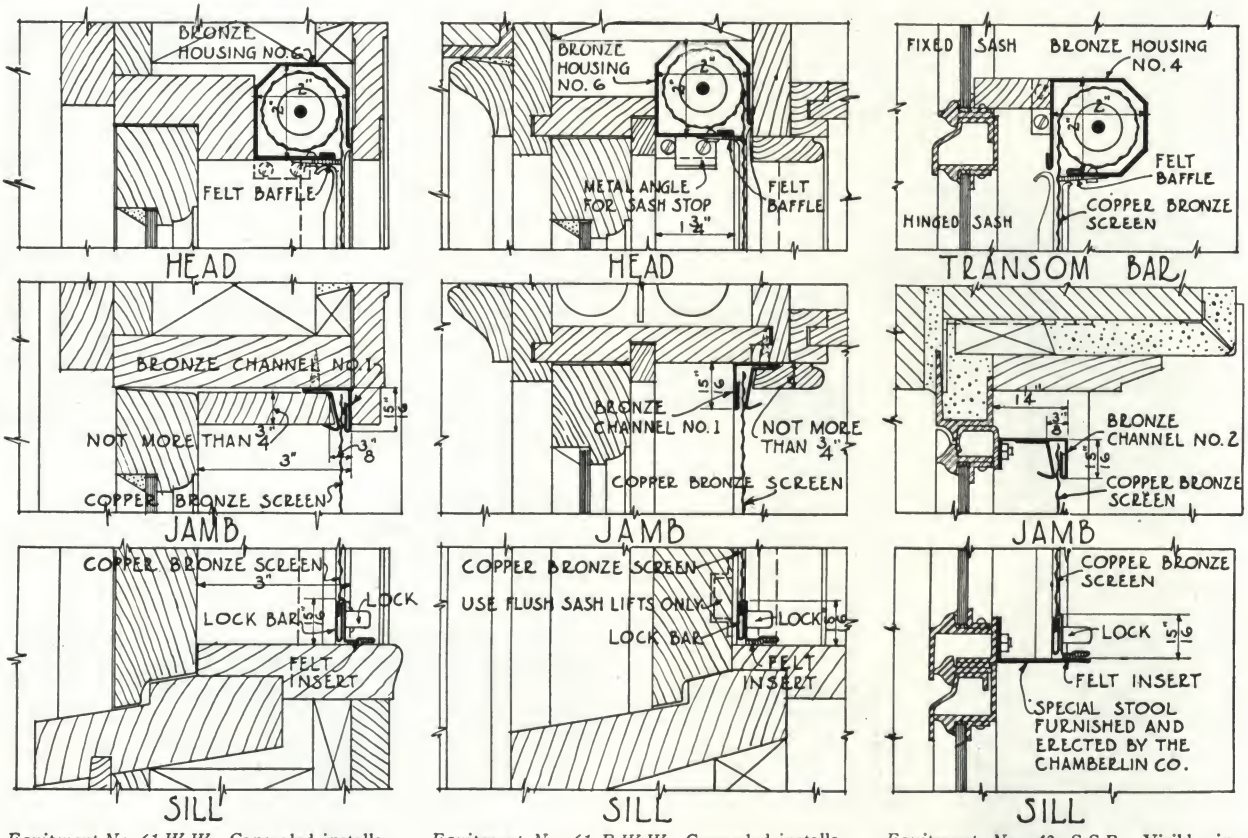
Two Ventilated Casements with Fixed Sash Between
Use two single roll screens over casements only



Single Casement with Fixed Side Lights and Transoms
Use one single roll screen mounted at transom bar screening ventilator only



Projected Steel Window
Use one single roll screen mounted on guides at transom bar



Equipment No. 61 W-W. Concealed installation on out-opening wood casement

Equipment No. 61 R-W-W. Concealed installation on a wood double hung window

Equipment No. 42 S-S-P. Visible installation on steel projected window

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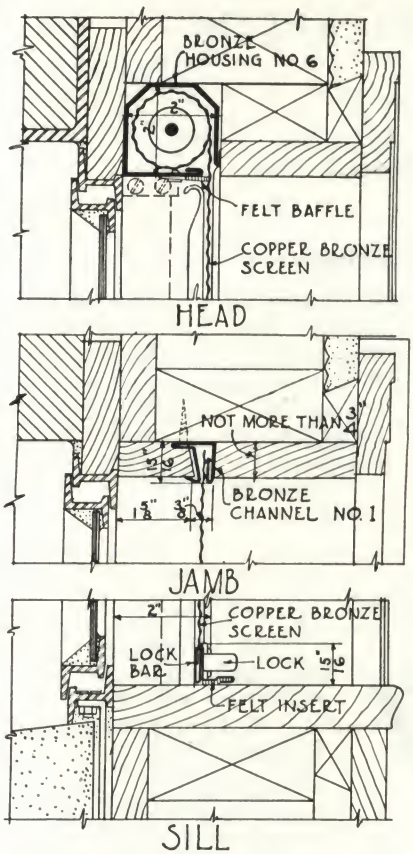
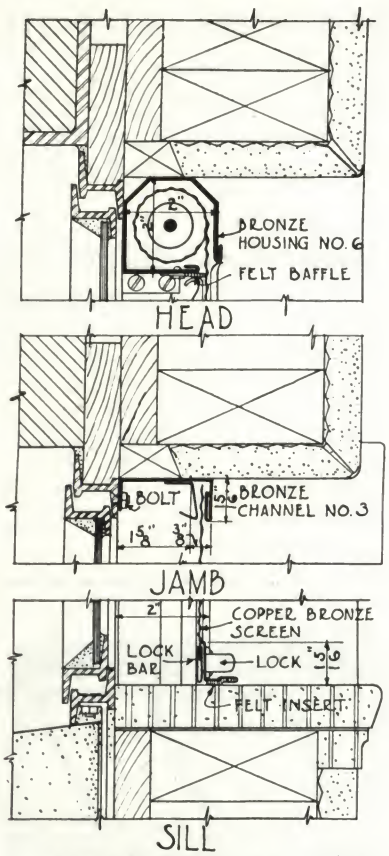
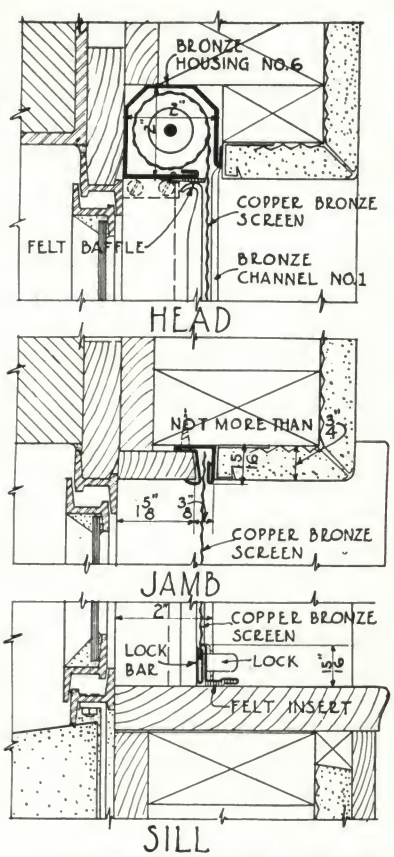


Equipment No. 61 S-W. Concealed installation on out-opening steel casement



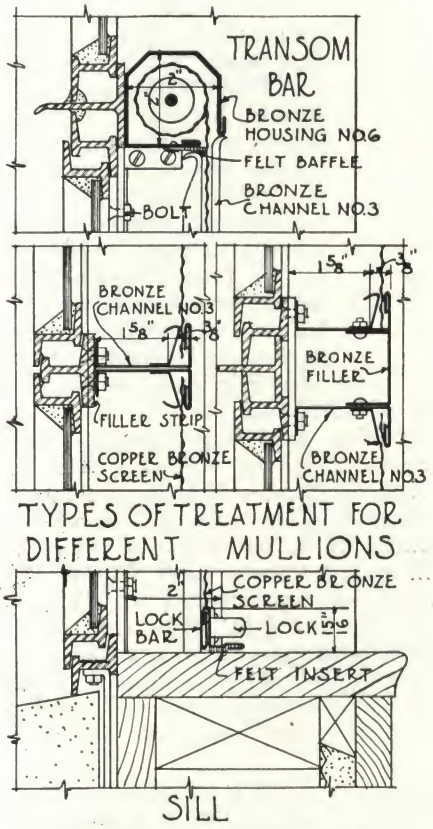
Equipment No. 63 S-S. Visible installation on out-opening steel casement.

Note: Mounting independent of plaster reveals

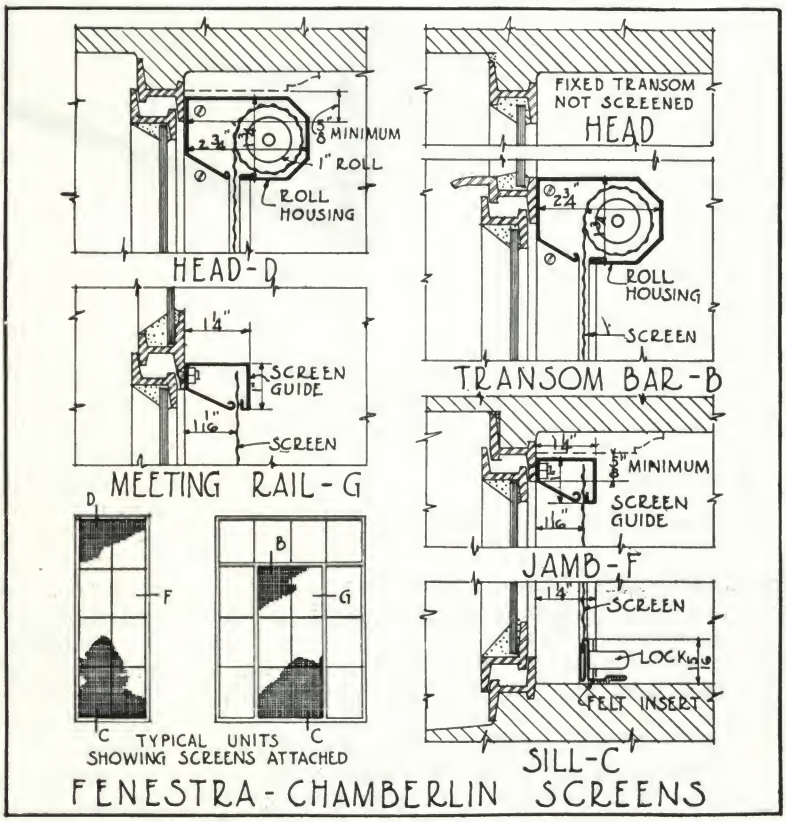


Equipment No. 61 S-W: Concealed installation on out-opening steel casement.

Note: Mounting independent of but concealed by plaster reveals



Equipment No. 63 S-S-T. Visible installation on steel frames with multiple sash and fixed transom in out-opening steel casement



Fenestra-Chamberlin Rolling Screen Equipment

Continued on next page

ROBBINS WOOD AND HOLLOW METAL SCREENS

Manufactured by
THE ROBBINS MANUFACTURING CO., CHICAGO, ILL.

Sold and Installed by
CHAMBERLIN METAL WEATHER STRIP CO., INC., DETROIT, MICH.

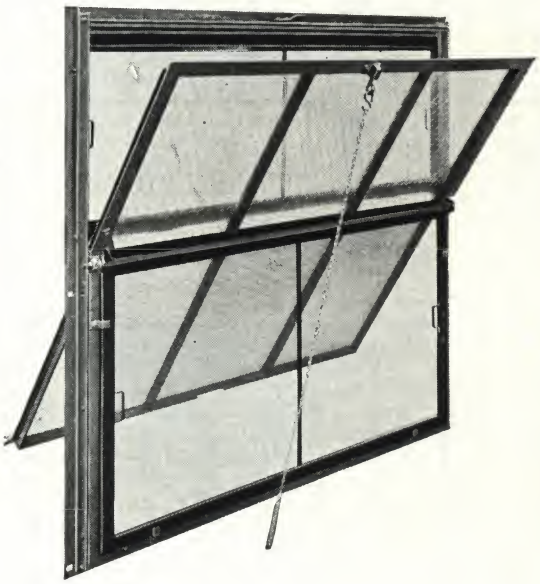
Chamberlin District Factory Branches Are as Follows

Akron, Ohio	Charlotte, N. C.	Dayton, Ohio	Jacksonville, Fla.	Minneapolis, Minn.	Portland, Ore.
Atlanta, Ga.	Chicago, Ill.	Denver, Colo.	Kansas City, Mo.	Nashville, Tenn.	Providence, R. I.
Baltimore, Md.	Cincinnati, Ohio	Des Moines, Iowa	Long Island City, N. Y.	Newark, N. J.	Richmond, Va.
Boston, Mass.	Cleveland, Ohio	Detroit, Mich.	Los Angeles, Cal.	New Haven, Conn.	St. Louis, Mo.
Buffalo, N. Y.	Columbus, Ohio	Flint, Mich.	Louisville, Ky.	Omaha, Neb.	San Francisco, Cal.
Champaign, Ill.	Dallas, Tex.	Harrisburg, Pa.	Memphis, Tenn.	Philadelphia, Pa.	Schenectady, N. Y.
Charleston, W. Va.	Davenport, Iowa	Indianapolis, Ind.	Milwaukee, Wis.	Pittsburgh, Pa.	South Bend, Ind.
	Terre Haute, Ind.	Toledo, Ohio	Washington, D. C.	Wilkes-Barre, Pa.	

Sales Offices in 60 Other Cities of the United States

Robbins Screens

Robbins All-metal Screens with frames of bronze or galvanized steel; Robbins Wood Frame Screens for windows and doors; Robbins Wood and Metal Porch Screens.



Services and Installation

Since its establishment over 50 years ago the Robbins Manufacturing Company has specialized in the exclusive manufacture of high quality, expertly finished, made-to-order screens. Ample manufacturing facilities insure prompt delivery. Distributing and installation facilities are furnished by the Screen Division of one of the best organized factory branch organizations in the country—the CHAMBERLIN METAL WEATHER STRIP COMPANY. The combined screen experience of nearly a century of Robbins and Chamberlin is available to discriminating architects and builders seeking expert co-operation in the solution of their screening problems.

Types of Screens

Robbins screens are furnished in every known type for every kind of window and door.

General Specification Data

Robbins Wood Screens—Frames made of white pine, unless otherwise specified.

Frames $\frac{13}{16}$ in. thick have stiles from $1\frac{5}{8}$ to $2\frac{1}{4}$ in. wide and base rails from $2\frac{1}{4}$ to $3\frac{1}{2}$ in. wide. When frames are $1\frac{1}{8}$ in. thick stiles are $2\frac{1}{4}$ in. wide and base rails from $2\frac{3}{4}$ to 4 in. in width. Robbins screen frames are thoroughly sandpapered and are then finished in specified colors with three coats of pure lead and oil. Corners are joined with a double mortise joint and the copper bronze wire is secured in place with the improved Robbins lock strip method of fastening each strand without the use of tacks.

All screens are numbered and duplicate numbers are furnished for each opening.

Robbins Metal Frame Screens—Made of bronze or electro galvanized steel.

The Robbins Hollow Steel Screen is a one-piece tubular section made from cold rolled copper, intent, electro galvanized steel .031 in. thick. Stiles and rails are 1 in. wide by $\frac{7}{16}$ in. thick. Finish two coats of enamel, baked on.

The Robbins Hollow Bronze Screen is a one-piece tubular section made from commercial bronze .031 in. thick.

Robbins metal frame screen corners are reinforced with a corrugated metal corner $2x2\frac{3}{16}$ in. to insure rigidness. The copper bronze screening is secured with a spline that rests flush with the frame. The spline will not twist or curl up when removed. Robbins screen hardware is made of solid brass.

Special Note: For extra large openings Robbins metal screen frames are $1\frac{1}{2}$ in. wide and $\frac{7}{16}$ in. thick.

Robbins Porch Screens—Made of white pine unless otherwise specified. They are joined, wired and painted as specified above for Robbins wood frame screens. Robbins porch screens have frames $1\frac{1}{8}$ in. thick with the stiles and top rails $2\frac{1}{4}$ to $3\frac{1}{2}$ in. wide and with base rails $2\frac{3}{4}$ to $5\frac{1}{2}$ in. wide.

Robbins Door Screens—These are $1\frac{1}{8}$ in. thick and made of white pine unless otherwise specified. Unless otherwise specified stiles, top rails and cross rails are $2\frac{1}{4}$ to 4 in. wide; base rails $2\frac{1}{2}$ to 8 in. wide.

Robbins screen door frames are joined with a full mortise and tenon joint. The netting is secured in place as in the case of wood window screens. Robbins screen doors are equipped in the lower panels with the Robbins No. 1 Diamond guard wire, flat or twisted grilles.

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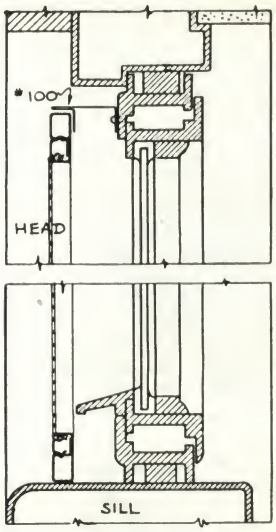
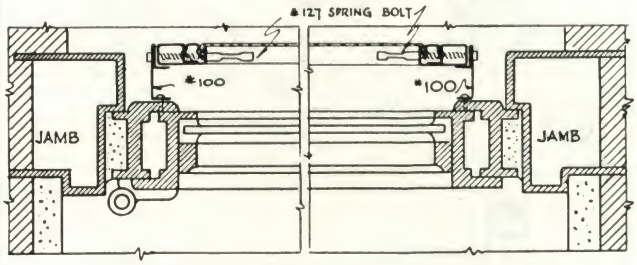
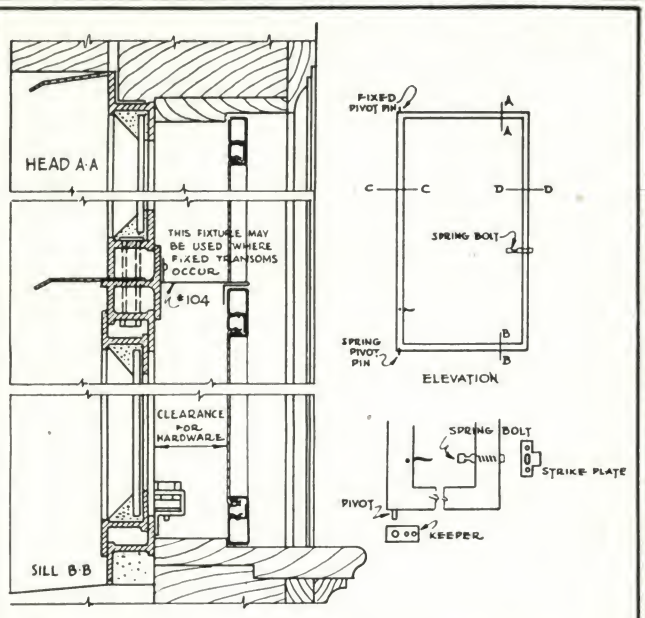


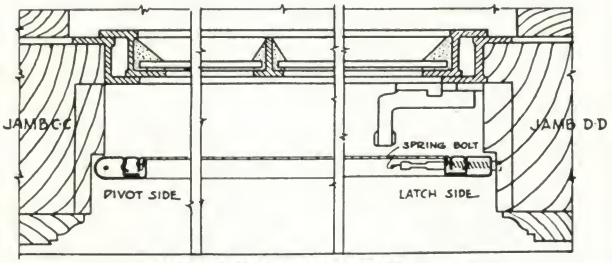
THE ROBBINS METAL FRAME SCREEN BEFORE WELDING. NOTICE THE UNJOINED DOUBLE THICKNESS AT "A" AFTER WELDING THERE IS A PERFECT, SOLID SUBSTANTIAL, SWAYLESS UNION AT "B"

ROBBINS METAL SCREENS ARE A ONE PIECE TUBULAR SECTION .031 THICK.
STILES & RAILS 1" x 7/16"
OR
STILES & RAILS 1½" x 7/16"

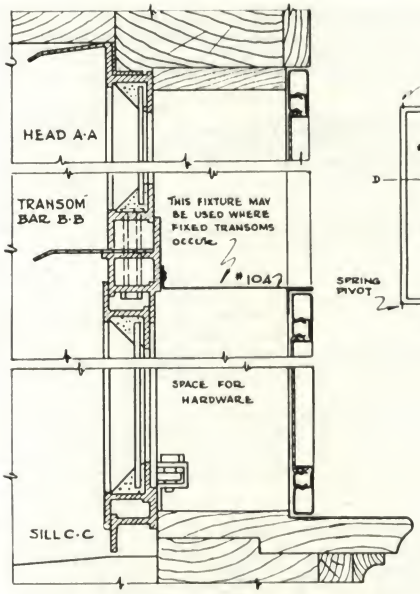


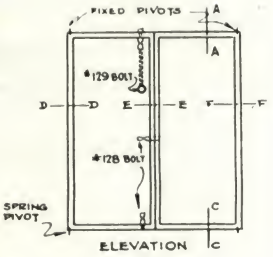
STATIONARY SCREEN FOR CASEMENTS WITH PROJECTED WATER LIP

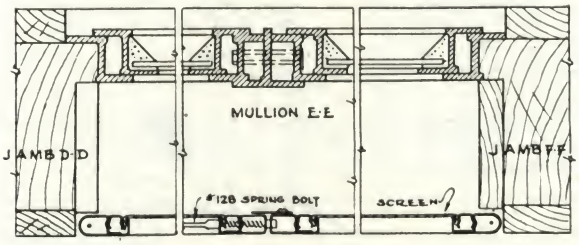




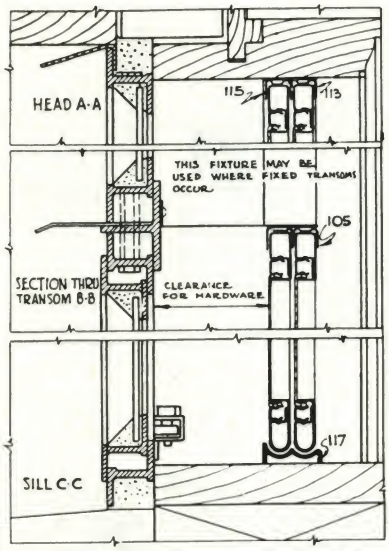
METAL SINGLE HINGED SCREEN FOR SINGLE OUTOPENING CASEMENT

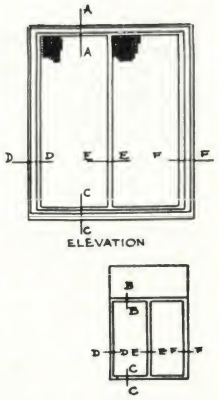


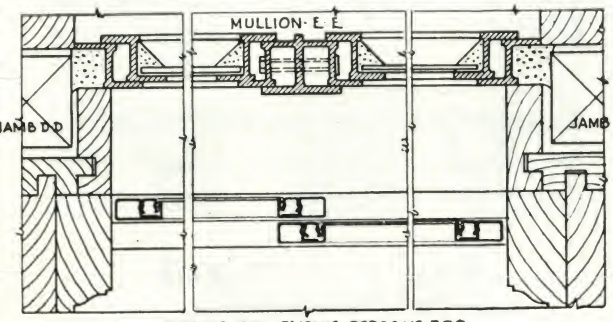




PAIR OF METAL SCREENS FOR OUTOPENING CASEMENTS







HORIZONTAL SLIDING SCREENS FOR OUTSWINGING CASEMENTS

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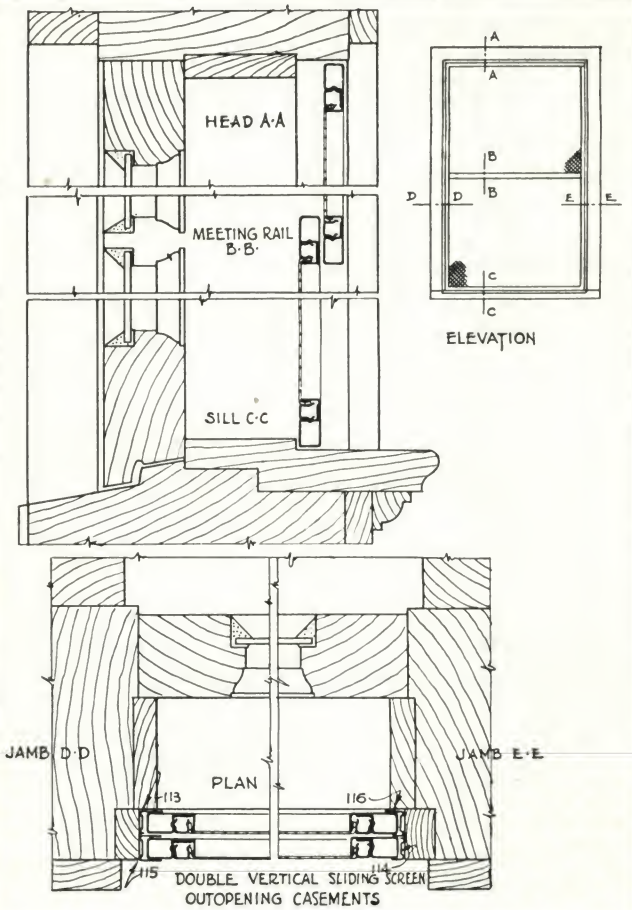
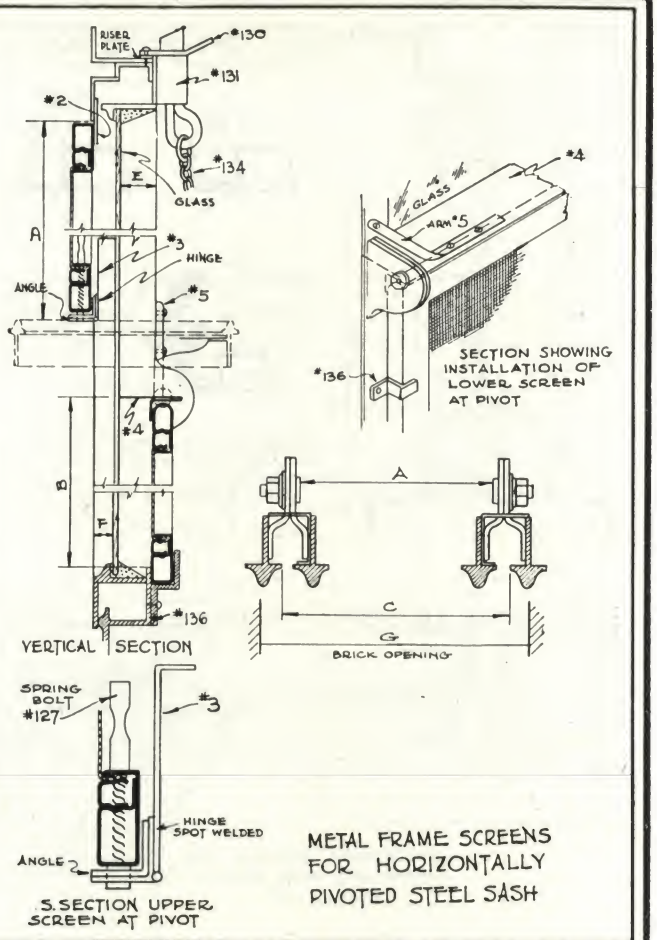
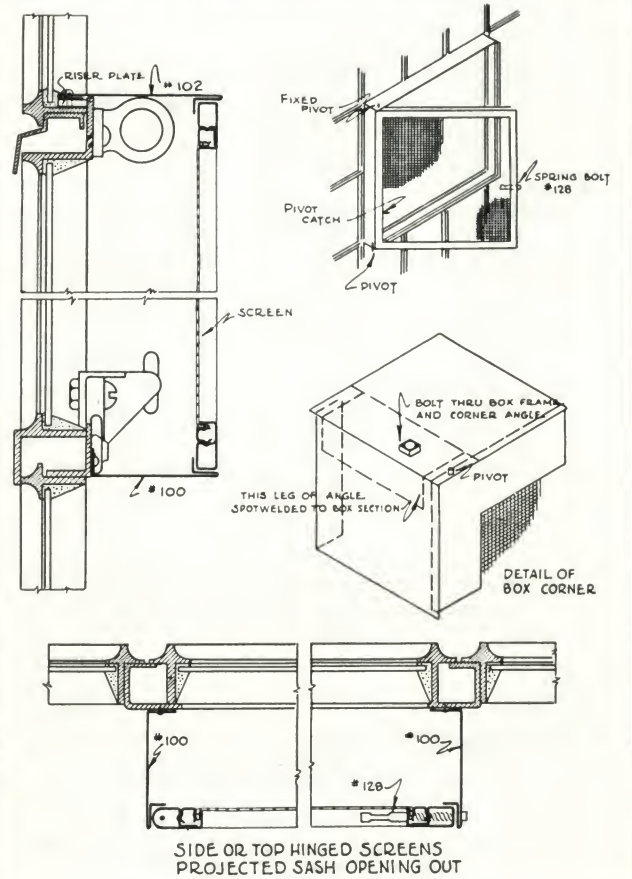
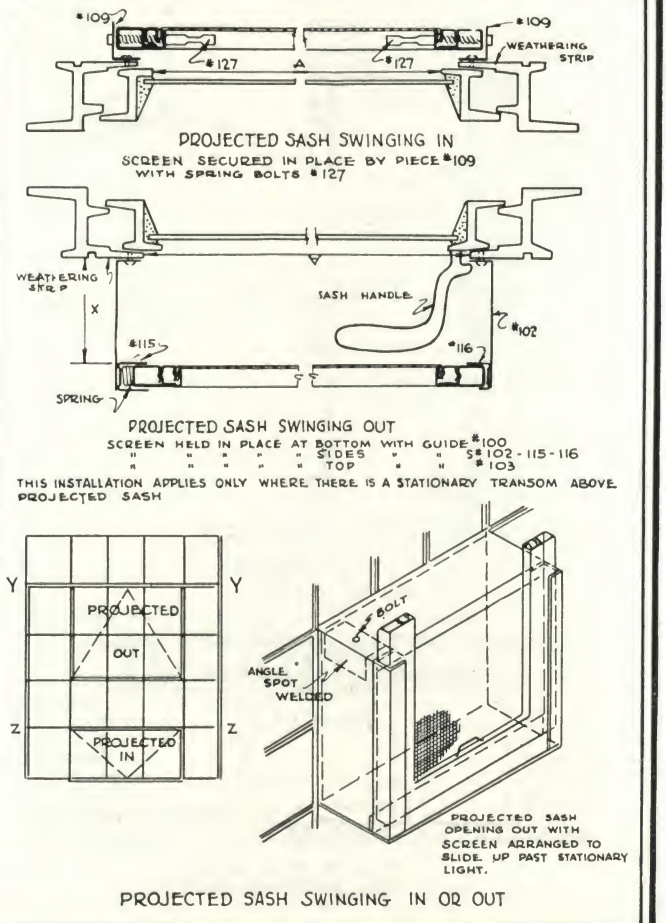




METAL FRAME SCREENS FOR HORIZONTALLY PIVOTED STEEL SASH





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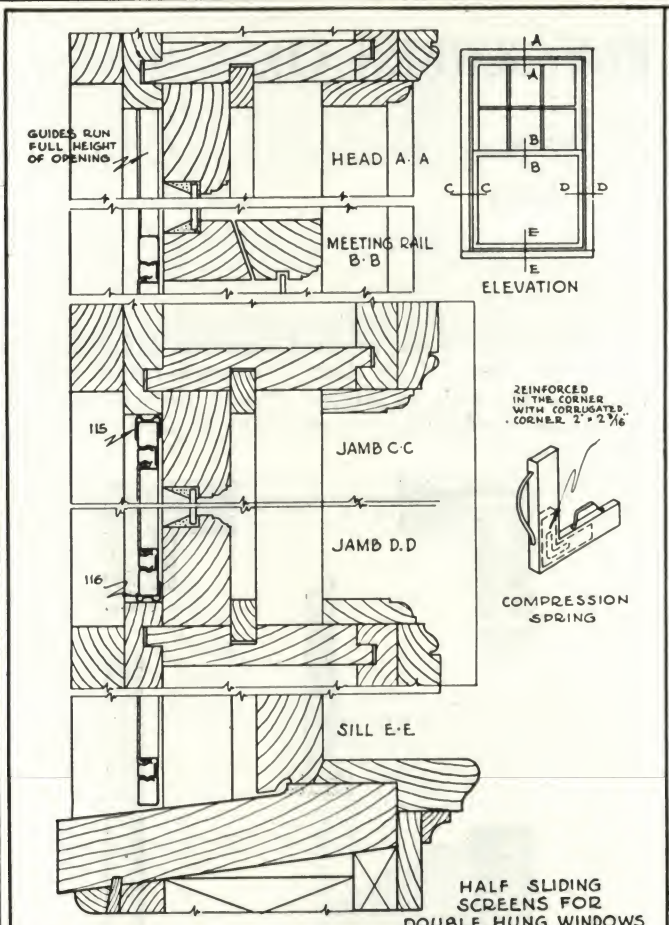
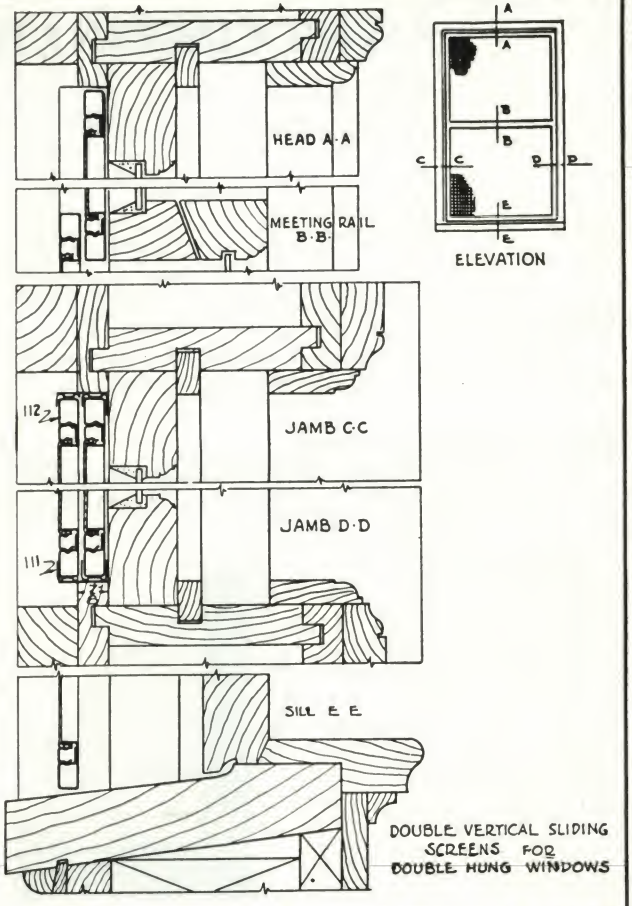
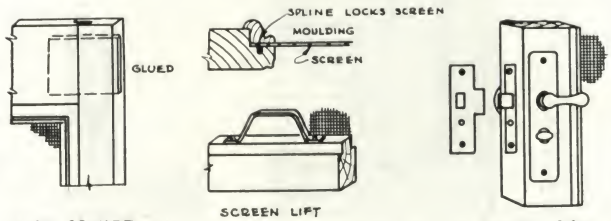
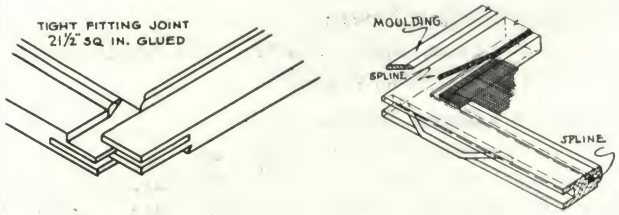


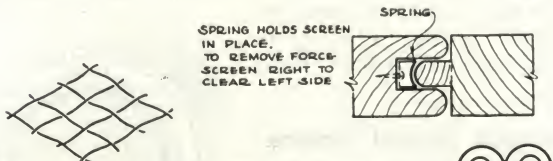
HALF SLIDING SCREENS FOR DOUBLE HUNG WINDOWS



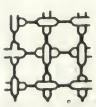
DOUBLE VERTICAL SLIDING SCREENS FOR DOUBLE HUNG WINDOWS





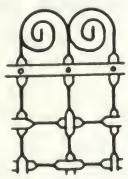


#1 DIAMOND GUARD WIRE



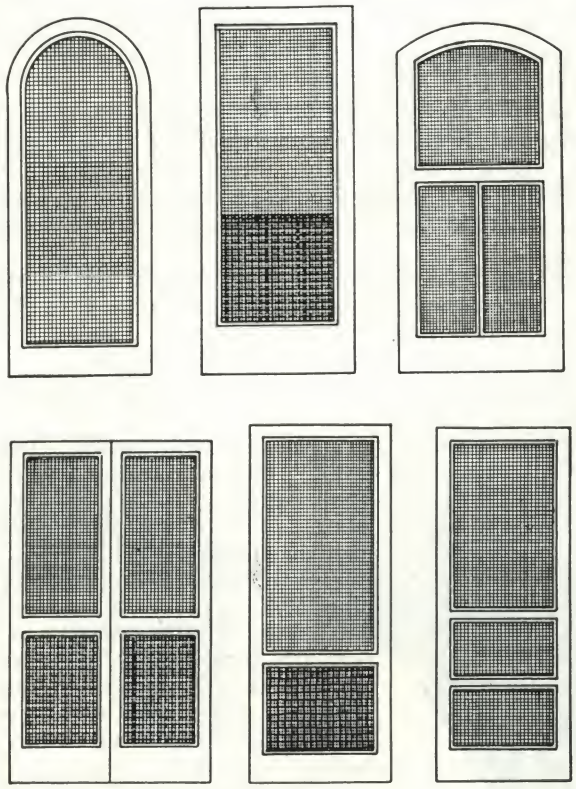
#2 QUARTER TWIST RIBBON GRILLE

#3 1 INCH MESH RIBBON NOT TWISTED



#1 SCROLL TOP GRILLE

WOOD DOOR & SCREEN DETAILS



A FEW TYPICAL DESIGNS OF ROBBINS WOOD SCREEN DOORS

THE CINCINNATI FLY SCREEN CO.

Gest and Evans Streets

CINCINNATI, OHIO

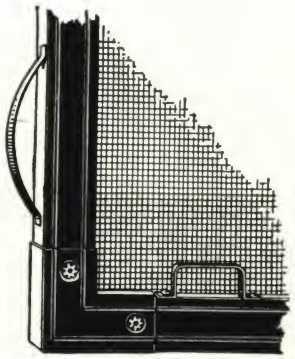
Products

CINMANCO ALL-METAL RE-WIREABLE FLY SCREENS; SCREEN DOORS and "EZ" WOOD FRAME SCREENS.

Cinmanco All-metal Screens

Manufactured of best materials obtainable; assembled on correct mechanical principle, in a variety of types and finishes for required conditions.

Features—Rewirable. Bronze wire cloth held by rounded corners. Detachable springs, easily removed and renewed. Solid copper bearings, smooth operation. Free ventilation, unpainted cloth, and small frame. Reinforced by metal angles. Turned edges on guide.



CORNER SECTION CINMANCO ALL-METAL REWIREABLE FLY SCREEN

Note detachable spring, open rivets, and location of stationary bronze direct lift

Furnished hinged, twin sliding, basket, circle, segment top, bow, bullseye, or any shape desired, of any mesh from 14 to 60, to fit all or part space. Made and stay true. Easily raised by bronze direct lifts. Steel frames specially galvanized, not sherardized.

Types—*Window Screens*—Finish A: Solid copper frame, statuary bronze finish, bronze wire cloth.

Finish B G: Galvanized black enameled steel frame, with galvanized corners and galvanized guides, bronze wire cloth.

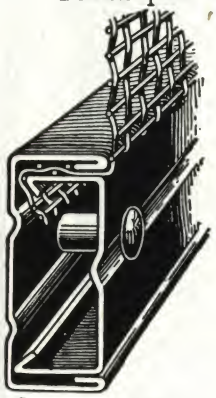
Finish B C: Galvanized black enamel steel frame, with copper corners and copper guides, bronze wire cloth.

Steel frames have copper content.

Frames can be made in any finish desired.

Screen Doors—Finish quartered oak in golden, natural, antique, or English.

Finish pine in light slate, Colonial white, cherry stain, Tuscan brown, natural bronze green, oak grained, ivory white, pure white, dead black, mahogany stain.

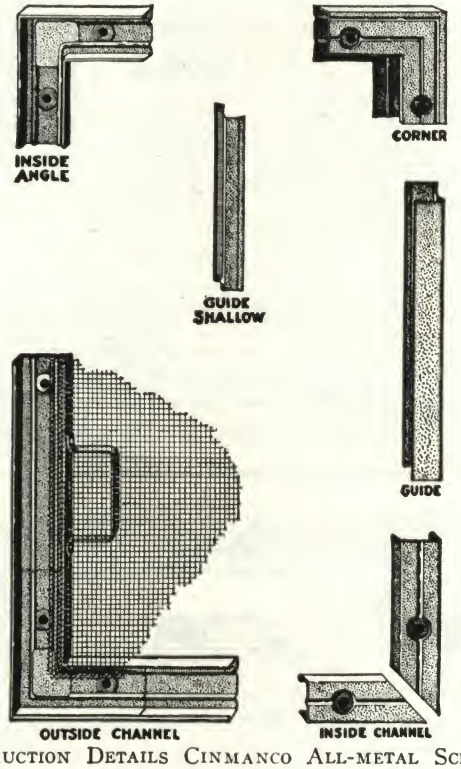


SECTIONAL DETAIL SHOWING ASSEMBLY ALL-METAL SCREEN

Wire Cloth—Cinmanco genuine 90% copper, rustless, bronze wire cloth. Meshes true; 16-mesh regularly furnished. Meshes from 16 to 60 or galvanized black enameled wire cloth, when specified. Also Monel metal cloth can be had, if desired.

Construction—The accompanying illustrations show construction details, method of securing wire cloth and the absence of cutting edges.

Two rectangular grooved channels are fitted one inside the other. The cloth is secured firmly without use of solder, rods or splines. Heavy pressed metal inside angle swedged and countersunk in addition to outside corner.



CONSTRUCTION DETAILS CINMANCO ALL-METAL SCREENS

Cinmanco Sliding Screen

Covers lower sash. Operates full height of frame on copper or galvanized guides.

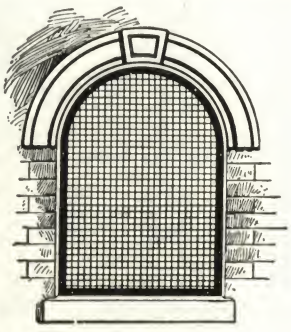
Cinmanco Hinged Screen

For casement or pocket windows.

Hung from either side, or top, by stationary rod and an inside operating sliding rod from frame. Rods rest in bronze sockets secured to window frame. On ½-in. rabbet use Cinmanco flush latch.

Cinmanco Special Screens

The construction of the frame of the Cinmanco Screen is such that we are able to make a perfect screen without marring the frame in either basket, circle or segment top, bow, bullseye, or any shape which may be necessary to thoroughly screen a building with all-metal screens.



CINMANCO SCREEN ADAPTED TO SPECIAL WINDOW

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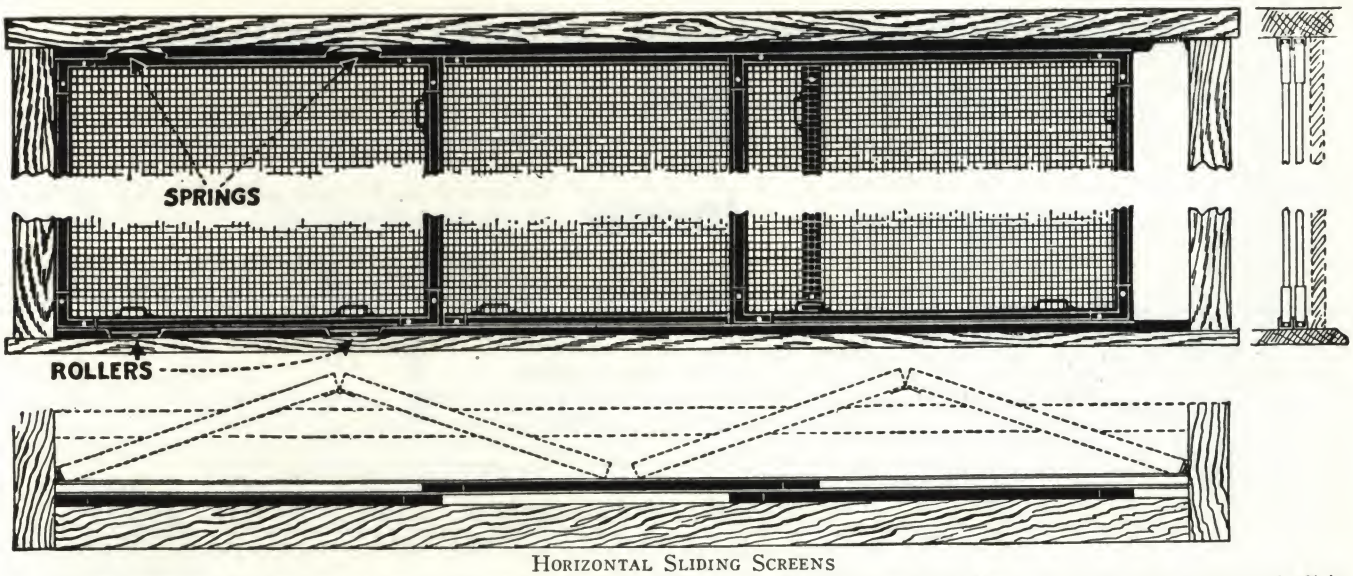


HORIZONTAL SLIDING SCREENS

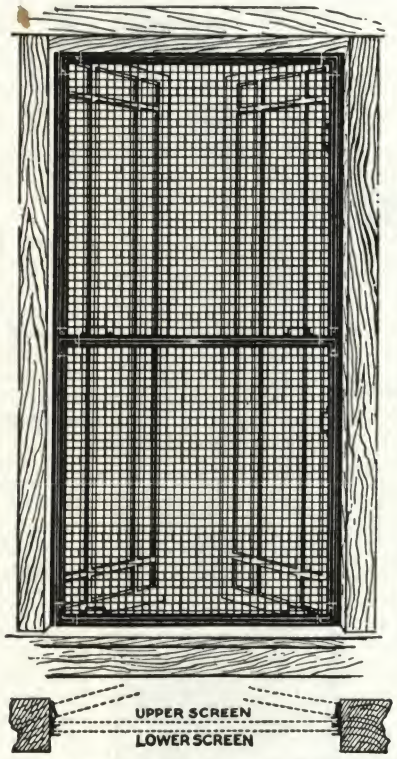
Cinmanco treatment for wide casement or porch openings, resting on sill or rail. Roller bearing allows 1¼-in. for metal frame screens and 1¾-in. for wood frame screens in total width on stool

Cinmanco Twin Sliding Screens for Casement Sash

We recommend twin sliding screens in preference to hinged screens, as they do not interfere with the curtains or draperies, and it is not necessary to open the whole screen to operate the sash or awnings.

The lower screen can be raised part way and the sash hardware adjusted easily, giving less opportunity for insects to enter.

These screens operate like a double hung window.



CINMANCO TWIN SLIDING SCREENS FOR CASEMENT SASH

Screen Doors

We make our doors from carefully selected well seasoned lumber, white pine, oak, cherry, mahogany, walnut and other woods that may be specified.

All doors are 1⅛-in. thick, unless otherwise ordered, mortised, glued and wedged. Special care is given to produce a superior door in every respect. The best paint, stains and varnishes are used, all carefully rubbed down.

Screen Door Grilles

Our catalogue shows for selection a large variety of screen door grilles.

Screen Door Hardware

The best hardware to be had has been selected carefully. Mortise door latch is all bronze and comes in various finishes. Five knuckle, steel bushed, loose pin bronze butts, or sherardized steel plated butts can be had.

"EZ" Slide Wood Frame Screens

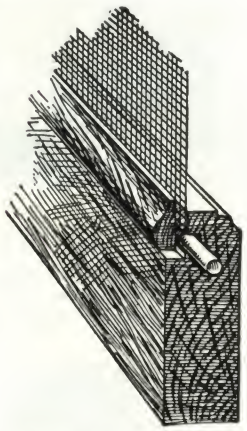
Construction—The corners of the "EZ" slide wood frame screens are securely framed together by interlocking concealed mortise and tenon joints, glued and securely wedged. This construction gives the greatest possible strength and makes the joints impervious to the weather.

The springs used in the wood frame screens are elliptic in shape; made of steel clock spring, they will last as long as the screen itself.

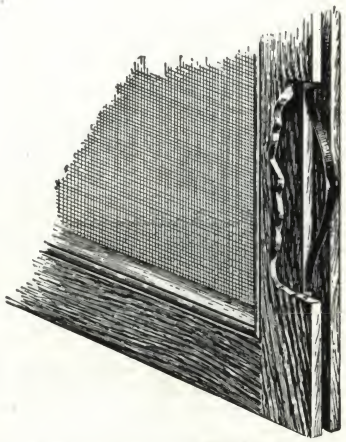
The wire cloth is attached to the screen frame by means of a groove and lock strip that keeps it perfectly tight and smooth. Its holding powers are equal to the strength of the wire itself. By this method the screens are easily rewired.

Duplicate numbers are furnished to be put on window sills, thus making it a simple matter to return the screens to their proper places.

Zinc metal or wooden guides are furnished with this equipment.



CROSS SECTION WOOD FRAME SCREEN, SHOWING GROOVE AND LOCK STRIP



CORNER SECTION "EZ" SLIDE WOOD FRAME SCREEN

Sleeping Porch or Solarium Screens

Made to harmonize with the surroundings.

ESTABLISHED 1909

DISAPPEARING ROLLER SCREEN COMPANY

1252-1260 West Temple Street, LOS ANGELES, CAL.

AGENTS IN ALL PRINCIPAL CITIES

Product

"In-Vis-O" Disappearing Roller Screens.

Inviso ROLLER-SCREEN

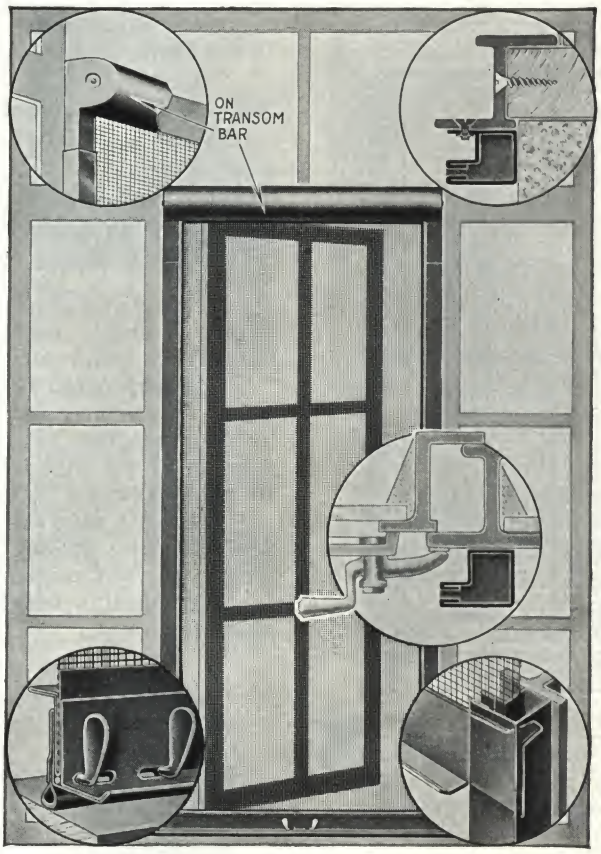
TRADE MARK
Registered in
U. S. Patent Office

Standard "In-Vis-O"

New and Improved Features—New type small housing with patented deflected lip eliminatnig friction; all metal roller with steel mandrel running full length, powered with a spring of exceptional durability and guaranteed for a lifetime; improved double ribbed slide (guide bar) with flexible cushioned closure, new automatic catch and central control, and the triple X (XXX) safety check; wire cloth reinforced with flat cable selvaged edges; new housing and metal grooves allowing vertical adjustment for screens whether in concealed or exposed position without cutting or fitting of grooves. This effects a quick and easy installation. The new and additional features with the well proven mechanical superiority make "In-Vis-O" the roller screen of outstanding merit.

Super "In-Vis-O"

Contains all of the best features of the Standard product in superrefined form and runs on fine ground and hardened ball bearings. The last word for smoothness and easy operation. This is not a stock product and additional time must be allowed for special manufacture.

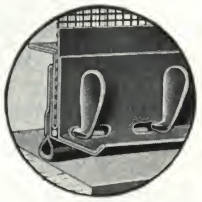


Advantages of "In-Vis-O"

The Deflected Frictionless Lip—A patented and exclusive feature of the "In-Vis-O" housing and is of the utmost importance for the successful operation of a good roller screen. Architects and engineers appreciate the value of holding down friction in mechanical devices to a minimum. The deflected lip, through the elimination of friction, prolongs the life of the wire cloth considerably and brings about a silent and easy performance of rolling, an advantage found only in the "In-Vis-O" Roller Screen.

The "In-Vis-O" Roller (All-metal)—The solid one-piece mandrel running the full length of the roller strengthens and supports its bearings. The bearings have permanent grease pockets. The unusual strength and quality of the "In-Vis-O" roller permits an unqualified guarantee for a lifetime.

New Flexible Cushioned Slide with Automatic Catch and Central Control—The automatic catch and central control will stop screen at different positions and serves as a friction shoe or brake on inside of grooves, prevents screen from rolling up too fast and aids in holding slide bar in a level position. A slight touch releases the friction and the screen travels to top of window. The flexible cushioned slide (guide bar) fits uneven window stools, closing any small crevice against intrusion of insects or casual moisture, and prevents marring of stool.

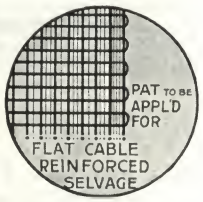


Triple X (XXX) Safety Check—Another improved feature of the "In-Vis-O." This equipment prevents the screen and slide bar from pulling out of guides.

Wire Cloth

Made to "In-Vis-O's" specifications, 16-mesh genuine monel, mono bronze, special bronze, and silver finish.

Selvaged Edges—Flat cable selvaged edges add great strength. Our many tests covering a period of over 20 years have perfected this better selvage which adds strength to the sides without stiffening or causing piling, binding, or stretching. Each turn lies flat on the roller.



The selvage is reinforced with many fine wires of great tensile strength distributed in between the larger vertical wires in triples, singles and pairs to equalize the strain and add strength where needed. The reinforcing covers a wider area and tapers off evenly. The extra reinforcing is done with strong metal strands, not with a cotton string found in inferior grades.

Other Features

"In-Vis-O" Roller Screens provide perfect screening when the screening of outswinging casements in steel or wood is required. "In-Vis-O" Roller Screens also offer an ideal way of screening double hung windows and inswinging casements.

"In-Vis-O" Roller Screens become a permanent part of the window frame in concealed or exposed position. They are self-cleaning through the action of rolling. They keep out insects but not the sunlight. They are out of sight, out of the weather, out of the way when not in use, and are stored away safely in their own housing at top of window simply with a touch of a finger releasing the automatic fastener. They do not obstruct your view of beautiful scenery and do not interfere with draperies. "In-Vis-O" Roller Screens require no fall storing or spring rehanging. They do not deteriorate in their housing at the top of the window.

Specifications

All windows to be equipped with Standard "In-Vis-O" or Super "In-Vis-O" Roller Screens as made by Disappearing Roller Screen Company of Los Angeles, California, and to have patented frictionless deflected lip housing, as per detail No. ...., using 16-mesh Genuine Monel wire cloth, [Mono Bronze], [Special Bronze], [Silver Finish] with flat cable reinforced edges.

General

Many well-known architects have specified "In-Vis-O" Roller Screens for more than 20 years. "In-Vis-O" Roller Screens have stood the test of time and have grown in demand consistently year after year as only a good product will. The new developments and improvements are the result of sustained successful experience and are free of experimental novelties.

Low Prices

The ever increasing volume in production and new automatic machinery recently installed have lowered the cost of manufacture time and again, and "In-Vis-O" Roller Screens are now being specified for the small homes.

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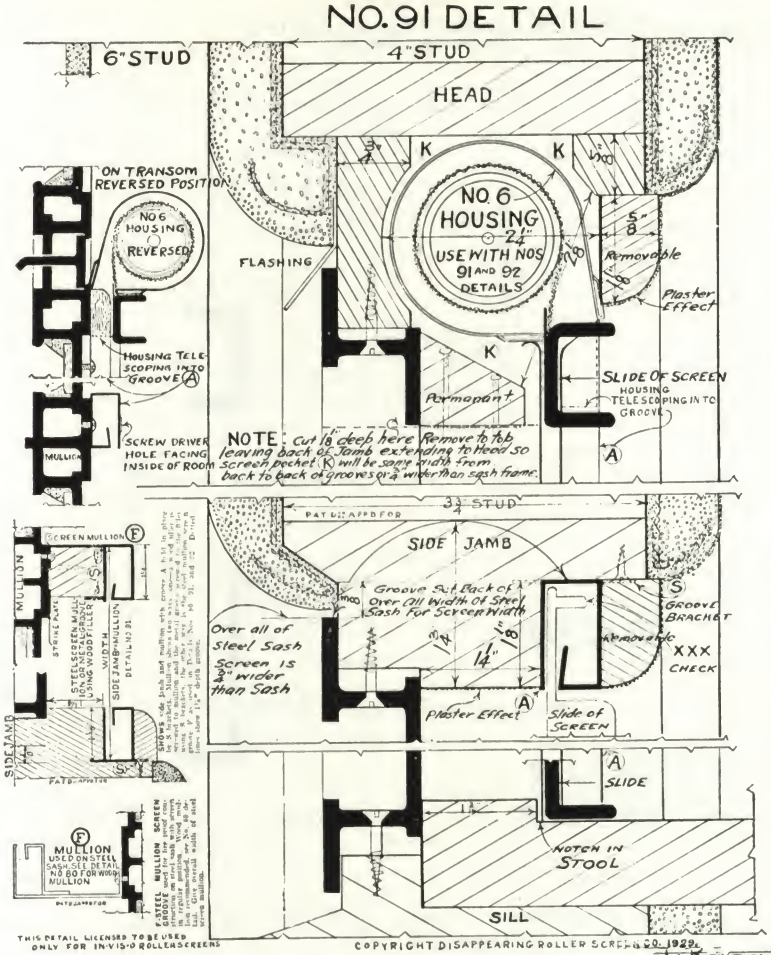
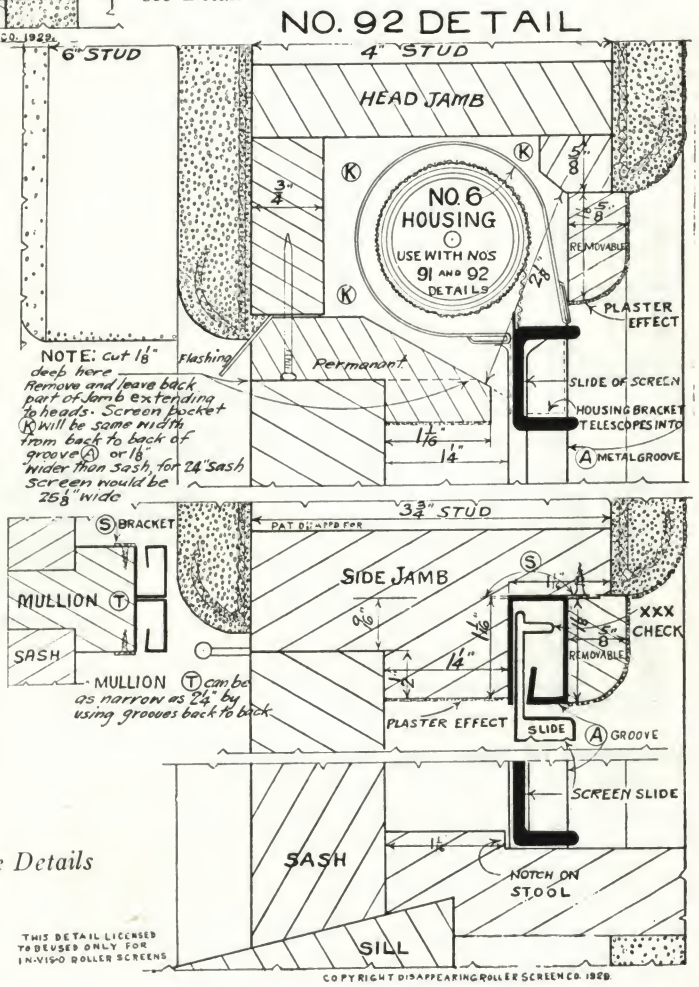


Description of Wood Sash Detail No. 92

Wood sash detail No. 92 allows screen housing to be concealed in a pocket over the sash, in regular position (not reversed). Metal grooves come within 1¼ in. of sash, leaving room for hardware on stool. Reveal can be had inside and outside with plaster effect over to sash if desired. The width of the side jamb can be as narrow as 3¾ in. The width of the pocket for housing in head is 1⅛ in. wider than sash width, or equal to the width from back to back of metal grooves. If sash is 24 in. wide, the screen housing would be 25⅛ in. over all. The No. 6 housing is supported and held in position by the end caps telescoping into the metal grooves; the "S" brackets hold the metal grooves to the side jambs. For steel sash see Detail No. 91.

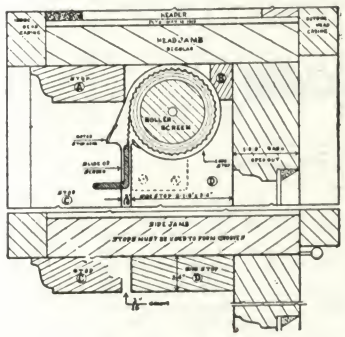


Description of Steel Sash No. 91 Detail

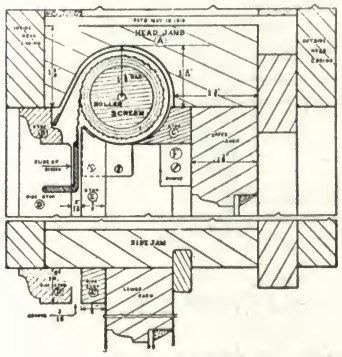
Steel sash detail No. 91 is an improved detail allowing screen to be installed in regular position (not reversed). Metal grooves are 1¼ in. from sash, allowing room for protruding sash adjuster and saves having to tap and screw screen on to steel sash. This detail gives reveal both inside and outside with plaster effect over to sash if desired. The width of the screen housing pocket in the head is as wide as the width between backs of grooves, or ¾ in. wider than the over all width of steel sash frame. The No. 6 housing is supported and held in position by the end caps telescoping into the metal grooves; the "S" brackets hold the metal grooves to the side jambs. For wood sash see Detail No. 92.

No. 1 Detail shows screen under jamb for house already built.

No. 6 Detail for double hung windows. For double hung windows, screens can be installed under head as shown in detail No. 1.



No. 1 Detail



No. 6 Detail

Send for Full Size Details

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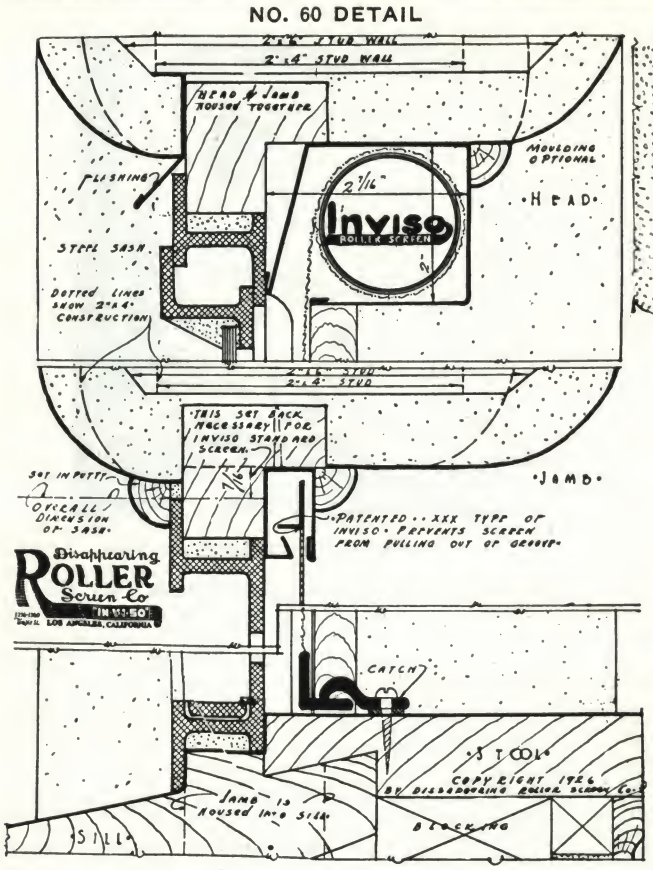
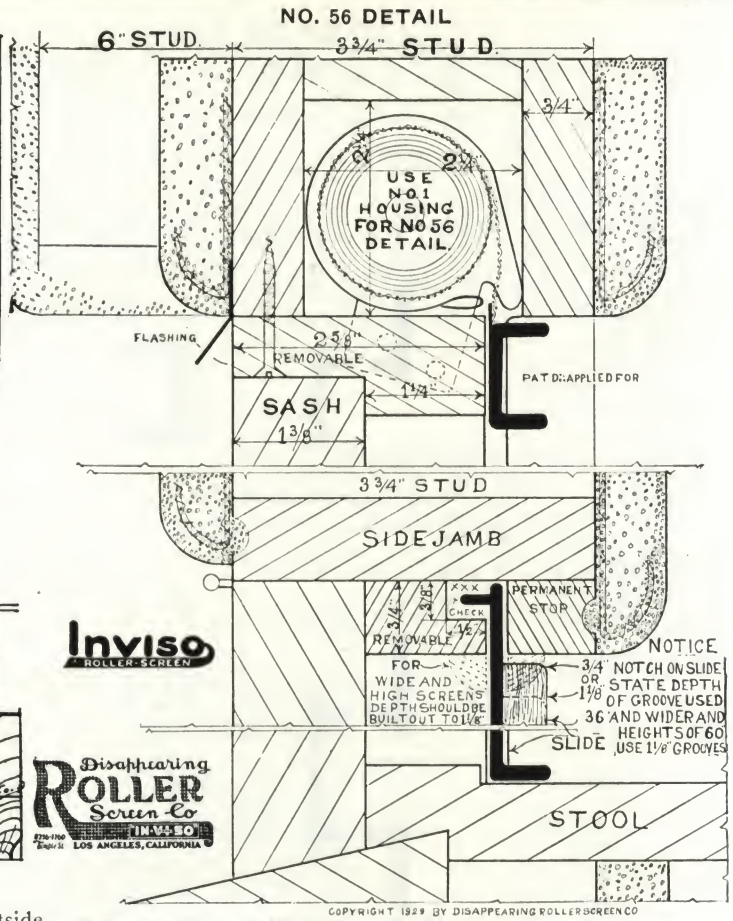
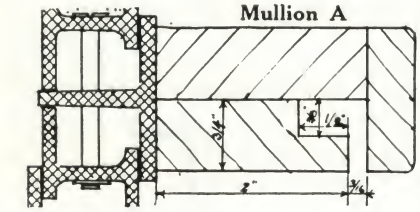
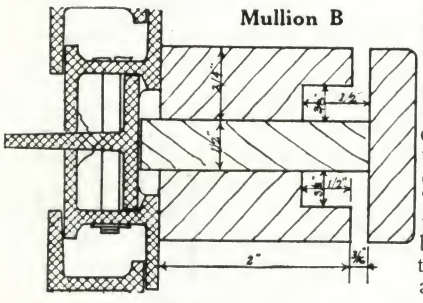




Description of Steel Sash No. 60 Detail

Steel sash detail No. 60 shows construction with outside and inside plaster reveal without any protruding sash adjuster on stool. The metal grooves are ⅝ in. wide, 1⅛ in. deep. For steel sash having protruding sash adjuster, a groove 1⅛x1⅛ in. must be used to miss adjuster. The screen width must be ¾ in. wider than over all of steel sash frame. The measurements between the completely finished plaster jambs (textured or painted) must be not less than the screen width; the plaster line must slant back a trifle, leaving a greater width toward inside of room than at sash. The detail shows the face of the metal groove set back of strike plate to avoid having to cut groove out to make room for sash lock on single casements when closed. These details should be strictly followed as they provide for standard stock screens.





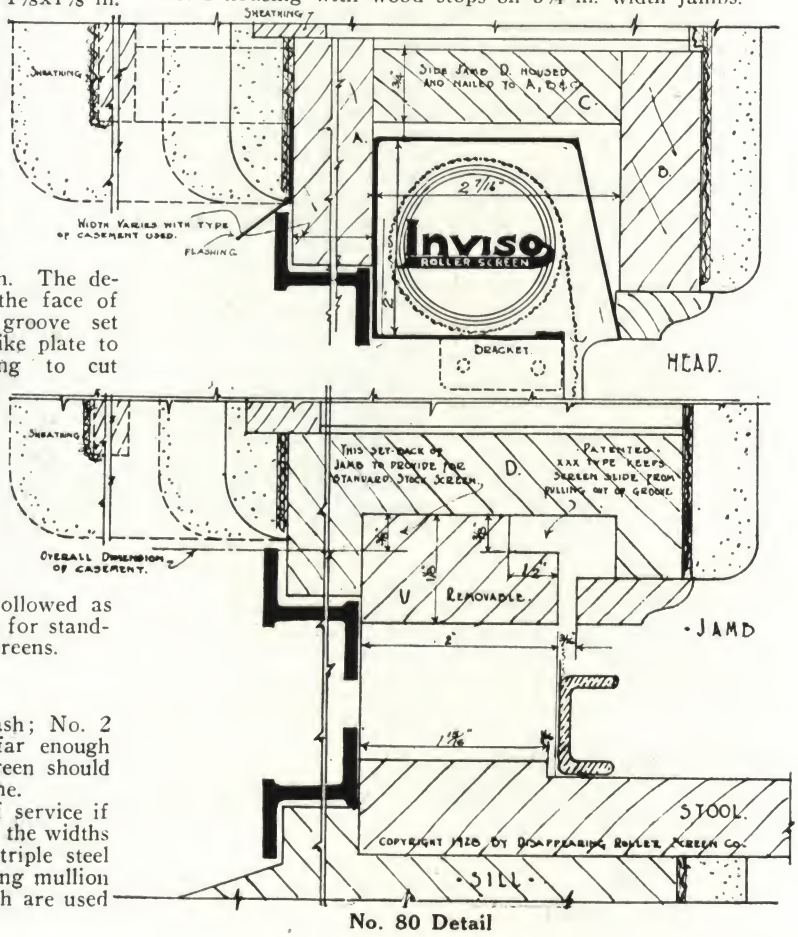
Description of Steel Sash No. 80 Detail

Detail No. 80 using wood stops with steel sash; No. 2 housing in regular position with grooves located far enough in to miss the handles of sash. The width of screen should be ¾ in. wider than the over all of steel sash frame.

"In-Vis-O" Roller Screens will give the best of service if the proper installation is made. We recommend that the widths be kept as narrow as 43 in. if possible. Where a triple steel sash is to be used, two screens are recommended using mullion "A." Mullion "B" is to be used where two steel sash are used together with screen on each side of mullion.

Description of Wood Sash No. 56 Detail

Wood sash detail No. 56; screen in regular position, using No. 1 housing with wood stops on 3¾-in. width jambs.



No. 80 Detail

MORRISON-SKINNER COMPANY

Manufacturers of Wood and Metal Frame Insect Screens

WAKEFIELD, MASS.
(10 Miles North of Boston)

SALES AND SERVICE IN PRINCIPAL CITIES

Products

"WAKEFIELD" EXTRUDED, TEMPERED ALUMINUM ALLOY FRAME WINDOW, DOOR and PORCH SCREENS.

Also "Wakefield" Parkerized Steel or Bronze Frame Window, Door and Porch Screens.

"Wakefield" Wood Frame Screens, Special Sash and Glass Porch Enclosures.

"Wakefield" Garden Furniture.

Screen Manufacturers for Over 39 Years

Thirty-nine years of continuous experience and a thoroughly modern plant assure production of the highest quality, and a promptness in manufacturing which is essential to congenial and profitable connections.

Being located within a few miles of the Boston docks and railroad yards enables prompt shipments of all "Wakefield" products.

THE "WAKEFIELD" EXTRUDED, TEMPERED, ALUMINUM ALLOY FRAME SCREENS

An Aluminum Which Has the Ring and Strength of Mild Steel

The Demand for Metal Frame Screens Which Will Not Rust, Corrode or Collapse

The increasing demand for a metal frame screen of quality was apparent eleven years ago, so much so that this company started experimenting with various shapes of solid and sheet metals of different composition to improve upon the types of frames in general use. We finally adopted for our highest grade screens a solid metal frame made of extruded, tempered aluminum alloy. This we found, in our experiments and tests, had many advantages not possessed by other metals. This alloy is similar to that used in the bracing of airplanes and where lightness and strength are essential.

The Solution of the Metal for Use in High Grade Screens at a Reasonable Cost

While screens made of steel have strength they are subject to rust, eventually, even if rustproofed. In order to be a permanent investment it is necessary that the screen frames be durable. No manufacturer can guarantee the life of the wire mesh on account of its very nature and delicacy, but we do guarantee our extruded, tempered aluminum alloy screens to be durable and rustproof. The aluminum alloy screen compares favorably in cost with the all-bronze screen.

Durable and Rustproof—The extruded, tempered, aluminum alloy frames of which the "Wakefield" screens are made are not only unusually durable but are absolutely rustproof. The metal being hard it is not easily bent or disfigured. As it is made of aluminum it will not rust.

Great Strength and Rigidity—This aluminum alloy has the tensile strength of steel and one and one-half that of bronze. It has a tensile strength of 40,000 to 50,000 lb. per sq. in. It is also one-third the weight of steel. Being made of solid extruded metal and not of sheet metal the screen has great rigidity.

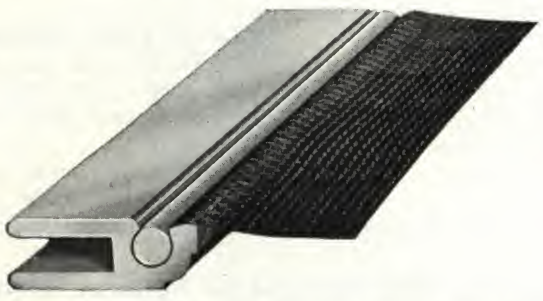
Light for Ease of Handling and Allowing the Use of Solid Metal—On account of its extreme lightness the screens are easily handled even in large sections. This is desirable in storing the screens after serving their summer use. They will not deteriorate, however, even if kept in position continually.

Advantages of Welding Corners in a Solid Metal

All our screens are welded at the corners making the frame one solid continuous piece. The corner is as strong as any other part of the screen. No special corner reinforcement is needed with this corner joint.

Thin Deep U-Shaped Channel Section Has Strength Yet Occupies Little Space

For screens over 3 ft. the U-shaped 1-in. channel section is used. This channel is 1 in. wide and ⅜ in. thick. This allows two twin sliding screens to be used in the thickness of an ordinary $1\frac{3}{16}$-in. thick outside casing. This section can also be made in any shape desired, such as curved head or pointed arch, or any such curves as are encountered in architectural work.



Cross Section of Frame Showing Method Holding the Screen Wire

Frames are made ⅞x¾, ⅜x1 or ⅜x1½ to fit requirements

Simplicity of Rewiring This Screen

The "Wakefield" screen can be rewired with a minimum of trouble. As seen in the illustration the wire mesh is held securely with a round soft aluminum rod. To rewire the screen the rod is removed, the wire screen cloth replaced and the rod replaced by pressing it down into the groove. This rod is not injured by removal for rewiring as on account of being a solid round it takes its original shape as it is forced back into position. The same round rod can be used over and over again without requiring replacement. This is one of the special features of this screen.

When Conditions Require It, We Can Install Two Twin Sliding Screens in a ⅝-in. Thickness

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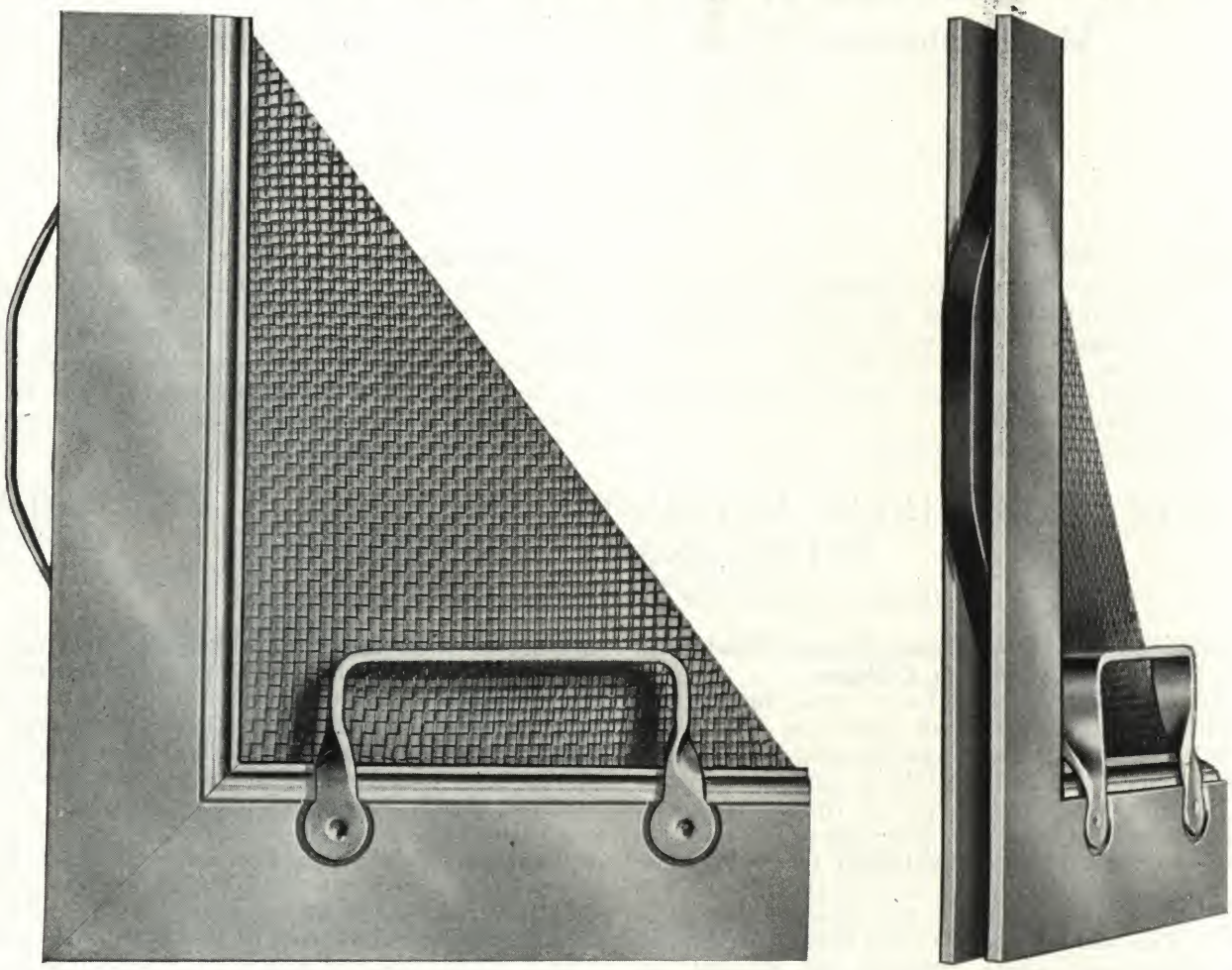
THE "WAKEFIELD" TEMPERED ALUMINUM SCREEN FRAME



Full Size Views of the ⅜x1-in. Aluminum Alloy Screen Frame

The illustration above shows the general appearance of the screen from the inside. The neat moulding gives a pleasing finish to the edge of the screen and reduces the apparent width of even the 1-in. size

Hardware

The two views show how our lifts for the screen are flush with the surface of the screen and are riveted on. This allows the screen to be used for double sliding screens where allowance for space for hardware is limited.

The spring used for sliding screens fits into the groove and is made of spring steel plated with chromium metal to prevent it from rusting as well as to match the appearance of the rest of the screen.

Finishes

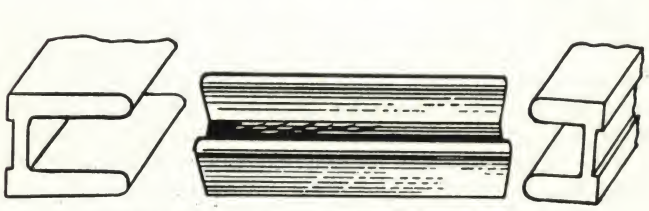
The natural polished aluminum color is the standard finish, which harmonizes well with almost any finish. If desired, it can be plated a statuary bronze or copper. All the hardware is the same color as the frame.

Cost of These Screens

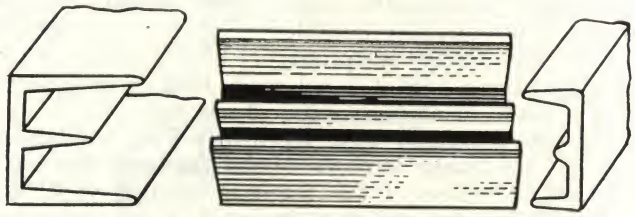
The cost of our aluminum alloy screens is higher than our parkerized steel screens and ordinarily compares favorably with the cost of hollow bronze screens.

This, of course, is the first and only cost for the frames. The only other expense is for ordinary repairs to damaged bronze wire mesh.

Guides of Hard Aluminum Alloy Extruded for Neatness, Accuracy and Durability



Guides for ⅜x1-in. Twin Sliding Screens
Note the compact shape



Guide for Twin Sliding 3/32x¾-in. Frames Used for Small and Narrow Windows

Screen Doors Are Now Available in this Strong Aluminum Alloy

Continued on next page

CONSTRUCTION DETAILS OF THE "WAKEFIELD" ALUMINUM ALLOY FRAME SCREEN

Types of Screens

The "Wakefield" Aluminum Alloy Screens are made to fit all the requirements of a complete frame screen line. They are made as follows:

Stationary:
- Top hung

Casement Types:
- Hung on pivots at the top
- Side swinging, top and bottom pivots with spring pivot at the bottom for ease of handling

Sliding Screen Vertical:
- Single half height vertical sliding
- Twin vertical sliding

Sliding Screen Horizontal:
- Two or more sliding screens

Note: We have special equipment for all-steel sash.

Standard Sizes

Frames—$\frac{7}{32}$x ¾ in.
$\frac{3}{8}$x1 in.
½x1½ in.

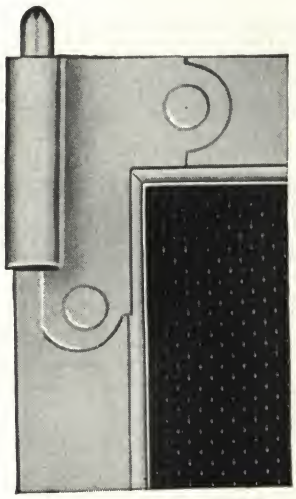
Cross Brace—¼x¼ in.
¼x½ in.
¼x1 in.

Special frames of any size can be designed for special purposes.

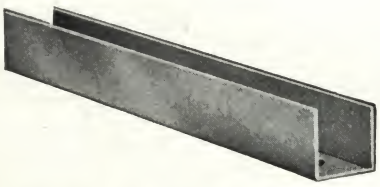
Space Requirements

Casement swinging screen—¼ to ⅜ in.
Single sliding screens—⅜ to ⅝ in.
Multiple sliding:
Vertical or horizontal—⅝ to 1 in.

Note: Rebate may be made any width or depth as desired but the figures given above are the minimum and maximum required, for different frames.

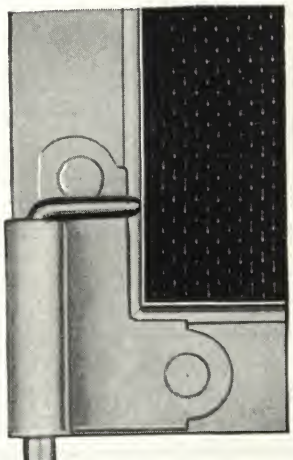


Top Pivot and Bracket

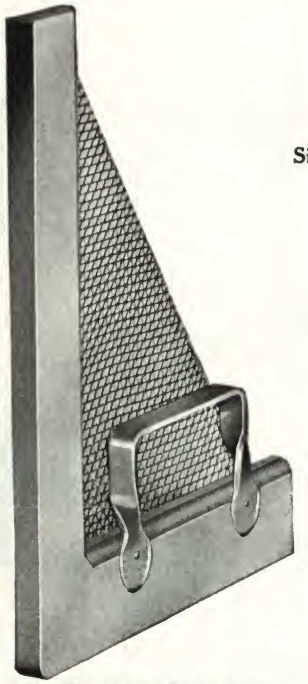


Channel Guide for Single Outside Screens

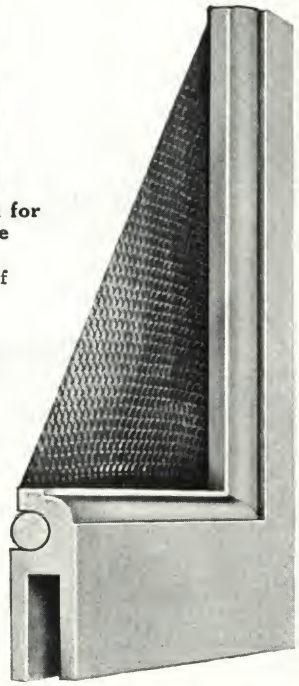
Side Spring Catch for Casement Type Windows
Illustrated at half full size



Bottom Spring Pivot for Casement Type Screens



The $\frac{7}{32}$x¾-in. Frame for Small Openings
Flush aluminum lift riveted to screen frame (patented)



Detail Showing the Smooth Finish of the Electrically Welded Joint Which Supersedes the Spliced, Soldered Corner
Illustrated at full size

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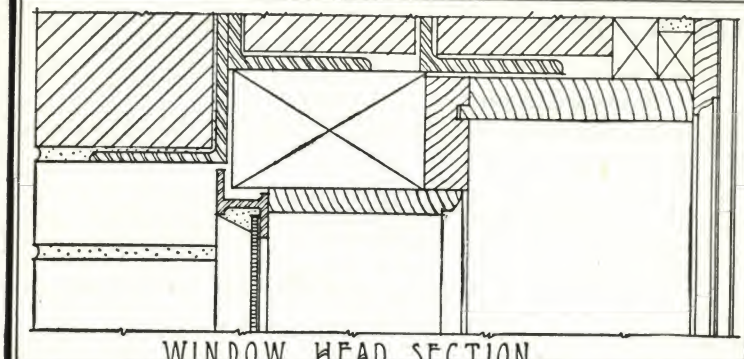
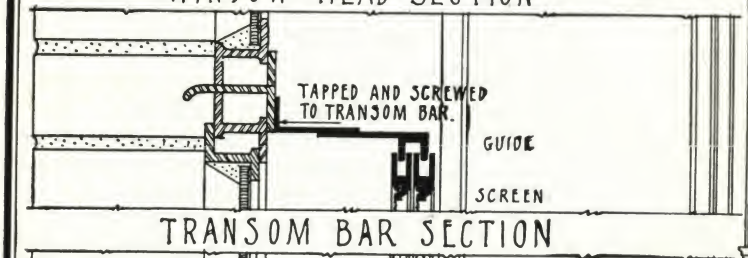
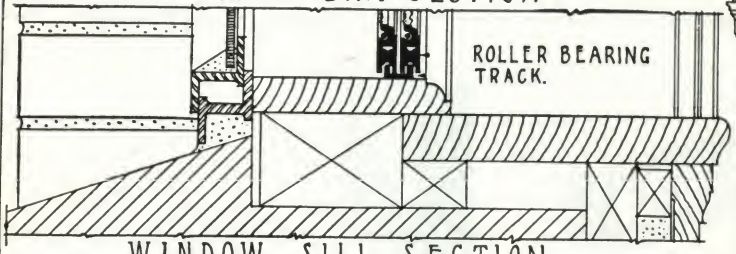
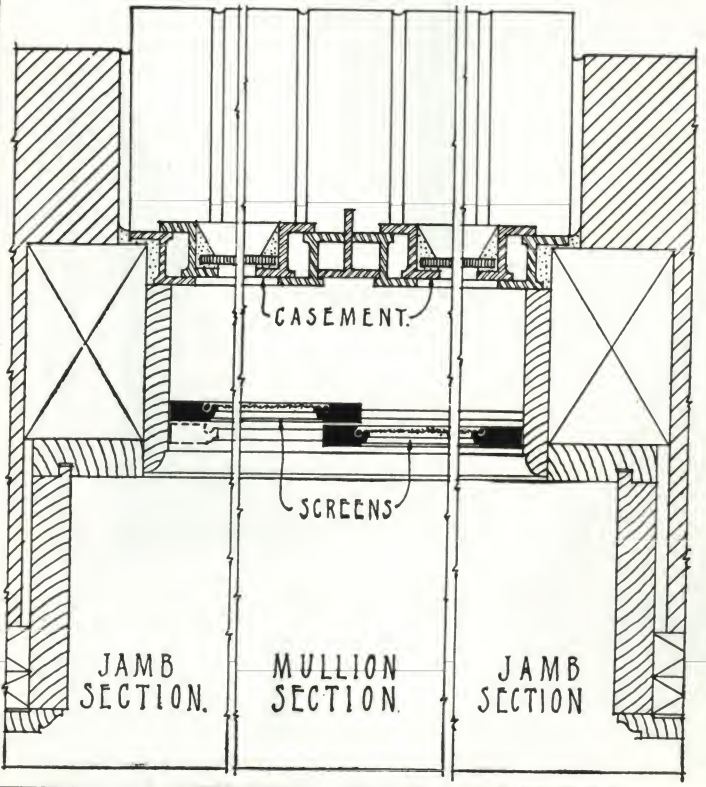
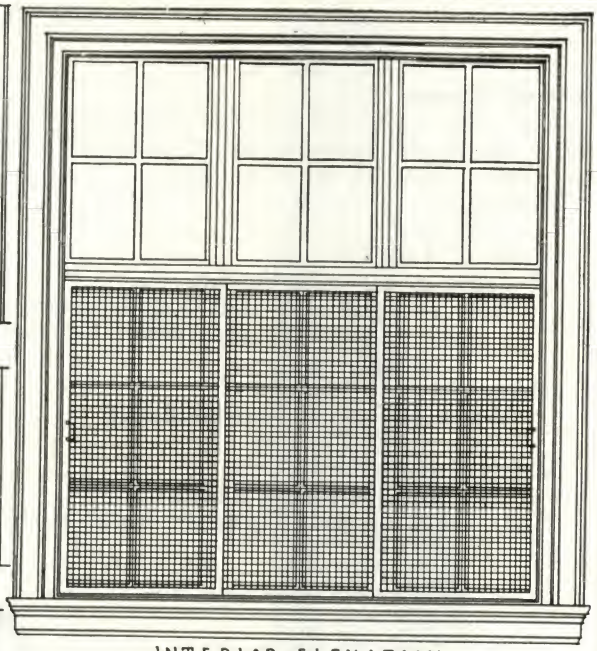




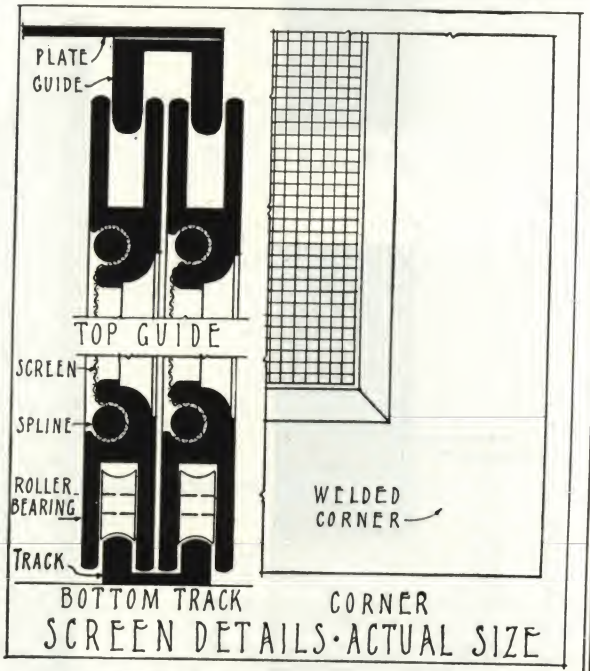






THE·WAKEFIELD SCREEN DETAILED HERE IS A·NATURAL·DEVELOPMENT·OF·THE·ORIGINAL·TEMPERED·ALUMINUM·ALLOY·SHAPE·AND·IS·DESIGNED·TO·CARE FOR·THE·NEED·OF·INCREASED·FRAME·SIZE·FOR·LARGE·OPENINGS· ·

THIS·TYPE·ESPECIALLY·ADAPTS·ITSELF·TO·THE SCREENING·OF·CASEMENT·WINDOWS·AS·WITH·THE BUILT-IN·FEATURES·OF·ROLLER-BEARINGS·AND· SMOOTHNESS·THROUGH·THE·EXTRUSION-PROCESS ITS·OPERATION·AS·A·HORIZONTAL·SLIDING· · SCREEN·LEAVES·NOTHING·TO·BE DESIRED· · MADE·OF·TEMPERED·ALUMINUM·ALLOY·AND· 16·MESH·COPPER-BRONZE·WOVEN-WIRE· · · · · · ·



SCREEN DETAILS·ACTUAL SIZE

DETAIL NO. 6. JANUARY 1929.

·HORIZONTAL·SLIDING·SCREENS·FOR·LARGE·OUT-SWINGING·CASEMENTS· · ·MORRISON·SKINNER·COMPANY – WAKEFIELD, MASS.· ·

WAKEFIELD ALUMINUM SCREENS

Continued on next page

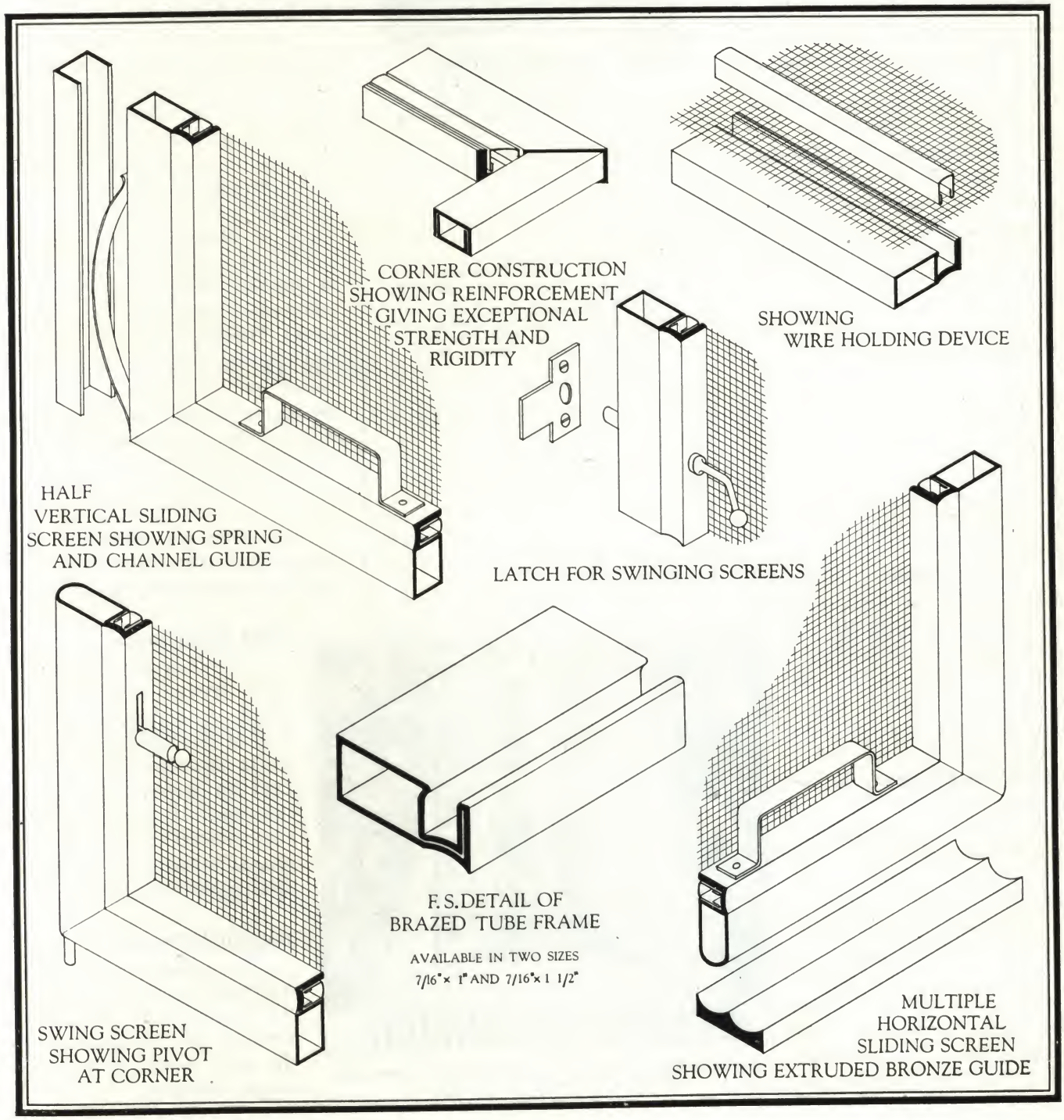
"WAKEFIELD" BRONZE TUBULAR FRAME SCREEN

A New Brazed Corner Tubular Bronze Window Screen Frame of Exceptional Strength and Rigidity, with Light Weight Through Method of Fabrication New to Screen Use

We have for years advocated the use of solid frame screen sections and still believe them to be the best. In order to justify this belief, we made particularly searching inquiry into the advantages and weaknesses of tubular frame screens. Yet, there is a demand for screens costing less than the solid frame section, and we have met this demand with the new "Wakefield" Tubular Bronze Frame Screen.

We decided that the principal weakness was in the soldering of the joints at corners and at seams. Solder is composed of lead and tin, and it is necessary to use acid to cause adhesion of solder and bronze. Corrosion generated by this acid will in time weaken the screens.

Bearing all this in mind, we designed the "Wakefield" Tubular Frame Screen without the use of any solder, for, in the "Wakefield," *all joints and seams are brazed, or reinforced without solder.*



THE HIGGIN MANUFACTURING CO.

Window and Door Screens

GENERAL OFFICES AND FACTORY

NEWPORT, KY.

BRANCH FACTORIES

KANSAS CITY, MO.—TORONTO, ONTARIO

SALES AGENCIES IN MORE THAN FIFTY OF THE LARGER CITIES THROUGHOUT THE COUNTRY

Look up our Local Office in Telephone Directory, or write to Newport, Ky., for information

The Company

This company, since its inception in 1893, has been makers of the finest quality all-metal screens, made to order. Thousands of these screens, installed more than thirty years ago, are today still serving satisfied owners. The firm financial standing and reputation for integrity of this company have meant much to the architect and his client.

The company's national advertising has gained nationwide acceptance of its products. The alertness in meeting the many difficult screen problems arising in modern building construction has made Higgin many warm friends.

Facilities

The extensive plants of THE HIGGIN MANUFACTURING CO. are centrally located and prompt deliveries can be made to all parts of the United States. Facilities are constantly being increased to meet the growing demand for Higgin products.

Every possible style of sash, every conceivable shape, every type of opening can be neatly and perfectly fitted with a Higgin Screen. Manufacturing all types of screens—rolling, hinged, sliding and stationary—this company is unbiased in its recommendations. The experience of Higgin screen experts backed by so complete a line permits a choice of screens best adapted to harmonize with the architectural effect of the building, be it a residence, a commercial building or an institution. The best of materials and workmanship render Higgin Screens the screens of a lifetime. Thousands of them have been in use for more than a quarter of a century. Many of the finest homes, apartments, hotels, hospitals, and other buildings in this country are "Higgin" screened.

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Designing Service

An engineering, research and advisory department is maintained at the home office in Newport, Ky., where the more serious problems arising in an ever advancing building field are given careful yet prompt attention. This department is always ready to work out screening or weatherstripping details or provide as complete information as is possible for every type of work, commercial, residential or institutional. Detail folders, as well as full scale drawings covering many varied conditions, may be had for the asking. If you would like these details or have a specific problem to be solved, write Desk 15, THE HIGGIN MANUFACTURING CO., Newport, Ky.

Estimates are cheerfully furnished from any of the local sales offices or from the home office.

An Installation of Double Side Hinged Screens for Outopening Casement Windows
Draw curtains are used here

Field Organization

This company has developed through years of experience a highly specialized field service with headquarters in the principal cities. These men are near at hand to render expert service in assisting the architect in meeting his special problems in the screen and weatherstrip lines.

Installation Service

In addition, thoroughly competent fitting organizations are continuously maintained, insuring the installation of the work in the most workmanlike manner.

Continued on next page

SCREENS FOR OUTOPENING CASEMENT WINDOWS

Horizontal Sliding Screens

These screens are primarily for use inside on double or group casement windows. The equipment consists of two or more screens sliding horizontally in a solid brass grooved track at the sill and channel guides at the head. The window trim may be detailed to receive the equipment as shown in the detail to the right, or it may be placed in openings not especially designed. The width of head and sill track is 1⅛ in. and of course clearance must be allowed for sash hardware. Roughly a reveal of from 2¾ in. to 4 in. is necessary.

Operation of Horizontal Sliding Screens

Where fixed transoms occur it is often advisable to mount the channel guides on metal flanges which are attached to transom bar of sash (Sec. E). Where fixed sash are used either beside or between casements a single grooved track and head channel similar to the double track illustrated, may be employed. In this case only the movable sash is screened, with the track running the full opening width. The space between the screen and sash mullion is sealed with a channel shape of metal (Sec. F) which is so formed that the screen will slide by it.

At the jamb sides of the screens, some method of closing the light line is essential, especially where there is unevenness. Two methods are indicated here. Section C' shows a small angle usually finished to match the window trim, into which the screen fits when closed. Where jambs must be kept free, a felt member may be attached to jamb edges of screen to contact with reveals and take up an unevenness in wood plaster or tile surfaces (Sec. C").

Section B shows a sill track which may be removed when screens are taken out of storage. The only attachment needed at the stool are two small keeper blocks fastened either into the stool or into the jambs. On unusually wide openings and intermediate fastening is required.

Horizontal sliding screens do not interfere with curtains, drapes, shades or venetian blinds. They are easily slipped out for storage and like all Higgin Metal Frame screens require little space. They are the ideal solution for screening wide groups of casements. No mullion pieces are required affixed to sash mullions to support screens. Screens are divided to harmonize with design of sash, that is rails of screens line with rails of sash.

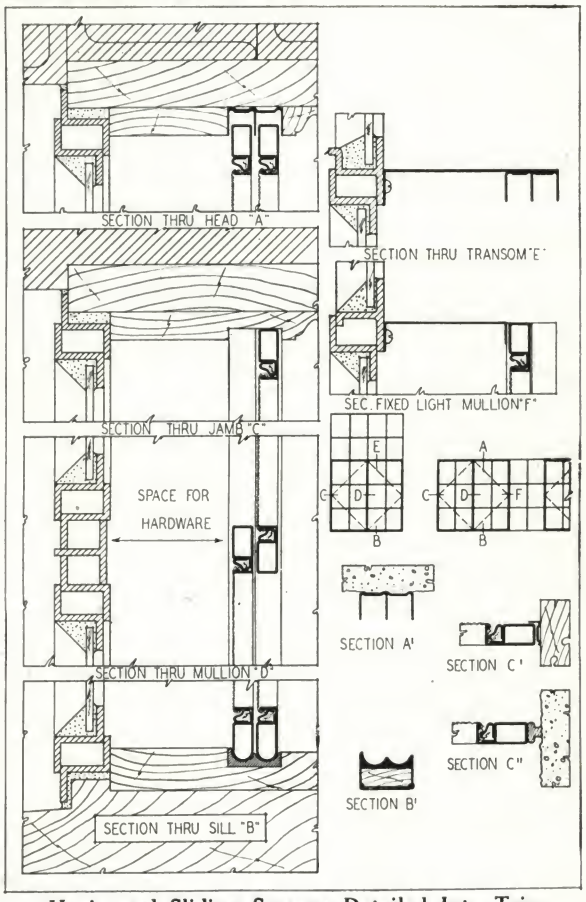
Side Hinged Screens
Operate smoothly and easily and are readily removed for storage

Inside Side Hinged Screens

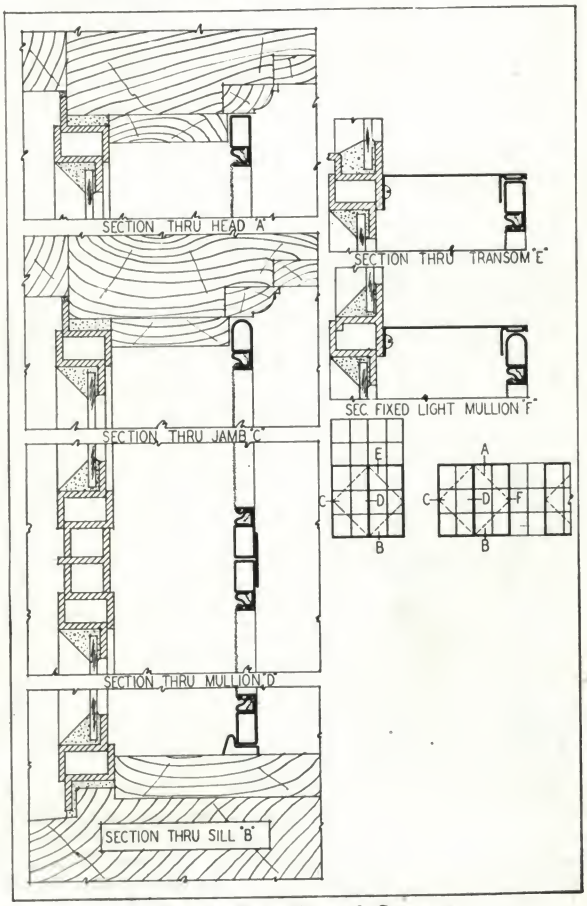
This type of equipment may be used for single or double out-opening casements, wood or metal, where there is no interference with curtains or drapes. Where curtains are desired with side hinged screens, draw curtains are recommended.

A rabbet ½x½ in. should be provided at the head and sides and if possible at the sill. Where there is no rabbet at the sill No. 142 bronze sill rabbet strip may be used. This keeps bottom rail of screen off stool and prevents dragging finished surface.

The screens are equipped with No. 27 pivot hinges and fixed pins on the hinged side and No. 26 latch on the lock side. For double hinged screens a plate astragal is used, top and bottom bolts for the stationary leaf are No. 402. Where fixed transoms occur a fixture as shown in Section "E" may be used so that the screen need not extend the full height of the opening. The fixture shown in Section "F" may be used where fixed lights occur so that the entire opening width need not be screened.



Horizontal Sliding Screens Detailed Into Trim



Inside Side Hinged Screens

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HIGGIN ALL-METAL ROLLING SCREENS APPLIED TO CASEMENT WINDOWS

Roll them up as you would a window shade—Higgin All-metal Rolling Screens disappear like magic into a concealed assembly box built right into the window opening. There they remain, a moment, an hour or all winter, out of sight, out of the way. No storage problem here. Roll them down, automatically they lock as raising bar reaches window stool, a guardian of health and comfort, a protection against fly and mosquito.

Higgin Rolling Screens are especially suited to out opening casement windows, where screens must be placed inside. This type screen permits use of any style curtain or drape which best harmonizes with interior decorations, without the least interference when it becomes necessary to open or close window.

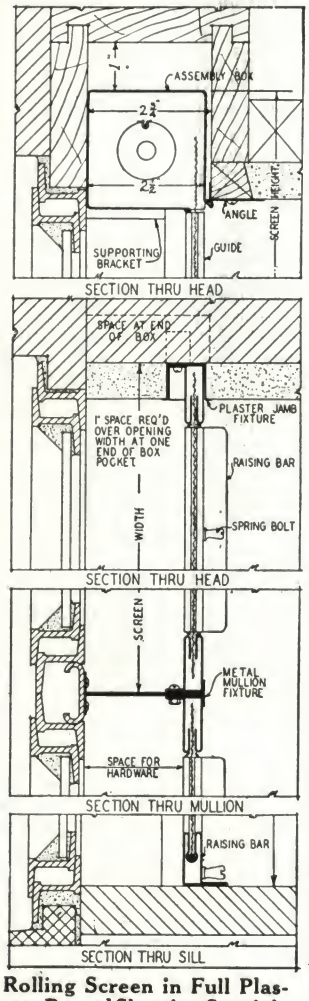
Of course, while primarily suited to out opening casements, rolling screens are also adapted to most every type of window where inside screens may be used. Where rolling screens cannot be used, there is another Higgin All-metal Screen to take its place and serve as satisfactorily as the disappearing type.

Installation

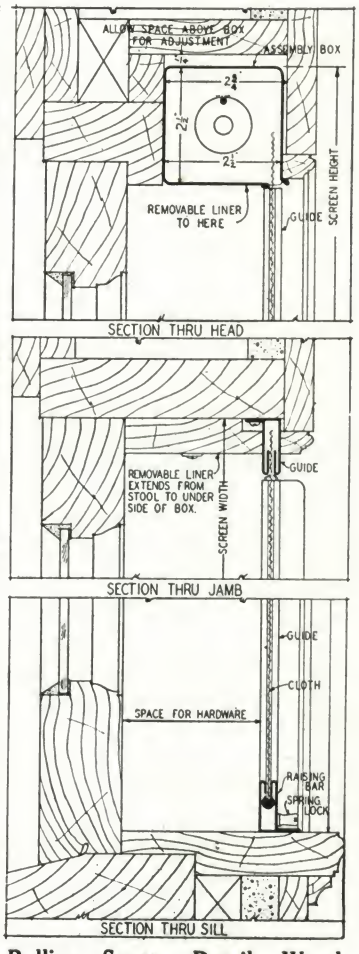
Higgin All-metal Rolling Screens may be installed in almost any type of opening. General details for various types of windows are shown. The designer is free to use his own ideas as to trim or construction of windows so long as ample provisions are made for housing the assembly box. Many architects prefer to leave the assembly box and guides fully exposed, eliminating the necessity of a special housing. The raising bar and guides are regularly furnished finished a neutral color and when the assembly box is exposed it too is finished in the same manner.

Dimensions required for the concealed installation are given in the quarter scale drawings on this page.

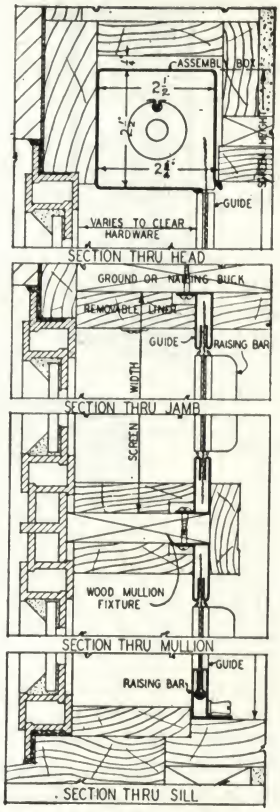
Sizes—Higgin Rolling Screens may be installed in any opening the width of which is from 10⅜ to 61¼ in. Assembly boxes are made only in variations of 1 in. and the over-all lengths of the boxes run ⅜ in. over the inch mark, that is 10⅜, 11⅜, 12⅜, etc.



Rolling Screen in Full Plaster Reveal Showing Special Channels Required (Furnished by Higgin)



Rolling Screen Detail, Wood Casement and Wood Trim



Sectional Detail of Rolling Screen on Steel Casement Window with Wood Trim

The raising bars however are made in two lengths. When opening widths run from ⅜ to 1⅛ in. inclusive over the inch the shorter bar is used. This brings the fastening flange of the guide on a line with the box ends.

For openings running ⅞ to 1⅛ in. over the inch the longer raising bar is furnished. In this case the fastening flanges of the side guides extend beyond the ends of the box ¼ in. (each side). All width dimensions should be given exactly, the factory determining which width of raising bar to furnish.

Those widths running ⅜ and ⅞ over the inch require no packing strips. All other dimensions do, and these are furnished by this company. Packing strips vary from 1/16 to ¼ in. in thickness and are the same widths as guide flanges.

Higgin Rolling Screens Lock Automatically from the Inside

A mere touch on the spring bolts at each side will permit the screen to raise sufficiently to clear sash hardware

Closing the Screens Requires Little More Effort Than Opening Them

Even tension from top to bottom of the opening is one of the many features of Higgin Rolling Screens

Storage Problem Solved

Release the spring latches, the screen will rise automatically about half way, a slight push upward on the raising bar will send the screen to the assembly box where it will stay until again pressed into service

Detailing

Higgin Rolling screens may be installed on present work usually without any modification in existing trim. In this case both the assembly boxes and the guides are fully exposed, but due to the attractive finish, the screens are quite inconspicuous.

The details on this page show the rolling screens built into the trim of the window, a practice generally followed on new work. The details are intended to give the architect requirements for the screens. The construction of the windows and the design of trim may be detailed to individual taste and requirement.

Where screens are to be installed in full plaster reveals particular attention should be called to the space above and at end of the assembly box required for its installation.

A number of details other than shown have been prepared and will be sent on request. The company's Technical Department will gladly work with the architect on special requirements.

Continued on next page

SCREENS FOR INSWINGING CASEMENTS

Inswinging casement screens of the type shown to the right are placed on the outside and are stationary held in position with ring spring bolts engaging in keepers secured to sash frame. Where weather drip bars occur at the sill and friction adjusters at the head, a roll fixture as indicated may be provided. This eliminates the use of a box over the entire opening. Screens of this type cover only the operating sash.

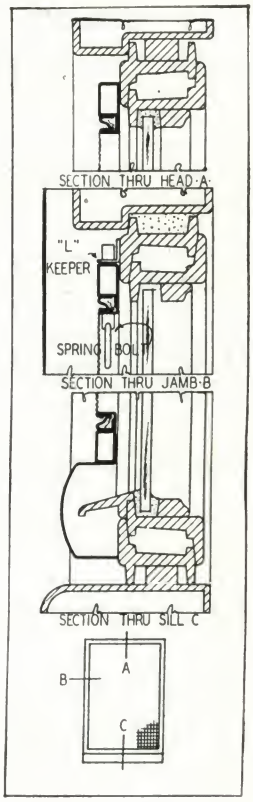
Where rabbets are provided a sufficient distance from the sash to clear drip bar or other obstructions, full opening screens of several types may be employed. One method is a fixed screen seating in the rabbet and held with fixed pins on one side and spring bolts on the other. Pins and bolts engage in flat keepers affixed to jambs. Where it is necessary to get at awnings the top hinged screen is more practical as it may be opened and closed quite readily. This equipment consists of a fixed pin and a spring pivot hinge at the top engaging in flat keepers. At the sides at a convenient height, either spring bolts or mortised beveled spring latches may be employed. If either of the above types are desired and there is no rabbet, small angles can be furnished by this company attached to jambs and head to receive screens.

A third method is the stationary screen in guides. This is quite similar to the vertical sliding type equipment except that the screen covers the entire opening and is of course immovable. Channel guides are secured to the jambs and the screens are held in these by compression springs attached to screen on one side.

Screens of Special Shapes

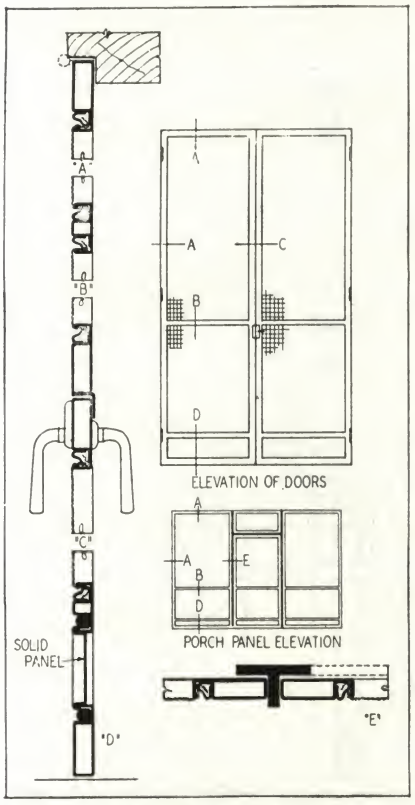
In connection with the stationary type screen a word might be said on special shapes. This company is in a position to furnish and accurately fit almost any shape of window, door or porch, whether full circle, half circle gothic or other design. Side hinged screens may also be especially shaped where conditions are favorable.

Stationary Screens on Outside for Inswinging Casements



Right:
Details for Inswinging Steel Casements

LIGHT METAL DOORS AND SCREEN PORCH PANELS



Quarter Scale Drawing of the 1½-in. Metal Screen Door

Showing section through bottom rail, meeting stiles, etc. In the lower right one panel of a screened porch is shown

Doors—The light metal doors illustrated are particularly adapted to full length steel casement doors. The stiles and top rails are only 1½ in. wide with cross rails one or two inches. The height of bottom rail may vary. It is usually arranged to match the bottom rail of the casement door. These screen doors are but $\frac{7}{16}$ in. in thickness and therefore can be hung in a shallow rabbet. Stiles are strongly reinforced as are the corners. The bottom rail is formed with a recessed panel spotwelded to screen frame.

All in all the doors are very rigid. Screen cloth is held by metal splines in the same manner as in the Higgin metal frame screen.

Doors are hung on one and one-half pairs of butt hinges per leaf. Latches are of the mortise type with ornamental lever handle.

For double doors, half oval bottom bolts are used. These doors may be had in steel, any color finish or in bronze, statuary finish or left unfinished to weather.

Panels—Panels of the same design as the light metal doors illustrated above may be used for porch work. The paneled bottom rails are not necessary and may be eliminated where a greater degree of ventilation is required. Entrance doors to the porch may be one of two types, that illustrated above, or the "Higgin $\frac{7}{8}$-in. Bronze doors" shown on Page 9. Several types of hanging stiles to support doors can be furnished. The one illustrated in the detail drawing to the left is a tee shape which forms its own rabbet. This can be furnished only in steel. The other hanging stile regularly furnished is of solid bronze tubing with angles to form rabbets.

Whether porches have been particularly detailed for screens or not does not matter to Higgin as hanging frames and rabbets of various designs can be furnished to meet almost every condition.

An illustration of a screened-in porch is shown on Page 9. Here the 1½ in. frame screen was used throughout, even in the door which can hardly be distinguished in the center of the right-hand opening.

Installation of a Pair of Higgin 1½-in. Stile Metal Doors Used Inside in Connection with Outopening Full Length Casements

Continued on next page

DOUBLE HUNG WINDOWS

Double Vertical Sliding Screens

Double Hung windows whether of wood or metal may be screened in a number of ways. Three are illustrated here. Double vertical sliding screens operate in channel guides secured to blind stops. Shallow guides are placed on one side and deep guides on the other. A spring channel guide may be used at the head to hold top screen rigidly in place. Compression springs are placed on screens (two to each) and operate in the deep guides holding the screens in any desired position while operating. Bronze lift handles and sill tacks are provided for each screen. Metal frame screens are particularly suited to double hung windows. Their stiles and rails are so narrow that in many cases it is difficult to see the screens at all.

Half Height Sliding Screens

This type screen covers only the lower part of the double hung window, extending from the sill to the putty line of the meeting rail of the upper sash. The Half Sliding screen operates in the same manner as the double vertical sliding having single channel guides at jambs (full height) in place of the double type.

Top Pivot Hinged Screens

Double Hung windows may also be screened full height with top pivot hinged screens. The screens may be placed in metal angle rabbets as illustrated in the detail or they may be installed in the rabbet formed by the blind stop. The screens at the top are equipped with a fixed pivot at one side and a spring pivot at the other. To remove the screens for storage it is only necessary to release the spring pivot which is operated by an inconspicuous lever handle flush with the surface of the screen. At the sides are mortised latches, lever operated. Stay bars may be provided to hold screens out from windows, for window washing.

Rolling Screens

The advantage of rolling screens for double hung windows is the absence of the storage problem. When rolling screens are raised to the top of the window they are in storage yet instantly accessible. The disadvantage is that they must be placed inside for continued satisfactory performance so that the screen must be raised each time the windows are operated.

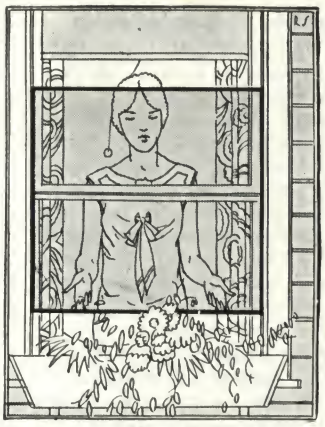
Whether one sash or the other is open there is always a "fly pocket" between the lower sash and the screen. Here flies and other insects congregate and it is difficult to keep them out of the house. With outside screens insects too are outside and there is no way for them to get in.

The detail in the upper right hand corner of this page shows Higgin Rolling Screens installed on double hung windows.

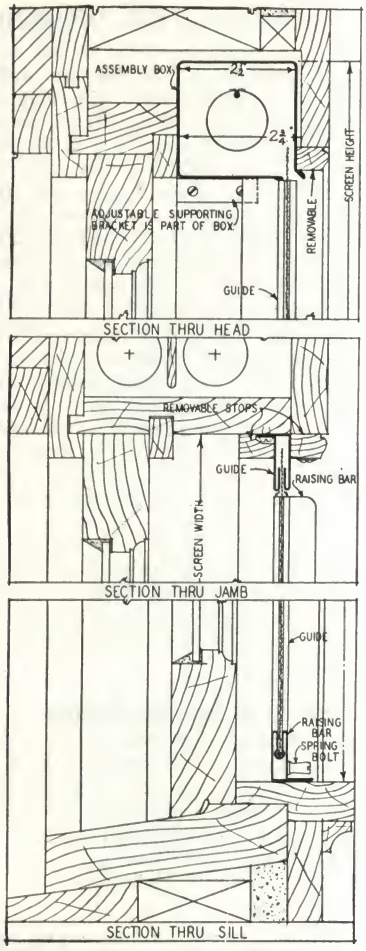
The sectional view shows one method of installing rolling screens. Quite often on this type window the assembly box is placed exposed under the top side of the window frame.

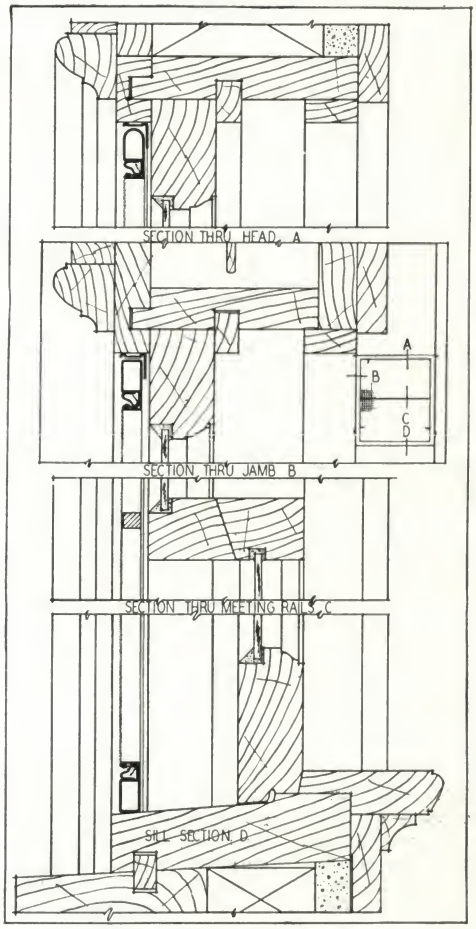
The guides too may be exposed, being screwed directly to the stop beads.

In the jamb section the fastening flange of the side guide is shown turned towards the outside. This may be reversed should it ever be necessary.

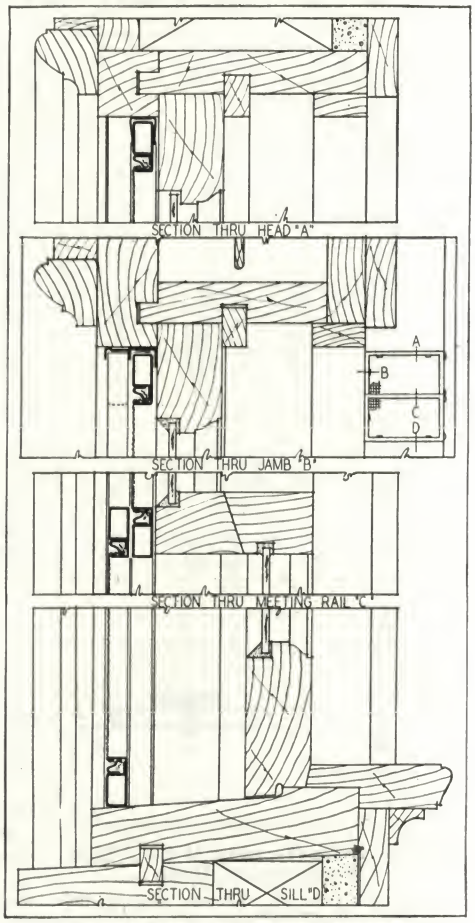


Access to Flower Boxes or Awnings Simple with Either the Half Sliding or Double Vertical Sliding Screen





Top Hinged Screens



Double Vertical Sliding Screens

Continued on next page

HIGGIN ALL-METAL SCREEN EQUIPMENT FOR PIVOTED SASH

The equipment consists of a straight metal frame screen placed at top of opening on the outside and a like screen on the bottom inside (see illustration). These screens are set in angle frames permanently attached to window frame with machine screws.

Metal contact rolls attached to ventilator at center close up space between ventilator and screens.

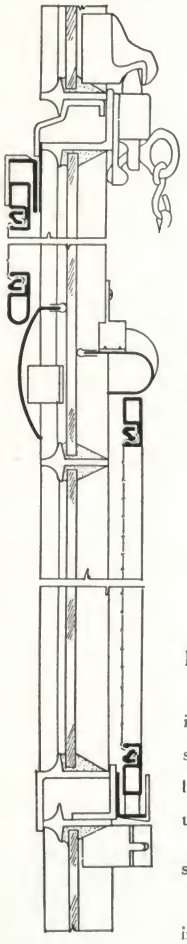
Patented features of Higgin equipment insure positive contact between rolls and screens at all times, no matter at what angle ventilator is set.

Rolls and angles become a permanent part of window but screens may be easily removed and replaced. Higgin equipment is adaptable to any type or make of either metal or wood pivoted sash.

We study each individual problem and make installations right on the job, giving personal, expert supervision.

Screens, rolls and angles are made to measure for each individual opening.

Complete details for various manufactures of pivoted sash will be sent on request.



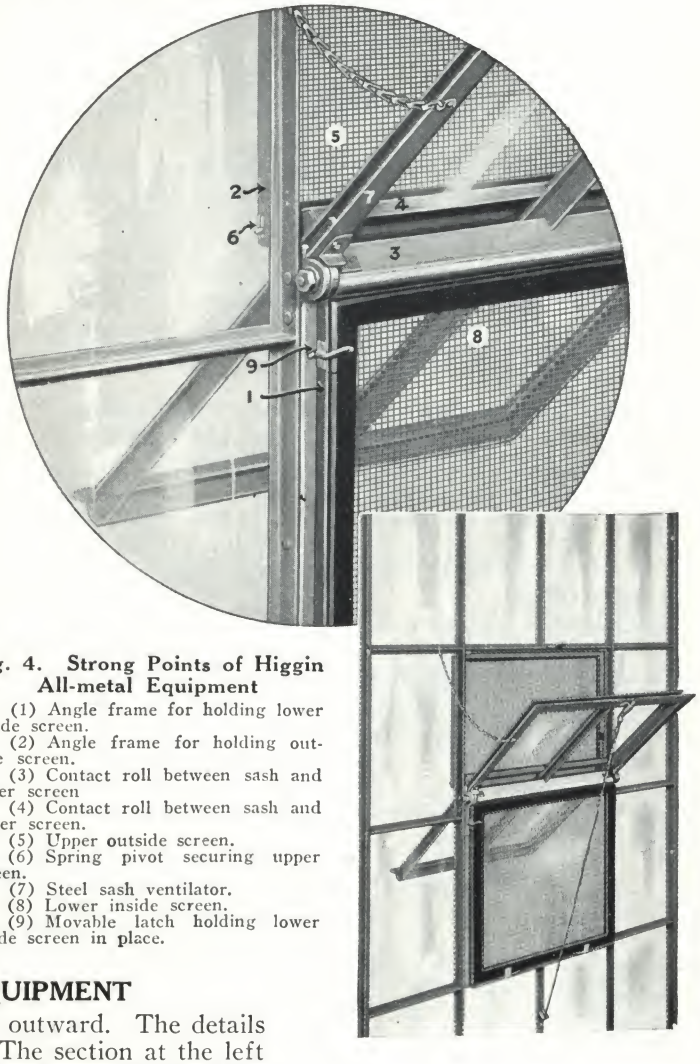


Fig. 4. Strong Points of Higgin All-metal Equipment

(1) Angle frame for holding lower inside screen.
(2) Angle frame for holding outside screen.
(3) Contact roll between sash and lower screen
(4) Contact roll between sash and upper screen.
(5) Upper outside screen.
(6) Spring pivot securing upper screen.
(7) Steel sash ventilator.
(8) Lower inside screen.
(9) Movable latch holding lower inside screen in place.

PROJECTED TYPE STEEL SASH EQUIPMENT

Projected sash are made to open either inward or outward. The details show both types and the screen equipment for each. The section at the left is for the inward opening type. In this construction the screen is placed on the outside and is suspended by means of a fixed pin at each upper corner, to a specially shaped (patent applied for) fixture. This fixture is tapered from the top to bottom to prevent the kickout of the bottom member of the ventilator interfering with screen. The space between the screen and sash at the bottom is closed with a spring bronze flange contacting with the sash frame. The screen is locked in position with a spring bolt on each side rail near the bottom. The screen is easily removed by releasing these bolts and lifting screen out.

The section at the right shows box equipment for projected out type sash. The box is necessary because of the projection of the hardware on the ventilator. The box which is of substantial gauge metal is rabbeted to receive a top pivot hinged screen. The screens are locked in place with ring bolts engaging in keepers in the box rabbet. Box is secured to the sash by means of machine screws or rivets and is a permanent part of the window although the screen may be readily removed.

Boxes may be made to cover more than one vent, individual screens being used for each of the ventilators.

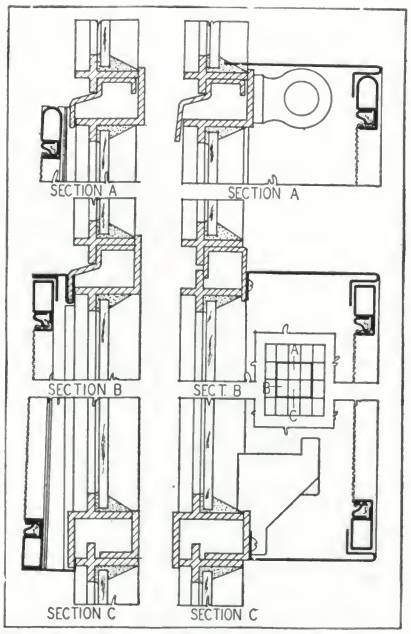


Fig. 5. Screen Equipment for Projected Type Steel Sash—Opening In and Out

BASEMENT WINDOW EQUIPMENT

This company has designed a simple yet effective equipment for standard types of basement sash, details of which may be had for the asking.

EQUIPMENT FOR OTHER TYPES OF STEEL SASH

This company has made a careful study of all types and kinds of steel sash, counterbalanced windows, austral windows, monitor and continuous sash, and skylights with mechanical operators, etc. and is in a position to offer complete screening service for these.

Continued on next page

HIGGIN ALL-METAL SCREEN CONSTRUCTION

The details on this page are for the most part full size and show the Higgin All-metal Rewirable Screen and some of the accessories used in connection with them.

Screen Frame—The frame itself is illustrated below.

The frame is of hollow or tubular construction with a groove formed on one side to receive the wire cloth. The netting is held permanently taut by a cam shaped non-resilient metal spline which locks in the groove of frame. All edges coming in contact with the screen cloth are rounded, eliminating any danger of sharp edges cutting the wire strands. The screens are easily rewired without removing screws or rivets or damaging the frame or spline.

The frames are assembled on heavy "ell" shaped reinforcements which extend into the frame or moulding at least 2 in. and lock mechanically.

Two widths of moulding are manufactured, one $1\frac{1}{16}$ in. wide and the other $1\frac{1}{2}$ in. wide. They are made in both steel and bronze. Steel mouldings are spot-welded through the spline groove, bronze mouldings are soldered.

Finish of Frames—Steel frame screens may be finished in black enamel baked on or in special colors to harmonize with surrounding trim. All lacquered or enameled screens are first given a prime coat thoroughly baked on, the coating covering not only the exterior but the inside of tube as well. The metal itself is copper content steel electro galvanized in the flat, which with the prime and finish coats provides double protection at every point.

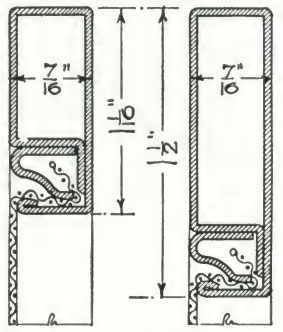
Bronze frame screens are made of the best grade of commercial bronze and may have statuary finish or may be left natural color unlacquered to weather.

Wire Cloth—Only genuine Anaconda bronze wire cloth is used in Higgin Screens. Standard mesh is 16 to the inch (by mesh is meant the number of spaces to the inch). The thickness of the wire for this mesh is .011. Extra heavy cloth may be had if desired, the diameter of which is .015.

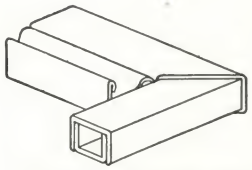
Other meshes which may be furnished are, 18, 20, 24 and 40; 18 and 20-mesh are often used in localities troubled with very small insects. For protecting fine machinery or delicate manufacturing operations a special dusttight equipment has been designed in which 40-mesh cloth is used. Cloth as fine as 100-mesh has been used for this purpose. Both 24 and 40-mesh cloth are employed for vision screens for banks and other ground floor offices.

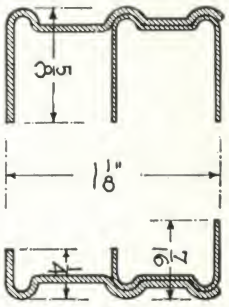
Hardware—In the group of illustrations are shown some of the more common items of hardware for metal frame screens of the hinged type. All this hardware is of solid bronze and is especially designed and manufactured by this company.

The illustrations show various accessories, such as guides, etc., used in connection with sliding screens. The drawings are full size.



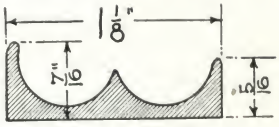
Tubular frame screens are made in two widths of rails as dimensioned above.


Corners of screen frame are mitered and assembled on "ell" shaped reinforcements of design illustrated above.

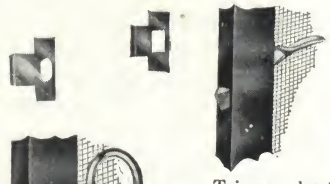


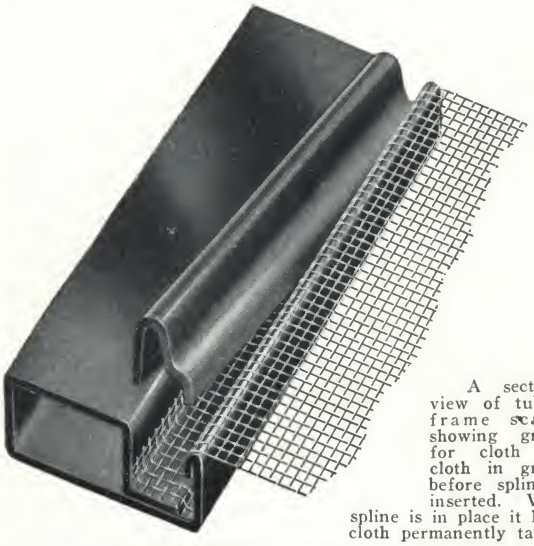
No. 316-317 double channel guides for double vertical and horizontal sliding screens.

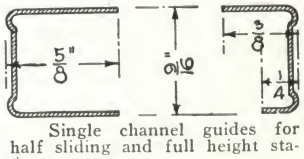
Corner of vertical sliding screen showing lift handle, compression spring, sill track and guide.



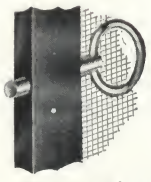
No. 132 Extruded brass sill track for horizontal sliding screens. A single track of the same design can be furnished.

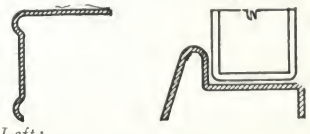

Trigger latch and keeper for hinged screens.


A sectional view of tubular frame screen showing groove for cloth and cloth in groove before spline is inserted. When spline is in place it holds cloth permanently taut.

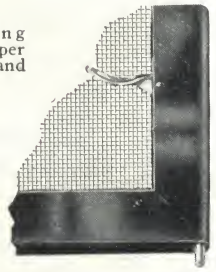


Single channel guides for half sliding and full height stationary screens.


Ring spring bolt with keeper for hinged and fixed screens.


Left: Utility angle guide.

Right: No. 142 bronze sill rabbet strip for side hinged screens prevents lower rail of screen from scraping finished stool.


Trigger operated pivot hinge for top and side hinged screens. Pivot at opposite corner of screen is fixed.

Continued on next page

HIGGIN ROLLING SCREEN CONSTRUCTION

The Higgin All-metal Rolling Screen consists of a metal box in which are assembled the roller tube to which the wire cloth is attached, the spindle and coil spring, 16-mesh genuine Anaconda Bronze wire cloth with double woven wire selvage edges, metal side guides and a one-piece rewirable raising bar complete with friction shoes and a pull operated spring bolt.

Assembly Box—Assembly boxes are made in two sizes, one $2\frac{9}{16}$ in. square at ends and one $2\frac{3}{16}$ in. square at ends. The first mentioned takes screen cloth up to 96 in. in height while the small box takes cloth for openings not exceeding 62 in. in height. The ends are of the flush type allowing a maximum margin of cloth in the side guides. The caps are equipped with metal bushings which support the spindle, spring and roller tube and prevent the pull of the screen from wearing on the spindle ends.

At each end of the assembly box are adjustable support brackets which when attached to the jambs support the box and hold it rigid.

Roller Tube—The roller tube is 1¼ in. in diameter and has a pear shaped groove running its entire length into which the wire cloth is held by means of a wire rod spline. The raising bar is equipped with a similar groove. All edges of the spline grooves are rounded so that there is no danger of sharp edges cutting the screen cloth. To rewire a Higgin Rolling Screen it is only necessary to pull the old cloth out of the grooves, crimp the new cloth around the wire splines and reinsert in the groove in the roller tube and raising bar.

Spring—The spring is oil tempered and encased in non-running grease. An automatic or self adjusting feature prevents binding or sticking and assures smooth and easy operation of the screen. Any degree of tension can be given the spring from outside the assembly box.

Side Guides—The side guides are $1\frac{3}{16}$ in. deep, permitting from ¾ to 1 in. of cloth in them at all times. Guides are provided with a flange by which they are attached to the jambs of the opening.

With the guides and assembly box both independent of the surrounding trim, special jamb liners and other finish may be eliminated. Both Box and Guides may be left exposed.

Raising Bar—The raising bar to which the screen cloth is attached at the bottom, is equipped with friction shoes which fit into the side guides, guiding the screen in its operation up and down. Automatic spring latches are provided on raising bar. The strikes engage in adjustable keepers attached to guides. Even though the finished stool shrink or warp, the keepers can be adjusted so that the raising bar will always contact tightly. To raise the screen it is only necessary to release these pull operated spring bolts and the screen will raise of its own accord to a distance sufficiently above the sash hardware to permit opening and closing of the sash. A slight push upward sends the screen home to the assembly box for storage, or it may be lowered again to the sill.

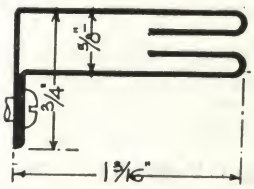
To prevent marring finished stools and to take up any irregularities, the raising bar is provided with a felt or fabric strip on the bottom. This feature also eliminates objectionable light lines.

Wire Cloth—16-mesh genuine Anaconda bronze wire cloth is used in Higgin rolling screens for Anaconda bronze never rusts and therefore always remains strong and serviceable. The edges of the cloth have double woven wire selvages adding to the strength of the cloth and keeping it in shape. The fine mesh bronze wire is almost invisible, ever admitting light, air and sunshine.

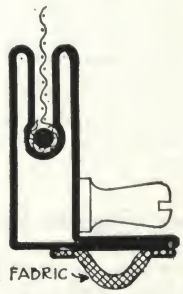
Each Part Renewable—The mechanical features of the Higgin Rolling Screen have been carefully worked out on the unit system. So simple is its construction that in case of accident any part or portion of the screen may be renewed without affecting any other part.

Finish—This company has adopted as a standard a neutral finish for raising bar and guides. Boxes are not finished unless so specified. Of course exposed parts may have special color finish if desired, but the standard color is so neutral that it blends with any finish.

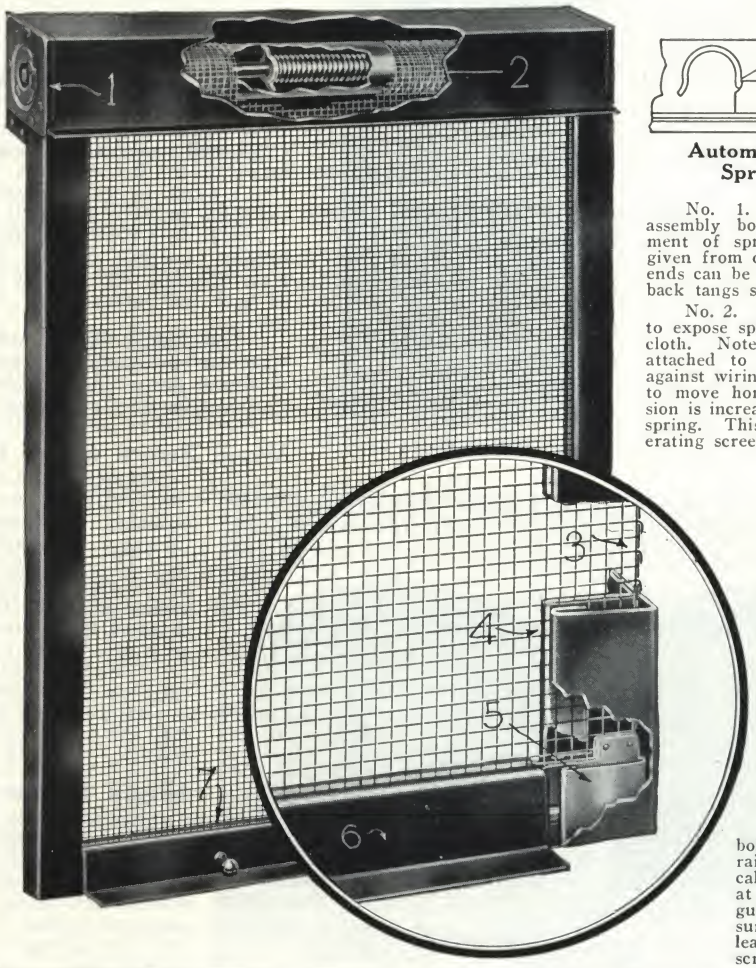
Sectional view through roller tube showing spindle and rewiring groove.

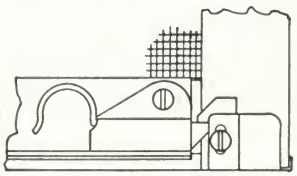


Cross section through guide. Regular position of fastening flange is under box, but guide may be reversed to bring fastening flange to room side of screen when specified.



Section through raising bar showing rewiring groove, knob operator for spring bolts and felt or fabric cushion which prevents raising bar marring stool and seals light line.





Automatic Locking Spring Catch

No. 1. Winding end of assembly box. Perfect adjustment of spring tension can be given from outside of box. Box ends can be removed by bending back tangs shown.

No. 2. Shows box cut away to expose spring roller tube and cloth. Note the automatic lug attached to spring which locks against wiring groove but is free to move horizontally when tension is increased or decreased on spring. This means smooth operating screen.

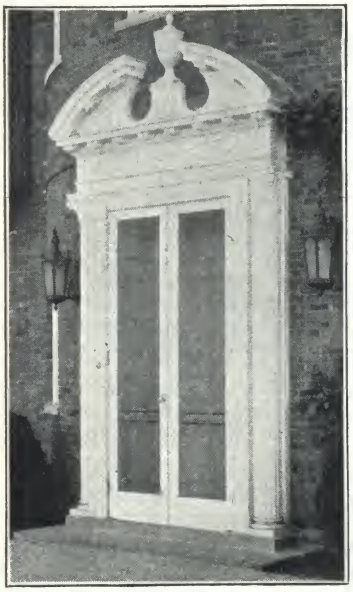
No. 3. Double woven wire selvage edge of cloth adds strength and holds wire strands in shape.

No. 4. Side guide of screen. Note depth of cloth in guide.

No. 5. Friction shoe attached to raising bar (No. 6) guides screen in its operation up and down. Friction shoes sticking in guides not possible.

No. 7. Pull operated spring bolt in each end of raising bar automatically locks in notches at bottom of side guides. Slight pressure of finger releases these when screen is to be raised.

Continued on next page



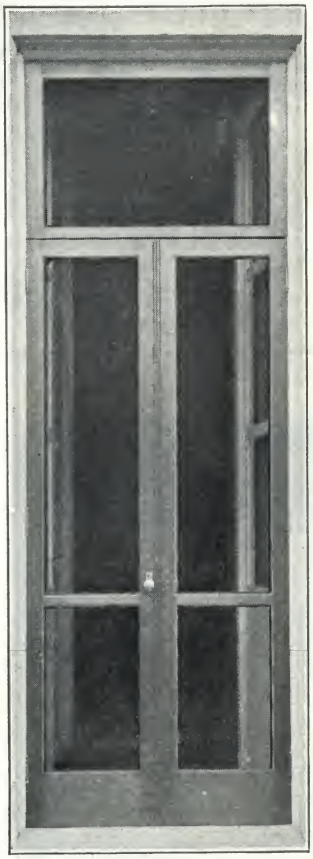
Higgin Wood Screen Doors

Higgin screen doors are designed to be in harmony with the architectural treatment of the opening. These doors are made in almost any wood and finish. Where no details are furnished the Higgin Field Expert makes the door to conform as closely as possible with the house door, not only in general design but in finish too. Many types of ribbon grille are carried or the architect may design his own. Hardware is the best and for the most part especially prepared for Higgin

Right

Higgin Bronze Doors

This door is not intended for heavy duty. It may be used on residence either at the chief door or those to terraces, porches, etc. It is made only in bronze and is $\frac{7}{8}$ in. thickness with stiles and rails either 2 or 3 in. wide. Cross braces are recommended. Wiring of the doors is accomplished in the same manner as described for metal frame screens, so they are rewirable. Doors are strongly reinforced but due to their thinness extreme heights are discouraged. Besides entrance doors this same type of construction is used for fixed panels and porch work. Some beautiful results have been obtained in this connection.



Below

Metal and Wood Porch Screens

Each porch screened is a new problem to Higgin. Each is individually treated and the many installations throughout the country are proof of Higgin's competency. Porch screens may be constructed of the Higgin bronze door shape illustrated and described above, of the 1½-in. frame described elsewhere, or of wood. No matter what the shape of the opening or how difficult it may seem Higgin is equal to it. A highly trained Field Staff working with our Technical Department will solve your problem nicely

OUTLINE SPECIFICATIONS FOR HIGGIN SCREENS

Metal Frame Screens (Higgin Page 7)

Window screens shall be of hollow or tubular construction with $\frac{7}{8}$-in. by (1$\frac{7}{8}$-in.) (1½-in.) stiles and rails, or not less than .032 cold rolled copper content steel electro galvanized in the flat; best grade commercial bronze. Steel frames shall be electrically spotwelded. Bronze frames soldered. Stiles and rails shall be assembled on reinforcing corners extending into frame at least 2 in.

Screen cloth shall be genuine Anaconda bronze 16 (18, etc.) meshes to the inch. Cloth shall be held in groove in screen frame with cam shape non-resilient metal spline which can be readily removed and replaced for the renewing of cloth, without distorting spline or damaging screen and without removing screws or rivets.

Screens (steel) shall have two coats baked on, inside and out, black enamel finish; special color lacquer finish; statuary bronze (bronze frame screens); unfinished to weather (bronze frame screens).

All hardware shall be as manufactured by THE HIGGIN MANUFACTURING COMPANY, Newport, Ky. Screens shall be numbered with corresponding numbered tacks in sill.

Rolling Screens (Higgin Page 8)

Windows (so specified) shall have Higgin All-metal Rolling Screens. The equipment shall consist of metal box in which are assembled the roller tube to which wire cloth is attached, spindle and self-adjusting coil spring, 16-mesh genuine Anaconda bronze wire cloth with double woven wire selvage edges. Metal side guides and a one piece rewirable raising bar complete with felt cushioned bottom, friction shoes and automatic locking spring latches complete the equipment. The assembly boxes shall have adjustable support brackets, removable end caps and a ready means of adjusting spring tension. Side guides shall be provided with flanges for fastening to jambs and adjustable keepers to receive strike of spring latches.

Screens shall be so constructed that the wire cloth or any part of the equipment can be removed and replaced without damage to any other portion.

Screens shall be installed in a neat and workmanlike manner according to details of the manufacturer and shall be left in perfect working order.

1½-in. Width Frame Metal Doors (Higgin Page 4)

Openings (so specified) shall have Higgin Metal Doors with stiles and top rail 1½ in. wide by $\frac{7}{8}$ in. thick. Bottom rails shall be of recessed panel type and shall correspond in height to the house doors. Doors shall have rewirable (2 in., 1 in.) brace at nearest cross rail of house door, below center. All stiles and corners shall be strongly reinforced.

Each leaf shall be hung on one and one-half pairs of butt hinges. Latches shall be of mortised type with ornamental lever handles. For double doors top and bottom bolts shall be of half oval surface type. Provide tee astragals for all double doors.

Doors shall be of (steel) (bronze) with screen cloth as specified for window screens. Doors (steel) shall be finished to match house doors; (bronze) shall be statuary bronze finish; shall be left unfinished to weather.

Wood Screen Doors (Higgin Page 9)

Screen doors (locate) shall be of (pine, quartered oak, etc.). All wood shall be well seasoned true and straight. Doors shall be 1⅛ in. thickness (or state thickness) with stiles and rails arranged to harmonize with house doors. All joints shall be mortised, glued and wedged. Wire screen cloth shall be held in a groove in door frame with a rattan spline easily removable for rewiring. Spline and groove rabbet shall be covered with a neat flush moulding.

Hardware shall be complete with butt hinges (3 each leaf), mortised latches, top and bottom bolts, etc.

Note: Higgin Doors are made to cover the individual requirement. Architects' details are followed. Doors can be equipped with checks, and grille of various designs.

Higgin Bronze Doors (Higgin Page 9)

Screen doors (locate) shall be of solid bronze, hollow metal type construction, $\frac{7}{8}$ in. thickness with stiles and rails (2 in.), (3 in.) wide. Doors shall have bottom rails 6 to 8 in. high, 2-in. cross rails. Hardware shall consist of bronze hinges (3 each leaf), mortised latches, knob and lever handles, escutcheons, etc. Provide tee astragals and top and bottom bolts on double doors.

Continued on next page

Rolling Screens for Outopening Casements (Higgin Page 3)

Outopening casement windows shall be equipped with Higgin Rolling Screens. Assembly boxes shall be concealed (they may also be exposed) in pockets at head of windows provided by others. Guides shall be secured to jambs and shall be true and straight. This contractor shall install screens before finished trim is applied. He shall instruct the carpenter and mill contractor on the detailing and application of all trim coming in contact with the screens.

Horizontal Sliding Screens (Higgin Page 2)

Outswinging casements shall have horizontal sliding screens to slide in grooved brass track at sill and channel guides at top. Unless rabbets are provided at jambs, metal angle rabbets or felt strips shall be furnished to seal light line and take up unevenness. Screens shall be divided to harmonize with sash units. Provide transom, mullions or other fixtures where required.

Side Hinged Screens (Higgin Page 2)

Windows shall be equipped with single or double inopening; outopening; side hinged screens complete with concealed pivot hinges, latches and for double type, astragals and top and bottom bolts. Provide angle rabbets, transom, mullions and other fixtures where required.

Inswinging Casement Window Screen (Higgin Page 4)

Metal inswinging casements shall be screened on the outside with stationary screens and held with ring spring bolts engaging in metal angle keepers attached to sash. Screens shall be easily removable. Where weather drip bars or friction stays occur, metal roll fixtures shall be secured to screen frame to overcome these obstructions.

Inswinging casements have rabbets provided on outside to receive screens. (a) Screens shall be stationary, held with spring bolts engaging in flat keepers attached to jambs. (b) Screens shall be top pivot hinged with fixed pivot at one corner and trigger operated spring pivot at opposite corner for the ready removal of screens. Mortise spring latches shall be furnished, one at each side near bottom of screen. (c) Screens shall be stationary, full height in channel guides affixed to jambs. Screens shall be held in place with compression springs attached to one edge of screen frame.

Rolling Screens for Double Hung Windows (Higgin Page 5)

Double hung windows shall have rolling screens on inside, with assembly box concealed (it may also be exposed) in pockets provided by others in the head of window frame. Guides shall be attached to pulley stiles and partially concealed with a stop bead.

Double Vertical Sliding Screens (Higgin Page 5)

Windows shall be equipped with double vertical sliding screens covering complete opening and shall have full height double channel guides, compression springs, lift handles, etc. Meeting rails of screens shall line with meeting rails of sash on double hung windows.

Top Hinged Screens (Higgin Page 5)

Windows shall have full height top hinged screens complete with concealed pivot hinges, latches or spring bolts. Where no rabbets are provided furnish metal angle rabbets.

Half Sliding Screens (Higgin Page 5)

Double hung windows shall have half height vertical sliding screens complete with compression springs, lift handles and full height channel guides. Screens shall extend to and contact with meeting rail of sash.

Screen Equipment for Center Pivoted Steel Sash (Higgin Page 6)

All center pivoted steel sash (state where) shall have Higgin Special Pivoted Sash Screen Equipment. This shall consist of a flat metal frame screen outside to cover the upper part of the vent and a metal frame screen inside to cover the lower part of the vent. At the center, both inside and out, shall be contact rolls which engage with screens to make a flytight job. Screens, both inside and out, shall seat in metal angle rabbets attached to sash. Screens shall be readily removable, but angle frames and contact rolls shall be permanently fastened to steel sash with machine screws. (This equipment may be had in steel or bronze.)

Screens for Projected-in Steel Sash (Higgin Page 6)

Projected-in type steel sash shall be screened on the outside. Equipment shall be Higgin No. 2501 and shall consist of a special metal fixture at each side forced over outside weathering of sash frame. The screens shall have two fixed pivots to engage in slots at top of each side fixture and be supported thereby. Screens shall be locked with spring bolts, one on each side rail engaging in keeper holes in side fixtures. Affixed to the bottom of the screen frame, a metal contact piece of bronze shall be furnished. This member shall contact with sash frame and provide a flytight job.

Screens for Projected-out Steel Sash (Higgin Page 6)

Projected-out type steel sash shall have screen contained in a four-sided metal box fastened to steel sash frame. Box shall extend no more than to clear sash hardware. Screen shall be top pivot hinged type with spring bolts at sides for locking. Screens shall be readily removable but box shall be a permanent part of the sash.

Where two vents occur one over the other, one metal box may be used with two top pivot hinged screens. On the outside of top rail of lower screen an astragal shall be provided which shall permit screens to be operated independently of one another.

Screens for Basement Steel Sash

Basement screens shall be Higgin No. 2512 type. This consists of a metal frame screen with a zee-shape adjustable fixture attached to each side rail of the screen. When screen is installed the zee-fixture engages with outside weathering of sash and holds screen at top and bottom tightly against sash weathering outside.

Patents

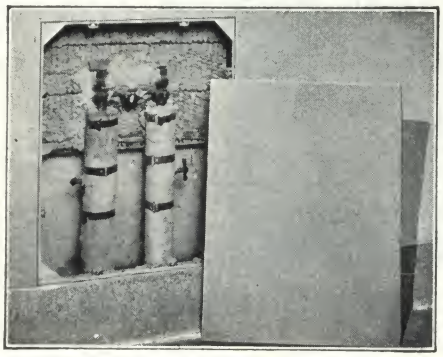
Higgin products are covered by basic patents which fully protect all important features.

OTHER HIGGIN PRODUCTS

Higgin Screens are known from coast to coast. Not quite so well known are other Higgin Products, but like Higgin Screens they are outstanding in their field. Higgin Weatherstrips are illustrated and described elsewhere in this edition (see Manufacturers' Index).

Higgin Venetian Blinds are fairly new in the field, but it will pay to investigate them. Descriptive literature has been prepared on these and will be sent on request.

The Higgin All-metal Access Panel is a product we want particularly to call your attention to. You will find complete information, cuts, sizes, etc., elsewhere in this edition (see Manufacturers' Index). The popularity of the Higgin Access Panel increases tremendously month by month. Its purpose is a flush, sanitary, door to hidden pipes, valves and other critical places in plumbing, heating and refrigerating systems. Being truly flush, it can be painted, papered or decorated over. Architects throughout the country are specifying them and many have developed uses that frankly, we must say, never were dreamed of.



The illustration at right shows a Higgin access panel behind the supply end of a tub. The panel lid has been removed exposing the supplies so artfully concealed when the lid is in place

JAMESTOWN SCREEN & MFG. COMPANY, INC.

"Artistic Sentinel" Metal and Wood Screens and Doors, Roll Screens, Pivoted Window Screens

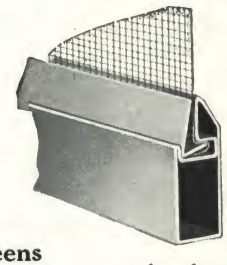
JAMESTOWN, N. Y.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Organization, Facilities and Quality

The JAMESTOWN SCREEN & MFG. COMPANY, INC. is operated in conjunction with The A. C. Norquist Co., established in 1881. The management personnel are the same.

Their screens are made of the highest grade materials in modern plants, completely equipped with the latest machinery and methods. They have met with public approval for fifteen years in installations of every sort.



Features of Jamestown Patented Metal Screens

(1) Completely rewirable without special tools.

(2) One-piece tubular construction built on truss principle to give great strength and rigidity.

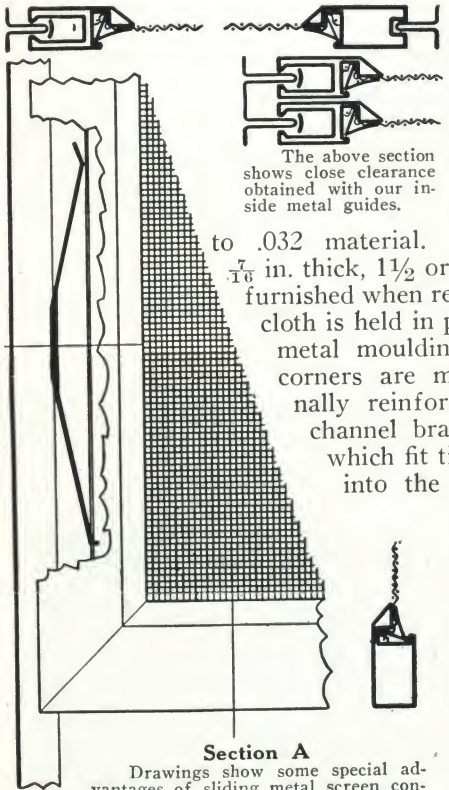
(3) Distinctive and neat in appearance; both sides are symmetrical.

(4) Beveled surfaces are smooth and do not hold dust; they form a practical water shed.

(5) Sliding screens have concealed springs which cannot fall out or become lost, yet may be easily replaced.

(6) Screens slide over a sturdy, ribbed track on an inside bearing surface, preventing a marred appearance.

(7) Reinforced and soldered corner construction.



The above section shows close clearance obtained with our inside metal guides.

Section A

Drawings show some special advantages of sliding metal screen construction, which includes such important features as concealed springs, minimum guide friction and inside guides which eliminate the possibility of marring surface finish of screens.

Construction Details—*Framing*—Is of tubular rolled, one-piece construction in a truss formation, $\frac{7}{16}$ in. thick, 1⅛ in. wide of .025 to .032 material. Special framing $\frac{7}{16}$ in. thick, 1½ or 2 in. wide will be furnished when required. The wire cloth is held in place by a resilient metal moulding or spline. All corners are mitered and internally reinforced with angular channel braces .050 in. thick which fit tightly, extend well into the framing and are soldered.

Metals and Finishes—Screen frames can be furnished in electro-galvanized copper bearing steel, bronze or aluminum. Steel frames are finished in any color baked enamel.

Wire Cloth—Sixteen-mesh oxidized or bright bronze wire cloth is standard, other types of cloth at proportionate cost.

Sliding—One frame member of each sliding screen has a shallow groove, the opposite member a deep groove. Oil-tempered compression springs are concealed in the deep groove and are retained by inwardly projecting shoulders at the outer edges of the frame section.

The inside guides eliminate rubbing and contact on the outside of the frame and enable twin-sliding screens to pass very closely, making them actually flytight. The lower rail of horizontally sliding screens may be furnished with concealed rollers to facilitate the sliding of large units.

Pivoted—Top or side pivoted screens are furnished with one fixed and one movable, lever operated, pivot bolt located in the rounded back member of the frame. All bolts and pivots are of solid brass with keeper plates furnished. Double pivoted screens include astragals and top and bottom bolts for stationary leaf.

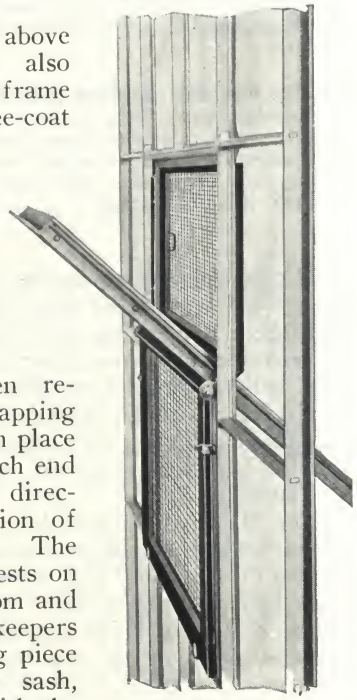
Top-hung—Flat-back frame sections are used on all four members, screens being furnished with loop hangers fastened to top rails according to the depth of rabbet specified. Hook and eye or straight spring bolt fasteners are provided near bottom of vertical stiles. Keeper plates and screw hook or plate hangers are included.

Stationary—Screens furnished for fastening directly to sash or openings by screws, to be held in place by hooks and eyes or spring bolts, or by means of springs similar to the arrangement for sliding screens.

Wood—All the above types of screens are also manufactured in wood frame construction with any three-coat color finish.

For Pivoted Sash—The Jamestown method of screening industrial sash is extremely practical. Installation entails a minimum of work, all performed from the inside.

The exterior screen requires no drilling and tapping of the sash. It is held in place by full length clips at each end and slides in a vertical direction, following the motion of the pivoted ventilator. The lower or inside screen rests on two hangers at the bottom and is held in place by turnkeepers at either side. A fitting piece above, attached to the sash, provides close contact with the screen at all times.



Center Pivoted Sash Screen

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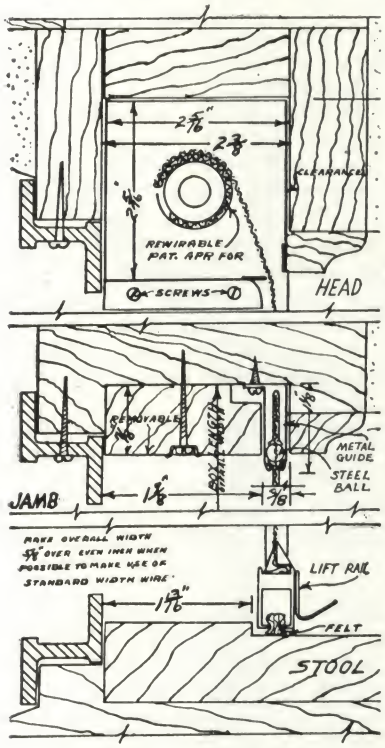
Jamestown Roll Screens

The JAMESTOWN SCREEN & MFG. COMPANY, INC., has developed two types of roll screens. "The Sentinel" is particularly adapted for building into the sash frame so as to be almost entirely concealed. It may, however, be exposed or used to meet any condition. A flange with punched holes is provided at each end for attaching the box.



Details of "Sentinel" Roll Screen Construction

"The Economic," or casement type, is designed primarily for attaching directly to the surface of steel sash without regard for jamb or head conditions. The box is especially neat and attractive, and the guides are provided with jamb strips which give ½-in. clearance between the cloth and the surface of the sash. When the sash vent is closed the screen is rolled up, removing all obstruction to vision.

The major features of construction are common to both, and either may be had in bronze throughout or with electro-galvanized or lead-coated steel roll, roll box, guides and lift rail. Sixteen-mesh bronze wire cloth is regularly furnished, but any other suitable type of cloth will be provided when required.

Roll Box—For "The Sentinel" type is square; for "The Economic" screen is hexagonal. End covers are attached by clips, making them easily removable. The adjustment of spring tension, however, does not require their removal, this being performed merely by the use of a screwdriver applied to one end of the axle shaft.

Roller—The wire cloth is attached to the roller without the use of solder, so that the screen is rewirable in fact rather than in claim only. The roller axis is of $\frac{5}{16}$-in. cold rolled steel with bronze bearings, which eliminates possible "freezing" of the axis. The roller is packed with grease when assembled.

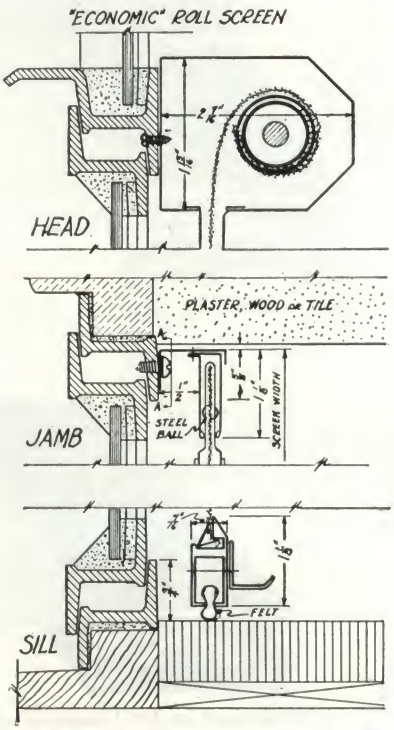
Guides—Are of heavy gauge material and fit securely into roll box. They are furnished punched, for fastening to the jambs or screwing to the sash.

Lift Rail—Is particularly pleasing in appearance and of beveled tubular construction, $\frac{7}{16}$ in. thick and 1⅛ in. wide with a felt strip, which can be easily replaced, inserted at the bottom edge to insure its being flytight, and to prevent marring of highly finished sills. The rail is rewirable and of unusual strength due to its tubular construction, yet it is light in weight. It is so constructed that it will stay in almost any position instead of flying to the top with great force and probable injury to the screen.

Hardened steel balls are inserted at either end of the lift rail to take wear and prevent the rail from leaving the guides.

Patents on this feature are now pending.

Finish—Roll screens may be furnished unfinished, or in any color of baked enamel, or grained, or in finished bronze.



Details of "Economic" Roll Screen Construction

Special Bronze Door

Metal Doors

The completeness of the Jamestown Artistic Sentinel line of screening is finally evidenced by the fact that it includes the manufacture of every type of metal screen door. They are regularly furnished in ½, ⅝ and 1⅛ in. thick pressed tubular construction.

Doors of greater thicknesses or special design will be furnished on special order.

The ½ and the ⅝-in. metal doors are similar in construction with smooth face stiles and rails 2 in. in width, except the bottom rail, which is 5 in. While these widths are standard they need not be fixed.

These two types are designed particularly for use in connection with Casement and French doors and for residence work, the heavier type being recommended where subjected to constant use.

The 1⅛-in. thick metal door is built of heavier construction and better adapted for public buildings and entrances where there is hard usage. Attractively moulded stiles and top rails are of 3¾ in. and the bottom rail 5¾ in. for two-panel door, 11¾ in. for single panel in standard width, though these may be varied.

All doors are rewirable, the wire cloth being held in place by means of a metal spline. Corners are internally reinforced and soldered.

Special shaped heads may be furnished to template. Double doors are made with astragal joint and concealed top and bottom bolts.

Hardware is mortise type, brass or bronze, finished as specified.

Frames may be of galvanized steel in baked enamel finishes, natural or finished bronze or in aluminum or other special metal. Wire cloth is 16-mesh bronze or as specified. Wire guard grilles are available in a variety of attractive types and designs.

1⅛-in. Section

½ and ⅝-in. Section

Wood Doors

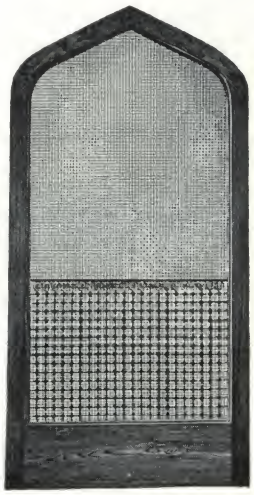
A complete range of wood screen doors are manufactured, either in solid or veneered construction. They are regularly made 1⅛ in. thick with stiles and top rails 3¾ in. wide and bottom rails 5¾ in. wide, or for single-panel doors 11¾ in. in width.

Other thicknesses and widths can be had at proportionate cost.

Joints are tongue-and-groove or doweled, and the wire cloth is secured by means of rattan splines and raised mouldings.

Doors are carefully finished in three coats of best white lead and linseed oil paint.

Regular hardware includes solid brass or bronze latch, loose pin butts, top and bottom bolts and coil springs. Liquid or pneumatic checks and guard grilles are furnished when specified.



Wood Door with Twist Bronze Guard

JOHNSON METAL PRODUCTS COMPANY

Manufacturers of All-metal Window, Door and Porch Screens

1316 Holland Street
ERIE, PA.

NEW YORK OFFICE, 101 Park Avenue—Telephone, Ashland 8320

Products

ALL-METAL RE-WIRABLE WINDOW, DOOR and PORCH SCREENS; SCREEN DOORS.

Also Radiator Cabinets.

Architectural Service

Architects are cordially invited to submit their screening problems to us. The simple construction of our screen enables us to manufacture special shapes and designs for any purpose, viz:

Auto busses	Railroad cars
Boats and yachts	Steel sash

Send for a corner section of the JOHNSON Screen and study it at close range. You are not obligated in any way.

Construction

The JOHNSON Screen is of metal construction throughout. The steel, bronze, and screen cloth are the very best obtainable.

The frame is formed of two channel bars, rolled to special design, the lower bar having an angle brace through its entire length which is sweated securely in position. The top bar is approximately the width of the lower one, but with flanges curved in.

Steel Frames—Made of finest quality copper-bearing electro-galvanized steel, .025 in. in thickness, with either sprayed lacquer or baked enamel finish over a baked prime coat. This produces the most durable finish obtainable. The JOHNSON Screen is rigid and strong and the one-piece triangular corner brace, sweated in, gives a solid corner construction which will support several hundred pounds. The closing channel interlocks with the main channel, forming a complete finished frame.

The reverse curve of this channel makes a most effective clamp for the wire cloth, every strand of wire being locked rigidly in place for the entire length and breadth of the screen.

Two-tone Finish—On account of the JOHNSON Screen being made in two sections, it is the only screen which can be finished in two colors; the side of the frame facing the inside of the room can be finished to match the interior finish of room, while the other side of screen may be finished to harmonize with exterior of building.

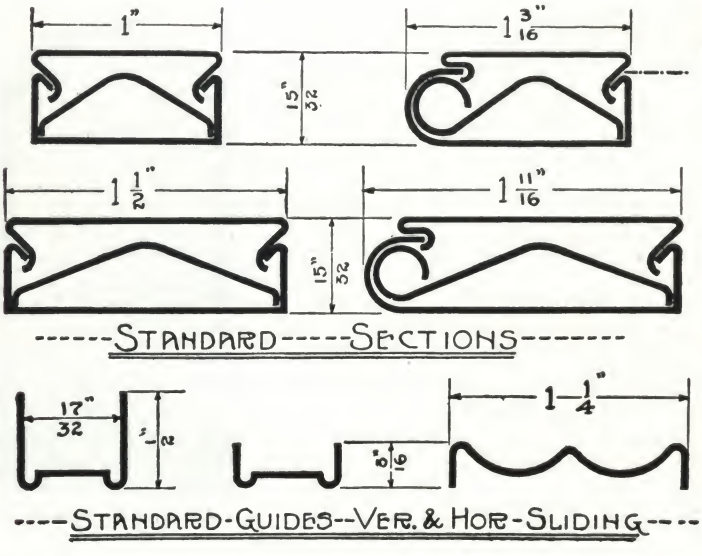
Bronze Frames (Non-rusting)—Made of commercial bronze of finest quality, .026 in. thick. Finish—natural, oxidized, or sprayed lacquer.

Screen Cloth—16-mesh bronze wire cloth is our standard. Other sizes furnished when requested.

Types of Screens

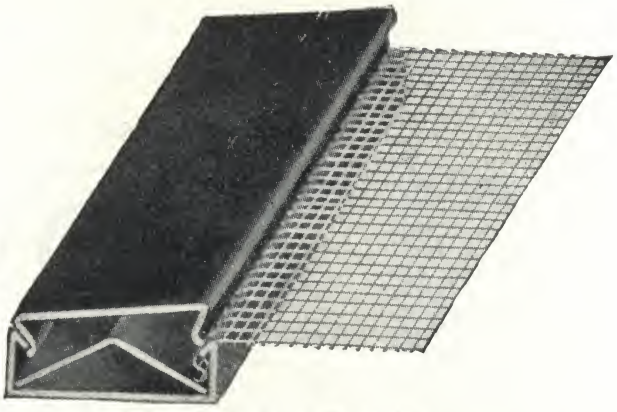
Screens are made to cover entire opening, or part of opening. Screens for entire opening are made stationary, top hung, side hung (the latter two being hinged or pivoted), or sliding (vertical or horizontal).

We also manufacture cage screens, porch screens and screen doors. Sliding screens operate full height of frame on our standard guides.



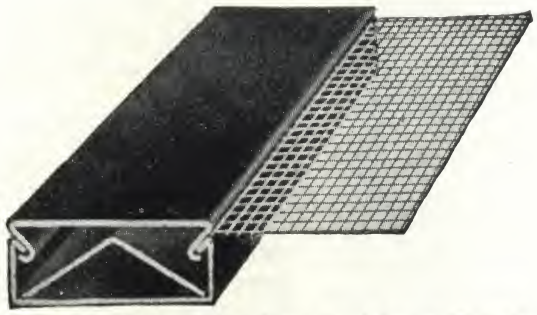
STANDARD SECTIONS

STANDARD GUIDES—VER. & HOR. SLIDING



Methods of Screening

JOHNSON frames are outstanding in the ease and speed with which they may be screened or re-wired



Upper and Lower Channels of the Johnson Tubular Patented Frame Interlocked

(Patent 1698885)

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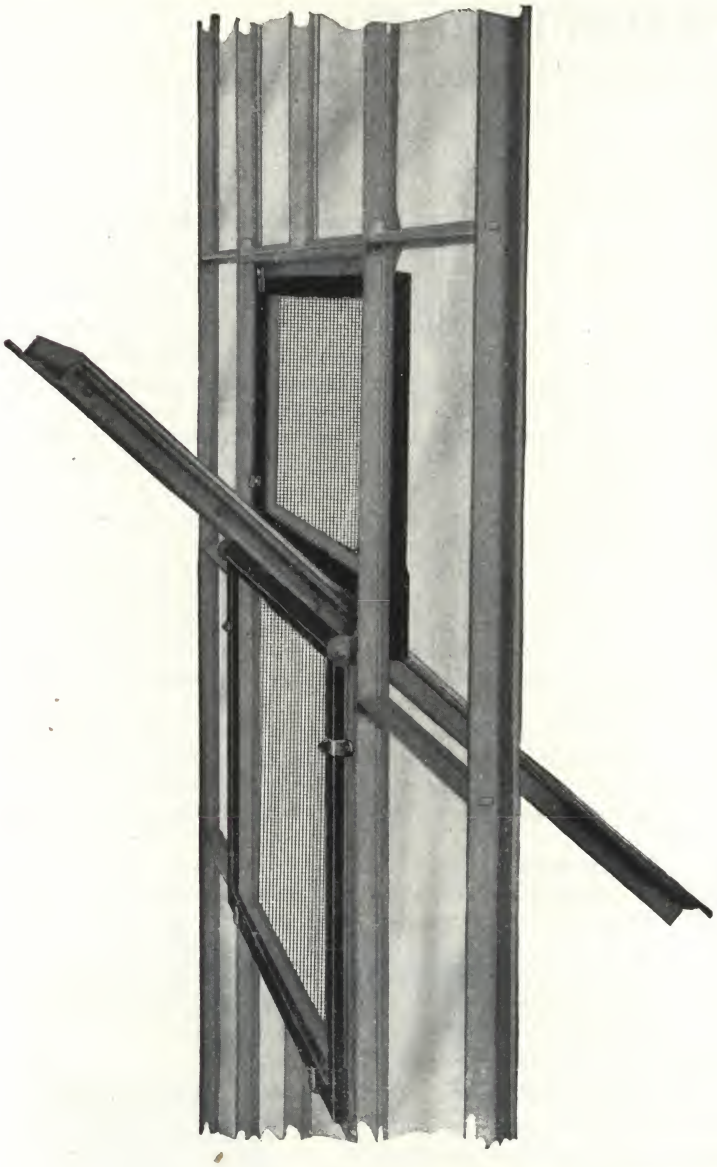


Pivot Sash Screens

The JOHNSON Pivot Sash Screen is simplicity itself. It has fewer parts than any other screen of this type. It requires the drilling of only six holes for attaching filler strips, and all installations are made *from the inside* of building, eliminating scaffolding, etc.

When ordering this type of screen, the only information required is the name of the manufacturer of the pivot sash, the manufacturer's factory or code number of the type of sash, the number of lights wide, and the size of the glass. This information can always be obtained from the sash manufacturer's catalogue.

Pivot sash screens can be made for the following sash: Fenestra, Truscon, Lupton, Thorne, Bayley, Mesker, Federal, Boca.

Screens and equipment for pivot sash are completely assembled at the factory, which greatly simplifies installation.

Screens for Standard Steel Casements

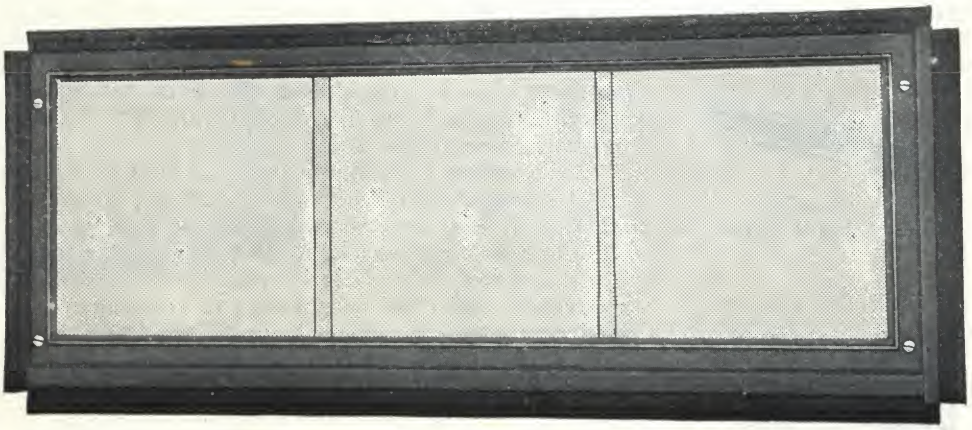
Our Duplex Screen is used extensively for screening steel casement windows. Details of single and double casement window screens are given in our catalogue, copy of which will be furnished upon request.

The construction of the JOHNSON screen is such that simple and satisfactory installations can be made for Top Pivot Sash, and Reversible Type Sash.

Steel Basement Screens

The JOHNSON Basement Screen is made of a special rolled section with butt-welded corners, designed especially for steel basement windows. This screen may be attached from the outside with screws, as shown in illustration, or from the inside with clips as may be required on various types of steel basement sash.

16-mesh bronze or galvanized wire cloth may be had as desired.



The JOHNSON Basement Screen is made for any steel sash. The only information required is the name of manufacturer of sash, number of lights and size of glass. Screen frame is finished in black baked-on enamel.

A Few 1930 Johnson Screen Installations

Maine General Hospital, Portland, Me.
Metropolitan Hospital, New York, N. Y.
Lakeside Hospital, Cleveland, Ohio
Cornell University, Ithaca, N. Y.
Kresge Company, Detroit, Mich.
Masonic Home, Utica, N. Y.
Morrisania City Hospital, New York, N. Y.
Ford Motor Company, Detroit, Mich.
New York Central Depot, Buffalo, N. Y.
Elbert Hubbard II, East Aurora, N. Y.
Standard Oil Corporation
Duke University, Durham, N. C.
Essex Mountain Sanitarium, Verona, N. J.
Children's Hospital, Boston, Mass.
Osteopathic Hospital, Philadelphia, Pa.
Homeopathic Hospital, Gowanda, N. Y.
Tulane University, New Orleans, La.
New Blessed Sacrament Rectory, Albany, N. Y.

KANE MANUFACTURING CO.

Manufacturers of "Kane Quality" Insect Screens

HOME OFFICE AND FACTORY

KANE, PA.

DISTRIBUTORS IN ALL PRINCIPAL CITIES

LOCAL REPRESENTATIVE

Products

Manufacturers of "KANE QUALITY" WOOD and METAL FRAME, FLAT and ROLL-TYPE INSECT SCREENS for practically any kind or shape of window, porch or door opening—made to order only.

For our pages on Weatherstrips and Accessories of zinc, brass, bronze and copper and Venetian Blinds, see Manufacturers' Index.

Experience and Facilities

The KANE MANUFACTURING Co. has been engaged in the manufacture of door and window insect screens for forty years, and has reached a degree of perfection in the finished product that is only possible through the combination of long experience and exceptional manufacturing facilities.

The Kane factories are ideally situated from a shipping and manufacturing standpoint, and are designed and equipped for making its product a leader in the industry.

Service

Kane distributors are located in all principal cities. They maintain organizations experienced in estimating, selling and installing, through whom our patrons are assured of efficient handling of their specifications.

Architects and builders are invited to consult with our distributors regarding their requirements.

"Kane Quality" Screens

The KANE MANUFACTURING Co. has set a high standard of quality in screen manufacture and this quality is as visible in the finished product as it is in the degree of service obtained through years of use.

"Kane Quality" screens are made from wood or metal to conform to any architectural design, and can be finished in harmony with any existing or desired color scheme.

They will fit the openings accurately and are made of durable, reliable materials.

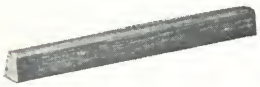
"Kane Quality" screens are easy to operate as well as easy to remove or replace. They are light in weight, without sacrifice of strength, to facilitate handling.

The finish and color are given special treatment to insure them against the weather and other destructive elements.

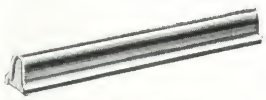
They are easily rewirable so that new screens are not necessary in case of accidental damage, and possess other exclusive features of design to make them unsurpassed from the standpoints of service and appearance.

Porch Screens

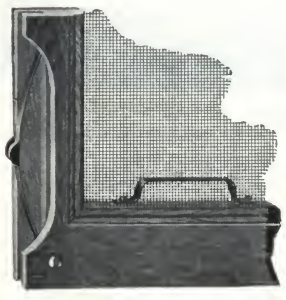
Porch screens vary so greatly in design that expert knowledge and skillful workmanship are particularly essential. Kane porch screens are designed to meet all conditions, and with their methods of fastening, are easily installed or removed. Complete information and quotations furnished on request.



Regular No. 16 Guide for Sliding Screens



No. 20 or 21 Metal Covered Guide



Section of Sliding Screen with Riveted Corner, Pull, and Flanged Friction Spring

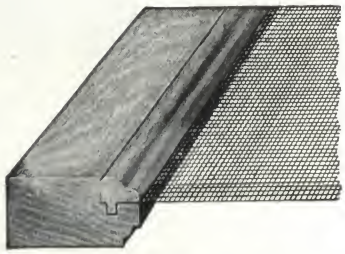
WOOD FRAME WINDOW SCREENS

Wood frame screens are made from selected domestic and imported lumber thoroughly seasoned and kiln-dried. It is our custom to use the same kind of lumber as is used in the sash which the screen is to cover, so that the finish may be carefully matched. For outside screens, however, we recommend the use of No. 1 Northern White Pine painted to match the exterior color of sash.

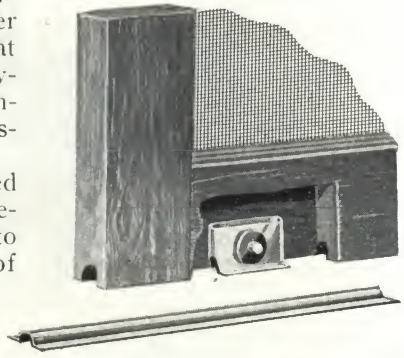
All corners are full mortised and tenoned joints, tightly wedged and held with waterproof glue. In addition to this, the standard $\frac{13}{16}$-in. thick screens for exterior use have a special brass rivet in each corner. The stiles and rails of all screens have a rabbet and groove into which the wire netting is rolled, then covered with a neat moulding having a spline on under side which is forced into the wire groove so that every strand of netting is fastened, each strand carrying its own weight (no tacks are used), making unsightly, baggy wire impossible. The moulding is fastened with brass brads.

Standard screens are $\frac{13}{16}$-in. or $1\frac{1}{8}$-in. finished thickness, but can be furnished in any thickness desired. The widths of stiles and rails are made to conform with the size of screens, keeping back of glass line wherever possible.

Painted frames receive three (3) coats of pure linseed oil, white lead and zinc. Stained work receives one (1) coat of filler and two (2) coats of spar varnish.



Method of Wiring Wood Frame Window Screens



Horizontal Sliding Screen with Sheave and Brass Guide

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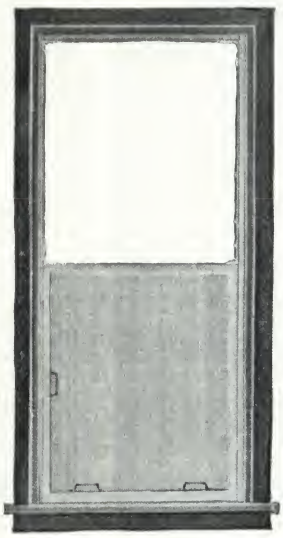
SELECTING THE RIGHT WINDOW SCREEN

Screens at their best do not add to or beautify a window or door. Therefore, selecting the proper screen for the different type openings should have very careful attention. Our representatives who have had many years of experience in this line are always at your service to consult with and advise you just what type screen would best harmonize with the conditions you have to meet.

For double hung windows, under ordinary conditions there are three methods of screening, each having its own advantages. All screens should, wherever possible, be placed upon the outside of the window so that sash can be opened or closed at will without disturbing the screen, for every time a screen is opened insects have an opportunity to enter the house.

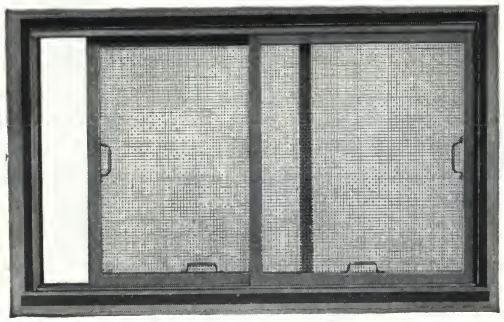
The first method and the one usually used is to have a single sliding screen made to cover the lower half of window. These screens are made so that the top rail of screen will overlap and make joint on the bottom rail of the upper sash and should slide up and down on guides which are attached to the blind stop the entire height of opening on both sides so that screen may be used at upper or lower part of window. This method allows ventilation for either the bottom or top part of window and has the advantage of being able to push the screen up out of the way so one would not be looking through the glass and netting when window is closed.

The second method is a vertical double sliding screen to cover both upper and lower sash; this method allows ventilation with both the upper and lower sash at the same time. These screens work exactly like the single sliding screen except that there are two screens which cover the entire window opening, the division being made at the meeting rail of sash. This method also has the advantage of raising the lower screen up out of the way when lower sash is closed.



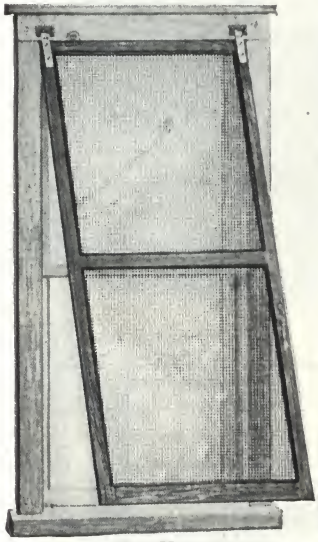
Single Sliding

Vertical Double Sliding

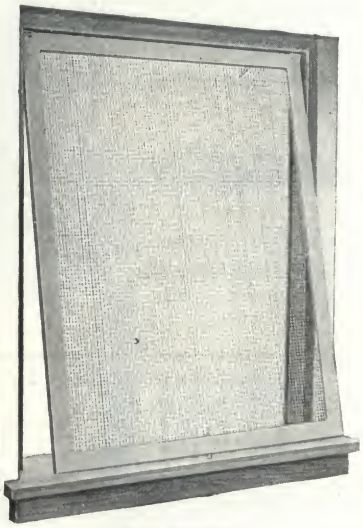


Horizontal Double Sliding

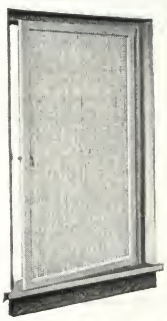
Types of "Kane Quality" Screens



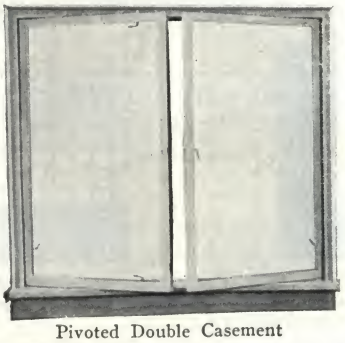
Top Hung



Top Pivoted



Pivoted Single Casement



Pivoted Double Casement

Types of "Kane Quality" Screens

The third method is to cover the entire window with one screen, either top-hung, top-pivot or side-hinged. This method has the same advantage as the vertical double sliding screen of being able to ventilate both the upper and lower sash at the same time, but has the disadvantage of always having the screen in view whether the lower sash is open or closed. This method also interferes with the use of outside blinds, shutters or awnings, where the single or double vertical sliding screen does not.

For casement windows opening outward, either the inside side pivot, vertical double sliding, or roll screen can be used, each having its own advantage. When roller shades or draperies do not interfere, the side pivot screen can be used to good advantage as it will give an unobstructed view, no cross-rails showing on eye-line and when removed from window leaves no unsightly hardware fixtures to mar the window trim.

If draperies or shades interfere, then the vertical double sliding screen or the roll screen (see third page following) can be used to better advantage on single windows, or if windows are in pairs or sections the horizontal sliding screen in either pairs or sections, to suit the width of opening, usually work to best advantage, the screens being divided opposite mullion in window frames.

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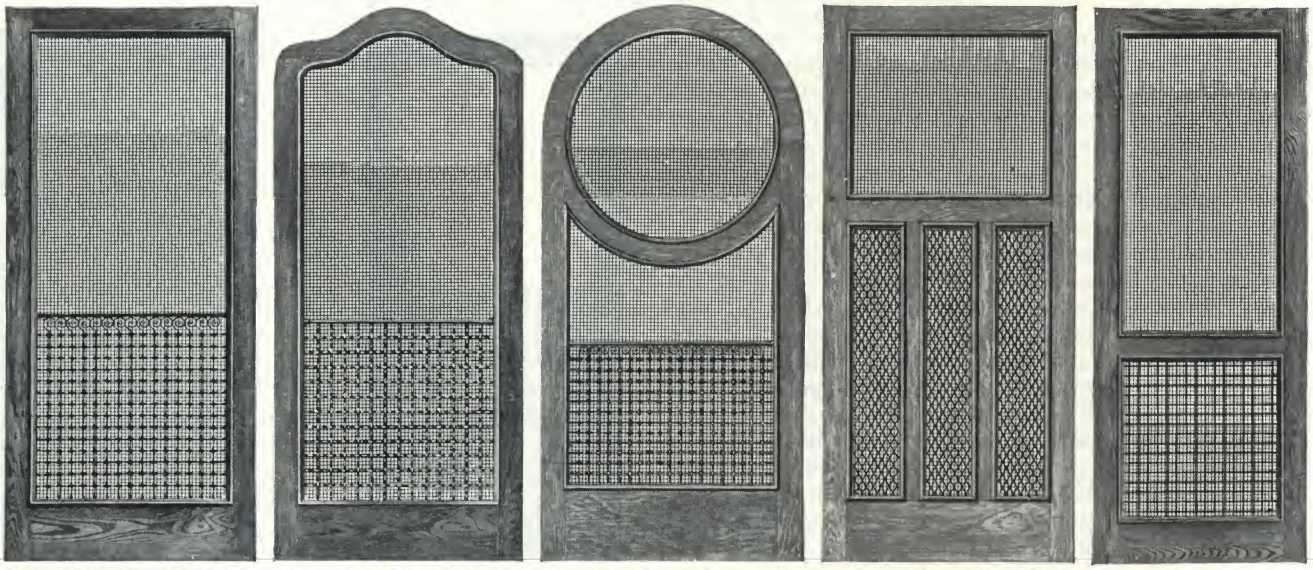
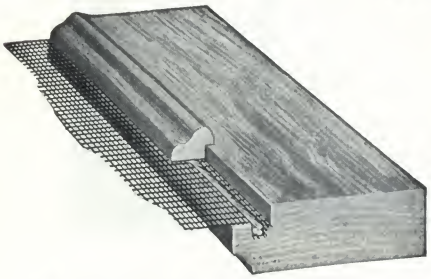


Door No. 19 with 10-X Guard | Door No. 19, Special, with No. 12-Y Guard | Circular Panel Door with No. 13-X Guard | Door No. 24 with No. 14 Guard | Door No. 20 with No. 12 Guard

TYPICAL KANE SCREEN DOORS

KANE WOOD FRAME SCREEN DOORS



Method of Wiring Door Screens

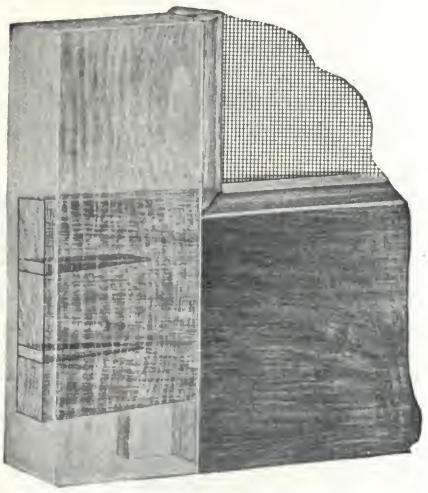
Frames are made from selected lumber, thoroughly dried, and the doors will not sag or warp. Standard dimensions are 1⅛ in. thick with 4-in. stiles and top rails and 7¾-in. bottom rails, except single-panel doors which have 11-in. bottom rails.

Other frame thicknesses and widths, and in any design, furnished as may be specified.

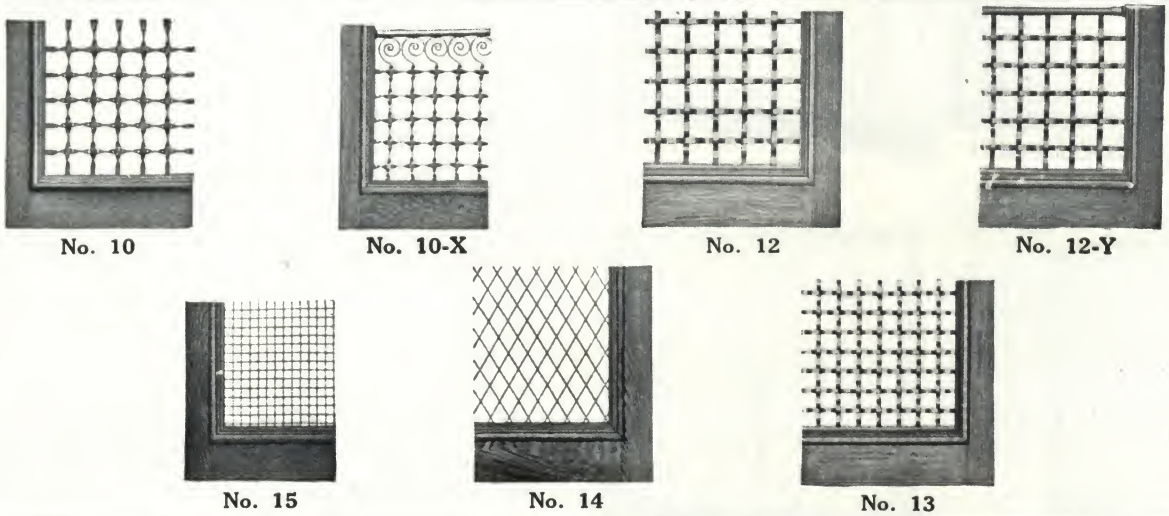
Corners are full mortise and tenon, wedged and glued.

The screen cloth is held in the grooved frame with a special jute cord and covered with neat moulding. This method of wiring has proven most satisfactory to prevent breakage of the screen cloth at the joint from vibrations which occur in service when a more rigid fastening method is used.

Grilles—To protect the lower panels of door screens from damage, we recommend and furnish a variety of brass and bronze grilles, ornamental in design and finish when specified.



Door Corner Joint



No. 10 | No. 10-X | No. 12 | No. 12-Y

No. 15 | No. 14 | No. 13

SCREEN DOOR GRILLES

Continued on next page

KANE METAL FRAME SCREENS

"Kane Quality" screens reflect precision and accuracy in workmanship, with mechanical ingenuity in construction and operation. They are made to harmonize with any architectural or decorative scheme in appearance and are as indestructible as durable materials can make them.

They are made from solid bronze or from a special grade of galvanized cold rolled alloy steel. The maximum degree of rigidity and resistance to torsion stresses is obtained by the use of the tubular frame which is internally reinforced at the mitered corners with an insert member forced into place. The moulding holds the screen cloth evenly and securely; forms a neat joint flush with the frame and makes removal of the screen cloth easy if it becomes necessary.

Regular frames are $\frac{7}{16}$ in. thick and 1 in. wide for usual sizes of window screens.

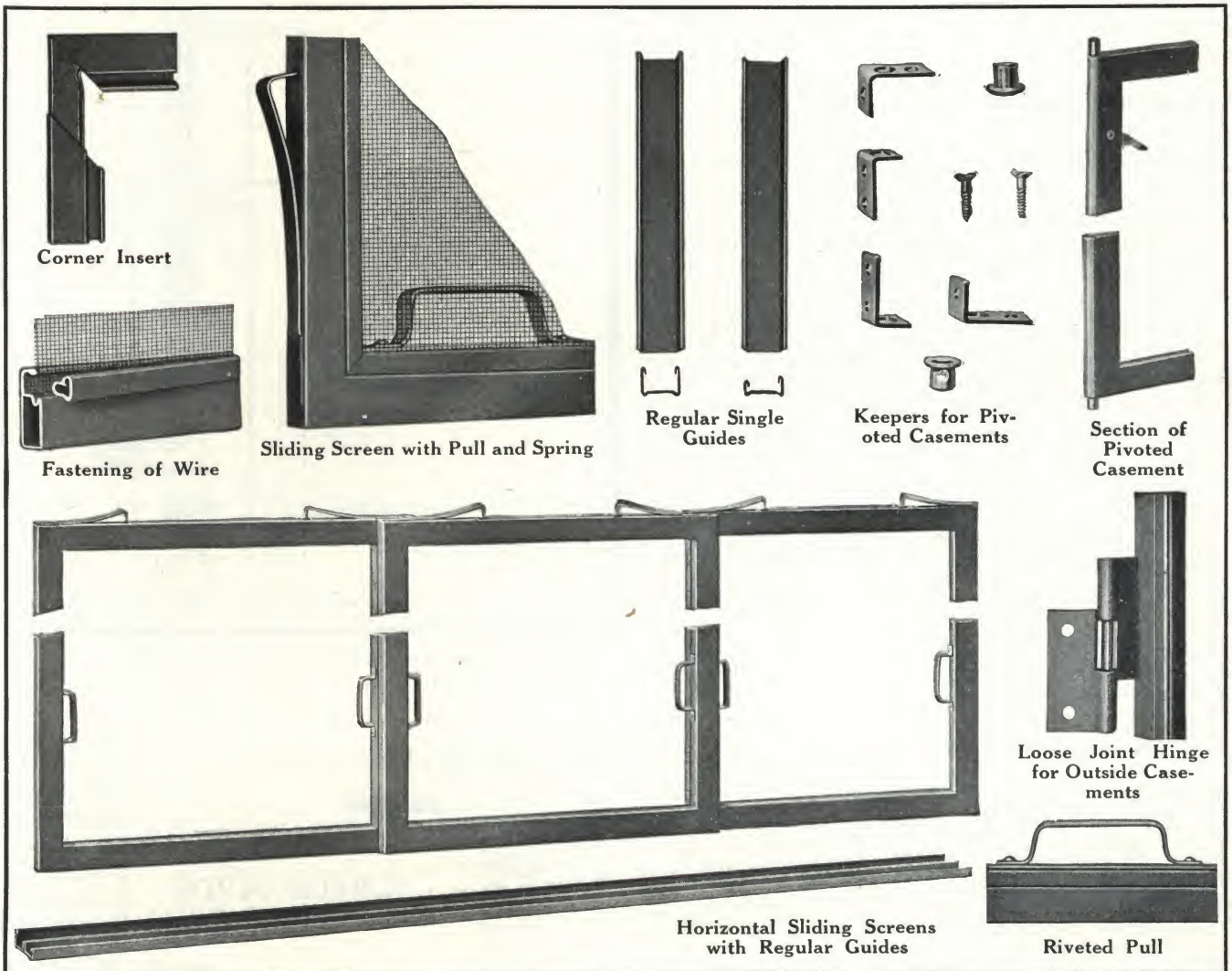
Special frames are $\frac{7}{16}$ in. thick and 1⅞ in. wide—designed for larger screens, such as French windows, porches and small doors.

The $\frac{7}{16}$x1-in. frames may be had with outside edges either square or rounded; the $\frac{7}{16}$x1⅞-in. frames with square outside edges only.

Screens for full size of openings are equipped with fastening and operating fixtures best adapted to meet such conditions as may occur—hooks and eyes or spring bolts for stationary screens; top hangers or pivots for suspending at top of openings; loose-leaf and loose joint hinges or pivots for casement screens.

Finishes—Steel frame screens are finished with a baked-on enamel or with nitro-cellulose enamels, the hardest and most durable metal finish known; a pleasing semi-gloss in such colors or grains as may be specified.

Bronze frames furnished in the various finishes which are applicable to the metal.



CONSTRUCTION DETAILS—METAL FRAME SCREENS

Screen Cloth

Unless otherwise specified, we use 16-mesh bronze screen cloth and recommend this material as most serviceable under all usual atmospheric and climatic conditions. It is as non-corrosive as pure copper and 50% stronger. Other screen fabrics furnished as specified.

"Kane Quality" Hardware

Our hardware is largely made to order after our own designs to provide most practical fastening and operating devices and to be in keeping with our product.

Continued on next page

"KANE QUALITY" ROLL SCREEN

With the changes in architectural design which have taken place during the past few years there have also come about changes in screen design to conform therewith. For forty years the the KANE MANUFACTURING Co. has held an enviable reputation with architects and builders and it was natural, therefore, that we should be requested to furnish roll screens when these were desired.

In order to meet the demand we have been studying and experimenting with this type of screen for several years, but only recently have these tests been completed and a roll screen developed which we were satisfied to offer to the architectural profession. The long period of trial has been well worth while, however, and we now feel that we can furnish a roll screen which will meet the strictest requirements of the architect and enhance the reputation of the KANE MANUFACTURING Co.

Advantages of "Kane Quality" Roll Screen

It seems to be scarcely necessary to detail the advantages of roll screens for most architects are familiar with their outstanding features. For those who have never used this type we describe below a few of the special points of interest to the designer, builder, or interior decorator.

Roll screens are installed on the inside of the window and are practically concealed except for the screen wire itself. The box containing the coil may be set into the trim of the windows and thus be entirely out of sight. The guides are also practically hidden in the trim as may be seen in the illustrations. Since they are on the inside, the screen will stay clean indefinitely and being in the reveal of the window they will never interfere with the draperies in any way.

Roll screens are raised and lowered with no more effort than a window shade, thus making for convenience in cleaning the windows, or other purposes. It is not necessary to remove the screens for storage, merely raise them and they are out of the way until needed. As they are made of specially tempered Anaconda bronze screen cloth they are practically indestructible and there is no annual expense for painting, repairing, or rescreening.

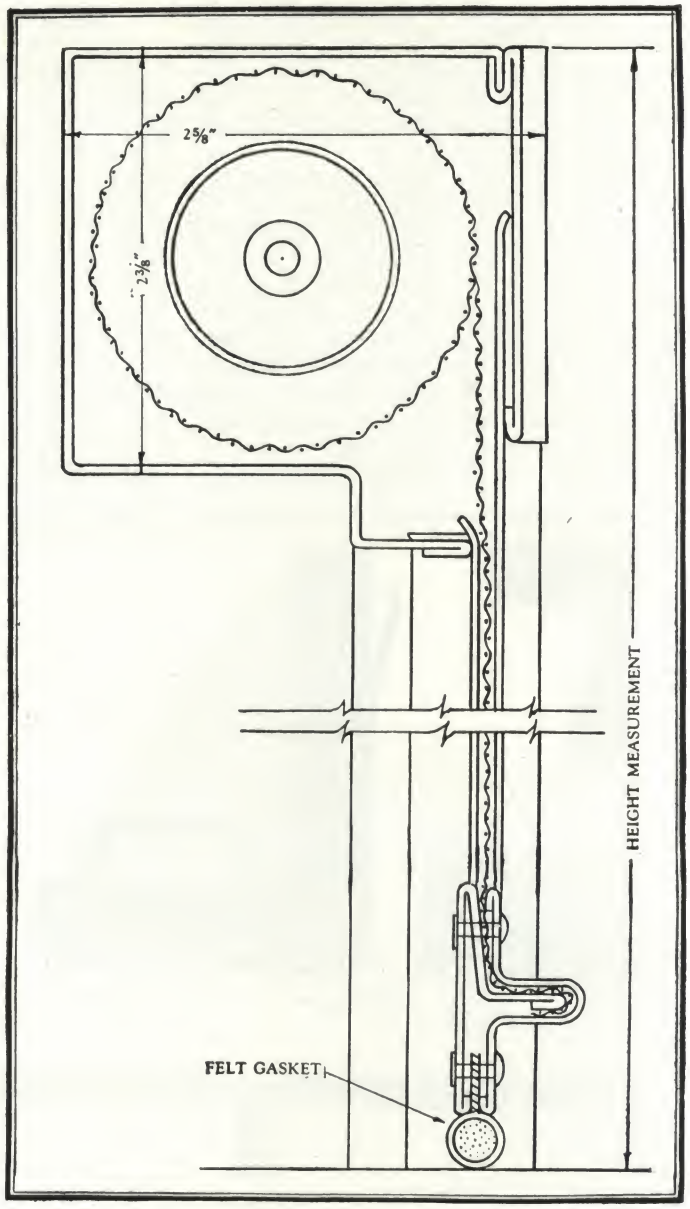
Guarantee

The reputation of the KANE MANUFACTURING Co. is back of "Kane Quality" Roll Screens but, in addition, we guarantee our screens for materials and workmanship for a period of ten years from date of installation. If during this period our screens fail to operate perfectly and the cause is not due to abuse or other conditions beyond our control, we will gladly furnish a new screen free of charge.

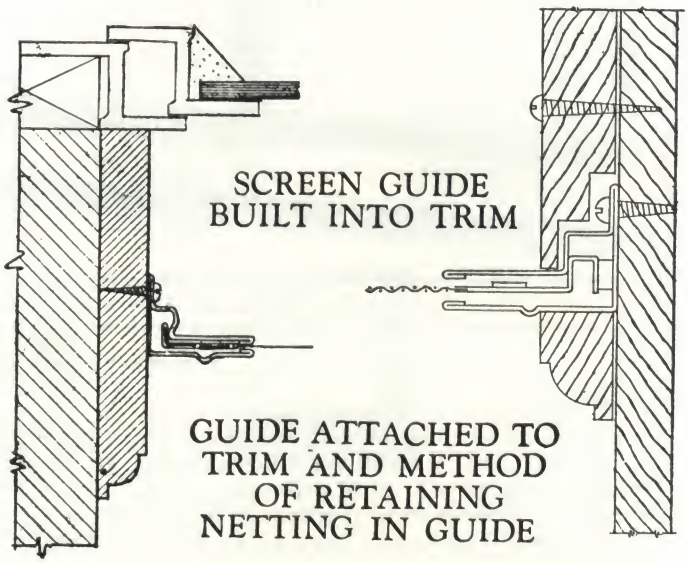
Co-operation with Architects

The same specialists who have worked with architects and builders in the past are now at your service for information and assistance in problems relating to roll screens.

They may be reached through our nearest branch office.



Section of "Kane Quality" Roll Screen



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MATERIAL AND PARTS OF "KANE QUALITY" ROLL SCREEN

In brief, the "Kane Quality" Roll Screen consists of three essential parts: the box which holds the roller and screen when coiled, the screen itself, and the guides and raising bar. These are described below.

Box and Roller

The box or housing which contains the roller is 2⅝ in. wide, 2⅜ in. high and is made of specially processed copper-surfaced cold rolled steel. The roller is of metal and holds an extra heavy duty spring adjustable for tension. This spring will never need lubrication and is completely guaranteed by the manufacturer. Repeated tests before delivery assure satisfactory operation.

Screen Cloth

Only 16-mesh special tempered, genuine Anaconda bronze wire netting is used in "Kane Quality" Roll Screens, and as Anaconda bronze is absolutely rustless, it always remains strong and serviceable.

The edges of the netting have double woven wire selvages, adding greatly to its strength and durability.

Guides

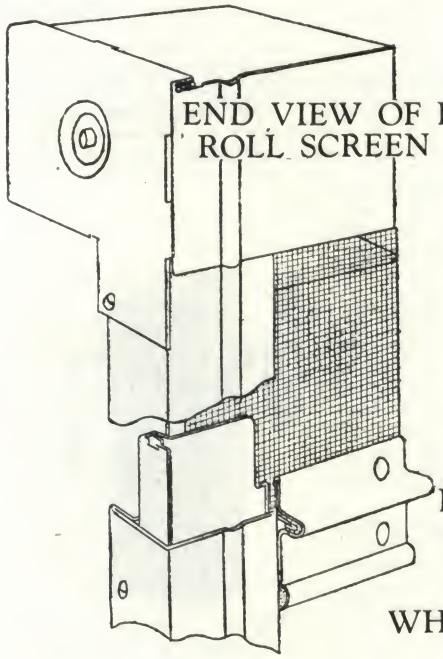
The side guides are 1⅛ in. deep, allowing from ⅝ to ⅞ in. of the netting to remain in the guides at all times. The guides may be installed on the finished trim, or if detailed for may be practically covered by the trim.

Raising Bar

The raising bar to which the netting is fastened at the bottom has a friction shoe on each end which slides in the guide and not only prevents the raising bar from coming out of the guide, but takes up any irregularities that may occur in the casing by reason of not being plumb.

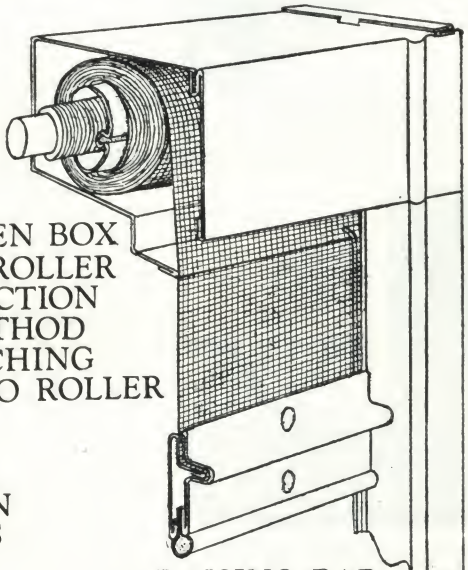
At each end of the raising bar, spring bolt fasteners are provided, which automatically lock themselves into keepers on the bottom of each guide.

A felt gasket is attached to the lower edge of the raising bar to prevent marring of finished stool, take up any irregularities of sill and eliminate any objectionable light lines.



END VIEW OF KANE ROLL SCREEN BOX

SLIDING SHOE HELD IN GUIDE BY FRICTION SPRING WHICH LOCKS RAISING BAR AUTOMATICALLY WHEN SCREEN IS DOWN



ROLL SCREEN BOX SHOWING ROLLER CONSTRUCTION AND METHOD OF ATTACHING NETTING TO ROLLER

RAISING BAR SHOWING FELT GASKET AT BOTTOM

ROLL SCREEN SIZES, DETAILS AND SPECIFICATIONS

Width Dimensions

"Kane Quality" Roll Screens can be made in any inch or fraction of an inch width from 11 to 61 in., both inclusive, and measurements should be given accurately. Openings wider than 61 in. can be screened by building in a simple mullion.

(See details.)

Height Dimensions

The height dimensions can be any length up to 96 in. and should be taken from the top of roll screen box to the top of finished sill, and sizes should be given accurately.

As "Kane Quality" Roll Screens are made to any fractional inch in width or height it is not necessary to build the windows to fit the screens or to have any special trim.

Plaster Reveal Trim

In detailing for "Kane Quality" Roll Screens in full plaster reveal construction the only thing that is necessary is to have plaster grounds installed before plastering is done. The grounds are needed for attaching the guide and box and are entirely covered by the guides when screens are installed.

Care must be used in placing grounds to have them set plumb. With this installation no wood trim is required.

Screen Specifications

Furnish and install at all openings listed below (or shown on schedule and plans) Roll Screens as manufactured by KANE MANUFACTURING CO., Kane, Pennsylvania. Screens shall be complete with box, spring roller, guides, hardware, etc. Screen wire shall be of Anaconda bronze woven 16-mesh to the inch. Installation shall be in strict accordance with the directions of the manufacturer and upon completion all screens shall operate satisfactorily and freely.

ORANGE SCREEN COMPANY

Wood and Metal Frame Insect Screens

MAPLEWOOD, N. J.

ORANGE
EXTRUDED ALUMINUM
PATENTED SCREENS AUG. 1926
ORANGE SCREEN CO. MAPLEWOOD, N.J.

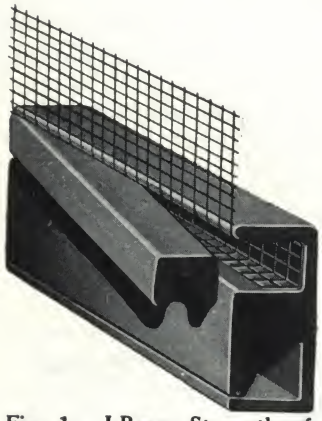


Fig. 1. I-Beam Strength of Extruded Moulding

Note the viselike grip of lock moulding. 300 lb. will not pull the wire loose

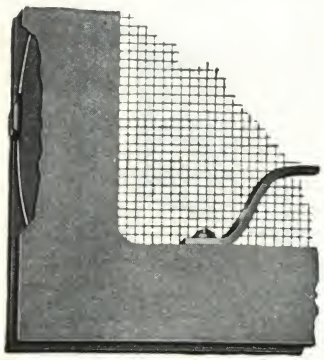


Fig. 2. The Invisible Rustless Spring Used on Sliding Screens

Note the corner construction—welded, carefully tooled to a neat finish and no joints whatever

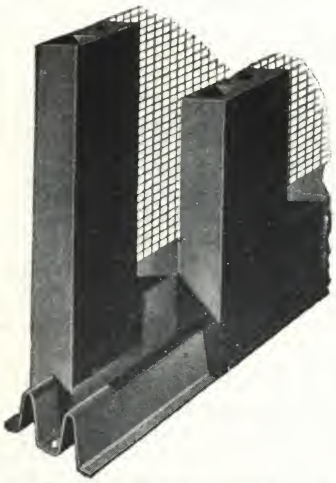


Fig. 3. Special Designed Metal Track for Double Horizontal or Vertical Sliding Screens

Orange Extruded Aluminum Frame Screens

Orange Extruded Aluminum Frame Screens are manufactured and sold on a guarantee by the ORANGE SCREEN COMPANY, an organization backed by financial responsibility, which for over twenty years has been one of the progressive leaders in the manufacture and installation of complete screen equipment.

This newest product is a one-piece metal screen combining beauty, light weight and permanence. It has no unsightly ridges or corner braces to mar the graceful simplicity of the frame. It is as sturdy as steel or bronze with about one-third the weight, and the cost is no more than other metal screens of less substantial construction or those less attractive.

Our engineers, co-operating with the manufacturers of various metal windows and steel sash, have evolved economical and mechanically correct methods for screening practically every type of opening. Today installations of Orange Extruded Aluminum Frame Screens cover almost every type of building—industrial plants, hospitals, clubs, hotels, banks, government buildings and residences.

Details of Construction

Material—These screens are made of extruded bars of aluminum, a special alloy developed for our use by the Aluminum Company of America, and is one of the strongest non-ferrous materials made. Because of its lightness and many structural advantages, aluminum, such as is used in our screen frames, is now used in airplane construction.

Frame Members—The members are made of strong aluminum alloy, specially extruded and drawn in solid one-piece sections. (1) Frames for average size windows are $\frac{7}{8}$x1 in. with center wall $\frac{1}{4}$ in. thick and outer walls $\frac{1}{16}$ thick. (2) Frames for exceptionally large windows, porch sections and French casement windows are $\frac{7}{8}$x1$\frac{1}{2}$ in. with center wall $\frac{1}{4}$ in. thick and outer walls $\frac{1}{16}$ in. thick. (3) Frames for entrance doors are $\frac{5}{8}$x2 in. with center wall $\frac{1}{16}$ in. thick and outer walls $\frac{3}{32}$ in. thick.

Assembly—All corners are welded, eliminating all riveted joints or corner reinforcements. Exterior welded surface is finished perfectly smooth. Wirecloth is held in place with an aluminum moulding keyed into the channel. Hardware is solid aluminum, built-in and operating within the frame, no surface hardware permitted.

Finishes—They are lacquered in a limitless range of colors and tones to harmonize with any chosen color scheme. Or they may be had in the natural platinum-like finish which gives a handsome effect and harmonizes well with any adjoining material.

Hardware—All Orange Aluminum Frame Screens are fitted and furnished with solid aluminum hardware of such design as to insure proper operation and installation of screens.

Estimating Service

We invite inquiry from owners, architects and builders. A letter addressed to the home office will put you in touch with our nearest representative, who is qualified by training and engineering ability to give an estimate of cost from plans or actual building.

Installed and Guaranteed by the Orange Screen Company

We guarantee Orange Aluminum Frame Screens to be the right size, free from imperfections in workmanship, material or finish, and guarantee that the screen installation, operation, etc., shall be satisfactory to the architect and owner. The screen installation is made by our own engineers and is under the direction of the ORANGE SCREEN COMPANY until final acceptance.

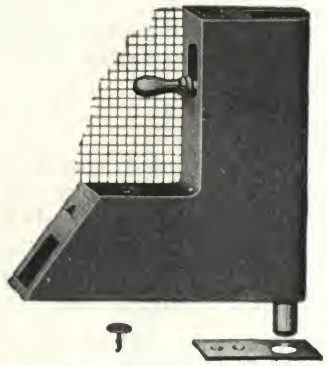


Fig. 4. Built-in Aluminum Pivot Hinges for the Bottom of Casement Screens and Also for Top Hung Screens

The lever permits easy installation or removal of the screen

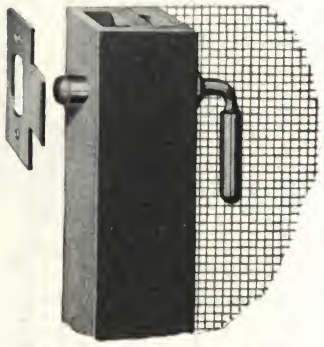


Fig. 5. Aluminum Spring Catch for Casement Screens

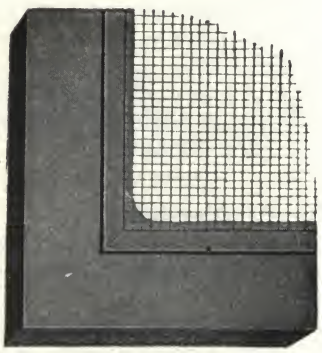


Fig. 6. Corners

Note how firm welded corners make the whole frame into one piece. Welded corners are stronger and neater than the old style reinforced and riveted corners

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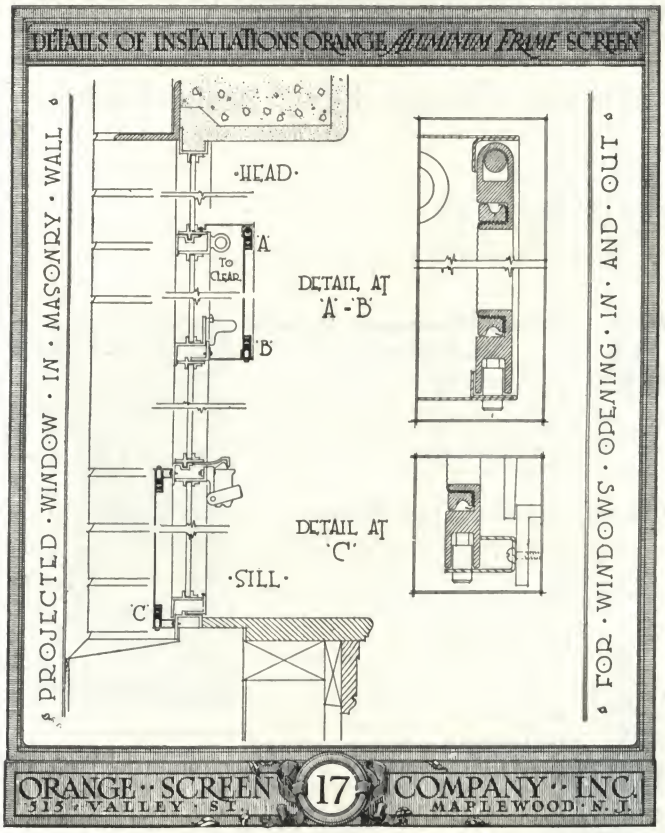

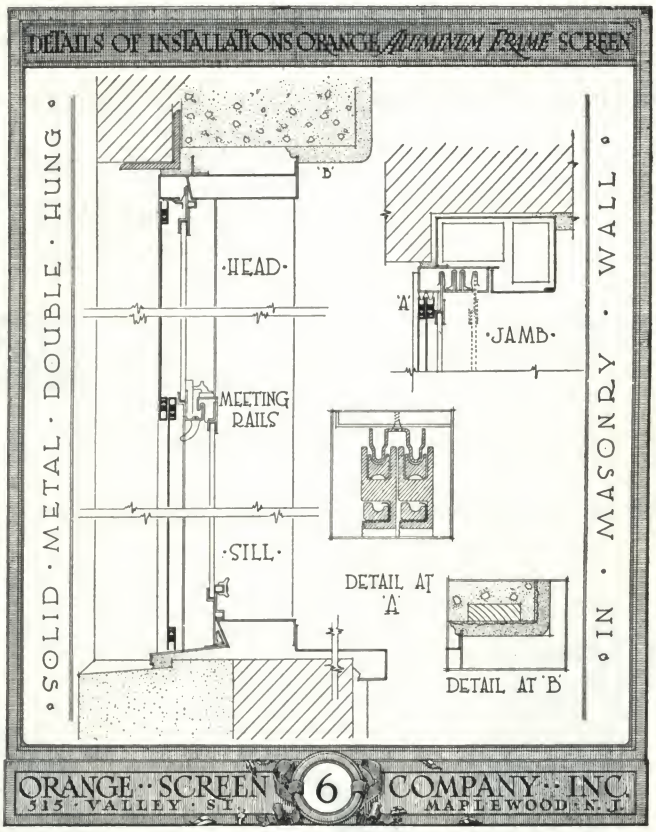

Details and Data for Screen Installations

The above plates (shown slightly less than half size) are two of over twenty plates contained in our new A.I.A. catalogue, "Details and Data for Screen Installations," which is now ready for distribution to architects. The text matter and plates cover most of the screening problems encountered in domestic and commercial work.

SUGGESTIONS FOR ARCHITECT'S SPECIFICATIONS

Work Included—Furnish window and door screens for all outside openings as called for in these specifications or shown on the drawings. Frames shall be of the rewirable type, constructed of extruded aluminum bars, manufactured by ORANGE SCREEN COMPANY, Maplewood, N. J.

(1) Double hung windows shall be screened with outside sliding screens with zinc guides extending the full height of the window. *(Architect to omit either paragraph 1 or 2.)*

(2) Double hung windows shall be screened with outside full length screens with cross rails opposite the meeting rail of the sash over 42 in. in height. *(Architect to omit either paragraph 1 or 2.)*

(3) Out-opening casement windows shall be screened with inside double sliding screens with zinc guides running the full height of the window. *(Architect to omit either paragraph 3 or 4.)*

(4) Out-opening casement windows shall be screened with inside full length screens, side hung, single for single sash, and pairs for pairs of sash. *(Architect to omit either paragraph 3 or 4.)*

(5) Out-opening pairs of and multiple casement windows shall be screened with interior horizontal sliding screens, equipped with aluminum bearings and zinc guides.

(6) Porch sections over 6 ft. high shall have stiles and rails not less than $\frac{7}{16}$x1½ in. wide.

(7) French casement doors or windows to floor, in-opening or out-opening, shall be screened with light metal doors. Stiles and top rails shall be not less than $\frac{7}{16}$x1½ in. wide, rewirable cross braces $\frac{7}{16}$x⅞ in., bottom rails $\frac{7}{16}$x4 in., kickplates both sides.

(8 Entrance doors shall be screened with heavy metal doors. Stiles and top rails shall be not less than ⅝x2 in., rewirable cross braces ⅝x1¾ in., bottom rails ⅝x6 in. with ⅛ in. kickplates both sides.

(9) Hardware shall be of non-ferrous metal and of such design as to insure proper operation and installation of window screens and screen doors.

(10) All work shall be installed in a thorough and workmanlike manner and premises left free of damages.

PROMINENT ORANGE EXTRUDED ALUMINUM FRAME SCREEN INSTALLATIONS

Building and Location	Architect	Building and Location	Architect
U. S. Post Office, Yonkers, N. Y.	Jas. A. Wetmore	Provident Life Insurance Co., Philadelphia, Pa.	Cram & Ferguson
Marcus Ward Home, Maplewood, N. J.	John Russell Pope	Mather Memorial Hospital, Port Jefferson, N. Y.	Henry C. Pelton
S. F Laucks, Wrightsville, Pa.	Delano & Aldrich	Wooster College, Wooster, Ohio	D. Everett Waid
Ardsley Club, Ardsley, N. Y.	Shreve & Lamb	Col. Jacob Ruppert, Harrison, N. Y.	Vincent B. Fox
Metropolitan Life Ins. Co. Sanitarium, N. Y.	D. Everett Waid	Christ Hospital, Jersey City, N. J.	John T. Rowland, Jr.
S. S. Alderman, Greensboro, N. C.	Harry Barton	Dr. R. R. Gandy, Stamford, Conn.	E. D. Parmelee
A. F. Maxwell, Pelham, N. Y.	Crow, Lewis & Wick	E. R. Stettinius, Locust Valley, L. I.	Electus D. Litchfield
Gallinger Hospital, Washington, D. C.	A. L. Harris	H. P. duPont, Winterthur, Del.	Albert Ely Ives, Inc.
Panhellenic House, New York, N. Y.	John Mead Howells	Continental Can Co., Oakland, Calif.	Francisco & Jacobus
Rev. C. L. Candee Residence, Wilmington, Del.	William W. Potter	First Church of Christ, Scientist, West Palm Beach, Fla.	Horace Trumbauer
George Debevoise Residence, Greenwich, Conn.	Chas. C. Grant	Randolph Pack, Greenwich, Conn.	Fred L. Ackerman
H. P. Cochran Residence, Chevy Chase, Md.	Waddy B. Wood	D. M. Bell. Amagansett, L. I., N. Y.	Frederick G. Frost
Baltusrol Golf Club, Baltusrol, N. J.	Edward C. Eppie	T. H. Wielandt, Great Neck, L. I., N. Y.	A. W. Coote
Mayflower-Plymouth Hotel, New York, N. Y.	Emery Roth	Thomas W. Lamont, Palisade, N. Y.	Walker & Gillette
Fire Headquarters, Yonkers, N. Y.	H. Lansing Quick	Tuxedo Club, Tuxedo Park, N. Y.	John Russell Pope
Dr. Hope T. M. Ritter, Allentown, Pa.	Henry Y. Shaub	Siwanoy Country Club, Bronxville, N. Y.	George Bartlett
Talmud Torah Building, Philadelphia, Pa.	Hahn & Baylinson	Psychiatric Institute & Hospital, New York, N. Y.	Sullivan W. Jones
New Jersey Bell Telephone Company	Voorhees, Gmelin & Walker	St. Vincent Hospital, W. Brighton, S. I., N. Y.	Ditmars & Reilly
New York Bell Telephone Company	Voorhees, Gmelin & Walker	Lying-In Hospital, Chicago, Ill.	Schmidt, Garden & Erikson
Chesapeake & Potomac Telephone Company	Voorhees, Gmelin & Walker	Rockland County Court House, New York, N. Y.	Dennison & Hirons
Mary McClellan Hospital, Cambridge, N. Y.	Geekie-Naughton, Inc.	Duquesne Club, Pittsburgh, Pa.	Janssen & Cocken
American Can Co., Brooklyn, N. Y.	C. G. Preis	Doctors Hospital, New York, N. Y.	Crow, Lewis & Wick
		Royal C. Hull Residence, Wilmington, Del.	Albert Ely Ives

PHENIX MANUFACTURING COMPANY

Screens, Awnings, Storm Sash, Screen Hardware, Garage Door Bolts, Holders

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MILWAUKEE, WIS.

Products

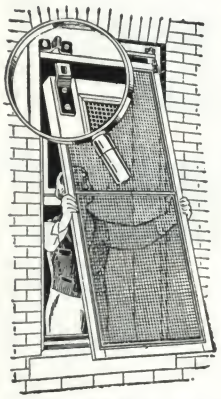
PHENIX WINDOW and DOOR SCREENS, SCREEN ENCLOSURES; COMBINED WINDOW SCREENS and AWNINGS; HANGERS and FASTENERS (Patented) for screens, storm windows and doors.

Also Phenix Storm Sash and Enclosures; Garage and Heavy Door Bolts and Holders.

Phenix Window and Door Screens and Enclosures

Made to fit any opening.

Material — Window and door screens and storm sash made from thoroughly seasoned white pine, wired with copper bronze wire cloth. Hardware finishes in steel, galvanized and solid brass.



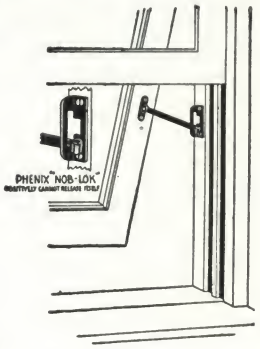
No. 114 Hanger

Full Length Top Hung Screen—Fastening and locking device No. 102 for cleaning windows and for ventilation.

K-I

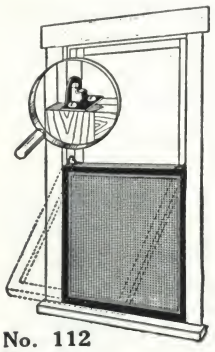
J-I

Half-set No. 30



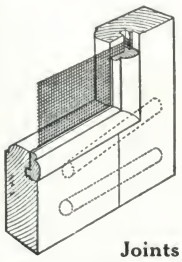
No. 102 Fastener

Top Hung, Swinging Half Screen—Fits in between outside casings, with shut-off stop at meeting rail; provided with No. 112 Hanger and inside locking device No. 30.

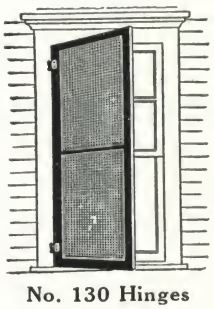


No. 112 Hanger

Side Hung, Half or Full Length Screen—Swings out like a door; hung by "Phenix" loose joint, self-locking hinges No. 130 and locked with No. 30 fastener, permitting hanging or removal from inside and the ready cleaning of windows.



Joints Doweled



No. 130 Hinges

Corner Joints—Joined by special dovetail hardwood dowel set in glue—superior to any mortise and tenon in carrying strength. Dowel pins form perfect wedge lock.

Method of Wiring—No tacks used. Wedge-grip wiring; every strand held perfectly taut and secure.

Screen Doors—Furnished complete with all necessary hardware, ornamental grilles and guards for special wire protection.

Veranda Enclosures—Made in convenient sized sections and held together with Phenix Nos. 60, 70 and 75 flush and corner locking devices.

Phenix Combined Screens and Awnings

A two-in-one combination. Screen covers entire window with awning attached. Awning raised and lowered from inside without disturbing screen.

Combination Screen and Awning

Phenix Cremone Door Bolts

No. 50 for Inside Locking Only—For right or left hand, single or double garage, factory, warehouse, fire and other heavy doors, swinging in or out.

No. 50 Bolt

One turn of handle locks or unlocks both top and bottom. Handle always retains its position because of counterweight.

Stock lengths 6 to 13 ft. increasing by 6-in. steps.

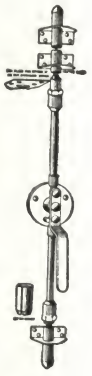
No. 51 for Outside Locking Only—Same construction and sizes as bolt No. 50, but with extra outside lever handle and strong malleable iron disc casting provided with loop arrangement for padlock. Used on garages without service doors. Steel, heavily galvanized. Specify whether for doors 1¾ or 2¼ in. thick.

No. 53 for Combination Inside and Outside Locking—Same construction and sizes as No. 50, but has locking attachment (screwed inside) which slips over end of bolt handle.

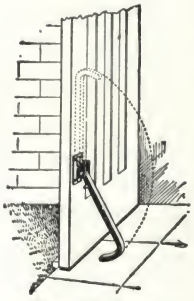
No. 57 for Inside Locking Only—Suitable for garages with service doors. Lengths 7 ft. 6 in., adjustable to 10 ft. 6 in.

No. 58 for Outside Locking Only—Same as No. 57 but with outside lever handle and strong malleable iron disc casting with loop arrangement for padlock. Used especially on garages without service doors. Specify whether for use on doors 1¾ or 2¼ in. thick.

No. 59 for Combination Inside and Outside Locking—Same as No. 57 but has locking attachment (screwed inside of door) which slips over end of bolt handle.



No. 57 Bolt



No. 52 Door Holder

Phenix Garage Door Holder No. 52

Simple, strong, inexpensive, practical. Easily turned down or up by hand or foot. Automatically locks itself.

Holds doors of any size and weight, and is equally effective on any kind of floor.

All-steel construction, heavily galvanized. Made of ½x½-in. steel rod, 12 in. long.

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STANDARD OF COMPARISON

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Modern Window Screens

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Dealers Everywhere—Distributors in All Principal Foreign Countries

ROLSCREEN

Rolscreen's Features Are Patented

Those features which have made Rolscreens practical and have led to their adoption and use by thousands of Owners, Builders and Architects each year, are exclusive and patented.

The first considerations in the designing of Rolscreens have always been that they must be of rigid and durable construction, they must be simple to install and easy to operate. Mammoth presses, intricate rolling machines, and the most modern tool equipment have contributed their part to this, and at the same time they assure accuracy and precision in the manufacturing processes.

GENERAL INFORMATION

Rolscreens are built in each "full inch" stock size dimensions from 11″ to 61″ wide. Standard 2⅝″ housings can be used in all openings up to 84″ high. The special 2⅞″ housing is furnished for openings over 84″ high.

ROLSCREEN MATERIAL

Rolscreens are constructed of lead coated terne-plate metal, which forms a perfect bond for paint. The screen cloth is double-lifed, rust-proofed, triple selvaged AluminA especially woven and processed for Rolscreens. It is a clean grey color and almost invisible. It has great tensile strength, it is rigid and is built up of materials that are guaranteed not to break or crack under continuous flexing. The mesh is perfect, sixteen strands to the inch. This is an ideal weave. It keeps out the smallest insects, yet allows maximum visibility and ventilation.

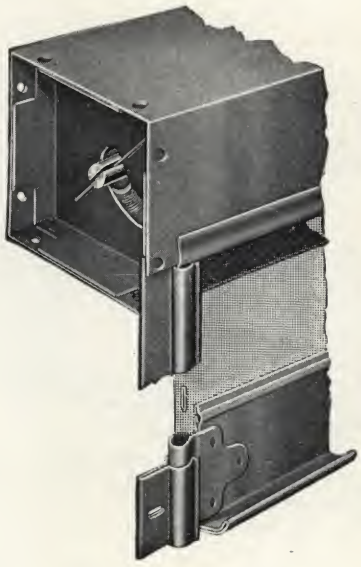
THE HOUSING

Rolscreen housing is electrically welded and of very sturdy construction. Recessed ends reinforce it and make it rigid. The standard housing is 2⅝″ square. For openings less than 52″ high a 2⅛″ housing may be used and for openings less than 36″ high, a 2″ housing may be used. For openings over 84″ high a 2⅞″ housing must be used.

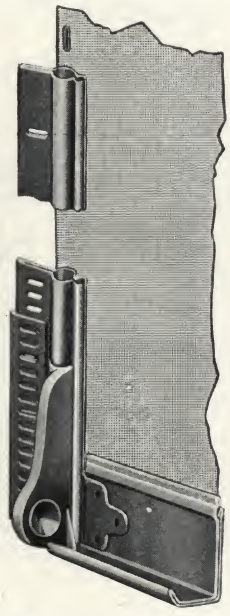
THE FLOATING ROLLER ASSEMBLY

A special feature of Rolscreens is the patented "floating" roller. As the screen lowers and the roll of screen cloth grows smaller, the entire roller assembly automatically moves forward. The screen wire cannot drag on the lower edge of the housing

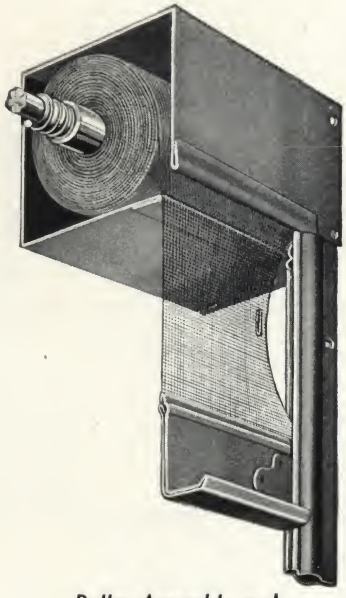
and cannot wear out. The entire roller including the spring, is built in the Rolscreen factory. The springs are coiled out of extra heavy oil-tempered wire on automatic machines operated under most careful supervision. After rigid inspection the springs are all thoroughly tested and mounted in the heavy metal roller.



Floating Roller Friction Block



Latch and Locking Bar



Roller Assembly and Screen Re-entry Feature

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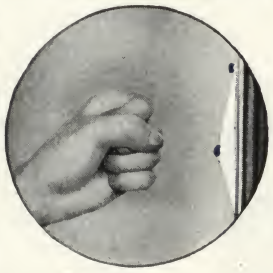
CONSTRUCTION

THE GUIDES

The Rolscreen guides grip lugs fastened in the selvages of the screen wire and prevent its sagging and bagging. Slotted holes in the attaching flanges allow for adjustment in case of swelling or shrinking of woodwork. Blocks on the ends of the cross-bar are frictionally engaged in the guides. This construction prevents the cross-bar tilting out of the guides and regulates the action of the screen. When the screen is released from the sill it does not fly to the top. The friction in the guides stops it about halfway up, where a touch of the fingers can raise or lower it. When installing Rolscreens, the cross bar, as it is drawn down through the guides, acts as a template and automatically adjusts the guides in the opening. Lips at the upper ends of the guides, co-acting with the housing, assure proper, accurate installation.

ROLSCREENS ARE INDESTRUCTIBLE

Rolscreens are built to stand up under hard service. If the screen wire accidentally receives a blow hard enough to tear or bag the ordinary screen, the lugs in the selvages of the screen are released at the sides without injuring the wire. Upon pushing all of the released lugs to the outside, raising the screen and again lowering it, the lugs automatically reenter the guides and the screen is stretched in its normal position.



FASTENERS

When lowered, Rolscreens are automatically locked on the window sills by spring catches, which are unlocked only from the inside. When released, the screen automatically rises about half its length to a point which makes the window easily accessible. A patented vernier arrangement of the catch provides perfect adjustment to the sill.

FRICTION ANGLES

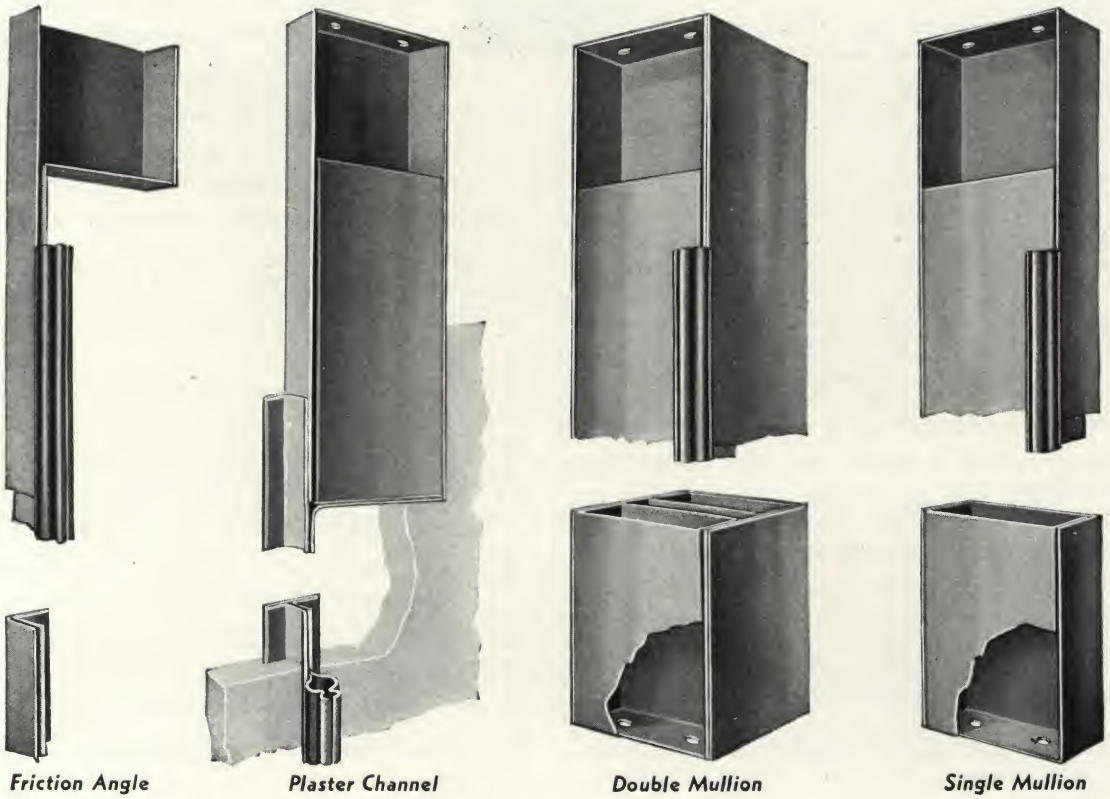
When screens are to be built into old work or are to be used with metal double hung windows, they can be mounted by means of the friction angles. These angles are attached to each jamb and support the screen box and frictionally hold the screen guides.

PLASTER CHANNELS

Special channels, which are imbedded in the plaster, may be used. The Rolscreens are installed quickly without using any wood trim or screws to hold them in place. This installation is simple and very economical.

METAL MULLIONS

Where openings are over 61" wide, mullions must be used. These can be of simple wood construction or metal mullions can be furnished as shown.



Friction Angle *Plaster Channel* *Double Mullion* *Single Mullion*

Continued on next page

THE THREE STANDARDS OF ROLSCREEN COMPARISON

ONE—Compare Rolscreen Convenience and Maintenance Cost

1—No annual dragging out of dirty screens and matching them to windows.

2—No annual taking down and storing.

3—No annual expense of painting and repairing.

4—No storage space required.

5—Never taken down too soon or put up too late.

6—Screens do not have to be taken down when windows are washed.

7—Window washing is reduced 50% because rain does not beat dirt onto window panes as with outside screens.

8—Awnings can be used.

9—Offer easy access to flower boxes.

10—Make easy the housewife's task in cleaning, in shaking out rugs and dust cloths.

11—Installed on the inside of the window they stay clean and last long.

12—Easy to reach and easy to operate.

13—Do not soil drapes as do outside frame screens when drapes blow against them.

14—Easily removed in case of unforseen accident.

15—No special window or screen hardware required.

16—Delicate drapes are not torn in operating or removing screens.

17—Do not interfere with the easy operation of the window. Special operators which exert wracking and distorting pressure on the lower part of the window are not needed.

TWO—Compare Rolscreen Effect Upon Window Appearance

1—Do not blot out inside or outside window beauty.

2—No heavy frames to obstruct the view and mar the appearance.

3—Do not blur or distort the vision through fine glass for when the window is closed the screen is raised.

4—A closed window with the Rolscreen raised admits 20% more light than the same window with a stationary screen that is always over the glass.

5—Beautiful window sills are not encumbered with screen tracks or grooves.

6—Do not mar the beautiful slender lines of the finest windows.

7—Do not detract from charming draping effects or interfere with any draping scheme.

8—The small exposed parts are decorated to harmonize with the adjoining window trim.

9—Do not conceal exterior effect of inviting drapings.

THREE—Compare Rolscreen Exclusive Mechanical Features

1—Rolscreen wire cloth is locked in at the sides as well as at the top and bottom. This feature prevents sagging and bagging and insures insect tight screens, even in widths as wide as 61 inches.

2—Enlarged ends of locking bar (friction blocks) fit snugly in guides at sides insuring even and easy flowing operation, and eliminating rack.

3—The floating roller moves forward as the screen is lowered eliminating dragging and wearing of the screen wire on the screen housing. The cloth always drops straight off the roller into the guides.

4—Slotted holes in flanges of the guides permit the screens to adjust themselves to expansion or contraction of woodwork and the screens never bind or stick.

5—The guides frictionally engage the ends of the Rolscreen cross-bar and control the action of the screen so it does not fly to the top. The screen is always within easy reach.

6—Rolscreens are practically indestructible. A blow that would tear the cloth in an ordinary frame screen merely disengages the Rolscreen cloth from the guides and is automatically re-entered by raising and again lowering the screen.

7—Rolscreen catch operates automatically. It is simple and positive.

8—Plaster Channels make possible the installation of Rolscreens directly in plaster jambs without the use of wood trim or screws to hold them in place, yet easily removable.

9—Friction Angles—A simple mounting for Rolscreens in existing windows. Require no fitting or cutting.

10—Rolscreen "AluminA" wire cloth is especially processed to make it rigid. Racking and sleaziness is eliminated—a very important feature in rolling screen construction.

11—Rolscreens are guaranteed to give ten years of satisfactory service.

Continued on next page

ROLSCREEN SPECIFICATIONS

(A) SCREENS

Screens shall be Rolscreens as manufactured by the Rolscreen Company, Pella, Iowa.

(B) WORK INCLUDED

Note:—List and locate either in schedules on plans or under this heading. If both double hung and casement windows are included list or schedule each under separate subheading.

(C) MATERIALS AND CONSTRUCTION

(C-1) **Metal**—Screens shall be constructed of heavy lead-coated terne plate.

(C-2) **Wire Cloth**—Screen wire shall be 16 mesh rust-proofed "AluminA" with double selvage. The screen cloth shall have lugs spaced at regular intervals along the two edges which shall be engaged by the tubular guides.

(C-3) **Metal Housing and Roller Assembly**—The screen cloth shall be attached to a steel roller encasing a heavy, thoroughly lubricated, oil-tempered spring. The roller shall be contained in a metal housing 2⅝" square. (2⅞" if opening is over 84".) Roller mounting shall be of floating type which allows roller to automatically move forward as size of screen roll reduces, eliminating "drag" of screen wire on lower edge of roller housing.

(C-4) **Guides**—The jamb guides shall be so mounted that they are slidably adjustable when the screen is raised or lowered to compensate for any expansion or contraction in the window frame. The guides shall be provided with lips at their upper ends inserted into slots in the roller housing (to assure proper alignment) with the beaded portion cut away adjoining the housing to allow the screen wire to re-enter the housing when accidentally knocked out of the guides.

(C-5) **Spring Catches**—Spring catches shall be attached to the lower end of the guides carefully adjusted to automatically lock the cross bar of the screen close to the sill.

(D) WOOD JAMB STOPS

The wood stops, to which the screen guides are fastened and which support the roller housing, shall be furnished and installed with stop screws and washers by others ready for the screen installation.

Note:—Omit if plaster jamb channels or friction angles are included.

(E) PLASTER JAMB CHANNELS

Rolscreen guides and housing shall be mounted on plaster jambs in Rolscreen Plaster Channels set in position before plastering. Channels shall be set absolutely plumb and true on each jamb and accurately on some "full inch" dimension back to back.

Note:—Omit if wood jamb stops or friction angles are included.

(F) FRICTION ANGLES

Friction angles shall be mounted on the jambs or window as detailed and shall be set true and plumb. They shall receive and hold in position the Rolscreen housing and guides.

Note:—Omit if wood jamb stops or plaster channels are included.

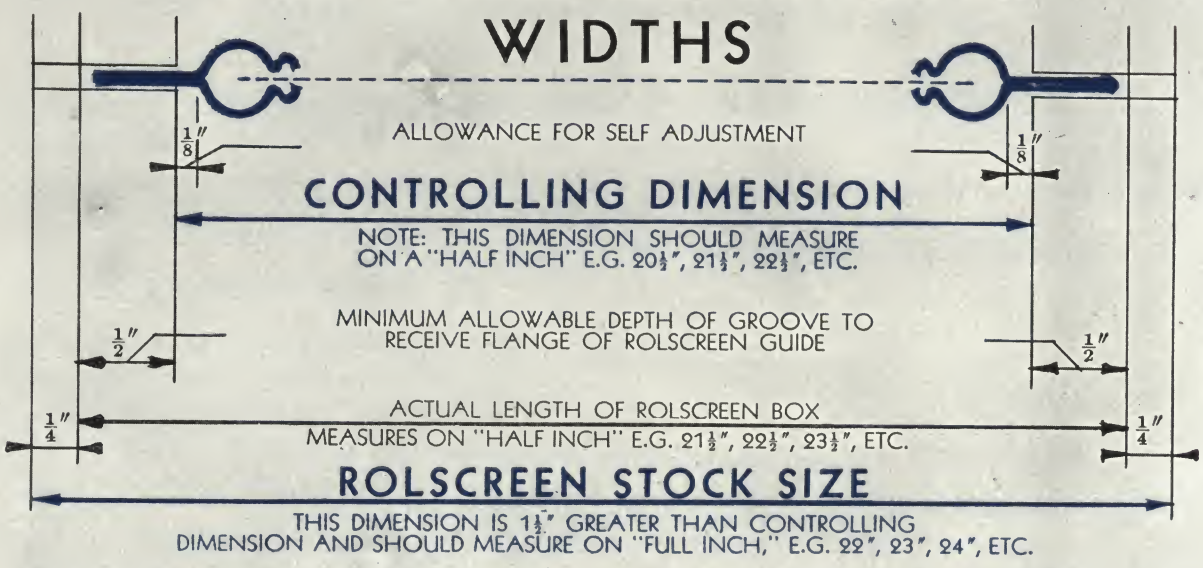
(G) INSTALLATION

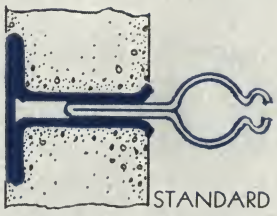
Rolscreens shall be accurately installed in strict accordance with the manufacturer's erection instructions. Guides shall be so mounted that the beaded portions and outside edges of guides shall not be in contact with window jambs. Entire installation shall be made so screen operates freely and easily.

Continued on next page

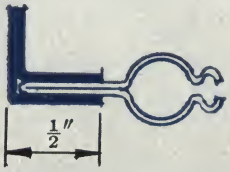
FULL SIZE SECTIONS

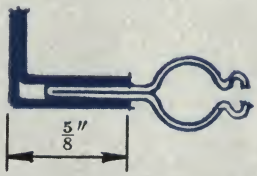
WIDTHS

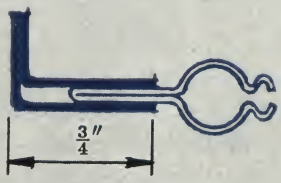


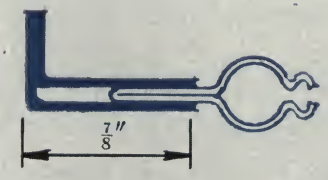


STANDARD
PLASTER CHANNEL



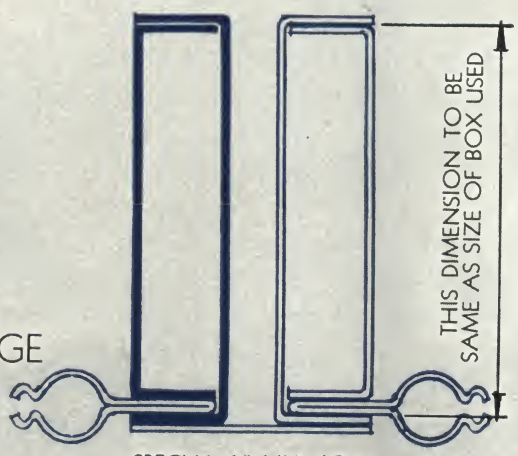






STANDARD
FRICTION ANGLES

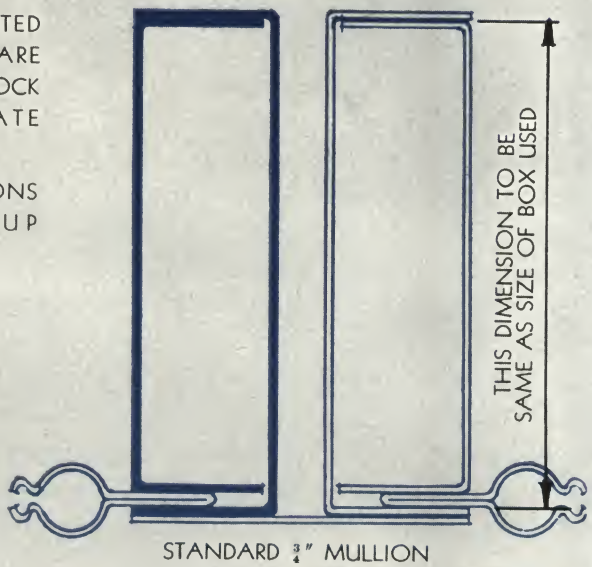
SPECIAL
WIDE FLANGE
GUIDE



SPECIAL ½" MULLION

SECTIONS NOTED "STANDARD" ARE CARRIED IN STOCK FOR IMMEDIATE SHIPMENT.

SPECIAL SECTIONS ARE MADE UP PROMPTLY.



STANDARD ¾" MULLION
MULLION

Continued on next page

FULL SIZE SECTIONS

DETAILING INFORMATION

Widths—

Rolscreens are built in standard stock sizes in each "given" full inch width from 11″ wide to 61″ wide. This full inch width is arrived at by using stops ¾″ thick. The standard stock sizes can be adjusted to all fractional inch openings by increasing or decreasing the thickness of these stops. (Refer to size control on opposite page.)

Heights—

Heights are taken from the top of the Rolscreen housing to what will be the top of the finished sill.

For openings not over 84″ high,—
The standard 2⅝″ housing is recommended.

For openings over 84″ high,—
The special 2⅞″ housing **must** be used.

For openings not over 52″ high,—
The special 2⅛″ housing **may** be used.

For openings not over 36″ high,—
The special 1⅞″ housing **may** be used.

Note:—Due to limitation of spring length, screens from 14″ wide to 18″ wide cannot be furnished over 75″ high. Widths from 11″ to 13″ cannot be over 52″ high.

Plaster Channels—

Plaster Channels are used in openings where only plaster and no wood trim is desired. They **must** be set and plumbed to a Rolscreen "full-inch" dimension. They will serve as grounds for plaster.

Friction Angles—

Friction Angles are used in new or old construction and also in metal jamb windows. They are attached directly to the face of the jambs. They are made in varying depths as shown, so as to adapt Rolscreens of standard size to fractional inch widths. In ordering give exact opening width and proper sizes of angles will be furnished.

Metal Mullions—

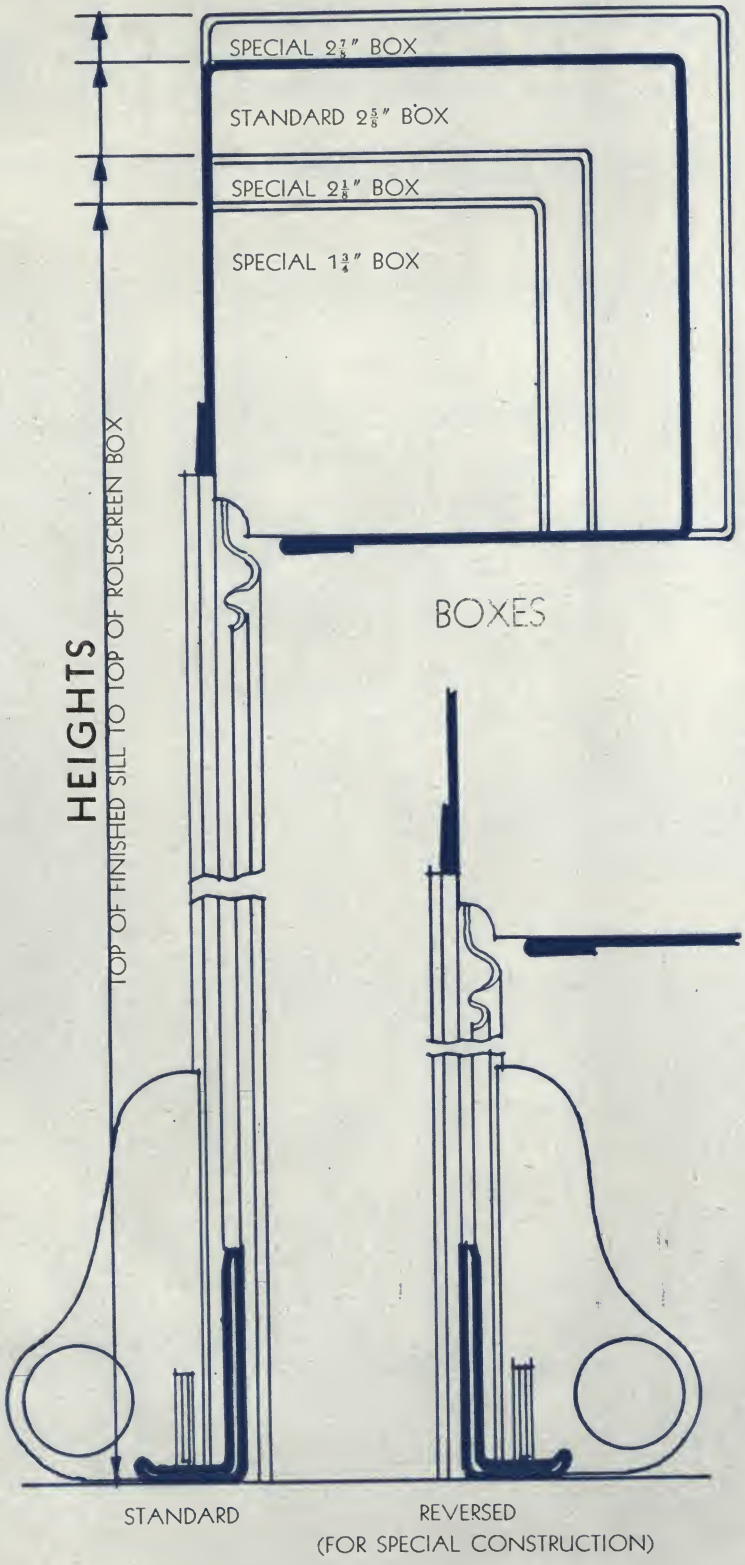
Metal Mullions can be furnished by the Rolscreen Company for all sizes of Rolscreen housings. Double mullions are used when a screen is to be installed on each side, and are built to any specified width to take up fractions in opening dimensions. Single mullions are used when a screen is to be installed on one side only.

Wood Mullions—

Wood Mullions of simple design can be used when openings require.

Wide Flanged Guides—

Special wide flanged guides can be furnished to meet unusual conditions.



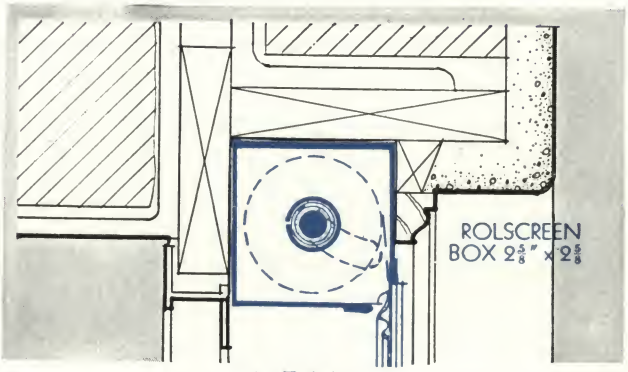
LATCH AND LOCKING BAR

Continued on next page

Rolscreens TRADE MARK

STEEL CASEMENTS

SEMI-WOOD TRIM



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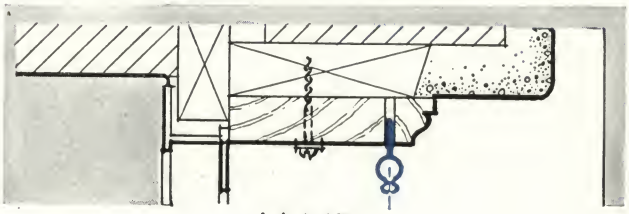
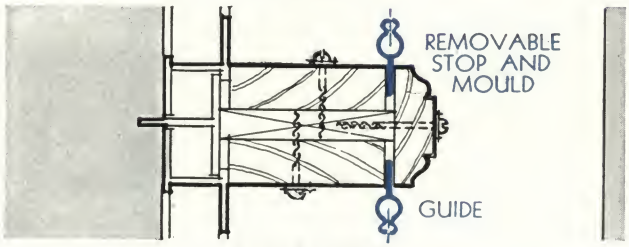
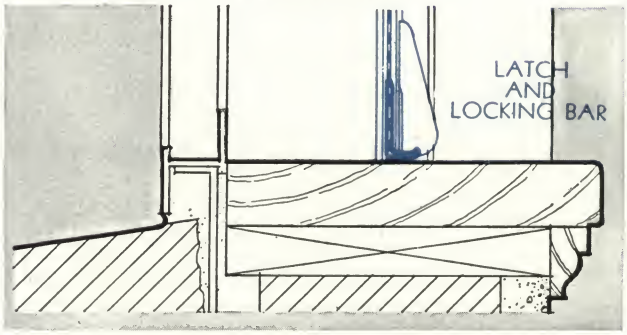


JAMB



MULLION

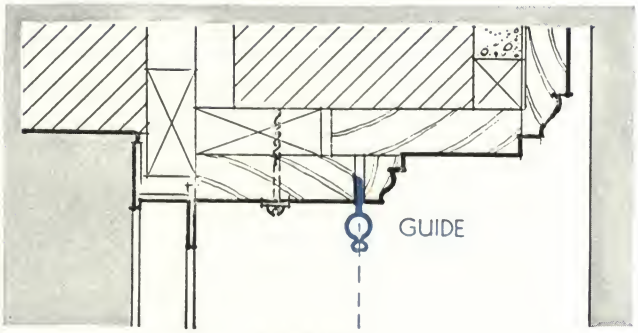


SILL

Rolscreen can be instantly removed in case of damage by taking out removable stops and moulds at jambs

WOOD TRIM

Rolscreens allow a new freedom to window opening and a new beauty in complete screen protection.



JAMB

Thickness of removable stops and moulds may vary. Read instructions carefully on page No. 5 for width dimensions.

REFER TO PAGES 5 AND 6 FOR SIZE CONTROL OF STANDARD STOCK SIZES

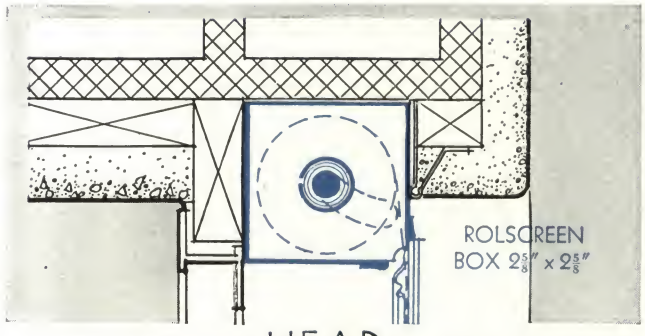
Continued on next page

Rolscreens TRADE MARK

STEEL CASEMENTS

BLOCK CONSTRUCTION

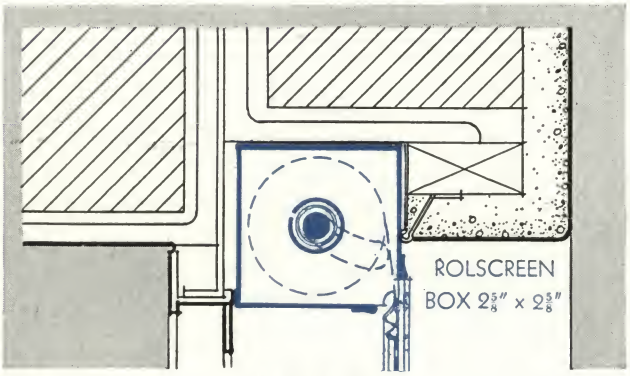
The Rolscreens do not mar the beauty or hinder the operation of casement sash. » » » »



HEAD

A metal recess 2½"x5½"x¾" with removable cover is attached to upper part of plaster channel to permit Rolscreen box to be inserted. » » » » »

MASONRY CONSTRUCTION



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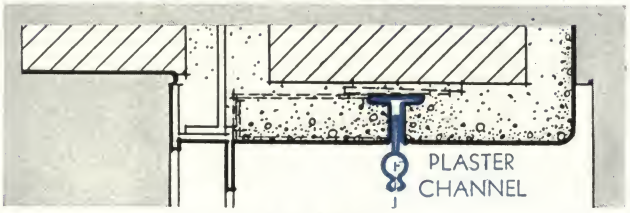

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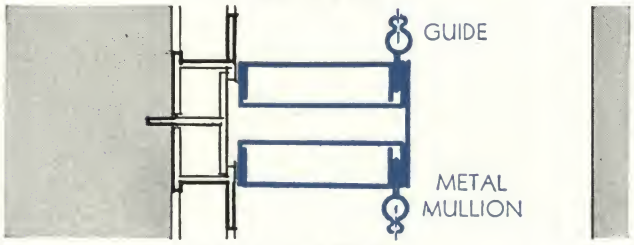


MULLION

SILL

Plaster channels should be set to some exact full inch Rolscreen dimension "back to back" and plumbed. They serve as plaster grounds. » » » » »

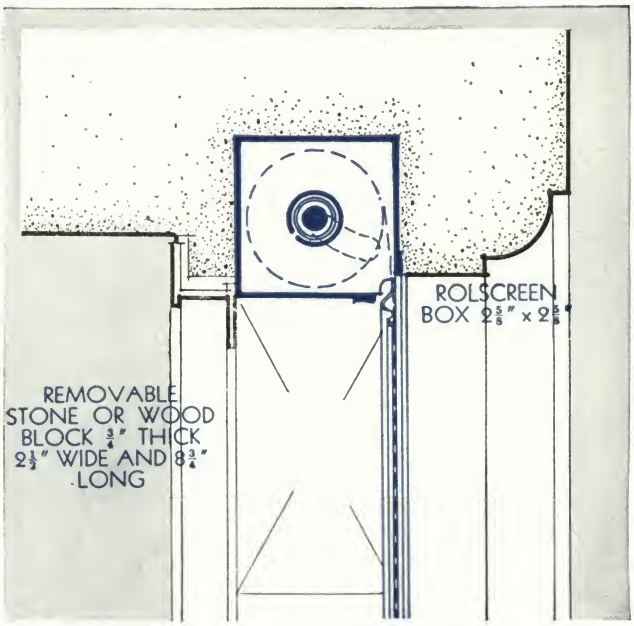
REFER TO PAGES 5 AND 6 FOR SIZE CONTROL OF STANDARD STOCK SIZES

Rolscreens
TRADE MARK

STEEL CASEMENTS

STONE CONSTRUCTION

HEAVY CASEMENTS



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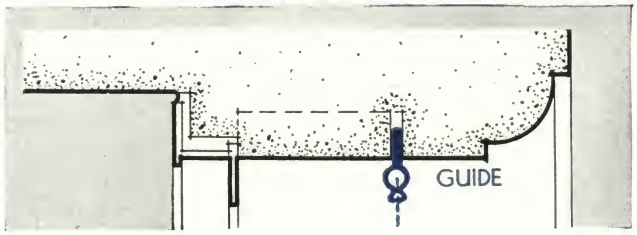

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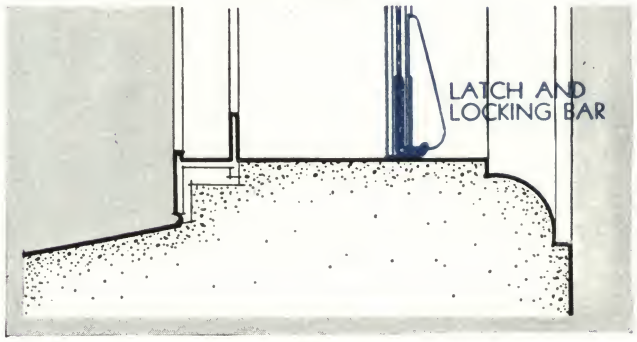
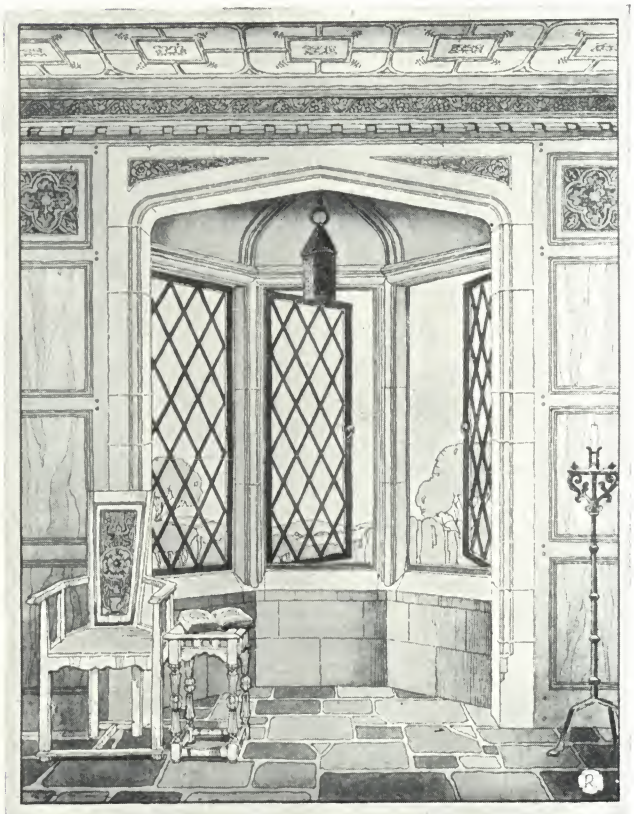
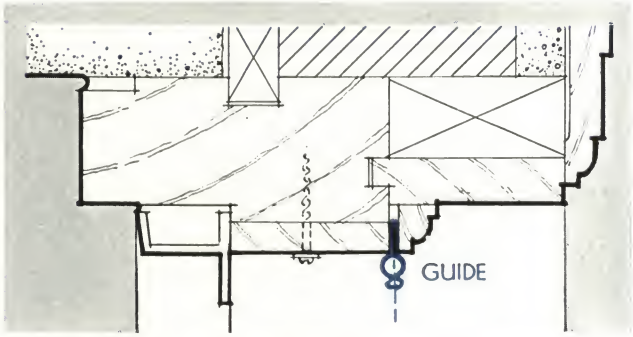


SILL

In stone work the guides can be "spot caulked" in place with lead. Removable block is necessary for installing Rolscreen.



Rolscreens perform a service of inconspicuous refinement—a decided asset in stone construction.



JAMB

Where it is desired to have sash set in rebate in frame, the thinner removable stop can be used. Minimum thickness is ½".

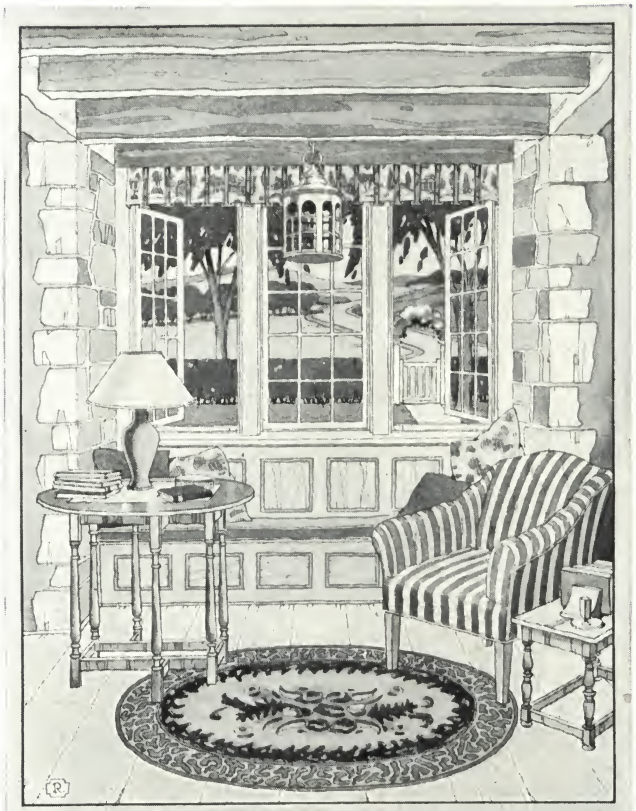
REFER TO PAGES 5 AND 6 FOR SIZE CONTROL OF STANDARD STOCK SIZES

Continued on next page

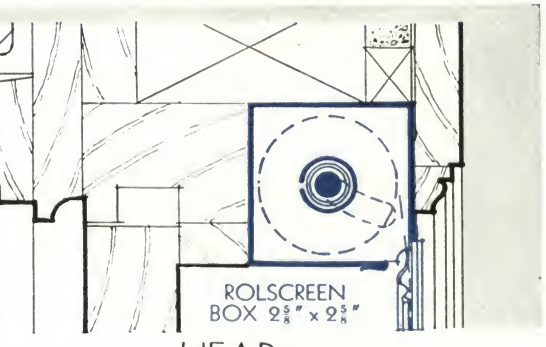
Rolscreens
TRADE MARK

WOOD CASEMENTS

HOFFMAN TYPE SASH



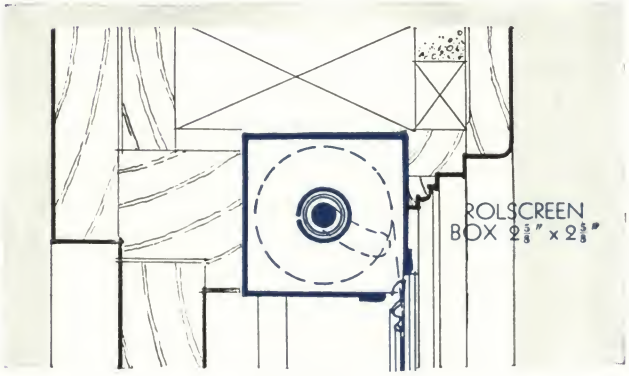
The absence of the screen when the window is closed completes the quiet, architectural dignity.



HEAD

If Rolscreen box is set against sash, the casement hardware at head can be attached to Rolscreen Box.

HINGED SASH



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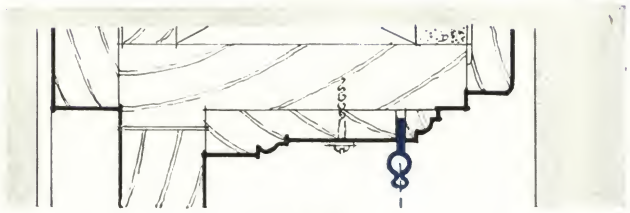
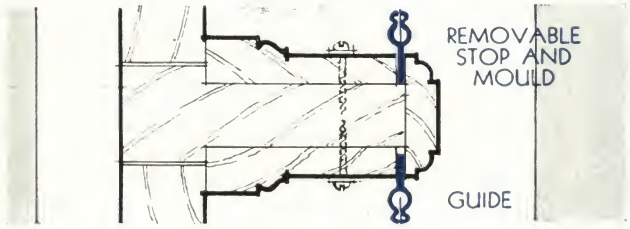
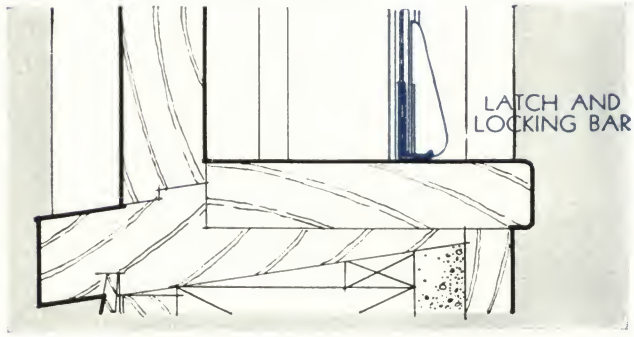


JAMB



MULLION



SILL

1⅜" thick sash are shown on the detail. If 1¾" thick sash are used the Rolscreen box serves as stop at the head.

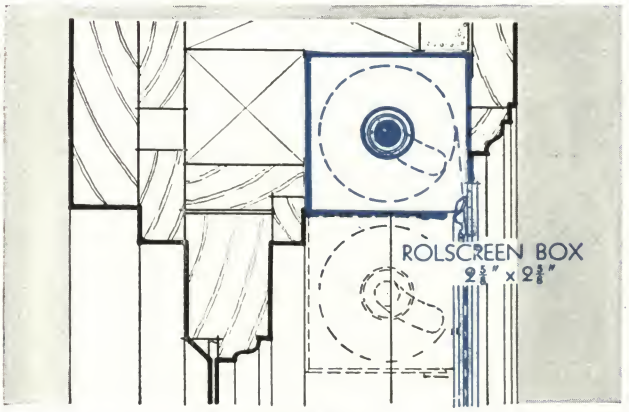
REFER TO PAGES 5 AND 6 FOR SIZE CONTROL OF STANDARD STOCK SIZES

Continued on next page

Rolscreens
TRADE MARK

DOUBLE HUNG WINDOWS

FRAME CONSTRUCTION



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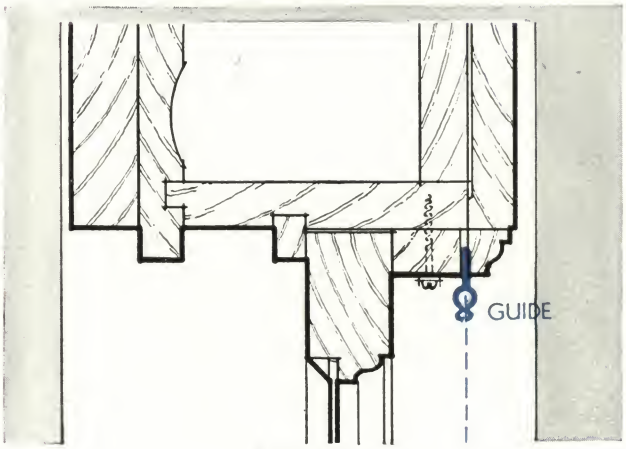
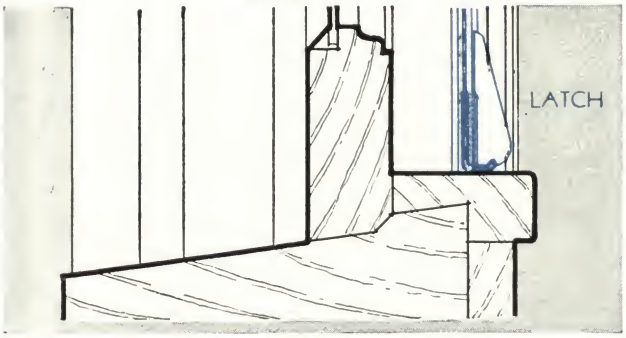


JAMB

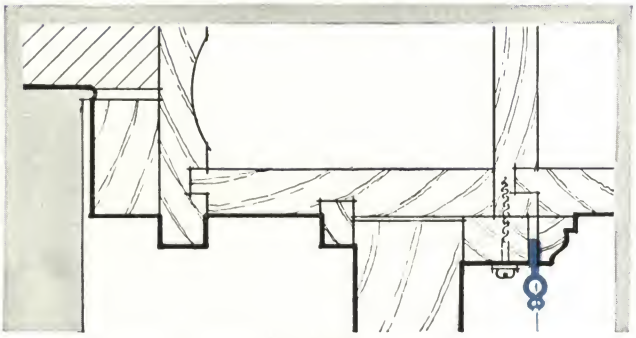


SILL

Rolscreen box may be set directly under head jamb as dotted in and a standard double hung frame used. »

MASONRY CONSTRUCTION

The rich sparkling lustre of fine glass and the exterior window beauty is not dimmed by screens. » » »



JAMB

Lift hardware on bottom rail of sash should be held to a minimum projection to clear locking bar on screen.

REFER TO PAGES 5 AND 6 FOR SIZE CONTROL OF STANDARD STOCK SIZES

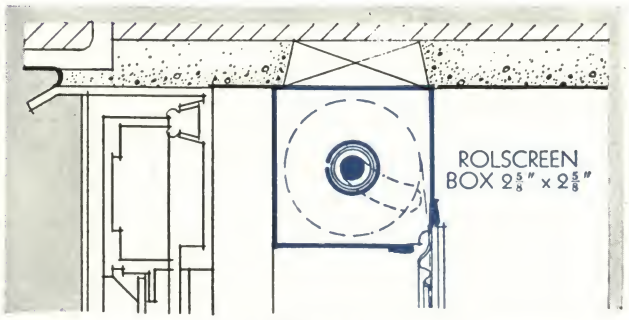
Continued on next page

Rolscreens TRADE MARK

METAL WINDOWS

DOUBLE HUNG BROWNE WINDOWS

No lovelier example of dignity and charm. All homes can boast such windows unmarred by screens. » »



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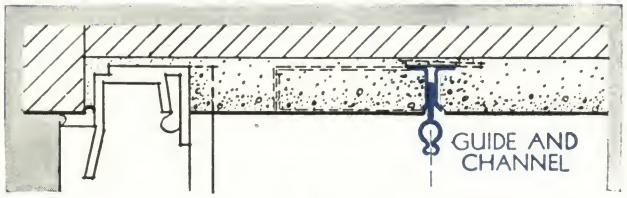
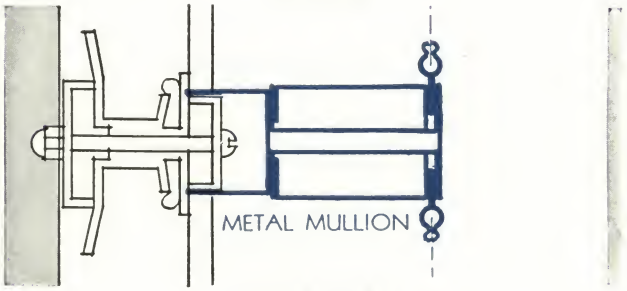
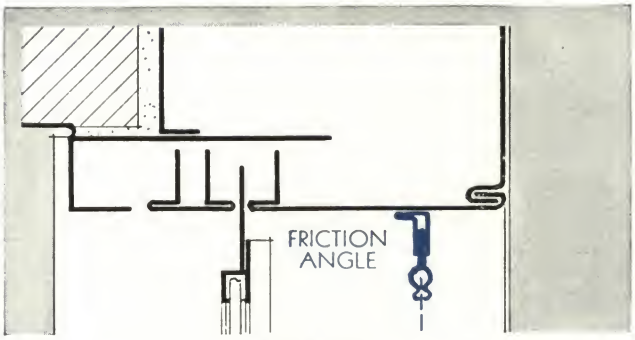


JAMB

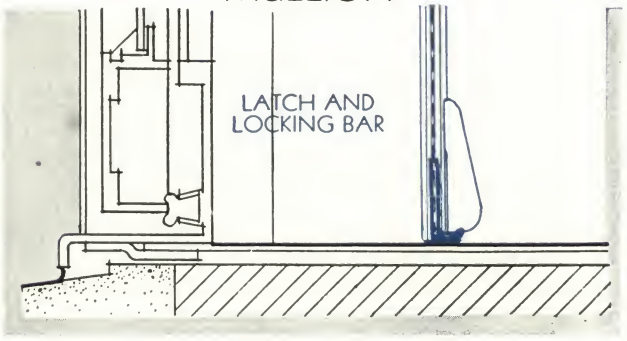


MULLION



JAMB

For metal double hung windows we recommend friction angles as shown in full size on page 4. » » »



SILL

Special details showing wood trim installation for Browne Windows can be furnished by Rolscreen Company. » » » » » » » » »

REFER TO PAGES 5 AND 6 FOR SIZE CONTROL OF STANDARD STOCK SIZES

Continued on next page

RECOMMENDED ROLSCREEN SIZES

For Standard Steel Casements of Various Manufacturers

"Z" BAR TYPES		Rolscreen Widths				Rolscreen Heights				
		1 Lt. Wide	Single Units	Double Units	Triple Units	2 Lts. High	3 Lts. High	4 Lts. High	5 Lts. High	6 Lts. High
ARISTON Standardized	a	13"	19"	37"	55"	28"	40¼"	52½"	64¾"	77"
BAYLEY-SPRINGFIELD	b	11"	20"	39"	55"	29⅜"	41⅝"	53⅛"	66⅛"	78⅜"
CAMPBELL 100 Series	c	11"	20"	39"	58"	25⅞"	37⅝"	49⅛"	62⅝"	74⅛"
CRITTALL STANWIN	d	11"	20"	39"	58"	26⅛"	37⅝"	51¼"	62¾"	74¼"
FENESTRA FENWROUGHT	e	13"	19"	37"	55"	27¾"	40"	52¼"	64½"	74"
GENFIRE Model No. 5	f	13"	19"	37"	55"	27¾"	40"	52¼"	64½"	76¾"
HOPE Standard	g	11"	20"	39"	58"	26½"	37⅞"	49⅜"	62¼"	
LEMCO Standard No. 100	h	11"	20"	40"	61"	25⅞"	37½"	49"	62¾"	74¼"
LUPTON Residence	i	11"	20"	39"	58"	25¾"	37⅜"	48¾"	62½"	73⅞"
SOULÉ Residence	j	14"	20"	38"	56"	28⅝"	41"	53¼"	65⅝"	77⅞"
THORN Residence	k	11"	20"	39"	58"	26⅜"	37¾"	49"	60⅜"	71⅝"
TRUSCON Model No. 5	n	13"	19"	37"	55"	27¾"	40"	52¼"	64½"	76¾"
EQUAL LEG CHANNEL TYPE										
CAMPBELL 400 Series	c	11"	20"	39"		26¾"	38"	49¼"	60½"	
CRITTALL NORMAN	d	11"	19"	38"	58"	26⅛"	37½"	48⅞"	60¼"	
FENESTRA FENCRAFT	e	13"	19"	38"		27⅜"	38⅝"	49⅞"	61⅛"	72⅜"
INTERNATIONAL COTSWOLD	o	11"	20"	39"		26¼"	37⅞"	49⅜"	60⅞"	
LEMCO Standard No. 700	h	11"	20"	40"	61"	25⅞"	37½"	49"	62¾"	74¼"
THORN MANOR	k		20"	40"	60"	26⅝"	37⅞"	49¼"	60½"	

Product of: a. Michel & Pfeffer Iron Works. b. The William Bayley Co. c. Campbell Casement Window Corp. d. Crittall Casement Window Co. e. Detroit Steel Products Co. f. Genfire Steel Co. g. Henry Hope & Sons Inc. h. Lundell-Eckberg Mfg. Co. Inc. i. David Lupton's Sons Co. j. Soulé Steel Co., United States Metal Products Division k. J. S. Thorn Co. n. Truscon Steel Co. o. International Casement Co. Inc.

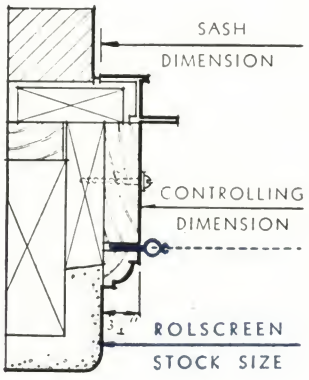


FIG. I

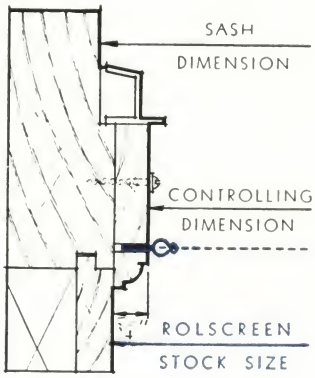


FIG II

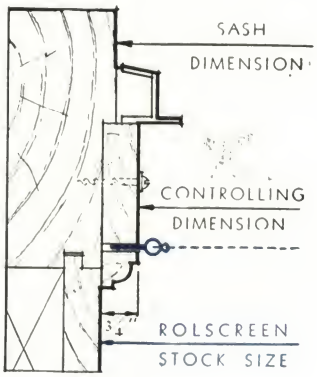


FIG III

Schedule Sizes **"Z Bar"** Type—Recommended Rolscreen sizes in the above schedule are based on installation as shown in Fig. I. **"Equal Leg"** Channel Type—Recommended Rolscreen sizes are based on Fig. II. Sizes as scheduled also apply to "equal leg" section detail shown on page 9. Where it is desired to set removable stop in rebate in frame, as shown in Fig. III, Rolscreens 1" wider than widths given in schedule must be used.

Controlling Dimension The Controlling Dimension should in all cases measure on the "HALF INCH," i. e., 18½", 19½", 20½", etc.

Rolscreen Stock Size The Rolscreen Stock Sizes measure on the "FULL INCH," i. e., 20", 21", 22", etc. This stock size dimension is just 1½" greater than the controlling dimension and is arrived at by adding a standard ¾" stop on each jamb, or the depth of a pair of plaster channels to this controlling dimension.

Thickness of Stops Thickness of Stops and depth of rebates for sash, (Fig. II) or depth of rebates for stops, (Fig. III) may vary to suit conditions so long as stops are not less than ½" thick and control measurement (face to face of stops) is on any "Half Inch."

Plaster Channels Plaster Channels must be set on exact "FULL INCH" back to back, to conform to size control and standard stock sizes.

Heights Height dimensions given in schedule are taken from what will be the top of box to top of finished sill.

Widths of Stops Width of stops set under box and onto which guides are fastened must be just ⅛" less than box size used, i. e., 2¾" stops for 2⅞" box, 2½" stops for 2⅝" box and 2" stops for 2⅛" box.

REFER TO PAGES 5 AND 6 FOR SIZE CONTROL OF STANDARD STOCK SIZES

ZERO WEATHER STRIPPING CO., INC.

Manufacturers and Installers of Insect Screens and Metal Weather Strips

1395-1397 Sedgwick Avenue
NEW YORK, N. Y.

Products

ZERO WOOD FRAME WINDOW SCREENS, DOOR SCREENS and PORCH PANELS.

Universal Roller Screens as manufactured by the Universal Roller-Screen Corporation (see manufacturers' details).

ZERO METAL WEATHER STRIPS.

Foreword

Zero Screens are skillfully and carefully made. Each opening is considered and treated as an individual installation to provide the correct screen in keeping with the architectural attractiveness of the building. Special attention is given to finishes and color of screens.

Services and Estimates

Consultation and suggestions regarding standard or special installations will be furnished upon request. Estimates supplied without obligation.

Factory is located in New York City, assuring quick service for Metropolitan area.

Zero Screen Door Installation

Zero Screens

Construction — Zero screen frames are made of 7/8 in. selected clear white pine thoroughly kiln dried. The 16-mesh bronze netting is rolled into a groove and held there by spline and countersunk moulding. All joints are mortised and tenoned, glued with waterproof glue, reinforced with special rivet. This type of joint is among the most desirable.

Finish — Painted frames receive 3 coats of pure linseed oil paint. Stained frames receive 1 coat of filler and 2 coats of varnish.

Window Screens

Double hung windows may be equipped with screens to cover whole opening and secured with metal hanger at top and hook and eye at bottom.

Half sliding screens used to cover lower or upper sash, sliding vertically on wooden tracks on blind stop. It is advisable to use this type where shutters are to be used.

Casement Screens

Casement screens are made to meet the particular conditions in rooms. On single or double openings, screens are hinged on sides and fastened with casement fasteners. For larger openings, horizontal sliding screens are applied.

Roller Screens

We are equipped to install the Lenish Roller Screens as manufactured exclusively by the Universal Roller-Screen Corporation (see manufacturers' details).

Door Screens and Porch Panels

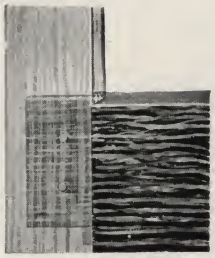
Zero Screen Doors are designed to blend with the architecture of the house. Width of stiles, type and position of vertical and horizontal rails, design of head, etc., are carefully considered. We recommend and furnish when specified, ornamental grilles to protect lower panels of door screens.

We also design porch screens to meet all conditions and with fastening arrangement for ease in installing or removing. Details upon request.

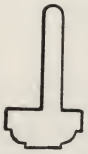
Half-size of Door Rail
Showing Wire Held with Spline and Moulding

Track for Sliding Screens

Half-size of Window Screen Rail
Showing Wire Held with Countersunk Moulding



Mortise and Tenon Joint



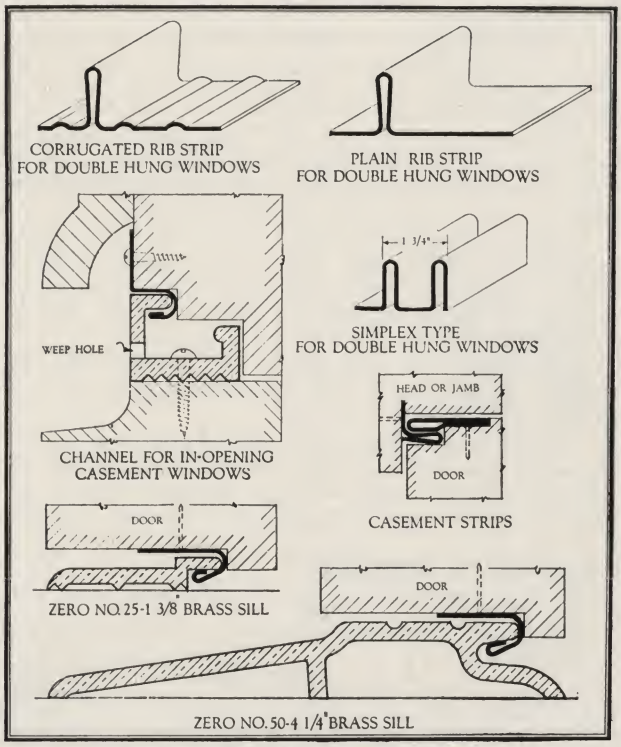
Astralgars for Porches and Double Doors

Details of Zero Screen Construction

Zero Guaranteed Metal Weather Strips

We manufacture and are prepared to install metal weather strips in large quantities, for all types of windows and doors.

Our high standard of workmanship and perfection of product assures efficient installation, guaranteed for the life of the building.



Details of Zero Metal Weather Strips

ROLLING SCREENS, INC.

MANUFACTURERS OF

MacCormack Rolling Window Screens

FACTORY AND MAIN OFFICE

126 Nassau Street (at Manhattan Bridge Plaza)

BROOKLYN, N. Y.

Product

MacCormack Rolling Window Screens.

Material

MacCormack Rolling Window Screens are manufactured from 24 gauge terne plate metal, thoroughly coated inside and outside with Hilo baked enamel, and the final finish to match the window trim.

Pure bronze wire screen cloth 18-mesh, specially drawn, evenly woven, with strong selvage edges and great tensile strength, makes MacCormack Rolling Screens strong and durable.

Quality

In rolling window screens you will find a wide range of quality in materials and workmanship as well as experience and responsibility of manufacture.

If you are in doubt, insist on a demonstration of the actual screen itself.

We are always ready and willing to install a sample MacCormack Rolling Window Screen in your client's house without obligation.

Installation and Service

MacCormack Rolling Window Screens are readily installed for either casement or double hung windows.

While these details show our screen exposed, the smallness of the case permits the complete concealment of our entire frame without weakening the window frame construction.

Our screens are completely assembled at the factory, with the baked enamel finish applied, so that the time required for installation on the average sized job rarely exceeds one or two days.

Having our factory and main office centrally located in the heart of New York City enables us to give very quick service and prompt delivery by our own trucks within a radius of one hundred miles.

During the past eighteen years we have made thousands of installations in exclusive residences from coast to coast, and each of these has come to us either through architects' specifications or present users' recommendations.

We always prefer to work with and through the architect because, as a rule, he shows appreciation of quality and service.

Complete drawings, ready for filing in your A.I.A. file, under section 35-P-1, showing various methods of installing MacCormack Rolling Window Screens in various types of windows, will be sent upon request.

Explanation of Drawings

Drawing No. 1 shows casement window opening out, with rolling screen inside on flat jamb.

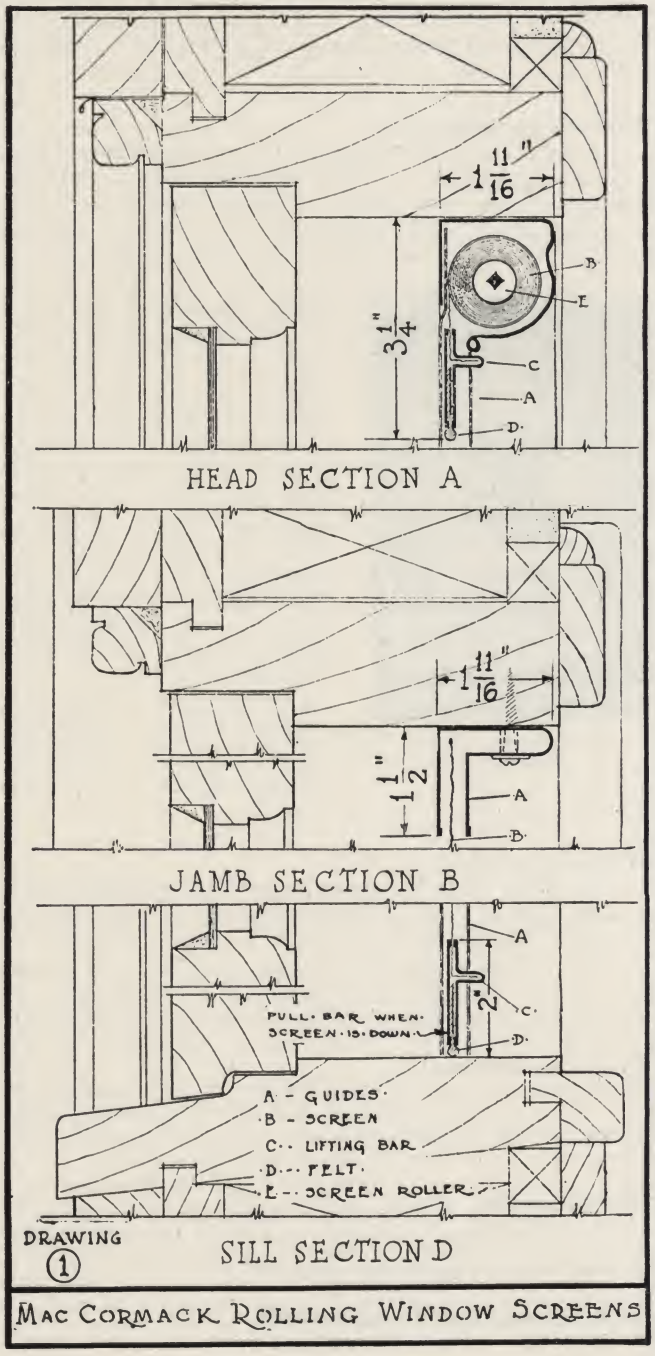
Drawing No. 2 is the same as No. 1 but with rolling screen in rabbeted jamb.

Drawing No. 3 shows a double hung window with rolling screens top and bottom—the top screen to cover the upper sash and the bottom screen to cover the lower sash. One rolling screen can also be used to roll from the top all the way down, as shown on drawings Nos. 1 and 2.

Our rolling screens are made in one piece up to 5 ft. in width and 7 ft. in height, without changing the frame dimensions, but we do not advise of a single rolling screen having an area of more than 20 sq. ft.

Permanent Exhibit

A permanent exhibit of our rolling window screen is located in the Architects' Samples Exhibit, Architects' Building, 101 Park Avenue, New York, N. Y.



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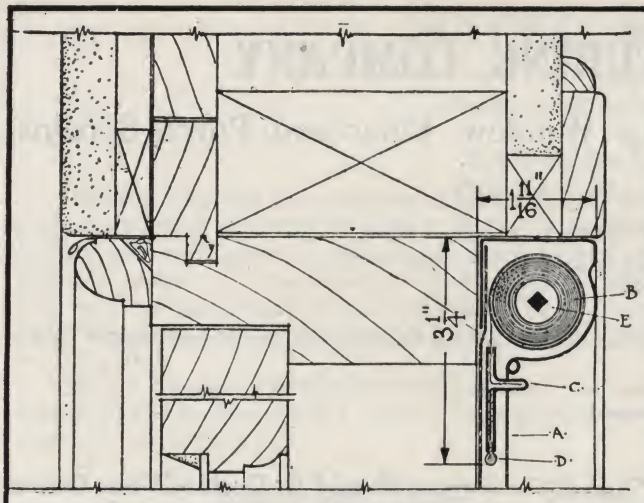
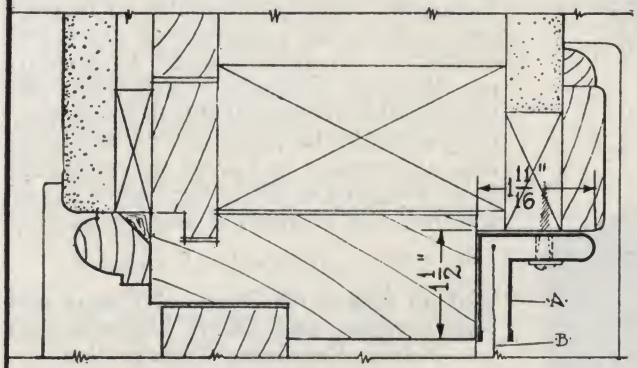
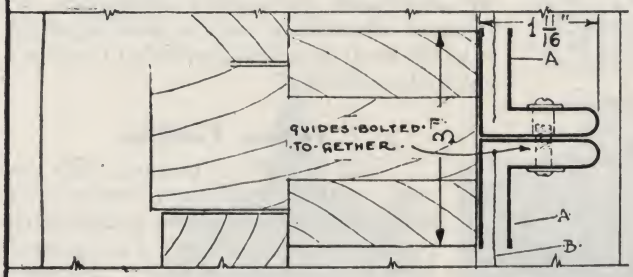


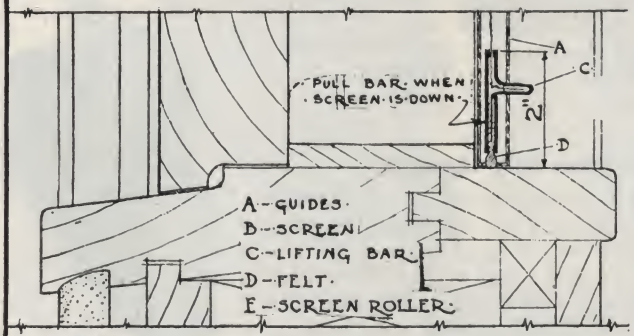
HEAD SECTION A



JAMB SECTION B

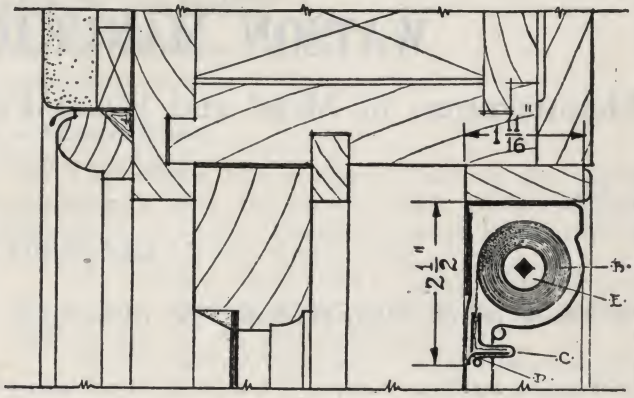


MULLION SECTION C



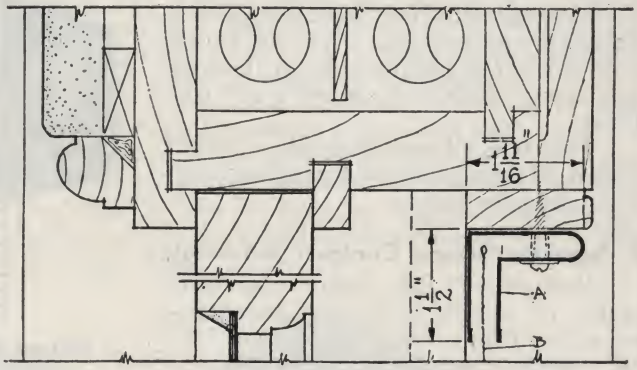
DRAWING ②

SILL SECTION D

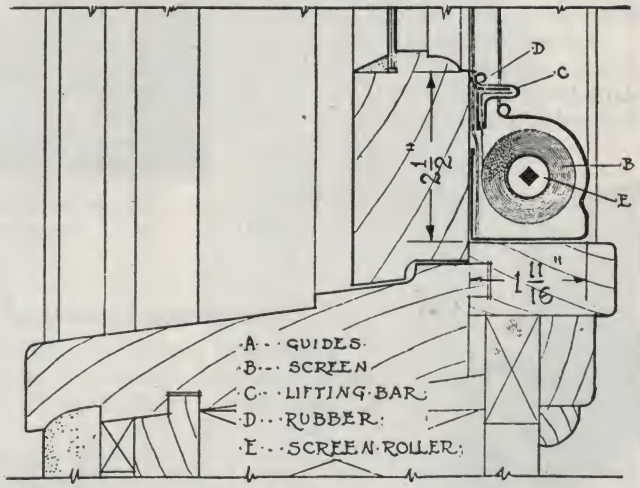


HEAD SECTION A

MEETING RAIL SECTION B



JAMB SECTION C



DRAWING ③

SILL SECTION D

MAC CORMACK ROLLING WINDOW SCREENS

WATSON MANUFACTURING COMPANY

Manufacturers of Metal and Wood Frame Window, Door and Porch Screens

EXECUTIVE OFFICE AND FACTORY
630 Taylor Street
JAMESTOWN, N. Y.

For Watson Venetian Blinds and Metal Office Furniture, see Watson Manufacturing Company in the Manufacturers' Index

Products

SCREEN DOORS, in Metal and Wood.
WINDOW SCREENS, in Metal and Wood.
ROLL SCREENS, Twentieth Century and Efficiency Screens for Steel Windows.
SCREENS for special conditions, porches, courts, etc.

A Complete Screening and Installation Service for All Types of Buildings

Our representatives in various parts of the country are experts. They will confer with and advise architects as to the most satisfactory method of screening any condition.

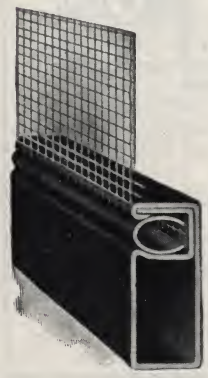
They take all measurements, carefully observe all details and conditions and properly install the screens.

A Separate Screen Contract Advisable

Because of the highly specialized nature of screen work and installation we advise that a contract, separate from the general contract, be made for screens.

Insect screening should be ordered in time so that it can be completed before the building is occupied.

Screens purchased on the basis of price only usually fail in quality, adaptability and efficiency to meet the standard contemplated by the architect. This results in dissatisfaction to all concerned.



Watson Metal Frame Screen

The Fly Outside
TRADE-MARK

Watson Roll Screen

Executive Office and Factory, Jamestown, N. Y.

Screens Should Be Decided Upon During the Preparation of Working Drawings

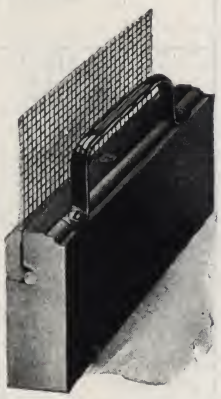
Insect screening is a recognized necessity of the greatest importance, which unfortunately often receives little or no consideration in the preparing of plans and details. It is safe to assume, whether or not the insect screens are included in the specifications or general contract, that they will eventually be required. We therefore urge that design and construction should be so arranged to allow for future use of screens in an economical and satisfactory way.

Watson Makes All Types of Frame and Roll Screens, and Offers Unprejudiced Advice Regarding Type to Use

We manufacture all types of roll, flat, cage or irregular metal or wood frame screens and metal doors. We are therefore not influenced by factory limitations or business interests in our recommendations as to the most practical methods of screening each condition.

Watson Facilities

The factory is equipped with the most modern machinery, much of it specially designed for the satisfactory production of our work. Our central location provides the best of shipping facilities. Our large force of engineers will assist with the solution of all kinds of screen problems.



Section Through Wood Frame
Shows method of attaching wire cloth

The Proper Method of Screening Any Opening

There are usually several methods of screening any opening. The best method depends on the type of sash or door and the surrounding conditions affecting the installation.

There are so many different makes and types of windows and such a wide variety of operating conditions, size and location of hardware, shade and other accessories and so many possible surrounding wall conditions, all of which affect the application of screens, that it is highly desirable that all details of a particular installation be carefully studied and the screens be designed to fit the particular installation.

Continued on next page

WATSON SCREEN DOORS

Screen Doors in all shapes, sizes and finishes and of all kinds of wood, steel and other metals.

A Complete Line of Screen Doors

We manufacture screen doors of all kinds and sizes and of any kind of metal or wood. All are of the best quality and workmanship, differing in kind, weight and finish of metal, kind and finish of wood, width of stiles and rails, thickness and kind of hardware, guards and other accessories but all made from measurements taken on the job.

Solid Bronze Hardware—All hardware is solid bronze of the highest quality, much of it designed especially for these doors.

Watson Metal Doors

These doors are not merely large window screens but in all details they are carefully designed door construction having maximum strength, stiffness and durability, being provided by the solid tubular construction with all joints reinforced. A rounded edge at the wire side prevents cutting the wire cloth.

Bronze Frame Doors—Are manufactured of commercial anaconda bronze containing not less than 90% copper.

Steel Frame Doors—Are made of copper bearing open hearth, alloy coated steel, electrogalvanized after fabrication.

Method of Attaching Wire Cloth—The wire cloth is securely held in a groove adjacent the inner edge of the frame by a resilient slotted tubular spline which locks every strand of the cloth in place. The spline is easily removed and replaced in case it is necessary to renew the wire cloth. 16-mesh oxidized anaconda bronze wire cloth is used on all doors.

Weights—Watson Metal Doors are furnished in four weights.

The "Extra Heavy Metal Door" is the highest grade metal door for use in banks, public buildings, residences, etc., where the finest type of door is required for appearance and frequent usage.

The "Heavy Metal Door," lighter than the extra heavy door but with ample strength for all ordinary requirements for the finer residence.

The "Medium Metal Door," similar in appearance to the heavy door, is a high grade medium weight metal door for use where not subjected to continued hard service.

The "Light Metal Door" is a less expensive light weight door used where not subject to frequent use.

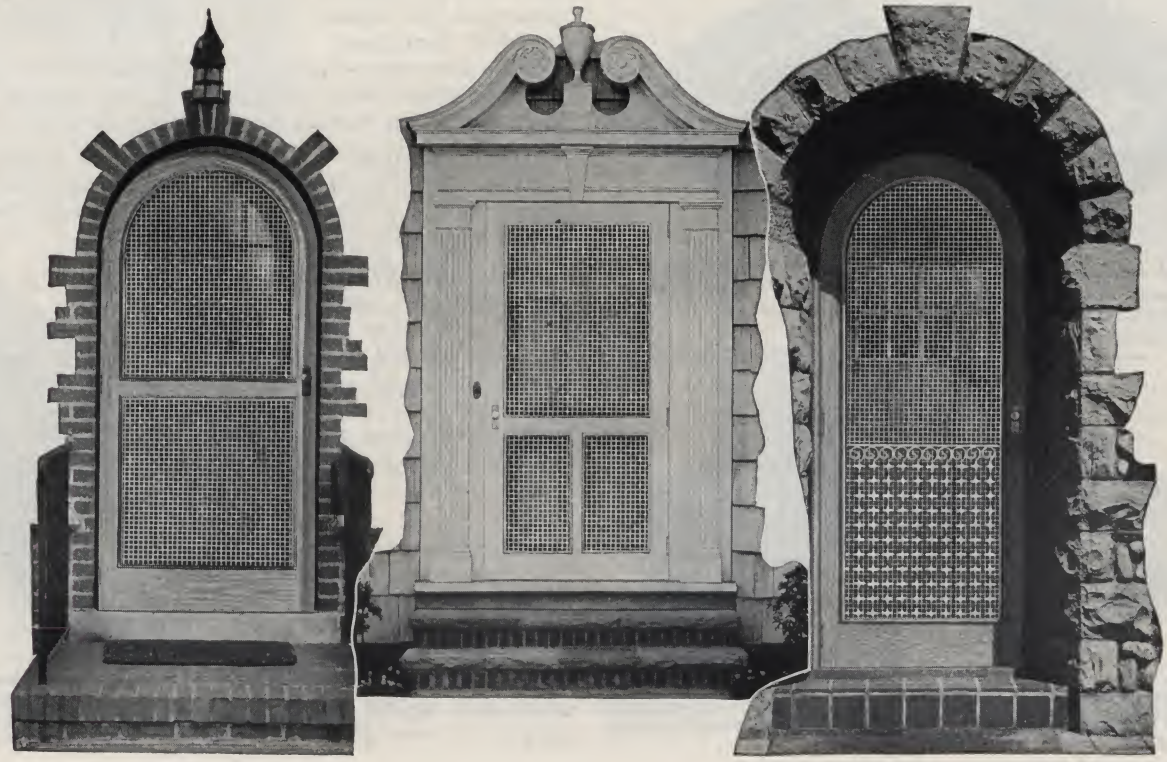
Finishes—Bronze doors are finished in any of the various metal finishes or left unfinished, attaining a statuary bronze finish by exposure.

Steel doors are finished in pyroxylin lacquer (duco or equal) in any color desired or in paints, enamels, plain or grained.

Watson Wood Frame Screen Doors

Wood frame screen doors are usually constructed of soft pine finished with the best pyroxylin lacquer (duco or equal), paint or enamel in any selected color. Also are made of any fine cabinet wood, finished to correspond with the adjacent woodwork.

Wire Cloth and Fastening—Standard weight 16-mesh oxidized anaconda bronze wire cloth. The wire cloth is fastened in a groove in the rabbet so located as to retain the greatest amount of strength in the frame. The cloth is held in place by a rattan spline and is further secured by a neat wood moulding held in place with brass nails.



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WATSON METAL AND WOOD FRAME SCREENS

Metal screens have the following advantages over wood screens: They are stronger, have narrower stiles and rails, offer less obstruction to the vision and require less storage space.

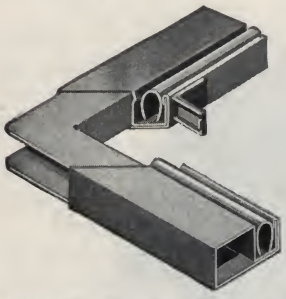
Metal Frame Screens

The special feature of our metal frame screens is the tubular frame construction. The solid tube has great strength, stiffness and rigidity which cannot be obtained in a section which is simply bent up. The metal is so distributed that it gives the greatest strength where needed. The bottom and inside edge of the wiring groove have double thickness of metal and at the rounded wiring edge, three thicknesses. The rounded edge prevents cutting of the wire cloth. The double walls of the groove are either brazed or welded together which gives extra strength to take up the strain of wiring and prevents twisting of the frame.

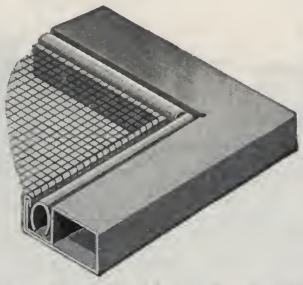
"Twentieth Century" Screens—Made in either bronze, steel or other metals. The corner is so constructed that it is actually stronger than the frame itself. It is reinforced by a patented solid-web channel corner reinforcement which cannot split. This channel reinforcement is sweated to the tubular frame in assembling. An additional corner reinforcement is fastened across the inside corner of the frame at the intersection of the wiring groove.

Efficiency Screens—(In steel only.) Have the same section as the "Twentieth Century" but are a welded construction. These are high grade, sturdy screens.

Method of Attaching Wire Cloth—16 mesh anaconda bronze wire cloth is standard. The wire cloth is stretched over the rounded edge of the groove and when the resilient slotted tube is forced into the groove every strand of wire is securely locked in place.

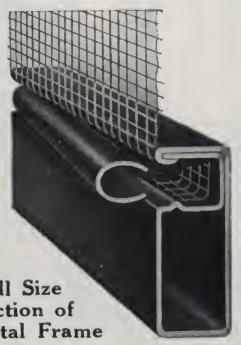


Patented Corner "Twentieth Century" Metal Frame Screen Pulled Apart
To show inside reinforcement and angle brace



Detail of Welded Corner of "Efficiency" Steel Frame Screen

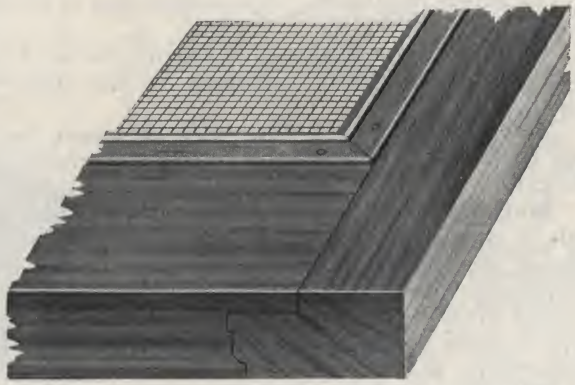
"Twentieth Century" Metal Frame Screen Patented Corner Assembled



Full Size Section of Metal Frame
Showing method of wiring, resilient split tube and rounded edge and double strength wiring groove

Wood Frame Screens

In our corner construction we use hardwood dowels. The rail is cope cut to fit the moulding of the stile which, together with the considerable superficial area of the dowels, provides a maximum gluing surface. The corners are protected from the injurious action of the weather by the use of waterproof glue. This construction has demonstrated its superiority by tests and practical experience.



Finishing—We are prepared to make any finish required, but in order to correctly interpret the general appearance of finished work samples of generous size should be furnished.

We recommend that the finishing of wood screens be included in the general contract, the screens being shipped from the factory primed or partly finished.

Identification—Identification of each screen with its proper opening is provided by duplicate numbering tacks, one being placed on the screen frame and the other on the window.

Fastening Wire Cloth—The wire cloth is fastened by the groove and spline method. The groove is located to insure maximum strength of material. The wire cloth is held firmly in place by a rattan spline and is further held by a neat moulding which is mitred and held in place by brass brads.

Hardware—Each screen is furnished with brass or bronze hardware suitable for its installation.

A considerable variety of special hardware applicable to usual and special conditions of hanging is provided.

Section Through Wood Frame
Shows method of attaching wire cloth

Continued on next page

WATSON ROLL SCREENS

Three Different Roll Screens Made in Two Different Types

Experience of Over a Quarter Century

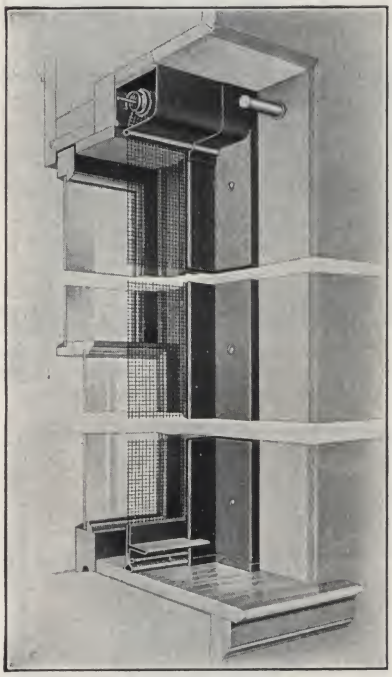
We believe we are the oldest manufacturers of roll screens. All of our long experience has been embodied in our present roll screen construction, many features of which are patented and used only by us. We invite comparison of construction and mechanical features with any other roll screen.

The "Twentieth Century" Roll Screen

The "Twentieth Century" Roll Screen has been well known to architects for many years. It is operated manually, and operating bar will stay at any desired height when released.

No catches are necessary to hold the screen in the lowered position. The operating bar cannot tilt and jamb. The screen is noiseless in operation.

It is our best grade of roll screen and well deserves the reputation gained by years of satisfactory service.



Construction—They are constructed on an entirely different principle. A bronze tape is fastened to and operates around a drum connected to the screen roller. It is carried down inside side guide around a pulley and fastened to the operating bar. As the screen is lowered the tape is wound on the drum. As the screen is raised the tape is drawn off the drum which rotates the roller and winds up the screen. The tape prevents tilting the operating bar. The wire is held tight and smooth by a spring, which, however, has nothing to do with raising or lowering the screen. Hence this is very easy as there is no resistance of a spring to be overcome.

The wire cloth runs in deep metal guides, and if forced out of the guide at any point, is easily returned without raising the screen and without injuring the wire cloth.

These screens are complete, the side guides, roll case and operating bar being shipped completely assembled.

The roll case is made in two sizes, one for moderate sized windows and another for large windows. They are also adjustable for unequal or unsymmetrical openings.

"Twentieth Century" Roll Screens are usually made in bronze or steel, but may be had in other metals.

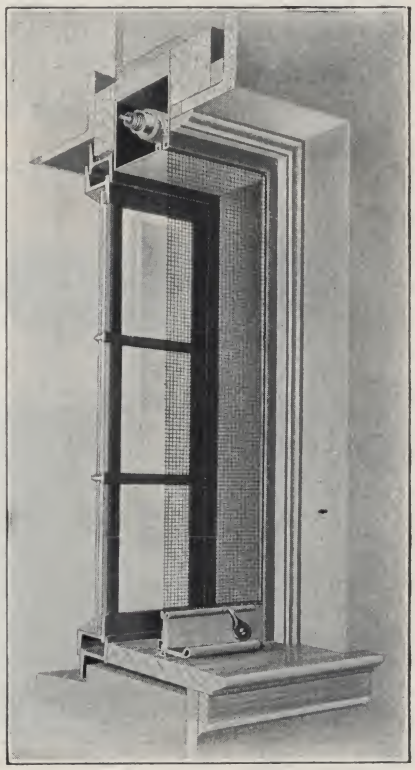
The steel screens are made of copper bearing, alloy coated, open hearth steel, electro galvanized after fabrication and finished in any color of pyroxylin lacquer, or grained or plain enamel finishes.

Wire cloth is 16-mesh special weight anaconda bronze which rolls easily and smoothly.

Efficiency Roll Screen

A medium priced, spring roller type of screen of the highest grade, made of the best quality materials and workmanship. These screens are guaranteed indefinitely against any defects of materials or workmanship.

Type "AB"—Has a standard roll case $2\frac{9}{16}$ in. square, which contains a stationary axle of round cold rolled steel extending the full width of the roll case, and is supported at each end by ball bearings. A solid tubular roller forms the housing for the non-binding spring. Each strand of the wire cloth is attached to the tubular roll. Bronze end bearings at both ends prevent end play and eliminate wear on the ends of the roll case.



The operating bar is constructed of heavy material having a substantial angle turned in at the bottom, forming a pull to receive the fingers in the operation of the screen.

An automatic spring catch is provided at each end of the operating bar engaging the guide shoe securely holding the operating bar in its lowered position.

Metal guides are formed straight and symmetrical with edges rolled, providing necessary stiffness and preventing damage to the wire cloth should it be accidentally forced out of the guide.

A bronze bound fabric cushion strip is inserted in the bottom of the operating bar to protect the window stool and to close out any possible light line.

Type "AC" Screens—These have the same details of construction and operation as Type "AB" except that they have plain bearings and "galvanoid" wire cloth.

Roll case is not galvanized and fabric cushion strip is omitted.

Installation Details—We have on hand many detailed drawings showing the various methods of installing Efficiency Roll Screens under almost any conditions. These will be sent upon request.

Continued on next page

SCREENS FOR STEEL SASH VENTILATORS

We are prepared to screen all the different makes of steel windows to meet the requirements of the many different kinds and conditions, no matter how complicated.

While frame screens are generally preferred, roll screens are often used. They are elsewhere described in more detail.

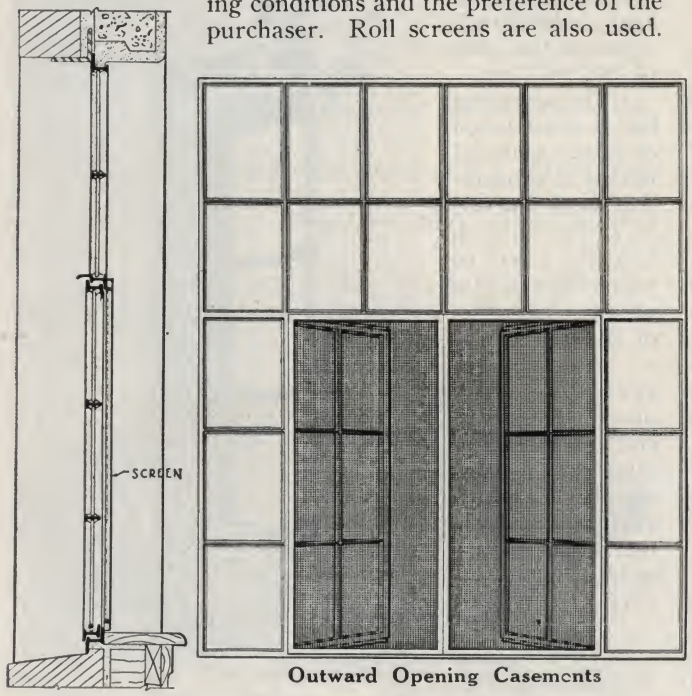
We will gladly offer suggestions and furnish complete information and details to meet any condition or requirement.

Types of steel windows we screen:

Casements (In and Out Opening)
Projected (In and Out) Ventilator
Center Pivoted Ventilator
Basement Windows
Double Hung Windows

Screens for Outward Opening Casements

Frame Screens are preferred for casement windows. Several kinds are used in various ways for this type of window. They may be hung at the top, at the side, either single or double or may be stationary. They may be vertical or horizontal, twin or multiple sliding screens, the best method being determined by the varying conditions and the preference of the purchaser. Roll screens are also used.



Outward Opening Casements

Screens for In-Opening Casements

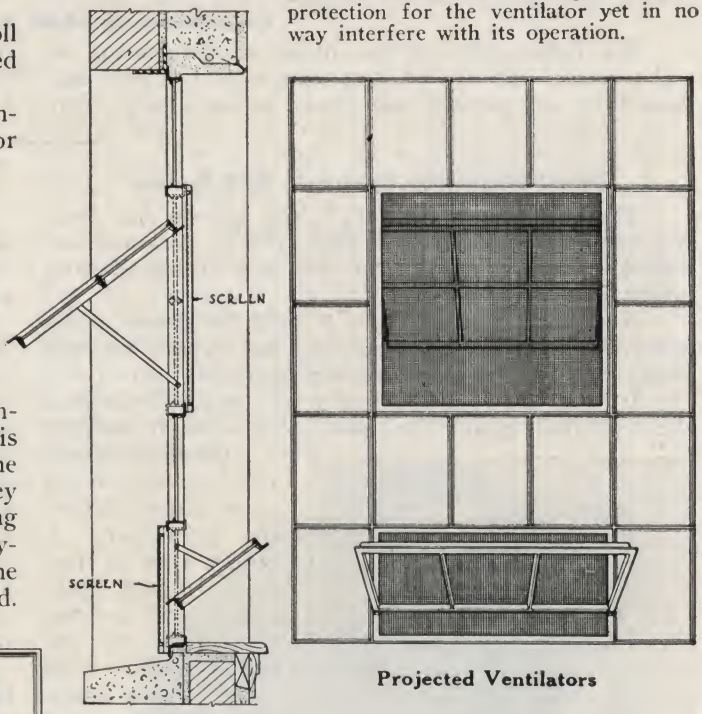
In-opening casements are usually best screened with frame screens attached to the window outside by various methods and may be stationary, side hinged (double or single), top hung, etc.

Screens for Projected (In and Out) Ventilators

Projected ventilators are generally screened with frame screens secured to the sash frame on the side opposite to the projection. These are attached to provide ready access for the operation of the ventilator and not to interfere with the sash hardware. Details vary to meet different ventilator conditions.

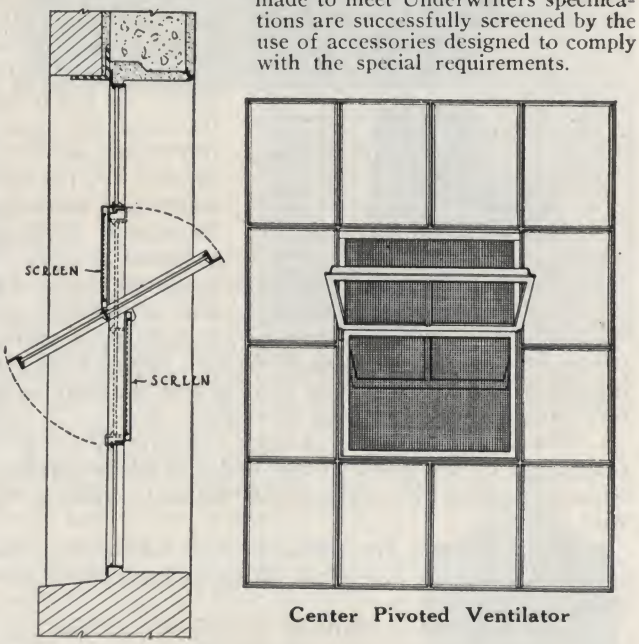
Screens for Center Pivoted Ventilators

These screens for center pivoted windows are in two parts—one applied to the top on the outside, the other to the bottom on the inside. The outside screen may slide up and down as the ventilator is opened and closed or it may be stationary with a drum connection between the ventilator and the lower edge of the screen. The inside screen is stationary. These screens afford complete screen protection for the ventilator yet in no way interfere with its operation.



Projected Ventilators

Underwriters' Labeled Sash—Center pivoted ventilators made to meet Underwriters specifications are successfully screened by the use of accessories designed to comply with the special requirements.



Center Pivoted Ventilator

Screens for Steel Basement Windows

Basement windows can generally be screened with our flat frame screens applied on the outside.

Screens for Double Hung Steel Windows

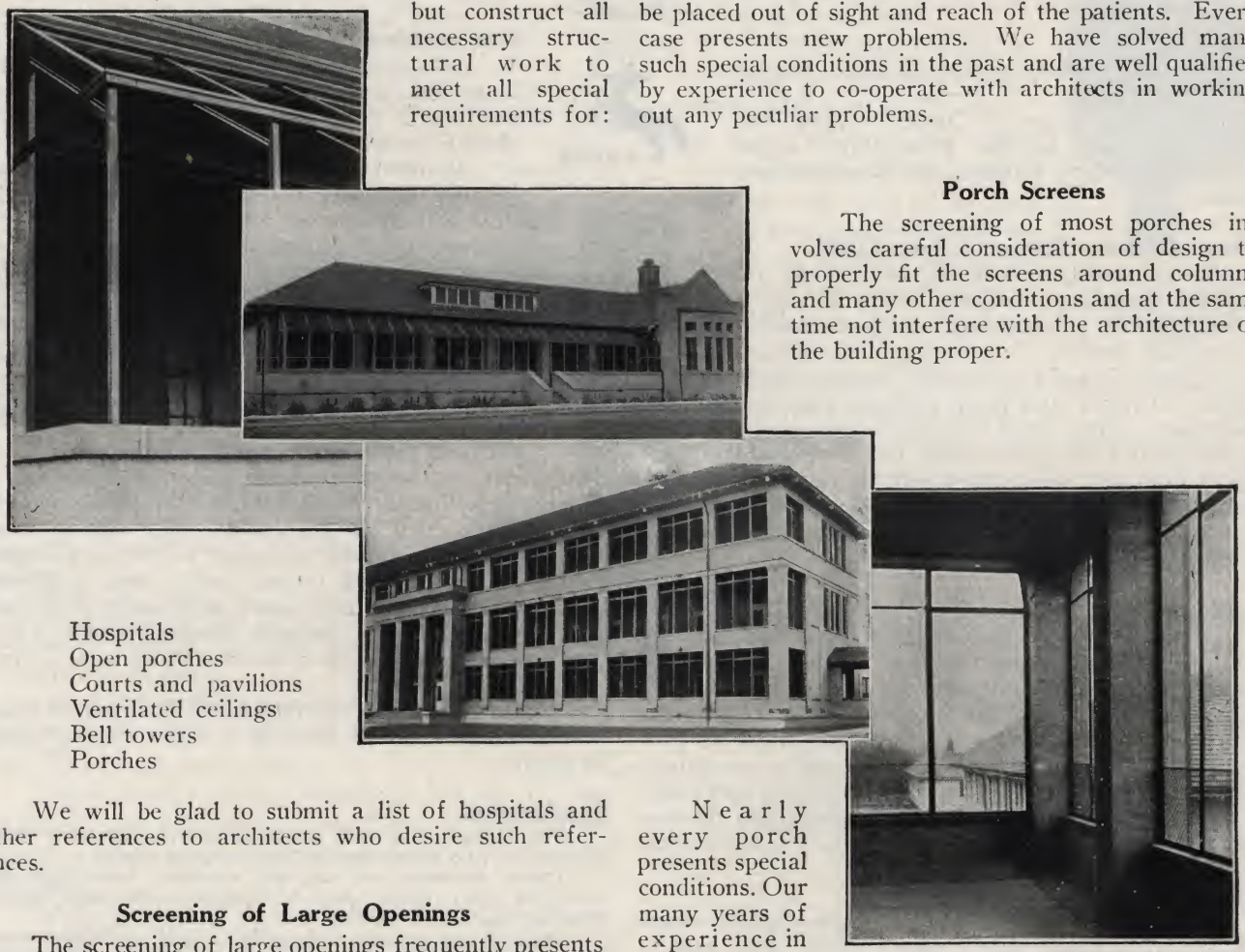
Double Hung Windows may be screened several ways with single or twin vertical sliding screens, flat, stationary screens, top hung, or top pivoted screens, or roll screens. Screens for this type of window are generally selected as best adapted to the particular window condition where it is used.

Continued on next page

SCREENING PORCHES AND UNUSUAL CONDITIONS

Through our long experience as screen manufacturers, we have screened many unusual conditions. Some of these were not merely conditions of screening, but we also have had to supply light structural metal supports and framing to support the screens.

Our factory is especially well equipped with metal working machinery, not only for screens, but applicable to all kinds of light structural work on sheets, angles, bars, etc., of steel, bronze and other metals. We can not only design, but construct all necessary structural work to meet all special requirements for:



Hospitals
Open porches
Courts and pavilions
Ventilated ceilings
Bell towers
Porches

We will be glad to submit a list of hospitals and other references to architects who desire such references.

Screening of Large Openings

The screening of large openings frequently presents problems in supporting the screens and holding them securely in place.

Our screen engineers have a broad experience on which to draw in solving these problems.

These engineers can properly design the structural supporting members to give the necessary strength with the minimum obstruction of vision and at the same time to harmonize with the architecture of the building.

The Watson Manufacturing Company have designed and manufactured this class of work for many years and maintain a force of highly trained engineers, combined with special modern machinery in their factory to obtain the very best results.

Courts and Patios—Tops of open courts or patios of any size, so that no screens are required for the windows and doors facing the court.

Screens for Asylums, Hospitals, etc.

Screens for asylums, insane hospitals, penitentiaries, etc., frequently present special problems. Insane patients often try to throw articles or even themselves out of the windows. They will sometimes work for hours trying to operate a catch or other piece of hardware.

For such conditions special methods of attaching the screens must be devised and not only the fastenings but sometimes also the frame of the screen itself must be placed out of sight and reach of the patients. Every case presents new problems. We have solved many such special conditions in the past and are well qualified by experience to co-operate with architects in working out any peculiar problems.

Porch Screens

The screening of most porches involves careful consideration of design to properly fit the screens around columns and many other conditions and at the same time not interfere with the architecture of the building proper.

Nearly every porch presents special conditions. Our many years of experience in solving such problems enables us to offer practical suggestions for their solution.

Fundamental Considerations Regarding Screens

For the architect who desires to detail screens for buildings he designs, these suggestions are offered:

1. A suitable framework or surface at top, bottom and sides to which screens can be attached should be provided. A rabbet is desirable.

2. Blinds, shutters, doors, flower boxes, curtains, draperies, electrical fixtures, hardware, etc., should not be allowed to encroach on the space provided for screens, or to prevent proper swinging of casement screens or screen doors.

3. For convenience in handling and storage, screens should not be made too large.

CHASE BRONZE AND COPPER SCREEN CLOTH

CHASE BRASS & COPPER CO.
—INCORPORATED—
WATERBURY, CONN.

NEW YORK, N. Y., 80 Lafayette Street
BOSTON, MASS., 411 "D" Street
BUFFALO, N. Y., 25 Ellicott Street
NEWARK, N. J., 361 Halsey Street
PHILADELPHIA, PA., 46 No. 6th Street
BALTIMORE, MD., 307 E. Lombard Street
PITTSBURGH, PA., 855 North Avenue, West
CINCINNATI, OHIO, 222 Post Square
CLEVELAND, OHIO, 5005 Superior Avenue
DETROIT, MICH., 2798 E. Grand Boulevard
CHICAGO, ILL., 1300 W. Harrison Street
MILWAUKEE, WISC., 512 North Water Street
MINNEAPOLIS, MINN., 145 No. 10th Street
ST. LOUIS, MO., 314 No. 2nd Street
NEW ORLEANS, LA., 429 Camp Street
DALLAS, TEX., 1407 Main Street
LOS ANGELES, CAL., 210 Central Avenue
SAN FRANCISCO, CAL., 680 Second Street
OAKLAND, CAL., 1808 Peralta Street
SEATTLE, WASH., 1957 First Avenue, So.

Products

SCREEN CLOTH: Chase Genuine Bronze and Pure Copper.

For Chase pages on Copper Roofing Materials and Door Saddles, Brass Pipe, Copper Water Tubing and Fittings, see Manufacturers' Index.

Chase Genuine Bronze Screen Cloth

Is the most economical, non-rusting material for screening windows, doors and porches where quality, ultimate cost and permanence are controlling factors.

Chase Genuine Bronze Screen Cloth is harder, stronger and more resilient and durable than pure copper cloth. Bronze cloth when released after having been bent under pressure of the thumbs will spring back into its original flat, straight surface, whereas pure copper cloth when bent under even a moderate pressure remains permanently distorted.

Antique Finish

In places where *bright* finish is undesirable Antique Finish, Chase Genuine Bronze Screen Cloth is an ideal substitute for the regulation bright bronze. The finish on this type of cloth gives it a very dark bronze color. *Antique* finish is produced by a special process which adds a permanent dark coating to the wire *before* it is woven into cloth, thus insuring uniform color. This process in no way detracts from the rust resisting qualities of the screen.

Chase Pure Copper Screen Cloth

This cloth is exactly what its name implies: screen cloth woven from 99.9% pure copper wire that is drawn as hard in temper as it is possible to make. Copper of course is non-rusting and needs no painting. It does not give as good results as bronze where large surfaces are to be covered, owing to its softness and liability to damage and being stretched out of shape after it is installed. Chase Copper Screen Cloth is clearly and unmistakably labeled *"copper,"* or if the wrapping has been removed it can be readily identified by testing with the fingers for resiliency and strength.

Size of Mesh to Use

The term *mesh* is generally understood to mean the number of openings in a linear inch and that is the standard by which our screen cloth is manufactured.

16-mesh is used more than any other size because it gives better service in guarding against both mosquitoes and house flies.

14-mesh will protect against flies but will not bar out mosquitoes.

18-mesh is required in some tropical climates and close to the Southern seashores in order to protect against the extremely small mosquitoes and gnats that infest those localities.

Standard Widths

Chase Genuine Bronze Bright Finish Screen Cloth is always available for immediate warehouse shipment in all *even widths* from 18 to 48 in., i. e., 18, 20, 22, 24, 26, etc. All of these widths are available in either 14, 16 or 18-mesh.

Antique finish bronze cloth is also carried in all even inch widths from 18 to 48 in. in 14, 16 and 18-mesh. Chase Antique Bronze Screen Cloth can also be furnished in 54, 60, 66 and 72-inch widths.

Chase Pure Copper Screen Cloth is carried in stock in all *even inch* widths from 18 to 48 in. in 14, 16 and 18-mesh.

Specification

The following form of specification with necessary modifications will be found satisfactory for most work:

Insect Screens—All movable windows, doors and also front (or side) porches shall be equipped with insect screens covering the entire opening.

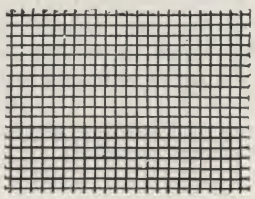
Double hung windows to have full length, top hung screens. Hinged windows opening into the building to have outside stationary screens. Hinged windows opening out to have top hung screens to swing in. Screen doors to swing in opposite direction from house doors.

Frames of all screens to be made of well seasoned, clear white pine with mortise tenon corners securely wedged and glued and to be painted with 3 coats of best lead and linseed oil in colors to harmonize with surrounding trim.

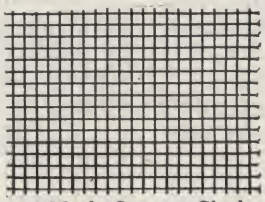
Insect screen wire to be 16-mesh, genuine bronze as manufactured by the CHASE BRASS & COPPER CO.

All hardware to be solid brass or bronze.

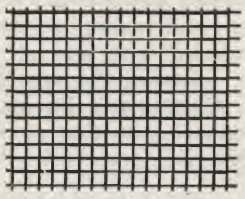
Installation of screens to be made under direction of architect.



18-Mesh Screen Cloth



16-Mesh Screen Cloth



14-Mesh Screen Cloth

WALTER B. GILBERT & CO.

Manufacturers of "Pullman" Ventilators

YORK, PA.

REPRESENTATIVES

NEW YORK, N. Y., 154 West 57th St. HELENA, MONT., Raymond C. Grant TORONTO, ONT., A. & F. Fisher
ST. LOUIS, MO., H. A. Woodworth Engineering Co. ST. PAUL, MINN., O'Connell Supply Co.

Products

Pullman-Erie Sash Ventilators; Pullman Sash Ventilators.

Also Pullman Window Ventilators; Pullman Roof Ventilators; Dampers and Bases.

TRADE MARK

Reg. U. S. Pat. Off.

Pullman-Erie Sash Ventilators

Description—These consist of two parts as illustrated and are furnished complete with wood screws for mounting on the bottom sash rail after opening is provided.

Inside View of Pullman-Erie Sash Ventilator

Specification Data—Pullman-Erie Sash Ventilators are made in two sizes, namely No. 1 and No. 2.

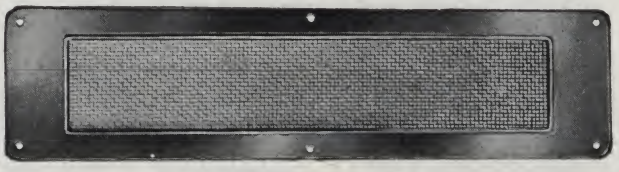
No. 1 size requires opening 1⅜ in. high x 7 in. wide and is 2 in. high x 9 in. wide over all, and sash must be at least 1¼ in. thick.

No. 2 size requires opening 1¾ in. high x 9 in. wide and is 2¾ in. high x 10¾ in. wide over all and sash must be at least 1½ in. thick.

Inside shutter can be opened to any one of four positions from full open to closed, and is held in position by a simple spring arrangement which is part of the ventilator.

Made completely of heavy brass, including screen, and are regularly finished in brush brass and lacquered.

All standard hardware finishes can be furnished on order.



Outside View of Pullman-Erie Sash Ventilator

A FEW RECENT INSTALLATIONS OF PULLMAN-ERIE SASH VENTILATORS

Building	Location	Architect
Abington Hospital	Abington, Pa.	Tilden, Register & Pepper
M. E. Hospital	Philadelphia, Pa.	Horace Castor
Woodrow Wilson School	No. Arlington, N. J.	James S. Pigott
Jewish Hospital	Philadelphia, Pa.	Horace Castor
Burg Co. Store	Wadena, Minn.	Private plans
McMillan Hospital	St. Louis, Mo.	Jamieson & Spearl

Pullman Sash Ventilators

View of Pullman Sash Ventilator with Standard Hood

Description — These consist of two parts, i.e., an inside diffusion box and an outside hood.

The outside hoods are made in two styles which are called "Standard" and "Louvre." Inside box is same in both cases.

The opening required is cut in the bottom sash rail at the mill where the sash are made, and the ventilators are screwed fast to the sash after the same are in place.

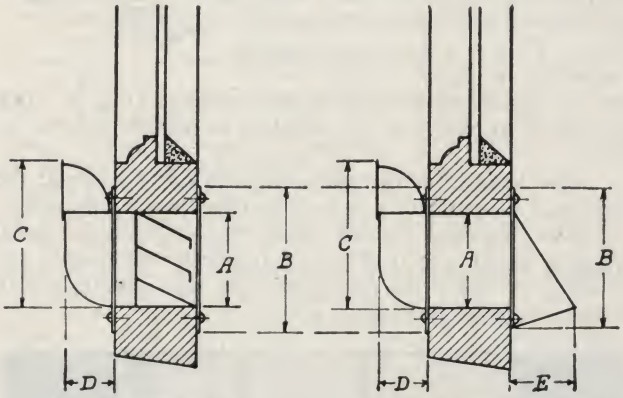
Specification Data—Pullman Sash Ventilators are regularly made with inside diffusion boxes of sheet brass with brushed brass finish and lacquered all over.

Fitted with hinged shutters to stay in any position from full open to closed.

Outside hoods, "Standard" and "Louvre," are made of sheet steel and finished in rubber finish black lacquer.

Fitted with 16-mesh bronze screen cloth.

Screws for mounting are furnished.



With Louvre Hood With Standard Hood

Cross Sections of Bottom Sash Rail Fitted with Pullman Sash Ventilators

STANDARD SIZES OF PULLMAN SASH VENTILATORS

Nominal sizes, height and width, in.	A	B	C	D	E	Sash openings, height and width, in.
2 x12	2	3⅛	3⅛	1	1⅜	2⅛x12⅛
2½x16	2½	3¾	4¼	1⅝	1⅞	2⅝x16⅛
3 x15	3	4⅛	5	1⅞	2¼	3⅛x15⅛
4 x18	4	5¼	6	2⅛	2⅝	4¼x18¼

Special sizes and finishes to order.

A FEW RECENT INSTALLATIONS OF PULLMAN SASH VENTILATORS

Building	Location	Architect
Montefiore Hospital	Pittsburgh, Pa.	Schmidt, Garden & Erikson
Bryn Mawr Hospital	Bryn Mawr, Pa.	Zantzinger, Borie & Medary
Episcopal Hospital	Philadelphia, Pa.	Stewardson & Page
Levering Hospital	Hannibal, Mo.	La Beaume & Klein
Grade School	Kalispell, Mont.	Fred A. Brinkman
Bronx Hospital	Bronx, N. Y.	Louis Allen Abramson

ESTABLISHED 1893

IDEAL VENTILATOR CO.

ORIGINATORS AND PATENTEES OF GLASS WINDOW VENTILATORS

Manufacturers of the Ideal Window Ventilator

FACTORY AND HOME OFFICE

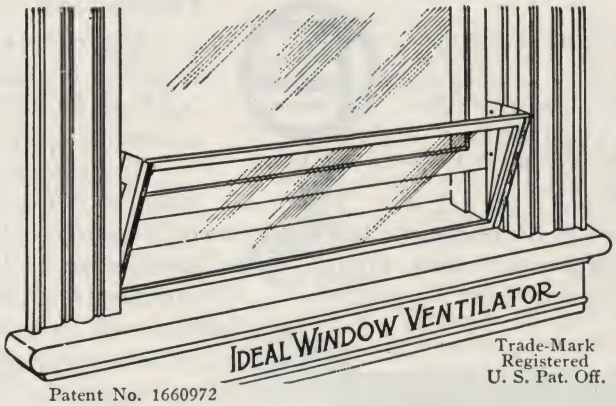
160 Atlantic Avenue

PROVIDENCE, R. I.

Ventilate the Ideal Way

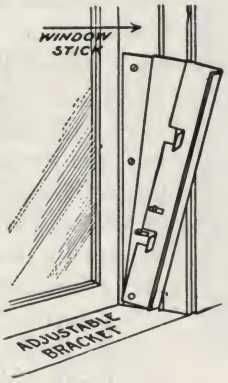
Deflectors of the Ideal type are especially adaptable to schoolrooms and various large buildings where many persons work or congregate, and have been recommended by the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association.

Ideal Ventilators are not an experiment. They have been manufactured and distributed for the past 37 years by this organization. Recommended by the best architects, engineers, contractors and boards of education in the United States. Their efficiency is not confined to offices and factories, but they have found high favor in schools, hospitals, homes and countless public buildings.



Trade-Mark Registered U. S. Pat. Off.

Patent No. 1660972



The Ideal Ventilator

Light, strong and made of the finest materials obtainable. Woods are selected well seasoned and kiln dried. This is a guarantee against premature warpage. Glass is "A" quality and is encased in a wood frame 11½ in. high and made as wide as the window in which it is to be used.

The Ventilator complete consists of two parts: the ventilator proper and a pair of metal adjustable brackets.

The wooden frames slide into adjustable metal brackets from which they are instantly removable for cleaning or other purposes, and do not interfere with screens, shades or draperies.

Window ventilation has proven extremely satisfactory, not only as to economy of installation and up-keep, but through effective operation by permitting regulation of incoming air by simply raising or lowering bottom sash to meet various requirements of occupants of rooms or offices.

Finishes

Ideal Ventilators are furnished in regular stock finishes as follows:

Light oak	Weathered oak	Enameled white	
Golden oak	Green oak	Light cream	Mahogany finish
Flemish oak	Walnut finish	Dark cream	Pearl gray

Special finishes to order.

Brackets are furnished as follows:

Oxidized steel, nickelplated brass, solid brass, dull finish.

A Partial List Where the Ideal Has Made Good

New York, N. Y.

Allied Chemical & Dye Corp.	New York Central Terminal
Columbia University	New York Edison Co.
Department of Health	New York University
Graybar Electric Co.	Rockefeller Institute
Manhattan College	Westinghouse Companies
National Biscuit Co.	U. S. Weather Bureau

Boston, Mass.

New England Telephone Co.	Gulf Refining Co.
State House	Boston Street Railway
Y. M. C. A.	Statler Building
General Electric Co.	Babson Statistical Organization
Standard Oil Co.	Otis Elevator Co.

Providence, R. I.

State House	Nicholson File Co.
City Hall	Gorham Mfg. Co.
Brown University	New Industrial Trust Bldg.
Public Schools	R. I. Hospital
Brown & Sharpe Mfg. Co.	Homeopathic Hospital
Turks Head Bldg.	St. Joseph's Hospital

Installation in Office of Commissioner of Health, State of Massachusetts, State House, Boston, Mass.

State house completely equipped with Ideal Ventilators

Installation in New York Central Building, New York, N. Y.

Ideal Ventilators selected as standard equipment for this building

THE V-W VENTILATOR COMPANY

V-W Built-in and Window Ventilators

2879 A. I. U. Building, COLUMBUS, OHIO

Other V-W Products

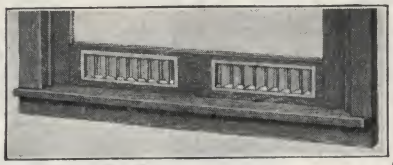
V-W Roof Ventilator, Tiger Floor Clips and Ceiling Clips. See Manufacturers' Index.

FRESH AIR

TRADE V-W MARK VENTILATOR THE V-W VENTILATOR CO. COLUMBUS O.

EVERYWHERE

Exterior of Two Type R Ventilators Installed



Uses — Wood and metal windows, doors, walls, railway cars, cabin planes, buses and the like are main uses for this ventilator.

VENTILATE EVERY WINDOW EVERYWHERE WITHOUT DRAFT, DIRT RAIN or SNOW

V-W Ventilators Have Patented R-Shaped Vertical Louvers

V-W Ventilators have the patented R-shaped vertical louvers that admit a free flow of fresh air at all times without draft, dirt, rain and snow.

The outside section is built right into the lower, upper, or both sash rails of the window. Sliding shutter on inside controls ventilation. Standard opening sizes are 12x2 and 18x2 in., with other sizes made to meet any specifications when ordered in quantities.

Stops Drafts

By twice checking the air as it passes through the R-shaped louvers, V-W Ventilators break up currents no matter how strong the wind may blow. Note in the diagram the double deflection and expansion of air which so thoroughly stops drafts.

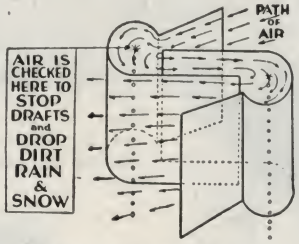


Diagram of Air Travel

Stops Dirt

As the air expands after entering the narrow openings of the "R," dirt and particles in the air are dropped. This is twice accomplished before permitting the air to enter a room.

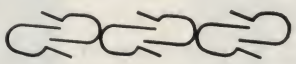
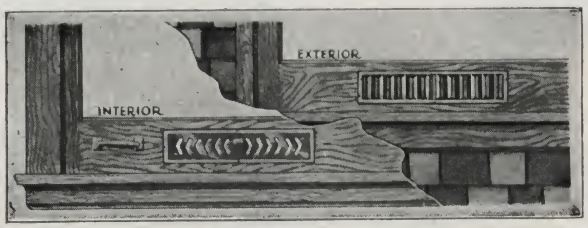


Diagram of R-shaped Louvers

Admits Fresh Air

V-W Louvers open in two directions, actually causing a flow of fresh air no matter from what angle the wind may blow. Scientific tests by A. I. Brown, Professor of Heating and Ventilating at the Ohio State University, have proven that the V-W vertical louvered ventilator takes in three times the amount of air taken in by horizontal louvered ventilators when the wind is blowing at 45° angle to window. Even when wind is blowing at most unfavorable angle, namely, parallel to the window, V-W Ventilators are still efficient.



Interior and Exterior Views Showing One Type S Installed

Efficiency Plus Beauty

The great efficiency of V-W Ventilators has not in any way interfered with their beauty. The solid bronze shutter of modern design will enhance the appearance of any window.

SIZES AND PRICE LIST, BUILT-IN VENTILATORS

*Type	Size, in.	Capacity per hr., 20-mile wind	Price list
R	12x2	350 cu. ft.	$3.00
R	18x2	525 cu. ft.	4.00
S	18x2	525 cu. ft.	4.25

*Type S opens in two directions; Type R, in one.

Suggested Specifications

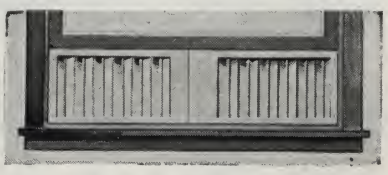
The lower rail of each bottom sash (and the upper rail of each top sash) shall be provided with one 18x2-in. V-W Type S (two 12x2-in. V-W Type R) Built-in Ventilator, containing patented V-W vertical R-shaped louvers, manufactured by The V-W Ventilator Company, Columbus, Ohio. Shutter shall be solid bronze. Manufacturer shall guarantee ventilators against defects in workmanship and material. Sash-rails shall be constructed to accommodate ventilators.

Note: One 12x2-in. ventilator fits window 22 in. wide (or more).
One 18x2-in. ventilator fits window 28 in. wide (or more).
Two 12x2-in. ventilators fit window 36 in. wide (or more).
Two 18x2-in. ventilators fit window 48 in. wide (or more).

Some Installations—

Palmer Memorial Hospital, New England Deaconess Association, Boston, Mass.; Earnest W. Dearing, Architect
Residence, Haverhill, Mass.; Frost & Raymond, Architects, Boston, Mass.
Emergency Hospital, Washington, D. C.; A. P. Clark, Jr., Architect
H. I. Potts Residence, Mt. Airy, Philadelphia, Pa.; A. H. Savery, Architect
Braun Baking Company, Pittsburgh, Pa.; The McCormick Company, Inc., Architects
Women's and Children's Hospital, Toledo, Ohio; Harry W. Wachter, Architect
Longview Hospital, Cincinnati, Ohio; T. Ralph Ridley, Columbus, Ohio, Architect
Pure Milk Co., Evansville, Ind.; The McCormick Company, Inc., Pittsburgh, Pa., Architects
Decorah Hospital, Decorah, Iowa; Charles Altfillisch, Architect
Branch of Bank of Montreal, Vancouver, B. C.; Honeyman & Curtis, Architects

V-W Window Ventilator



R-Shaped Vertical Louvers—The V-W Window Ventilator also contains the patented R-shaped vertical louvers that are so efficient in admitting fresh air without draft, dirt, rain or snow.

Easily Installed and Removed—This ventilator is held in the outer window channel by a patented expanding spring that permits the window to operate independently. It can be installed in less than a minute without tools and is just as easily removed. Sizes to fit all windows.

"Whichever way the wind doth blow, some heart is glad to have it so"

ATHEY COMPANY

Perennial Window Shades and Disappearing Skylight Shades

6035-6045 West 65th Street, CHICAGO, ILL.

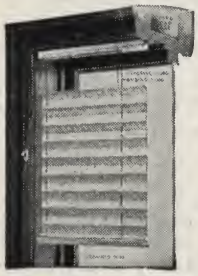
BRANCHES AND DISTRIBUTORS

NEW YORK, Franklin H. Keese, 7 E. 42nd Street
DETROIT, LeSage & Company, 1720 12th Street
BUFFALO, Howard T. Cary, 1831 Hertel Avenue
ST. PAUL, Metal Weatherstrip Co., 910 Builders Exchange
MILWAUKEE, Willer Screen & Weatherstrip Co., 477 40th Street
BOSTON, H. E. Holbrook Company, 89 Federal Street
CLEVELAND, Athey Foote Company, 8612 Hough Avenue
MEMPHIS, Chears Floor & Screen Co., 884 Adams Avenue
HARTFORD, Hartford Wire Works, 90 Allyn Street
LOUISVILLE, Pryor & Carroll, Starks Building
HONOLULU, T. H., Jack Drew, Box 3135
MONTREAL, Cresswell Pomeroy, Ltd., 3989 Ambroise Street
TORONTO, Cresswell Pomeroy, Ltd., 2 Grosvenor Street
SAN DIEGO, Consolidated Building Specialties Co., 848 8th Street
PITTSBURGH, Moyer & Stewart, 727 Park Building
ST. LOUIS, John C. Wasson, 563 Paul Brown Building
CHICAGO, Wilson & Scott, 30 No. Michigan Avenue

For our page on Weatherstrips, see Manufacturers' Index

ATHEY PERENNIAL WINDOW SHADES

The Athey accordion pleated cloth window shade has been on the market for some fifteen years. Its development has been much like that of the sewing machine and the automobile; there were many problems to solve but it is now and has been for some years a perfected mechanism.



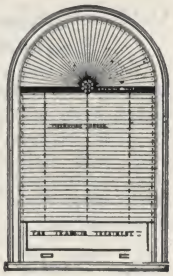
The colors are now guaranteed sunfast, the cloth is of a heavier weave, and the abrasion of the taut wires has been eliminated by using brass eyelets.

This shade has had a wide distribution; it has been installed in twenty-six of the recent buildings in Detroit and in thousands of other buildings — banks, stores, schools, universities, hospitals, hotels and homes.

Advantages

A new type shade which is attractive, enduring and practical, and which is an intelligent solution of light control, ventilation, and the treatment of large skylights, is well worth your investigation.

The Athey shade is extremely durable, easy and quick in operation, high in efficiency, low in maintenance and medium in price. It solves the treatment of irregularly shaped window heads and transoms. They are in the nature of sunbursts and apply to segmental, elliptical, gothic or even rectangular heads—when the head is a true half circle they may be operated, opening like a fan.

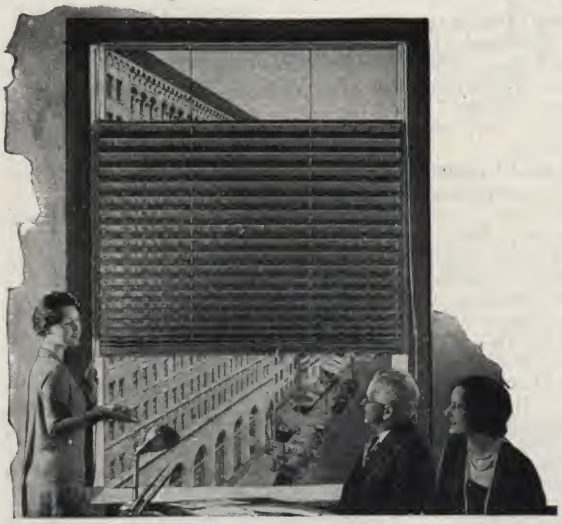


Construction and Operation

The cloth is a herringbone woven coutil, 200 threads per sq. in., guaranteed sunfast, pleated to 1⅝ in., stitched at each fold and made in 7 colors. It raises from the bottom and lowers from the top, sustained at each side by strained brass wires as shown by the sectional illustration.

The cord case at the head is a steel channel with brass rollers for the cords, both the wires and cords passing through perforations in the cloth.

This shade acts as a natural ventilator—when the sun is on the glass lower the sash from the top, raise the shade from the bottom and the intermediate air becomes superheated causing an upward current which ventilates the room.



Note: Twenty-six Large Office Buildings in Detroit Are Athey Shaded. Ten of Them Are Shown in the Illustration

Continued on next page

ATHEY DISAPPEARING SKYLIGHT SHADES

The *function* of skylight shades is that light may be diffused in a room of large expanse or in any room where it is not available from windows in the wall.

The *problem* is that the greatest volume of light may be developed on murky days and the disturbing glare of the sun softened on bright days.

The Athey skylight shade is a new and improved method made possible because the Athey pleated shade cloth, herringbone woven, 200 threads per sq. in., sunfast dyed, weighs just 5/8 oz. per sq. ft.—infinitely lighter than any other possible material.

Construction and Operation

The principle of control of the Athey shade is one endless 1/8-in. wire cable passing over a 5-in. sheave pulley at each corner of the skylight and leading to a winch located at any remote point and operated by either a crank or motor.

The shade is in two leaves, meeting in the center and the skylight may be as large as 20x40 ft. When the shade is open, these leaves collapse into pockets at either end of the skylight and thus are concealed.

The meeting bars are equipped at each end with a ball bearing sheave traveling on a metal track, hence noiseless and with minimum friction.

The cloth is sustained on strained bronze No. 12 gauge wires on about 18-in. centers. The shade is suspended from these wires by means of perforated brass clips attached to each fold of the cloth and the wires are practically invisible.

Type A Skylight Shade

The illustration below is one of three installations in the schools at Cleveland. There are two skylights operating in unison with one cable, the winch located back stage. It is an auditorium, the shades are dark green and when motion pictures are shown they close in a silent and rather mysterious way.

Installation of Type A Skylight Shades

In working rooms the light ecru shades are usually chosen so that the full volume of light is available on dark days and a soft diffusion of light on bright days.

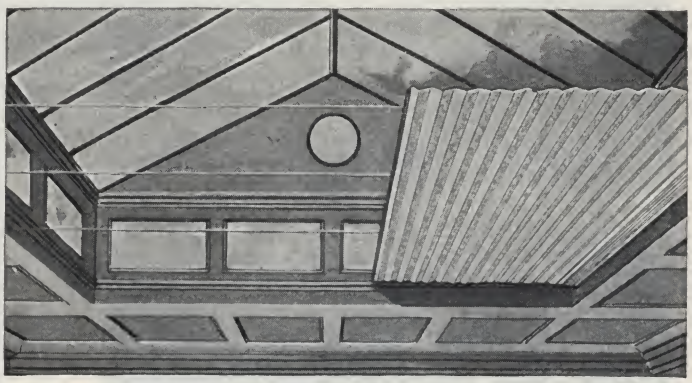
Skylights are of the utmost importance especially in one-story factories, but a large expanse of sun glare creates an impossible condition. Hence hooded skylights facing north have been much used, but on murky days they deliver little or no light.

Type B Skylight Shade

The Type B is for skylights in one leaf and can be made 50 ft. long. It is essentially our regular back wire type shade installed horizontally, one end equivalent to the head of the window, and it is shipped threaded complete. The cords have a 1/16-in. cable cord which we pre-stretch. There are 3 rollers on the wall above the shade for the return cords and one horizontal one to direct the pull cords downward. These are a piece of 1½-in. channel 3 in. long with 7/8-in. rollers screwed to the wall, the master cord to go at either corner of the shade.

In Athey skylight shade construction all cords, cables and other mechanism are located above skylight, hence invisible.

The E. H. Allen Private Natatorium, Chicago



Type B Skylight Shade

ANDEL & COMPANY

Manufacturers, Contractors and Engineers

4630-4636 North Lamon Avenue, CHICAGO, ILL.

Products

ANDELCO LIGHTPROOF CURTAIN EQUIPMENT.
Andelco Electrical Sash Operating Equipment.
Andelco Electric Heaters.
Andelco Sheet and Plate Metal Products.
Heating-Ventilating, Air Conditioning, Cooling Equipment.
Andelco Combination Steel Fireplace Throats and Damper.
Special Mechanical Equipment.
Sheet and Plate Metal Work.
Drying and Processing.
Andelco Hoods and Canopies.
Owners and Operators of Chicago Areological Laboratory.

ANDELCO LIGHTPROOF CURTAINS

Visual Education and Methods Requisites

Educational and medical buildings—hospitals and institutions.

School auditoriums, classrooms, lecture rooms, laboratories, X-ray and dark rooms, medical and surgical clinic amphitheatres, X-ray photographing and developing, spectrum, radium and cathode ray study, etc.

For moving picture and stereopticon projection, chemistry experiments and demonstrations, photomicrography, micro and balopticon projection, electric arc and brush discharge study and photographing or wherever absolute darkness is desired intermittently during daylight hours.

Service

Send to us your plans, elevations and sections, or sketches, for our recommendations, details, specifications and prices.

Construction

Andelco Lightproof Curtains are made of heavy doubly treated and filled artificial leather and steel. We manufacture both electrically and manually operated equipment. All types are automatic limiting and foolproof. Andelco best grade equipment is fully self-lubricating. All types make a permanent equipment that will last as long as the building without any repairs or maintenance.

Guarantee

All Andelco Lightproof Equipment is guaranteed unreservedly. Any necessary replacement, repairs or adjustments to make Andelco installations wholly and fully satisfactory will be made in a period of two years after completion of installation free of any expense to the buyer.

Typical Lecture Room Auditorium, University of Chicago, Social Science Building
C. HODGDON & SON, Architects
"Built-in" type installation, electrically operated

Typical School Auditorium, Indiana University, School of Pathology
R. FROST DAGGETT, Architect
"After-completion" type of installation, electrically operated

Lecture Room Auditorium, University of Chicago, Eckhart Hall
CHARLES Z. KLAUDER, Architect
"Built-in" type installation, electrically operated

Typical Lecture Classroom, "Semi-Built-in" Type Installation, Hand Operated

DU PONT TONTINE WASHABLE SHADE CLOTH

Made by

E. I. DU PONT DE NEMOURS & CO., INC.

NEWBURGH, N. Y.

Product

DU PONT TONTINE, the washable Window Shade Cloth.

Advantages

Genuine du Pont Tontine possesses unique advantages which architects have long sought in window shades. It is proof against the three main causes of shade failure: *dirt, rough handling and rain.*

Washable—Tontine can actually be scrubbed with soap, hot or cold water and a brush. All dust, dirt, and finger marks are easily removed—the shade restored to its original fresh beauty, season after season.

Durable—Du Pont Tontine shade cloth is made by an entirely new process—pyroxylin impregnation. This process assures the highest degree of durability. Tontine shades will survive the rough handling and abuse incident to hotel, hospital, school and other installations of like nature.

Waterproof—Rain and storms have no effect upon Tontine. Even extreme dampness at the seashore cannot make it limp.

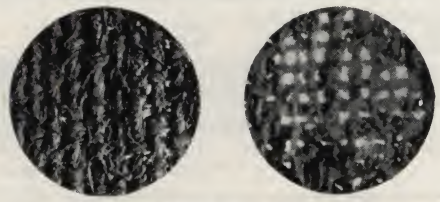
Sunfast—Tontine is made with tested sunfast pigments. It will not fade on exposure to sun, rain, or even when being washed. It is remarkably resistant to fraying on the edges.

Tontine eliminates the need of costly shade replacement. It is most economical.

DU PONT
REG. U.S. PAT. OFF.

TONTINE
REG. U.S. PAT. OFF.

THE *WASHABLE*
WINDOW SHADE



The Washing Test

Unretouched photomicrograph showing du Pont Tontine after being scrubbed with a brush, soap and hot water. Note that the surface is unharmed by this rigorous washing test

A high grade nonpyroxylin shade cloth washed exactly the same way as the Tontine cloth (unretouched photomicrograph). Filler has dropped out exposing the basic fabric

This Window Shade Can Actually Be Washed

Samples for Testing in Your Office

We will gladly send a large sample piece of Tontine to test out in your office. Soil this piece, then scrub it clean with soap, water and a brush. Immerse it in water for days—it is thoroughly waterproof. Twist and crease it between your hands. It does not crack or "pinhole."

How Tontine Is Made

Tontine is made by an entirely new process, developed by du Pont chemists. The basic fabric is special cotton cloth, woven to our strict specifications as to weight, count and tensile strength.

This material is thoroughly impregnated with imperishable pyroxylin, forced through and through the fabric—an ideal vehicle for the tested sunfast pigments used for coloring. No fillers or coatings which could deteriorate are used. Tontine's surface is beautiful, lasting, very tough and entirely waterproof.

Colors and Widths of Tontine

Du Pont Tontine shade cloth is offered in 19 solid colors and 6 duotone combinations (widths 36 to 72 in.); in attractive corded designs (widths 32 to 63 in.); and in figured patterns (widths 36 to 54 in.). All Tontine shade cloth, no matter what design, pattern or color specified, is waterproof, washable, sunfast and durable.

How to Test the Quality of Window Shade Fabrics

Before specifying any window shade, make actual tests yourself.

Will the material stand up under washing?

Rough handling?

Rain?

Note the effect of a washing test on Tontine in comparison with an ordinary filled fabric. See photomicrographs above.

Proper Specifications for Shade Cloth

All shade cloth shall be du Pont "Tontine," waterproof and washable pyroxylin material, of color to be selected by the owners. Each shade to be mounted on the Tontine guaranteed shade roller. Each bidder must submit a sample of the material he proposes to furnish.

Samples

Write for sample books showing complete color range, testing swatches, information concerning installation, and names of nearest dealers.

THE COLUMBIA MILLS, INC.

Manufacturers of Columbia Window Shades, Shade Cloths and Shade Rollers

225 Fifth Avenue, NEW YORK, N. Y.

BRANCH OFFICES

BALTIMORE	CINCINNATI	DENVER	KANSAS CITY	NEW ORLEANS	PITTSBURGH	SALT LAKE CITY
BOSTON	CLEVELAND	DETROIT	LOS ANGELES	NEW YORK	PORTLAND	SAN FRANCISCO
CHICAGO	DALLAS	FRESNO	MINNEAPOLIS	PHILADELPHIA	ST. LOUIS	SEATTLE

Products

COLUMBIA SHADE CLOTHS: Niagara Washable-Waterproof, Crescent Tint, Damasko Hevi-Duty and Vellmo.

COLUMBIA GUARANTEED SHADE ROLLERS —Wood and Metal.

COLUMBIA AWNING ROLLERS.

For Columbia Perfected Venetian Blinds, see Manufacturers' Index.

Columbia TRADE-MARK

Columbia Shade Cloths

Niagara—A fine washable and waterproof shading with a clear velvety texture, and translucent without sacrifice of privacy. A beautiful shading whose washability keeps it beautiful. Widths up to 58 in.

Crescent Tint—An unfilled hand-painted cambric, translucent, pliable, long-lived shading. The base is 72x80 thread count cambric, painted by hand with pure linseed oil and pigments.

Particularly adapted to homes. Widths up to 150 in.

Damasco Hevi-Duty—This shading is identical to Crescent Tint but has a much heavier finish. As its name implies, it is made for heavy duty and rough usage in hotels, hospitals, office buildings and other institutional structures. Widths up to 150 in.

Vellmo—This is a lightproof cloth for use where light must be completely shut out—such as X-ray rooms, photographic dark rooms, school auditoriums used for stereopticon or moving picture lectures. Vellmo shades can be colored to match Niagara, Crescent or Damasko Hevi-Duty shades used in other parts of the building, assuring a uniform color throughout.

Colors

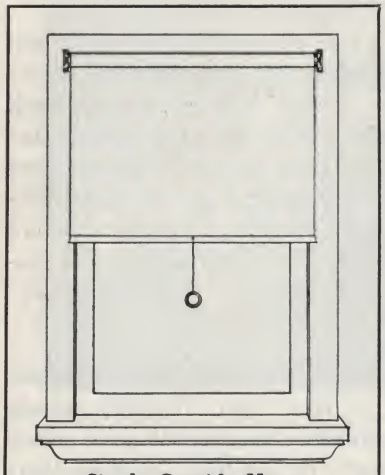
Parchment, Chamois, Persian Gold, Peach Skin, Strained Honey, Plaza Gray, Circassian Brown, Hunter Green, Eggshell White, Canton Jade. Duplex Combinations (different color on each side of shade)—Meadowbrook (dark green and white), Frontenac (dark green and light ecru), Princeton (dark ecru and buff). Niagara is made only in the foregoing colors. Crescent-Tint, Damasko Hevi-Duty and Vellmo are available in many additional standard colors. Special colors to order and any duplex combination. Sample color books on request.

Shade Accessories

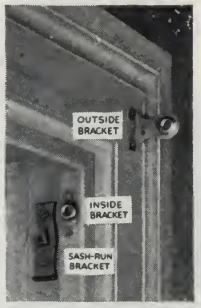
Brackets—Suitable brackets for any type of installation can be furnished. For detailed information refer to Columbia Roller Catalogue, which will be furnished upon request.

Cords—Solid braided cotton cords, in colors to match shades, are furnished in the following sizes: No. 2, 2½, 3 and 4 (the number indicates diameter in 32nds).

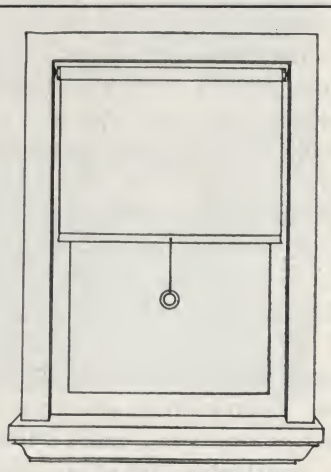
Ring pulls and tassels are furnished in cotton or silk.



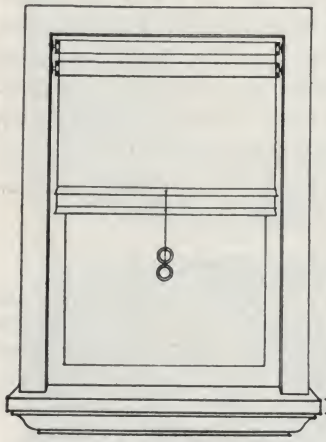
Single Outside Hung



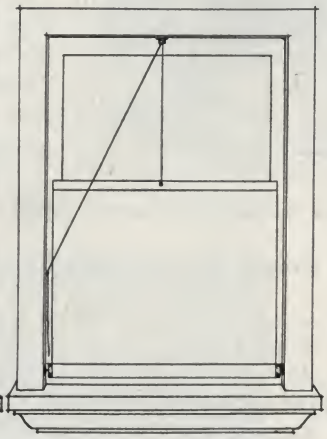
Installation of Three Common Brackets



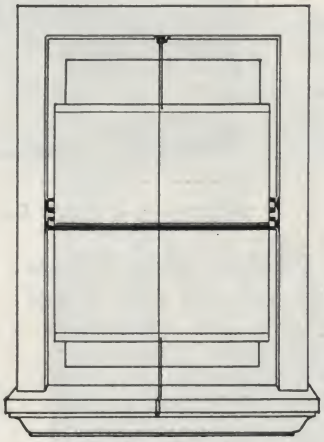
Single Inside Hung



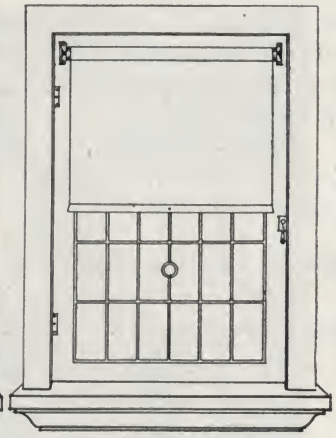
Double Inside Hung



Bottom-up Installation



Two Shades, One Up and One Down



Casement Hung

INSTALLATION SUGGESTIONS

Continued on next page

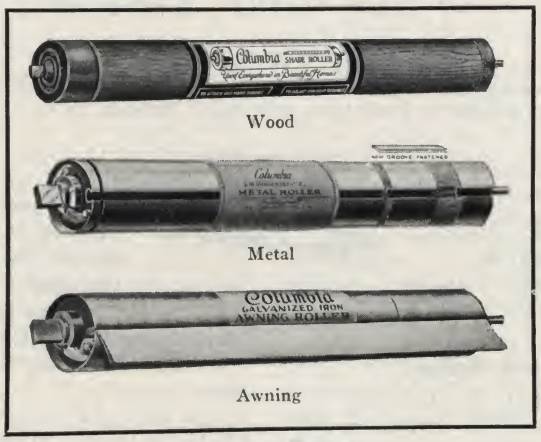
Columbia Wood Rollers

Columbia Wood Rollers are made from carefully selected, well seasoned, kiln dried white pine, and are fitted with nickel-plated brass ends which are absolutely rustproof. Extra weight springs give more than ample lifting power and 30% to 40% reserve strength. Our semi-closed end construction protects the pawls from dust, moisture and ravellings.

Columbia Metal Rollers

Columbia Metal Rollers are made of specially selected prime open-hearth tinplate. The barrel is lock-seamed, doing away with the sharp edges and giving the barrel strength and rigidity. Unusually powerful springs combined with modern Columbia construction result in dependable long life.

Brackets for metal rollers are made of an aluminum alloy. They are lighter, stronger and of better appearance than the heavy cast-iron type.



Columbia Rollers

Columbia Galvanized Awning Rollers

Columbia Awning Rollers are made with galvanized iron barrels. All other exposed parts have a rustproof sherardized finish except the pawls, which are brass. They are constructed throughout for heavy work and are provided with unusually powerful spring mechanisms. Awning roller brackets are sherardized and rustproof. All Columbia Rollers are guaranteed against defects in materials and workmanship.

ROLLER DIAMETER FOR WIDTH AND LENGTH OF SHADE CLOTH

Length of shade	Diameter of roller required for shades of widths given				
	Width Up to 38 in.	Width 42 to 45 in.	Width 48 to 60 in.	Width 63 to 72 in.	Width 82 in.
Up to 8 ft.	1-in. wood roller	1⅛-in. wood roller	1¼-in. wood roller	1¼-in. wood roller	1¾-in. metal roller
Over 8 to 10 ft.	1⅛-in. wood roller	1¼-in. wood roller	1¼-in. metal roller	1½-in. wood roller	1¾-in. metal roller
11 to 12 ft.	1¼-in. metal roller	1¼-in. metal roller	1¼-in. metal roller	1½-in. metal roller	1¾-in. metal roller

Specification

Window Shade Specification for.....(Name)
Building .....(Address)

General—These specifications shall cover the manufacture, correct installation and operation of all window shades. Shades shall be made in a thoroughly workmanlike way, cut square and true, and mounted on rollers in the same manner, using suitable substantial fasteners. The materials used in the manufacture of these shades shall be commercially perfect and of first quality.

All shades shall be clean and free from dirt, finger-marks and other imperfections due to faulty handling. A complete shade shall be submitted with bid as a sample and will be held until job has been approved.

The contractor shall be responsible for any damage to the building which is caused by him or his employees; he must also protect his work from damage until released by its final acceptance, and must clear away all surplus material for scaffolding used in the erection of the shades.

Cloth—All shades shall be made of Columbia Niagara Washable Waterproof Shade Cloth. [Damasko Heavy Duty hand-made unfilled Cambric] [Crescent Tint hand-made unfilled Cambric] [Vellmo lightproof shade cloth].

Color—Color shall be.....(as selected).

Length—All shades shall be finished 9 in. longer than actual height of the window frame.

Metal Rollers—All shades shall be mounted on Columbia Guaranteed Metal Rollers of proper diameter and shall be constructed with aluminum spoolplates and lock-seam reinforced barrels.

Wood Rollers (alternate clause [a] for Wood Rollers)—All shades shall be mounted on Columbia Guaranteed Wood Rollers of proper diameter, constructed with rust-proof nickel-plated brass ends.

Slats—All shades equipped with smooth wooden 1¼-in. slats in hems. Windows over 5 ft. in width to be equipped with smooth 2-in. slats in hems.

Eyelets—All shades to be equipped with stainless aluminum eyelet in center of hem for cord.

Cord—All shades to be equipped with No.....cord, same to match color of shades, and securely fastened in the center eyelet, allowing enough length to permit the shade to be drawn to the bottom of the window and rolled to the top without going over the roller and fastened 24 in. above the sill on the left stop bead.

Cord Holders (for Metal Windows)—Parker hollow metal screw-eyes. Cord holders are to be installed 24 in. above the sill.

Brackets for Metal Rollers—Aluminum brackets are to be installed in the proper location at the top of the window, and are to be securely fastened in this location by first drilling or tapping the stop beads, and fastened with machine or hollow metal screws.

Note: This quotation covers labor, materials and all appliances herein specified above for the necessary installation and complete operation of the shades.

Brackets for Wood Rollers—(If wood rollers are used, the following alternate clause [a] should be used): (a) Brackets for wood rollers shall be stamped nickel-plated steel brackets fastened with screws.

Delivery—All shades shall be completed 30 days after receipt of contract or date agreed upon.

A Few Notable Columbia Installations

Hotel New Yorker, New York, N. Y.
Hotel Lexington, New York, N. Y.
Junior League Club, New York, N. Y.
400 Madison Avenue Building, New York, N. Y.
Chicago Civic Opera House, Chicago, Ill.
Merchandise Mart, Chicago, Ill.
Bronxville High School, Bronxville, N. Y.
New York Telephone Building, Albany, N. Y.
Town House, New York, N. Y.
Young Men's Christian Association, Evanston, Ill.
Cedars of Lebanon Hospital, Hollywood, Calif.
Hotel Sherry Netherland, New York, N. Y.
Russ Building, San Francisco, Calif.
Southwestern Bell Telephone Building, St. Louis, Mo.
Paramount Building, New York, N. Y.
Hotel Stevens, Chicago, Ill.
Statler Hotel, Boston, Mass.
Savoy Plaza Hotel, New York, N. Y.
French Hospital, New York, N. Y.
Neurological Hospital, Medical Centre, New York, N. Y.
Psychiatric Unit Medical Centre, New York, N. Y.

ESTABLISHED 1860

STEWART HARTSHORN COMPANY

SUBSIDIARIES

OSWEGO SHADE CLOTH COMPANY
OSWEGO, N. Y.

JOANNA MILLS
GOLDVILLE, S. C.

Manufacturers of Hartshorn Window Shade Rollers and Shade Cloths

TELEPHONE
CALEDONIA 9620

250 Fifth Avenue
NEW YORK, N. Y.

BRANCH OFFICES

CHICAGO, ILL., 29 East Madison Street
TORONTO, ONT., CANADA, 54 River Street
LONDON, ENGLAND, Bush House, Aldwych, W. C. 2

Products

HARTSHORN WINDOW SHADE ROLLERS; HARTSHORN WINDOW SHADE CLOTHS.

Also special grades of High Carbon and Alloy Steel Wires; Aircraft Tie Rods.

Hartshorn Automatic Spring Shade Rollers

Hartshorn Wood Rollers—Have barrels of well seasoned, kiln dried white pine; finely tempered steel wire springs, produced in Hartshorn's own wire mill; moving parts, which consist of brass pawls and rivets mounted on a copper plated steel cup that revolves on a brass ferrule, will not rust or stick and insure smooth, silent action; aluminum shells, which will not rust or tarnish, but remain always bright and new, enclose the mechanism at one end of the roller. Aluminum pin ends protect the solid end. All of these new improved mechanical parts make the Hartshorn Roller silent, smooth running and long lived. Hartshorn Rollers are guaranteed for the life of the building.

Hartshorn Wood Rollers are made in four diameters:

$\frac{7}{8}$ in. up to 43 in. in length	1⅛ in. up to 49 in. in length
in. up to 43 in. in length	1¼ in. up to 73 in. in length

Made in two styles: Regular full round for use with mounting machines, tacks or staples; Improved Grooved for use with shade holders.

Hartshorn Metal Rollers—Made of high grade hammered open hearth steel, heavily tin plated. Powerful springs made of finely tempered steel wire produced in Hartshorn's own wire mill; brass pawls and copper plated stamped steel parts make this roller smooth running and rustproof. Extension plugs in the ends permit the lengthening of these rollers in proportion with the diameter of the roller. Hartshorn Metal Rollers are guaranteed for the life of the building. They are made in two styles: the new groove in which fasteners are slipped over the end of the shade, pressed into the groove and turned so as to secure the cloth. The old groove in which the cloth is folded over short lengths of wire, slid into the groove from the plug end and held securely in place by these short wires.

Hartshorn Metal Rollers are made in the following diameters:

1 in. up to 4 ft. in length	2¼ in. up to 12 ft. in length
1¼ in. up to 5 ft. in length	3 in. up to 15 ft. in length
1½ in. up to 6 ft. in length	4 in. up to 18 ft. in length
1¾ in. up to 9 ft. in length	5 in. up to 25 ft. in length

Hartshorn Awning Rollers—Made with barrels of high grade hammered open hearth steel, heavily plated with tin and then painted with a waterproof paint.

All exposed parts are electro-galvanized, making them completely rustproof. The powerful springs of finely tempered steel wire, produced in Hartshorn's own wire mill, can be adjusted to lift the heaviest awning. The awning canvas can be sewed to a strip of strong Holland shade cloth supplied with each roller. The Holland strip is easily inserted in the roller groove and held securely in place by a full length wire also supplied with each roller.

Hartshorn Awning Rollers are made in the same sizes as shown for the metal rollers, with the exception of the 1-in. and 1¼-in. diameters which are not made in this style of roller.

Some idea of the strength and sturdiness of Hartshorn Metal Rollers can be realized from the fact that the 5-in. roller will lift a shade weighing 246 lbs. with ease.

Continued on next page

Hartshorn Automobile Rollers—Made of high grade hammered open hearth steel plated with tin in ¾-in. diameter size with 1-in. nickel plated flanges on the ends. Noiseless and rattleproof. Obtainable in stock sizes for all standard make cars.

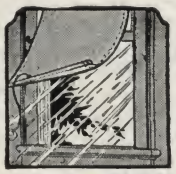
Hartshorn Car Rollers—For use in railway cars, street cars, etc., specially made with powerful springs of finely tempered wire.

Special Rollers—We are always glad to take up problems of roller construction for special devices. Having our own wire mill we are best able to furnish springs that can be adapted for any work required.

Hartshorn Shade Cloths

The muslin used in all Hartshorn Shade Cloths is made from high grade, long staple cotton, produced in Hartshorn's own mills at Goldville, S. C. These mills are equipped with the very latest types of textile machinery and are devoted exclusively to the production of shade muslin. By spinning and weaving its own shade cloth Hartshorn obtains a specialized product which has many advantages over that used by other manufacturers.

Hartshorn Joanna Cloth—A waterproofed beetled shade cloth with a beautiful satin, moire finish. This cloth contains no filling and is made by a manufacturing process whereby a special protective preparation literally is hammered into select cotton fabric. Exposure to rain or weather will not affect it. It is sunproof, dirt-resisting and sanitary, and is easily cleaned. Joanna Cloth will not curl, crack, stretch or bag and will hang smooth and straight at the window indefinitely. It is manufactured in both solid and duplex colors. The light colors are translucent, but will not show silhouettes. They diffuse the light of the sun and brighten up the interior of the house.



Rainproof

Hartshorn Oswego Tinted Cambric—This fabric contains absolutely no filling and is tinted by hand with pure linseed oil colors which are sunfast. It is made from the best grade of cambric shade muslin and because of its oil painted finish it is not affected by moisture or atmospheric conditions. It is a durable shade cloth that will not curl, crack or bag. Oswego Tinted Cambric is very popular in duplex combinations since, by using a shade with contrasting colors on the two sides, it is possible to match both exterior and interior coloring without the use of two separate shades. The light colors are translucent, but will not show silhouettes. They diffuse the light of the sun and brighten up the interior of the house.

Hartshorn Oswego Shadowless Triplex—Is a specially treated cloth designed particularly for use in installations where the shades must keep out all light, such as in dark rooms, laboratories, X-ray clinics, moving picture auditoriums, etc. May be had in any color so as to match the shades in other parts of the building.

Hartshorn Oswego Opaque Cambric—An unfilled hand-made shade cloth, made exactly like Oswego Tinted Cambric with the exception that a heavier paint is used on the surface, making it less translucent. Opaque Cambric is particularly suitable for use in hotels or other public buildings where shades are apt to be subjected to rough usage.

Hartshorn Chouaguen Hand-made Opaque—A hand painted shade cloth of fine smooth texture, less translucent than Oswego Tinted Cambric.

Hartshorn Aluminum Coated Moving Picture Screen Cloth—Very popular wherever home movies are in use. Reasonable in price, easily installed and gives a good clear projection.

Window Shade Specifications

General—These specifications cover the manufacture and correct installation of window shades (including labor, material, and all appliances and accessories) at the given address, so as to provide a complete installation ready for use. Accurate measurements are to be taken at the building and all conditions noted by the contractor. Shades to be made in a thoroughly workmanlike manner, cut square and true and mounted on rollers in the same manner. The materials used in the manufacture of these shades must be commercially perfect and of first quality. All shades to be free from dirt, finger marks, etc., and subject to final acceptance by the owner.

Charge of Work—The owners shall have the general supervision and direction of work. They shall pass upon materials, workmanship and installation, and may reject such as in their judgment is not in accordance with the contract or specification.

Scope of Work—(State here whether shades are to be double hung—that is, two shades mounted in the center of sash so that the top shade rolls down and the lower shade rolls up (school installation)—or whether the shades are to be mounted at top of the sash to roll down, or any other type of installation that may be required.) State also windows that will not require shades or any other information bearing on the installation and requirements pertaining to the job.

Cloth—Shades to be made of Hartshorn Joanna Cloth as manufactured by the Stewart Hartshorn Company. This cloth to have a smooth, moire finish and to be sunfast and waterproof and to be free from filling. (Alternate prices on Hartshorn Oswego Tinted Cambric as manufactured by the Stewart Hartshorn Company. This cloth to be hand-made, free from filling, sunfast and waterproof.)

Length—Cloth for all shades to be *finished* 9 in. longer than actual window openings and of correct width.

(Optional)—Shades that are to be installed on face of casings to have the cloth cut 4 in. wider than width of window opening, so as to allow a 2-in. lap on each side.

Color—Color to be specified by architect. (State whether solid or duplex color is required.)

Rollers—All shades to be mounted on genuine Hartshorn [wood] [metal] Rollers. Metal rollers to be made of the best grade open hearth steel heavily plated with tin and fitted with a groove for attaching shade fabric. Rollers to be of a diameter guaranteed to carry the shade. (State diameter required.)

Slats—⅞, 1¼, 1½, 1¾, 2 or 2½-in. white pine slats to be placed in hems of all shades. Slats to be cut ¼ in. less than width of cloth.

Eyelets—Shades to be equipped with stainless metal eyelets fastened through the center of slat for attaching of shade cord or shade pull.

Cord—All shades to be equipped with No. 2, 3½ or 4 braided cord (ring pull) to match color of shade and to be attached to slat and fastened to the window jamb with suitable length of cord to allow for the operation of the shades.

Hems—Shades shall be equipped with [side hems] [plain side] [reinforced pocket]. Slat hems for all shades shall be securely sewed, back-stitched and tied.

Brackets—If attached to solid metal sash or frame, screw holes to be drilled and tapped and brackets installed with machine screws. If hollow metal sash and frame, screw hole to be drilled, brackets installed with Hartshorn's Expansible Screw Grips or a case hardened self-threading screw. If attached to wood sash or frame, brackets to be installed with regular wood screws. Brackets to be installed in such a manner so as to assure true alignment when rollers are placed therein. (On installations where stop pulleys are required the same method of attaching them will be used as stated in the installation of brackets.)

Delivery—All shades shall be installed complete by ..... or any other date agreed upon in writing by the owner.

Shades for Casement Windows and Other Difficult Installations

No substitute has ever been found which can control the lighting of a room through windows as well as a window shade. Our *Architectural Service Department* is familiar with every type of window shade installation and can solve your most difficult problem. Please do not hesitate to call upon them for information.

Address your letter to the Architectural Service Department, Stewart Hartshorn Company, 250 Fifth Avenue, New York, N. Y., or call Caledonia 9620.

Samples

Write for sample books showing complete color line.

INTERSTATE WINDOW SHADE PRODUCTS

MANUFACTURED BY

Interstate Shade Cloth Co.
812-820 Jefferson Street
HOBOKEN, N. J.
TELEPHONES, Hitchcock 7160, 7161; Hoboken 3-1848, 3-1849

The Lapsley-Interstate Shade Cloth Co.
Light and Lombard Streets
BALTIMORE, MD.
TELEPHONE, Plaza 3290

Products

Interstate Window Shade Cloths and Rollers are sold under trade-marked brands—Inter-twill, Radiant, Sunlite, Paragon, No-Lite Shadowless and Rolrite Guaranteed Rollers, specify accordingly.

Inter-twill—the Long Wearing Shade Cloth

An improved type of shade cloth with the strength in the twill. We believe it is the toughest and strongest shade cloth and will outwear them all. It will stand abuse and rough usage. The threads will not "burn" when exposed to the sun's rays. It has special Interstate protective coating which makes it easily cleanable, reversible and long wearing. Soil is easily removed from its surface. The manner in which the twill fabric is woven insures the extra years of service. It is pure finished, and unfilled, no clay or other fillings used in the manufacture. Made in any color tone and in any combination of colors.

INTER-TWILL WINDOW SHADES
THE STRENGTH IS IN THE TWILL

"Radiant" Washable Window Shade

The feature of this cloth is that it is not only washable but that it can also be had in colors of the modern spirit: jade, peach, old rose, celestial blue, canary, sun flower, apple green, tango, lilac, sweet pea, seafoam, sapphire, amber, gunmetal, also in other pastel tones: cream, sandstone, ecru, mauve, and in duplex color combinations.

Interstate Cambric Cloth Shades

The cambric cloth used has a thread count of 72x80 and exceeds the technical requirements of the United States Government specifications No. 345 and the revised master specifications of May 22, 1928, No. 367b as to thread count and tensile strength.

Like all Interstate Shade Cloths the following brands are pure finished, unfilled; no clay or other fillings are used in their manufacture. They are cleanable and color fast.

Sunlite, a Cambric Tint—This is lightly tinted shade cloth made on unfilled cambric cloth in all the popular tints. It is translucent in lighter colors (light without glare) and semi-translucent in darker colors.

Paragon Heavy Duty Cambric—A heavier coated shade cloth, unfilled cambric, semi-opaque in lighter colors and opaque in darker colors.

Paragon is a "heavy duty" shade cloth especially adapted for office buildings.

Many attractive colors to choose from.

No-Lite, a Shadowless Shade Cloth—This a triplex process shade cloth—made on unfilled cambric cloth and is absolutely opaque in all colors. Any color combination.

The undercoat is black, making it shadowless and lightproof. Used extensively for auditoriums, X-ray rooms, and hospital laboratories.

No-Lite is used in hotels and residences where shadows would be objectionable.

Specify No-Lite when total exclusion of light is desired

Rolrite Shade Roller

This roller does what its name implies. It rolls right because it is made right. It has a spring that is different—we call it a super-spring. This spring is made with precision of highly tempered spring steel wire fashioned by automatic machines. Ordinary springs are handmade and are often uneven in their performance. Rolrite springs render real service. All lumber used is seasoned straight-grained white pine. Every roller undergoes a number of inspections and tests and must roll right before it leaves the factory. Every Rolrite Roller is unqualifiedly guaranteed.

An all-metal Roller is made for extra wide shades.

Diameters—Rolrite wood rollers are made in four diameters: 1⅛, 1, 1⅛ and 1¼ in.

Metal rollers are made in eight diameters: 1, 1¼, 1½, 1¾, 2¼, 3, 4 and 5 in.

Slats are ⅞, 1¼, 1½, 1¾, 2 and 2½ in. For shades up to 60 in. wide not less than 1¼-in. slat should be used.

We recommend the following diameters: for shades up to 38 in., 1 in.; shades 39 to 48 in., 1⅛ in.; shades 49 to 63 in., 1¼ in. For shades wider than 63 in. use metal rollers.

Widths

Radiant, Sunlite, Paragon, No-Lite shade cloths can be furnished in any width up to 150 in. and in any color or combination of colors.

Inter-twill up to 130 in. wide.

Architect's Specifications

Shade Cloth—"Inter-twill" [Sunlite] [Paragon] [No-Lite] as manufactured by the Interstate Shade Cloth Co. shall be used for all windows, and of a color to be selected (state if a solid color or duplex color is being considered).

Rollers — Interstate "Rolrite" guaranteed wood rollers of the proper diameter (for shade wider than 63 in. specify metal rollers).

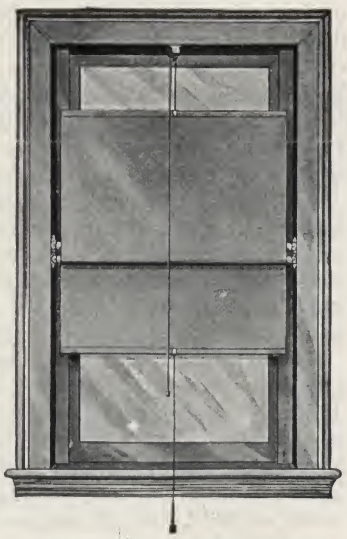
Service and Samples

Our service department will co-operate with architects in writing specifications which will prove helpful in securing estimates.

We will gladly share our knowledge of shade materials used in various types of installations and furnish sample window shades to determine color tone effect at window.

Facilities

We have ample facilities for the prompt handling of the largest contract job.



Double Hung Window Shade Installation

Two window shades are installed at center of window. One shade may be pulled up to cover upper sash, the other shade pulled down to cover lower sash. Double hung window shade installation is suitable for schools and hospitals. Permits control of light and air

ESTABLISHED 1775

JOHN KING & SON, LTD.

Window Shade Cloth

GLASGOW, SCOTLAND

SOLE SELLING AGENT FOR THE UNITED STATES
JOHN S. McCOSKER
286 FIFTH AVENUE, NEW YORK, N. Y.

King's Scotch Hollands—A Quality Window Cloth That Is a Standard Throughout the World

Description

For 154 years King's Scotch Hollands have been accepted as a standard in window shade cloth throughout the world's markets. They are manufactured under ideal conditions and finished in the pure crystal waters from the hills in Scotland. The cloth thus attains an unexcelled finish with the much desired beautiful watered silk effect. This special beetled finish gives to the cloth a nicely glazed smooth surface to which dust and dirt do not adhere. The original appearance is retained throughout the life of the shades.

The recollection of quality remains long after the price is forgotten

TRADE-MARK

King's Scotch Hollands lend to a home that distinction and the much desired finish that is so often lost.

Outstanding Features

The outstanding features of King's Scotch Hollands briefly are: strongest possible construction, less soilable yet cleanable, absolutely odorless, and guaranteed sunproof.

Construction

King's Scotch Hollands have no filling whatsoever. They contain no impregnation, jelly, paint or clay, such fillings being unnecessary owing to the close weave of the cloth. The absence of filling prevents the cloth from cracking or breaking, and entirely eliminates all objectionable odors.

King's Scotch Hollands Are Cleanable

King's Scotch Hollands are readily cleanable by experienced persons with the right equipment. However, *cleaning is seldom necessary* as their exceedingly high finish makes them remain clean longer.

The Inherent Strength of the Cloth

This is due to the extreme closeness of the weave. It has been our experience that there is no way in which a shade cloth can be made stronger; this is based on over a century and a half experience in the manufacture of shade cloths.

Colors

King's Scotch Hollands are stocked in the United States in 12 different colors:

White, cream, ecru, lint, linen, beige, drab, ivy, green, brown, red, blue.

All colors have the King "Sunproof" guarantee.

Sizes

King's Scotch Hollands are stocked in the following sizes:

White, cream, ecru, green and blue in all widths from 28 to 108 in.

Linen, drab, beige, brown and ivy in all widths from 28 to 72 in.

Price

Though superior in quality, King's Scotch Hollands are underneath in price. Quality in a window shade means economy eventually.

Stock Handled by Distributers

Large quantities of King's Scotch Hollands in the above sizes and colors are imported and carried in stock by leading window shade distributers. Our American representative, John S. McCosker, 286 Fifth Avenue, New York, N. Y., will gladly advise you of the location of the nearest dealer.

Samples

Upon request our representative will personally call upon you with sample books to demonstrate the great difference between this imported durable fabric by comparison with domestic manufacture. Address John S. McCosker, 286 Fifth Avenue, New York, N. Y. Telephone—Chickering 2121.

E. W. A. ROWLES CO.

Manufacturers of Mastermade Tan Cotton Duck Window Shades

"They wear and wear but never crack or tear"

2345-2351 South La Salle Street

CHICAGO, ILL.

For Blackboards made by E. W. A. Rowles Co., see Manufacturers' Index

Style GA Double Roller Demountable Shade

Advantages

Perfect ventilation, proper light distribution, instant and full access to glass and sash for cleaning, repairs and refinishing.

Construction Features

The brackets supporting the shade are riveted to a heavy gauge steel light shield which is mounted on the window frame by means of special fixtures that permit the entire assembly of shades and light shield to be instantly removed from the window frame and hung on the sash on either side of the window out of the way.

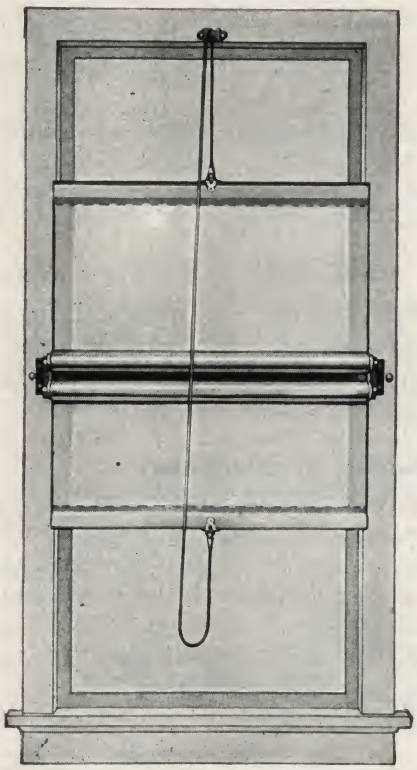
This feature gives full access to the window opening for replacing broken glass, washing windows, and painting or varnishing frames. This accessibility not only lowers the cost of such work but also prevents the soiling of the shade cloth by cleaning fluids, paint or varnish, thereby lengthening the useful life of the shade.

The design is such that there is free circulation of air both at the top and bottom of the window, thereby fulfilling all ventilation requirements. Either the upper or lower shade can be drawn to the point where shading is required without the necessity of covering the entire window opening.

Lifetime Service

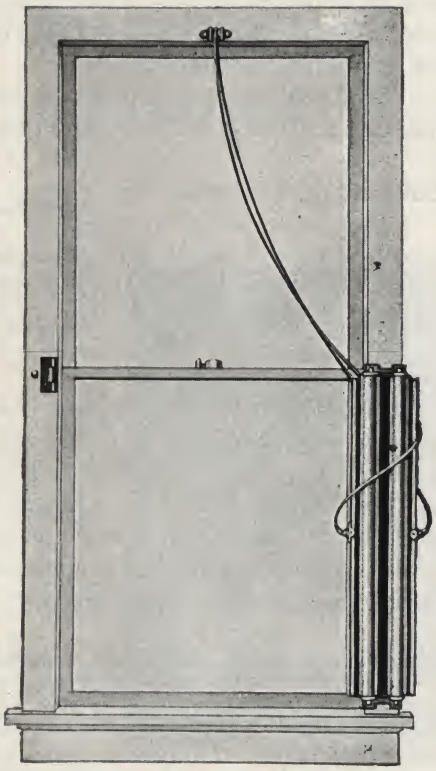
Style GA shade is made to give lifetime service. The light shield is pressed from a single piece of heavy gauge steel with turned edges. Shade brackets, demountable fixtures, and metal hanging strap are riveted to the light shield and are then finished with baked on olive green enamel.

All shades are equipped with Hartshorn rollers, heavy braided cord, rustproofed brackets, and bottom slats of ample size and strength.



Shade in Place

Rear View of Light Shield Showing Turned Edges and Steel Hanging Strap



Shade on Hanger

Shades Available in Any Size

Style GA shades are available for either inside or outside installation on any size window, large or small. Special brackets can be supplied for unusual installation requirements when needed.

THE AEROSHADE COMPANY

Wood Slat Window Shades

3192 Oakland Avenue, WAUKESHA, WIS.
AGENTS IN PRINCIPAL CITIES

AEROLUX
REG. U.S. PAT. OFF.
VENTILATING
Window Shades

Where to Use

Factories, mills, laboratories, offices, schools —any place where protection against the sun's heat and glare must be combined with good light, ventilation and durability.

Advantages

Guaranteed for 10 years.
Better working light.
Keep the sun's heat outside the building instead of retaining it inside.
Allow better ventilation.
Take the place of both inside shades and outside awnings.
Rugged enough to stand hard use without upkeep or replacement.
Reasonable in first cost and cheapest in the last.

Construction and Operation

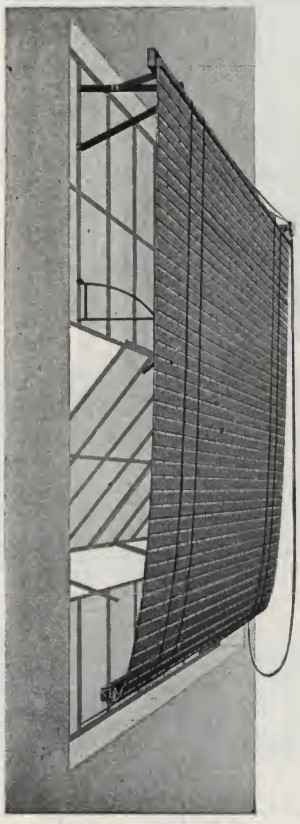
Fabric made of thin basswood strips woven together with best fish net twine. Heavy mouldings top and bottom. Operation by cords running through automatic lock pulleys which hold shades at any desired height. Lower end of raising cord rolls up with shade—no cords to dangle below sill.

Fabrics

De Luxe—½-in. splints. Used for offices, schools, etc.
Grade A—⅞-in. splints. For factories, mills, etc., where sturdier equipment is required.

Aluminized Finish

A new lustrous finish that *reflects 91% of the sun's heat rays back through the windows.* Keeps rooms 5° to 15° cooler, and admits 50% to 70% more light than stained finishes. Remains bright indefinitely in spite of gases and industrial fumes which darken other finishes. Unusually sanitary because it offers little foothold for dust and may be washed almost as easily as tile.



Type 5 Shades for Center Pivoted Sash

Projecting brackets suspend the shade away from sash. Ventilator guards prevent the shade from striking sharp corners on the ventilators. Guide cords draw the lower end of the shade toward the sill so that shade occupies minimum amount of room space—also prevents shade blowing into the room. No projecting brackets at bottom.

We loan tool to punch sash for easy attachment of fixtures.

Any width to 20 ft.

Stained Finish to Darken Rooms

In rooms used for rubber, leather, colored paper storage, etc., where light has a deteriorating effect, stained shades are provided which will darken the room and still allow ventilation through open window.

Sizes

Made to order only in any width to 20 ft. by almost any desired height.

Genuinely Economical

Aerolux fabric is so ruggedly constructed that it is covered by a 10-year guarantee—yet the shades cost no more than an average awning.

Many Aerolux have been in service 17 years.

One factory superintendent who had used his Aerolux continually for 11 years recently said, "Aerolux have already cut our shade bill in two. There seems to be no wear-out to them."

Right:

Suntite Weave

Note the splint edges are beveled to overlap. This eliminates "barred" light. Should be specified where fine work is done close to clear glass windows, as in drafting rooms, offices, or fine manufacturing of small parts

Left:

Standard Weave

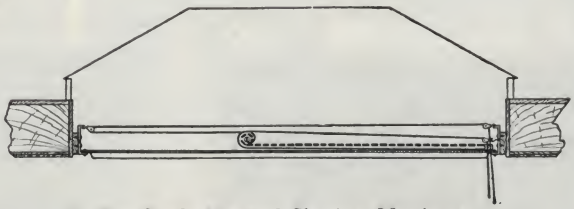
This slightly open weave is one of the most popular for industrial use. Generally used for all purposes where window glass is of the ribbed or diffusing type. Frequently woven in combination, with "Suntite" at the bottom and standard weave at the top

Installation to Wood Sash

Simply screw the mounting strip to face or underside of top casing. Shades, pulleys and cords are completely assembled at factory

Installation to Projected Sash

Brackets may be fastened either to bracket holes provided by sash manufacturer or bolted to muntin bar as illustrated. We supply sash punch for latter installation



For Skylights and Sloping Monitors

Operated either horizontally or on a slant. Shades supported on suitable T-bars. Operating cords may be extended to any convenient location

Estimates

Our engineers, with 18 years' experience in industrial shading, will willingly co-operate in solving your shading problems and supplying estimates. When inquiring, please send specifications of sash or blue prints and state whether glass is clear or diffusing.

HOUGH SHADE CORPORATION

INDUSTRIAL SHADE DIVISION

Steel Window Ventilating Window Shades

150 North La Salle Street, CHICAGO, ILL.

FACTORY, JANESVILLE, WIS.

RA-TOX

OFFSET WOOD FABRIC SHADES *for* **STEEL SASH**

Product

VENTILATING WOOD FABRIC SHADES developed especially for application to all types of windows used in industrial buildings; particularly designed for the factory workroom and office, schools, hospitals, etc.

Shade Fabric

RA-TOX shades are staunchly constructed of beautifully and permanently stained wood strips, woven parallel with hard twist seine twine. Weatherproof, sunfast oil stains are employed. Constructed of stained wood strips, RA-TOX shades function as non-conductors of heat (a very important feature, especially in plants equipped with large areas of steel windows). Filtering the heat and glare from the sun's rays RA-TOX shades allow fully 30% to 40% more light and air to enter the shaded area than other shades. Their staunch construction insures satisfaction for 20 years or longer.

Fixtures

Raised and lowered by means of especially designed and patented fixtures, RA-TOX shades are easy to operate. A slight twist of the roll-up cord to the right unlocks the cord grip and allows you to raise or lower the shade. A slight twist to the left locks it securely at any point desired within the area of the window opening.

Brackets

Enameled steel brackets have been designed for all types of windows. All brackets are baked enameled in a color that harmonizes with the color of shade fabric selected. The illustration to the right shows method employed when shading center pivoted type windows used so extensively in modern factory construction.

Installation

By employing tools especially developed and controlled only by the HOUGH SHADE CORPORATION, perforations are made directly in the ribs of the window, making it possible to secure the enameled steel brackets directly to the window. No drilling or boring of concrete is necessary. This method of installation greatly reduces installation costs when shading steel windows.

Center Pivoted Windows
Shade extended into room at top and guided around center pivoted ventilator at base. Shades overlap pilaster to eliminate side angles of light

Installation Service

Trained crews of installation men are located in all industrial centers. If purchaser desires, we will install at moderate charge.

Combined Features Found Only in Ra-Tox Equipment

The features listed below are the result of concentrated successful effort to definitely solve the shading problems of industrial buildings. The strong installation, the provision for ventilation and light, the ease of operation, and the durable construction, all represent RA-TOX superiority.

Seven Advantages You Get in Ra-Tox

(1) Offset brackets permit independent freedom of movement for center pivoted type ventilators—insure perfect ventilation without drafts and wind.

(2) Twenty years and more of shade satisfaction.

(3) Permanent metal-to-metal installation — prevents all loosening due to vibration of walls or ceiling.

(4) 30% to 40% more light and air.

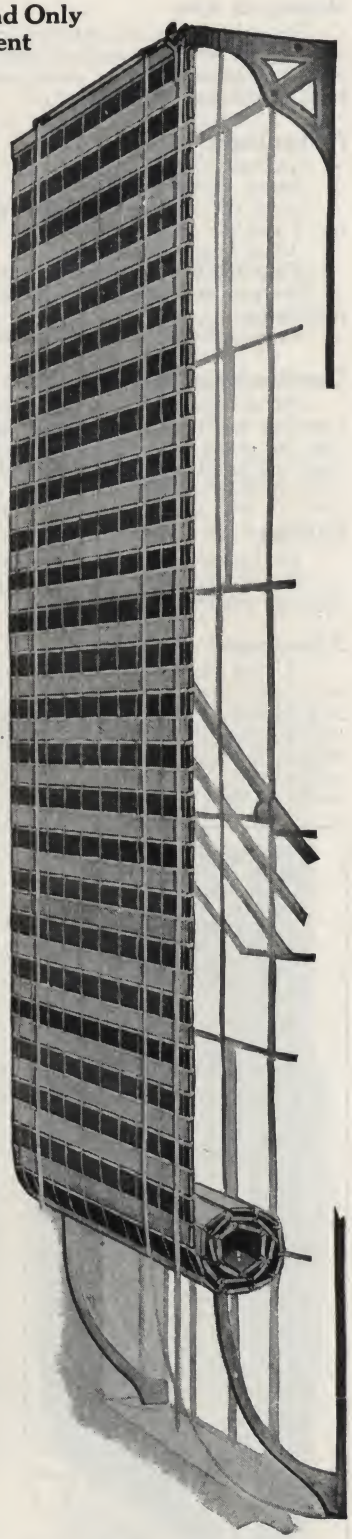
(5) Quick, simple, foolproof operation.

(6) Made of selected basswood strips, woven parallel with hard twist seine twine; attractive fast colors add smart, business-like appearance.

(7) Reduces room temperature 10 to 20 degrees.

Estimates and Additional Information

The benefits of our experience gained during many years in shading all types of windows—steel, wood, hollow metal, etc.—in industrial institutions throughout the United States and Canada are at your disposal. Upon receipt of sketches, blue prints, or specifications of requirements, we will cheerfully give estimate on cost of installation.



Center Pivoted Steel Window
Showing how center swing steel windows should be shaded.
Note: Brackets secured direct to ribs of window, the metal-to-metal permanent installation. Equipment patented. A shading equipment that satisfactorily shades above type of window

Projected Type Window
RA-TOX shades installed between pilasters close to window. Offset feature not required here

Vertical Sliding Window
RA-TOX shades installed on vertical sliding window

Illustrating a Few Typical Ra-Tox Shade Installations

WOODWEB SHADE MANUFACTURERS, INC.

Manufacturers of "Fyneart" Ventilating Shades

Reg. U. S. Pat. Off.

WASHINGTON, N. J.

BRANCH OFFICES

NEW YORK, N. Y., 34 West 33rd Street — PHILADELPHIA, PA., 401 No. Broad Street — DETROIT, MICH., 3062 Fischer Avenue

Product

"FYNEART" WOODWEB VENTILATING SHADES, that combine in one fixture the desirable characteristics of window shade, blind and awning.

LET IN THE AIR
SHUT OUT THE GLARE

Advantages of "Fyneart" Shades

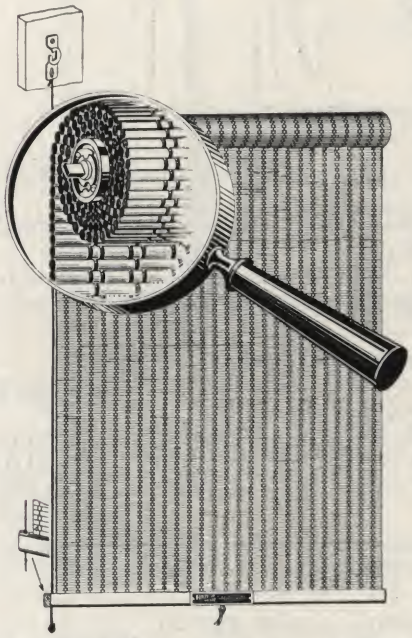
Free Circulation of Air—The open weave of "Fyneart" Shades permits unobstructed circulation of air through the entire shade area. Extensive tests have shown that "Fyneart" Shades keep the temperature of a room a minimum 15° lower.

Natural Daylight—"Fyneart" Shades absorb the glare of sunlight, diffusing it and admitting an even distribution of natural daylight. Enough light is admitted for practically any requirement, a feature of incalculable value, particularly in stores, offices, showrooms, etc., where natural, unfiltered daylight is indispensable to bring out the exact detail and true color of products.

Privacy and Comfort—In daytime one can look out through "Fyneart" Shades with perfect ease, but a passerby cannot look in through them. This feature makes porches and sun parlors equipped with "Fyneart" Shades a haven of comfort and rest in the hottest weather.

Artistic and Decorative—Any decorative or color scheme may be applied to "Fyneart" Shades to bring them into harmony with their surroundings. They come in standard colors of plain, ivory, gray, green and brown, and in a large variety of combinations of these and other colors.

Durable—The staves, round or flat are made of the choicest wood of a semitranslucent variety and coated with the best grade of oil paint. The warp of twisted, long-staple combed peeler yarn, woven six strands to every half inch, binds the staves firmly. "Fyneart" Shades are easily installed and will remain neat and in perfect working order after many years of use.



Spring-roller Type "Fyneart" Shades with Guide Cords or Wires to Insure Even Rolling Up and to Prevent Flapping

Savings

Particular attention is called to the use of "Fyneart" Woodweb Ventilating shades in preference to awnings, especially on casement windows, thereby saving the annual cost of hanging awnings, dismounting them, storage, continual replacements caused by storms, etc., and eliminating a fire hazard.

Write and tell us of your particular requirements and we will put our experience at your disposal without obligation.

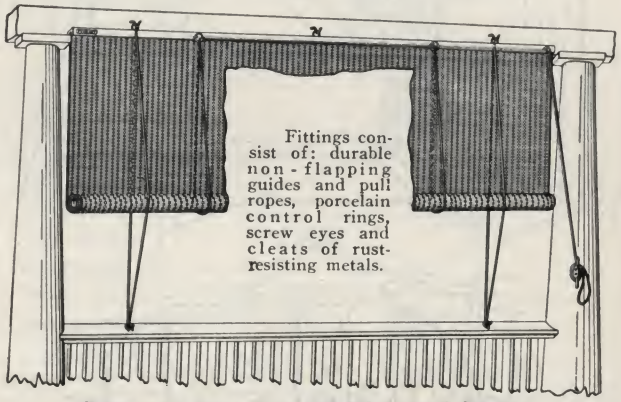
Types and Sizes

"Fyneart" Woodweb Shades are made in two types, the spring roller illustrated at the left and the rope and ring type as shown below.

Both types can be had in widths up to 10 ft. and in any desired length.

In the spring roller type, the fabric is mounted on especially constructed Hartshorn rollers and finished at the bottom with wood doweling. Fittings consist of metal brackets, woven silk pull rings or braided pull ropes, non-flapping guides of either bronze wire or braided cord.

In the rope and ring type, the fabric is glued and grooved in at the top in 1½ in. square wood and at the bottom in 1 in. round wood doweling in color to match the cloth.



Rope and Ring Type of "Fyneart" Shades

In the Schoolroom
Sun's glare absorbed by "Fyneart" Shades

In the Sun Parlor
Privacy and comfort obtained with "Fyneart" Shades

In the Bedroom
Plenty of ventilation assured with "Fyneart" Shades

ESTABLISHED 1880

THE BOSTWICK-GOODELL CO.

Manufacturers of Victoria Venetian Blinds

NORWALK, OHIO

SALES AGENCIES IN PRINCIPAL CITIES

Victoria Venetian Blinds

Of approved manufacture for over thirty years. They exclude the sun, admit air and regulate the amount of light to any degree.

Preferably made from thoroughly dry basswood with cream enameled finish, and fully guaranteed against warping and splitting.

Head Piece—2¼ in. wide by 1⅛ in. thick, and as long as width of window opening, when blind is installed within the opening.

Top Tilting Bar—2⅜ in. wide by ⅞ in. thick, secured to head at each end with sheet metal brackets, metal clips over each end for additional strength. (Figs. 1, 2 and 3.)

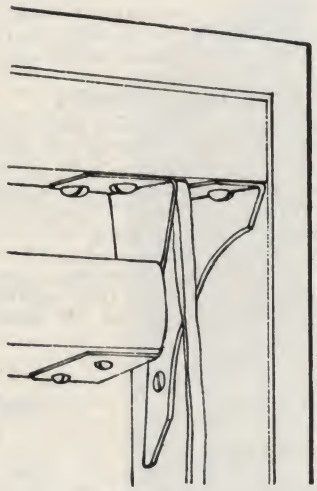


Fig. 3

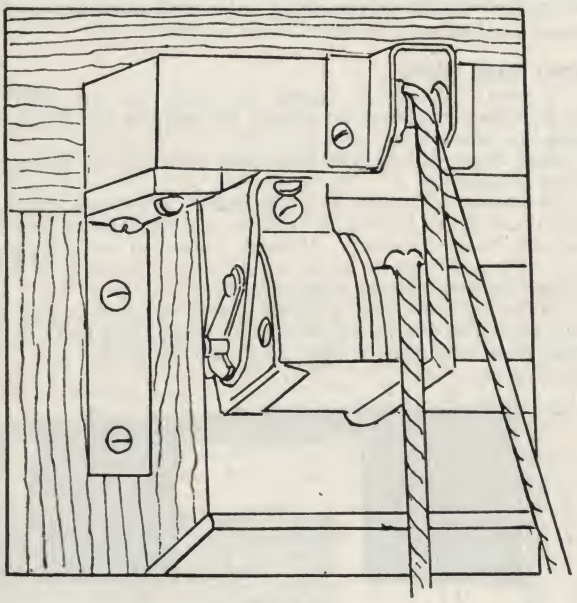


Fig. 1

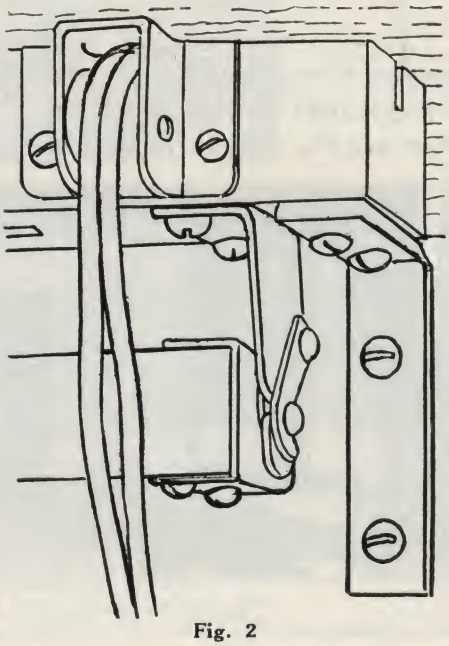


Fig. 2

Automatically held at any angle with an all-metal spring (Fig. 1), adjustable to any degree, without removing blind from window and instantly detachable from head by raising the metal dog at right-hand end. (Fig. 2.)

Slats—2⅜ in. (or 2 in.) wide by ⅛ in. thick.

Tapes—Best quality domestic, also imported stamped and approved qualities.

Cords—Flexible heavy woven and glazed to minimize wear. Tilting cords operate in front. (Fig. 1.). Raising cords either front lift (Fig. 2) or end lift (Fig. 3) as desired.

Pulley Wheels—Cold rolled steel or brass or double race ball bearing.

Sill Brackets—No. 32 (Fig. 4).

Side Sill Brackets—No. 34 (Fig. 5).

Operate in connection with heavy metal pins in end of thick bottom slat, that has sheet metal clip on each end to prevent breakage.

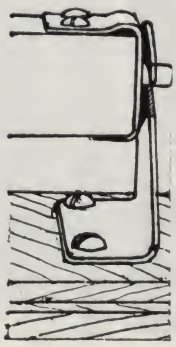


Fig. 4. Sill Bracket No. 32

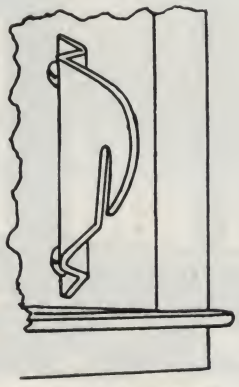


Fig. 5. Side Sill Bracket No. 34

Solid Brass Cord Clip No. 103
For raising cords, keeps slats horizontal

Continued on next page

Hardware—Steel brass finish, or solid brass.

Installation—Very easy with two or more 2¼-in. No. 12 round head screws through head into overhead jamb or casing or *inside brackets* at each side of jamb supporting the blind between stops or jambs (Fig. 3), or *angle brackets* (2½ in.) supporting the blind on face of subjamb or face of casing. (Figs. 1 and 2.)

Type E.L. (Easy Lift)

Has pulleys also in thick bottom slat that makes a blind "Easy Lift" and is recommended for blinds over 50 in. wide.

Roll Head and Oscillating Roll Head Blinds

For both large and small windows.

Austral Blinds—Transom Blinds

These blinds are without the 2¼x1⅛-in. head and with special brackets shown at end of tilting bar are secured directly to the sash. The cords pass through porcelain eyelets in tilting bar. (Fig. 6.)

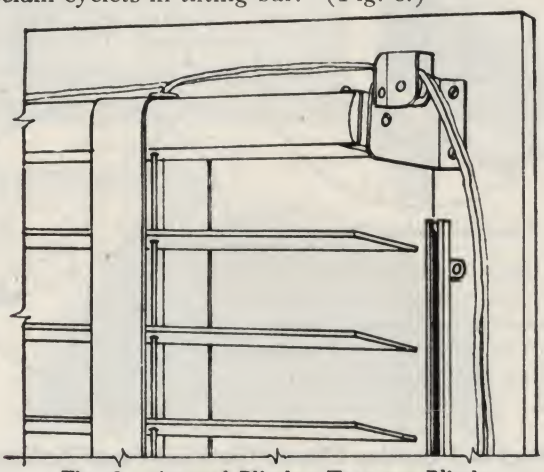


Fig. 6. Austral Blinds—Transom Blinds

Type S.R.

Has a ⅜-in. thick slat about every ten or twelve slats, with brass rings operating on $\frac{3}{16}$-in. brass rods at each side of blind.

Type R.O.S.

Has brass rings on thick bottom slat and on every other or every third slat, operating on $\frac{3}{16}$-in. brass rods at each side of blind. (Fig. 7.)

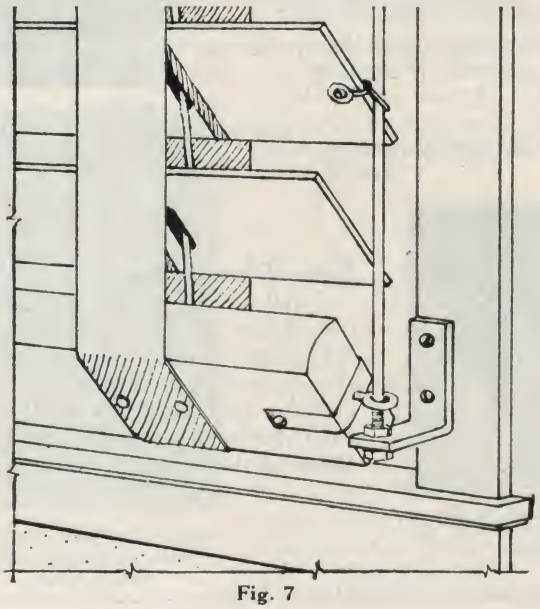


Fig. 7

Metal Side Guides

Either solid brass or steel brass finished. Either ½-in. square with open seam; ½-in. round open seam tube with brass ball bearing fixture (Fig. 8) or metal shoe fixture or ¼x½-in. square with metal shoe.

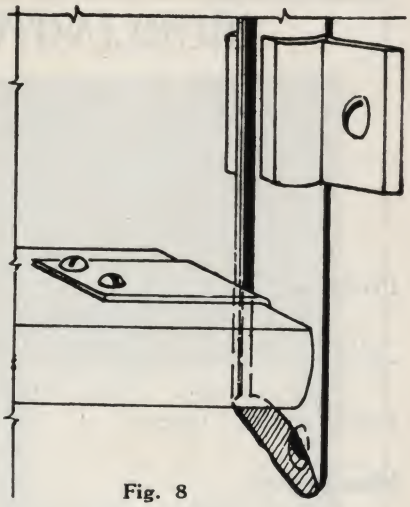


Fig. 8

Metal Shoe No. 84

(With brass clip.) Can be used with either square channel or round tube and by some is preferred to ball bearing fixture. (Fig. 9.)

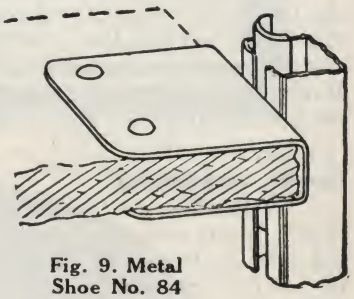


Fig. 9. Metal Shoe No. 84

Brass Eyelet No. 59

May be had in the slots through which the cords pass in the slats.

They add to the strength of the slats and make a perfectly smooth edge, preventing wear on cords.

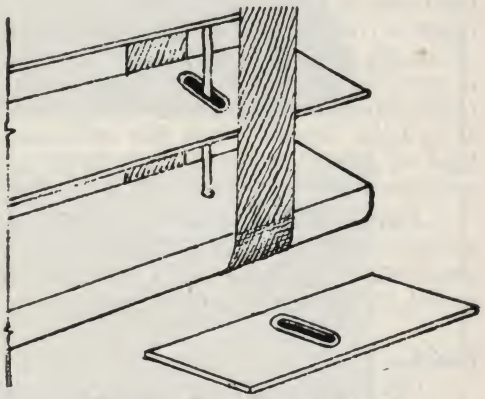
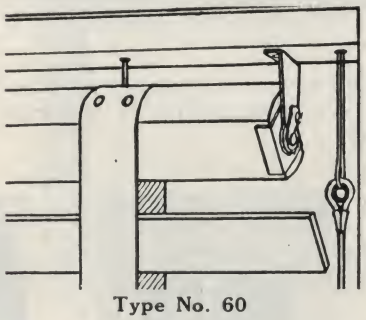


Fig. 10. Brass Eyelets No. 59



Type No. 60

Type No. 60

Has multiple strand copper cable down through the slats (instead of cords) and practically eliminates cord wear. Keeps slats horizontal when raised and lowered.

Sample Blinds

Sample blinds of any type, mounted in 15x32-in. frames, show improved construction, finish and appearance better than any word description or picture and may be had for the asking.

Measurement and Hardware Blanks, Literature

Literature, blanks and Bulletin No. 205 with more details about blinds and installations, mailed on request.

ESTABLISHED 1882

BURLINGTON VENETIAN BLIND COMPANY

Manufacturers of Burlington Venetian Blinds

BURLINGTON, VT.

REPRESENTATIVES IN ALL LARGE CITIES

Products

"Burlington" Venetian Blinds for all types, including Regular "Burlington" Head Piece, "E-Z Lift," "Roller," "Junior Roller" and "Traverse Roller" types.

We also make Inside Sliding Blinds and Wood Frame Insect Screens.

Manufacture

All our blinds are made to order only. They are the output of a large, well equipped factory, employing men skilled in this line. Sizes of blinds are secured by our representatives as well as the color of finish desired. Each order is then run through the factory according to the specifications for that order.

Quality of Materials

Slats—We use only the best quality of materials which in our experience has given satisfactory and lasting construction. All wood used is first air dried in our own yards and is then kiln dried. On account of the thinness of the slats as well as their length on large blinds it is absolutely necessary to use the very best wood obtainable to prevent twisting. Unless some other wood is specified we use linden, as we consider it the best obtainable for this purpose and gives the best results. It is light, durable, does not twist and will take any kind of finish. Other woods will be used, however, if so desired.

Sizes of Slats—Slats 1/8 in. thick and 2 3/8 in. wide are generally used. In small windows, slats 2 in. wide are used. The blinds with the wider slats are lower priced as fewer slats are required.

Finishes

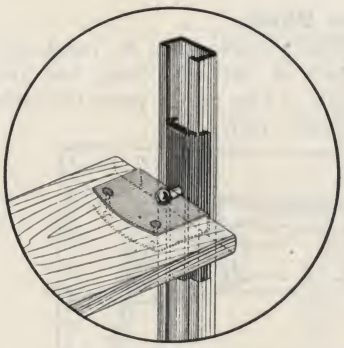
Blinds are finished natural wood varnished, stained and varnish, painted, enameled or lacquered in any color.

Ladder Tape

The tape and the interwoven cross straps supporting the slats are of the very best quality of imported or domestic manufacture.

Cord

We use a hollow braided cord as it does not twist when handled. It is specially treated to prevent wear.

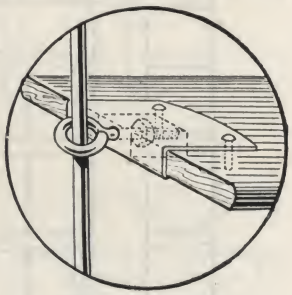


Channel Guide Type

the rings running over the rods are secured to heavy slats which are spaced every sixth or seventh slat, depending on the height of the blind.

Side Guides

Side guides can be furnished when desired. These are of two types, the extruded brass channel type and the brass rod type. The shoes running in the channels and



Brass Rod Type

Burlington Venetian Blinds Tilt Easily and Noiselessly

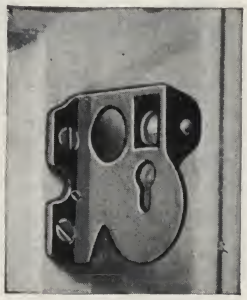
The tilting of slats in all types of our blinds (slats are "raised" flat under each other) is accomplished easily and noiselessly by operating a cord at the left of the blind.

They are held fixed at any angle until changed by a friction spring which is one of the features of our blinds. This spring presses against the right-hand hanger.

The tension of the spring may be adjusted by turning a round headed screw which holds the spring in place as well as supporting the top tilting rail.

Spring on Top Rail
Engaging with hangers and holding slats at desired angle

When Attached to Stop Beads or Subjambs



When Attached to Face of Casings

When Attached to Top of Window Frame

Right Hand Hangers for "Burlington" Type Venetian Blinds

Ease of Installation

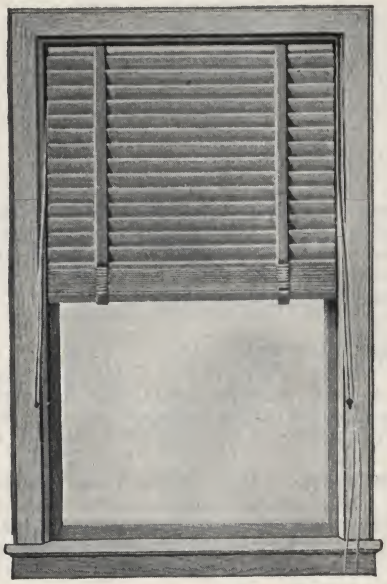
All of our blinds are shipped completely finished with the necessary hardware for proper installation of each type of blind.

As each blind is built to fit each opening they are easily installed with a few screws.

Keep Out the Sun—Permit Perfect Ventilation—Control the Light

Continued on next page

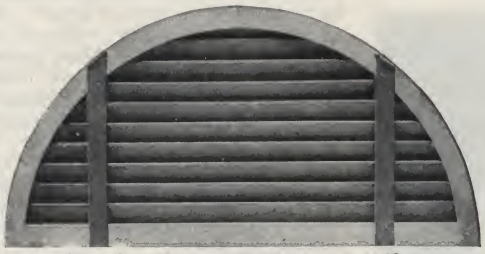
TYPES OF BURLINGTON VENETIAN BLINDS
The Modern Window Furnishing



Burlington Type
For windows up to 24 sq. ft. Operating and tilting cords

Head Piece Type
For windows larger than 24 sq. ft. Pulley operated

Roller Type
For any size window. Held at any height without securing tape

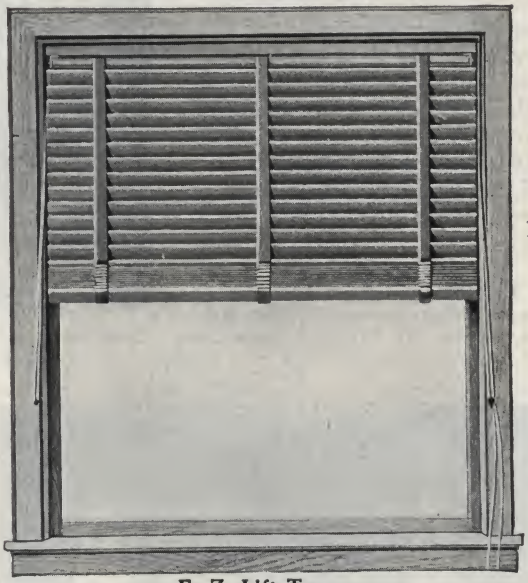


Circular Top with Horizontal Slats

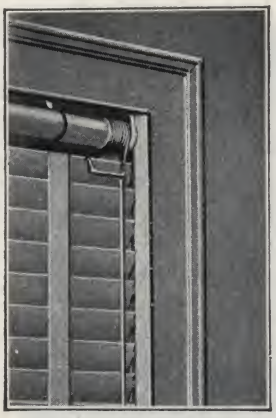
Circular Top with Radial Slats

Cord Knob Holds Tilting Cord Taut

Horned Hook or Cord Hook for Operating Cord



E. Z. Lift Type
Designed for easy operation of large blinds

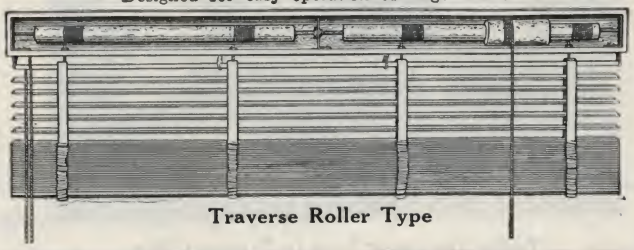


"Junior Roller" Type Showing Blind without Ratchet

Raising and Lowering of Blinds

All our blinds are raised and lowered easily and, except the "Roller" Type, are secured at any desired elevation by a single turn of the cord around a horned hook secured to the jamb or trim.

Note: The operating cord is regularly placed at the right side of the blind but, when conditions require it, the position of operating and tilting cords may be reversed.



Traverse Roller Type

THE COLUMBIA MILLS, INC.

Manufacturers of Columbia Perfected Venetian Blinds

225 Fifth Avenue, NEW YORK, N. Y.

For Branch Offices, see Our Other Section
For Columbia Window Shades and Rollers, see Manufacturers' Index

Columbia PERFECTED VENETIAN BLINDS

Columbia Perfected Venetian Blinds

Columbia Perfected Venetian Blinds provide ideal control of light and ventilation for every type window. They contain mechanical improvements which make a real new efficiency in this type of blind.

Construction Features—Head rail, bottom rail and slats are all made from clear white cedar. They are finished in six standard colors in lacquer. Special colors to order. Duplex colors (different colors inside and outside) may also be furnished. Hardware and fittings may be had in bronze, steel, brass or copper plated. Tilting and operating cords are No. 4½ hollow braided glazed cord, tapes are imported and made of stretchless materials, cross tabs are woven into vertical tape. Tapes and cords can be dyed to match color of slats.

Operation

Columbia Perfected Venetian Blinds are made in three types, Pulley Operated, Roller Type and Mechanically Operated.

Pulley Operated—Recommended for small windows, up to 40 sq. ft. The pulley operated type is also made with compound operation for blinds of greater size.

Roller—May be used for small windows but its ease of operation particularly adapts it to blinds of large area.

Mechanically Operated—Should be used on unusually large windows, whose area is 120 sq. ft. or over.

Slider Guides

Where wind pressure might cause blinds to sway, guides are installed with slide brackets on every twelfth slat and bottom rail. Guides and brackets are made in bronze only. Where conditions demand it, such as plaster embrasures, we install metal or wood backing strips ⅝ in. wide to which channel guides are applied.

Installation of Mechanically Operated Columbia Venetian Blinds

Specifications

Slats—Slats shall be ⅛x2⅜-in. clear cedar, free from warp, wane, stain or knots. All slats are to have smooth, even surface, all edges rounded and free from splits. All slot holes for operating cords to be clean cut with smooth edges.

Lacquer Finish—All slats to be Columbia Tudor and semi-gloss, velvet finish, of any standard Columbia color.

Ladder Tape—Tape to be of best grade of imported interwoven tape, free from defects in warp, woof or weaving. Color to be selected from Columbia standard color line for Columbia Venetian Blind tapes.

Lifting Cords—Lifting and tilt cords shall be of non-stretch glazed No. 4½ hollow braided cord of a standard Columbia color. All blinds to be equipped with sufficient cord to properly control lift of blind as per specification covering height of blind from floor to sill. All cord equipment to be guaranteed against defects in material or weaving.

Pulleys—All pulleys shall be machined steel ball bearing wheel type ½x⅞ in. with ⅛-in. flanges. Pulleys to have ⅛-in. Bessemer steel shafts to insure smooth operation.

Tilt Lock — All blinds shall be equipped wtih Columbia positive stop tilt device allowing at least eleven adjustments of slats both upward and downward from horizontal position of slats, and insuring quiet operation of blind by the use of tilt cords.

Slider Guides—For openings requiring inside installations, when guides are designated, blinds shall be equipped with Columbia slider guides. Every twelfth slat of blind shall be equipped with guide lugs and clips.

Auxiliary Elevator Roller — All blinds containing over 100 sq. ft. area shall be mounted on Columbia auxiliary elevator roller to insure ease of operation in lifting blinds.

Pulley Operated Type in Private Office

Installation of Columbia Roller Type Venetian Blinds

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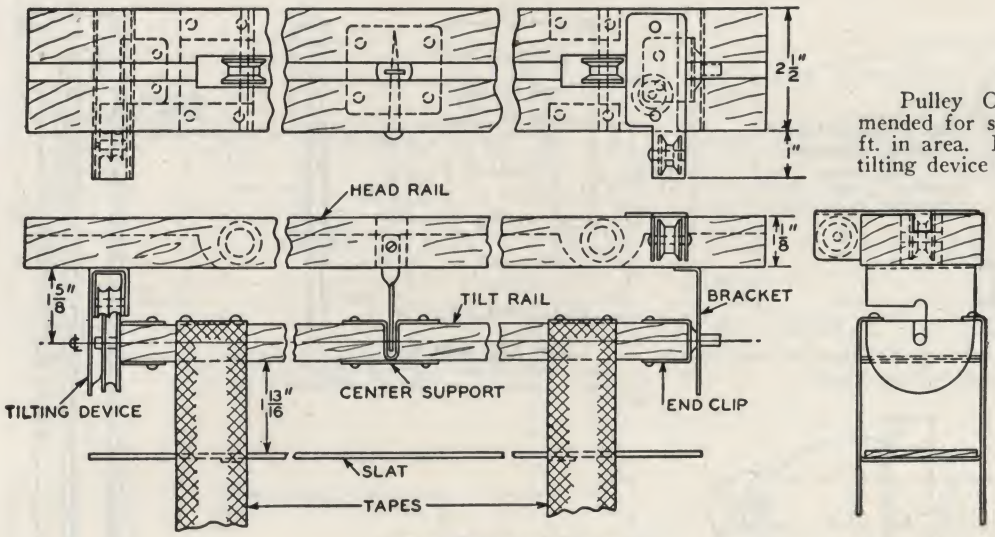
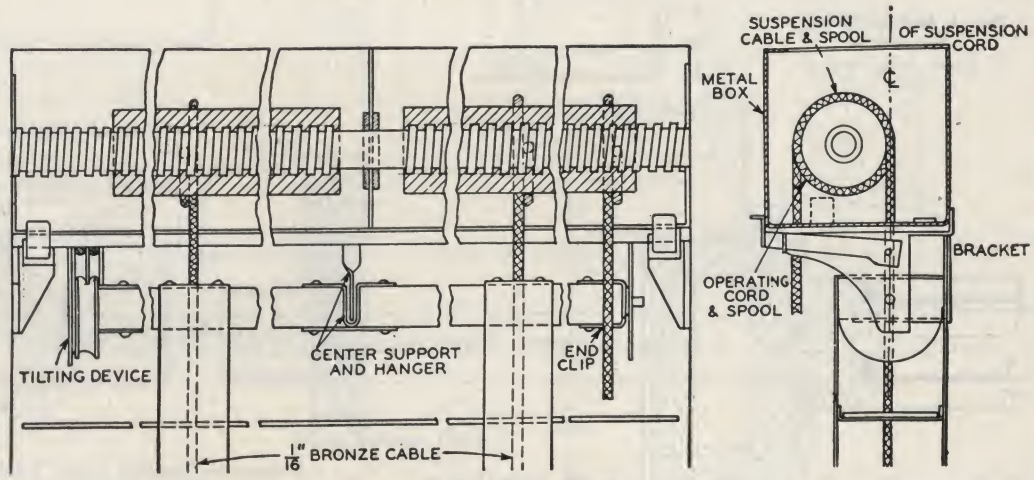


Pulley Operated Type

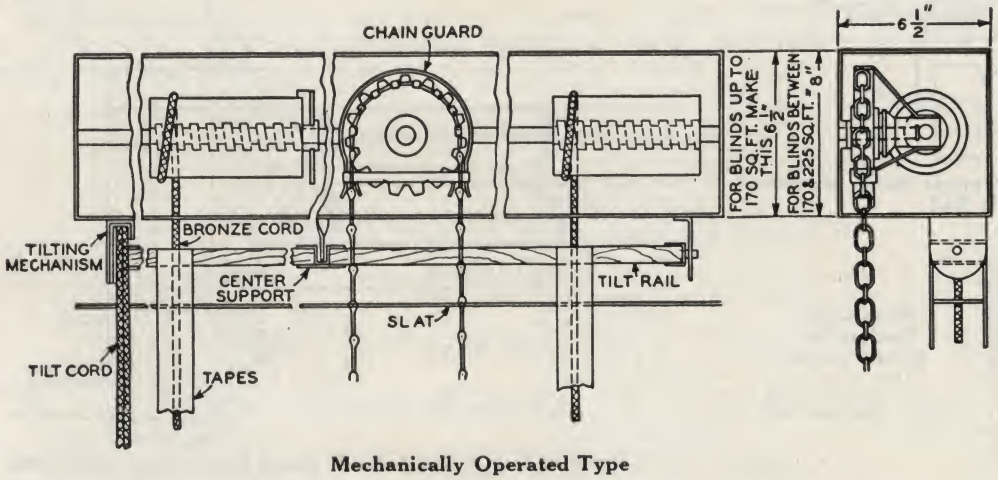
Pulley Operated Type is recommended for small windows up to 40 sq. ft. in area. For detail of brackets and tilting device see following pages.

Roller Type Blind is recommended for installations up to 120 sq. ft. Metal boxes containing lift mechanism are made in the following sizes: No. 1 for blinds up to 40 sq. ft. 3½x3½; No. 2 for blinds up to 80 sq. ft., 3½x4; No. 3 blinds up to 120 sq. ft., 4¾x4¾; No. 4 for blinds over 120 sq. ft., 5½x5½. Dimensions of brackets change correspondingly. Bracket details shown on second following page.



Roller Type Blind

Lifting spools move transversely on stationary axis to insure equal lift on both cords



Mechanically Operated Type

Mechanically Operated Blinds are recommended for windows of extremely large area. Brackets to hold this type of blind are made especially to fit the conditions of each particular installation.

Automatic brake holds blind at any point without fastening chain. An exclusive feature of Columbia Blinds.

DETAILS OF COLUMBIA PERFECTED VENETIAN BLINDS

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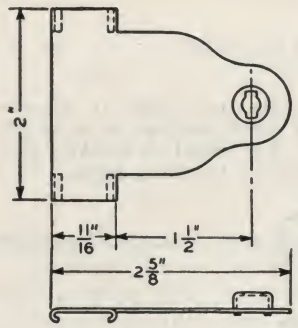
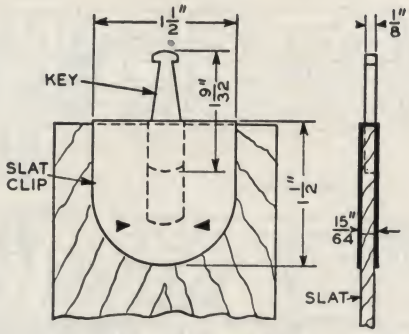


Left

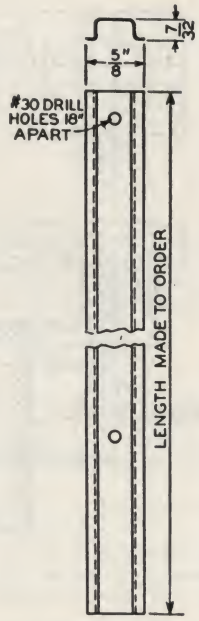
No. 2 Inside Offset Slider Bracket

For blinds hung between jambs where clearance is necessary

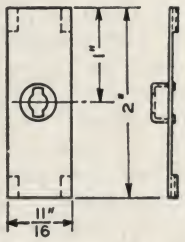


Slat Clip and Key

Used with guide rail and slider brackets. Installed on every twelfth slat



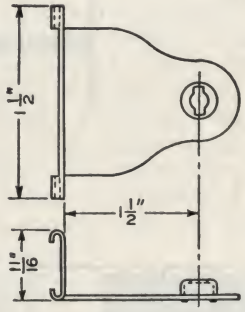
Guide Rail



Above

No. 1 Inside Slider Bracket

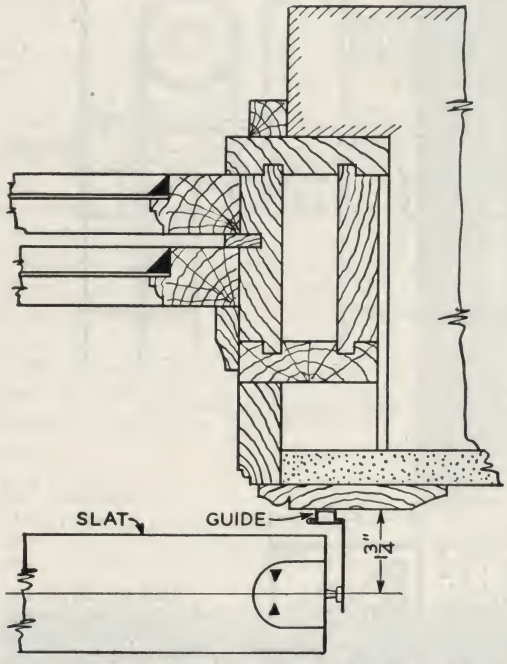
For blinds hung between jambs



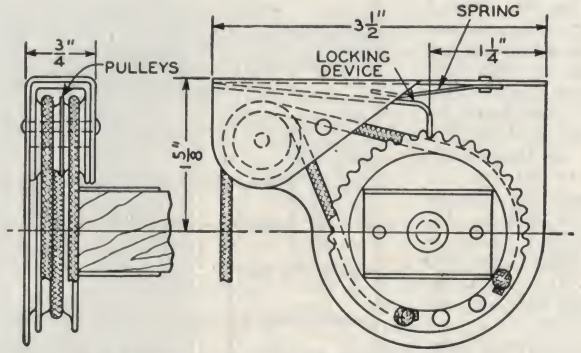
Left

No. 3 Outside Slider Bracket

For blinds hung on face of casing

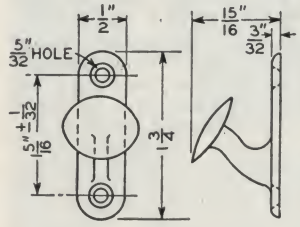


Detail of Use of No. 3 Outside Slider Bracket and Guide Rail



Columbia Positive Lock Tilting Device

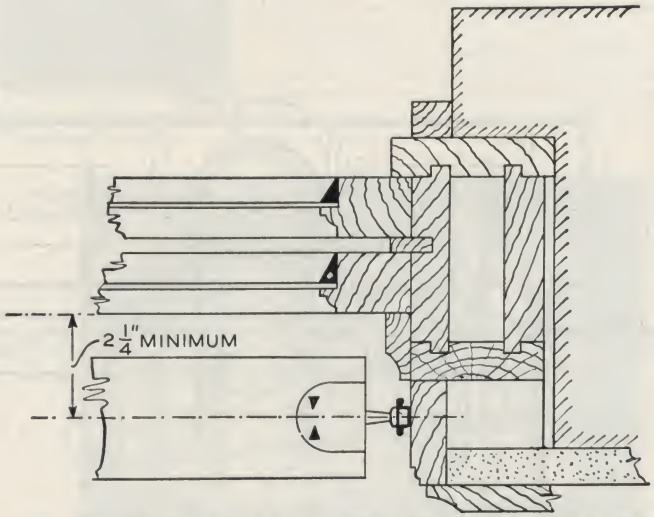
Used on all types of blind



Left

Brass Cord Holders for Lifting Cords

Also furnished with backing plate where conditions demand it



Detail of Use of No. 1 Inside Slider Bracket and Guide Rail

DETAILS OF COLUMBIA PERFECTED VENETIAN BLINDS

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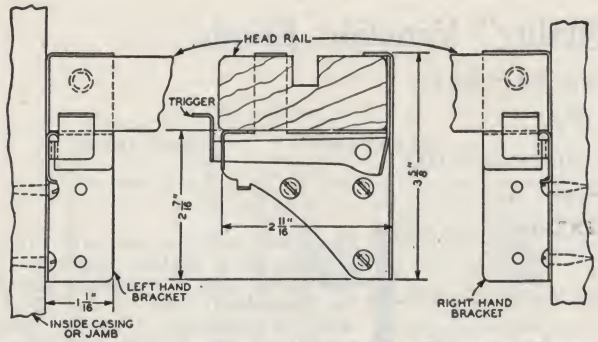
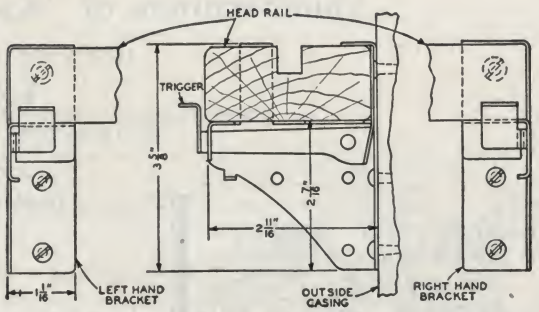
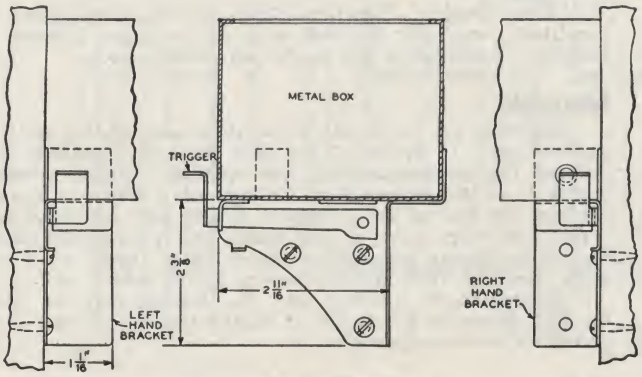


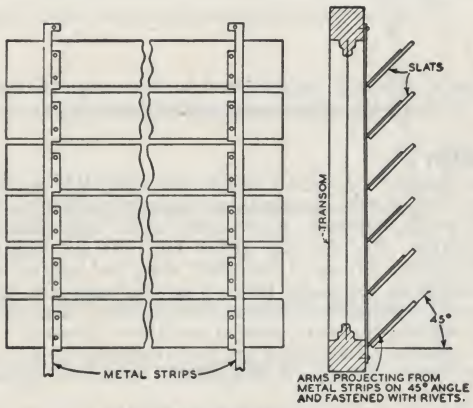
Detail of Universal Bracket for Pulley Operated Type
Shown installed inside of jamb



Columbia Universal Bracket for Pulley Operated Type
Shown installed on face of case



Bracket for Roller Type
Dimensions shown cover bracket No. 1 roller type blind only



Columbia Transom Blind
Slats are 1/8 x 2 3/8 in. and are stationary. The metal strips are fastened to the stiles of the transom

DETAILS OF COLUMBIA PERFECTED VENETIAN BLINDS

Installation Data

Columbia Perfected Venetian Blinds can be successfully installed at any window. Pivot sash, casement, circle-top or any special type of window offer no obstacle. Plans and details for any particular installation will be furnished on request.

Bundle Space—The space occupied by the blind when fully raised. The most satisfactory method of installing Venetian blinds is to allow for a pocket above the window so that the blind is completely concealed when raised. Table below gives data for figuring size of pockets. Where it is not practical to construct pockets, the bundle space shows how high blinds should be hung above the opening, if installed on the casing, to clear window entirely when raised. It will also show how much light will be cut off if the blind is hung between jambs.

Type	Bundle space, in.	Width of pocket, in.
Pulley	3¾ plus 1¼ for each foot in height of window opening	4½
Roller No. 1 *Blinds up to 40 sq. ft.*	3⅝ plus 1¼ for each foot in height of window opening	4½
Roller No. 2 *Blinds up to 80 sq. ft.*	4⅛ plus 1¼ for each foot of window opening	4½
Roller No. 3 *Blinds up to 120 sq. ft.*	4⅞ plus 1¼ for each foot in height of window opening	4¾
Roller No. 4 *Blinds over 120 sq. ft.*	4⅞ plus 1¼ for each foot of height of window opening	5½
Mechanically operated *Blinds up to 170 sq. ft.*	6½ plus 1¼ for each foot of height of window opening	6⅝
Mechanically operated *Blinds up to 225 sq. ft.*	8 plus 1¼ for each foot in height of opening	6⅞

KANE MANUFACTURING CO.

Manufacturers of "Kane Quality" Venetian Blinds

HOME OFFICE AND FACTORY
KANE, PA.
DISTRIBUTORS IN ALL PRINCIPAL CITIES

LOCAL REPRESENTATIVE

Product

"KANE QUALITY" VENETIAN BLINDS are made in the following types: Standard Lift, Traverse Roller, Aluminum, Skylight and Exterior.

For our pages on Metal Weatherstrips and Wood, Metal and Roll Type Insect Screens, see Manufacturers' Index.

Patents

All special features incorporated in the design of the above blinds are covered by patents and application.

Adaptability

"Kane Quality" Venetian Blinds are adaptable to all kinds of window, sun porch or other openings in residences, offices, hotels and public buildings where control of light and ventilation are desired. By their use direct sun rays are diffused and reflected by proper tilting of the blind slats, and perfect ventilation is obtained at the same time as air currents are deflected, giving positive circulation without direct drafts near openings. By entirely closing the slats, utmost privacy is assured.

Roller shades or awnings are not necessary where "Kane Quality" Venetian Blinds are installed.

Operation

"Kane Quality" Venetian Blinds are easily raised and lowered and are secured at any desired elevation by a turn of the lifting cord around the horned hook secured to the window trim. The slats may be tilted to any desired angle by the operating cord and are held firmly in position by a positive operator. The operating cord is regularly placed at the right-hand side of the blind but may be reversed to meet existing conditions, if necessary. End lift for raising or lowering the blinds is regularly supplied, but front lift may be furnished if desired.

Installation

"Kane Quality" Venetian Blinds are made to order and furnished completely finished, with all necessary fixtures for hanging. Installations are easily and quickly made.

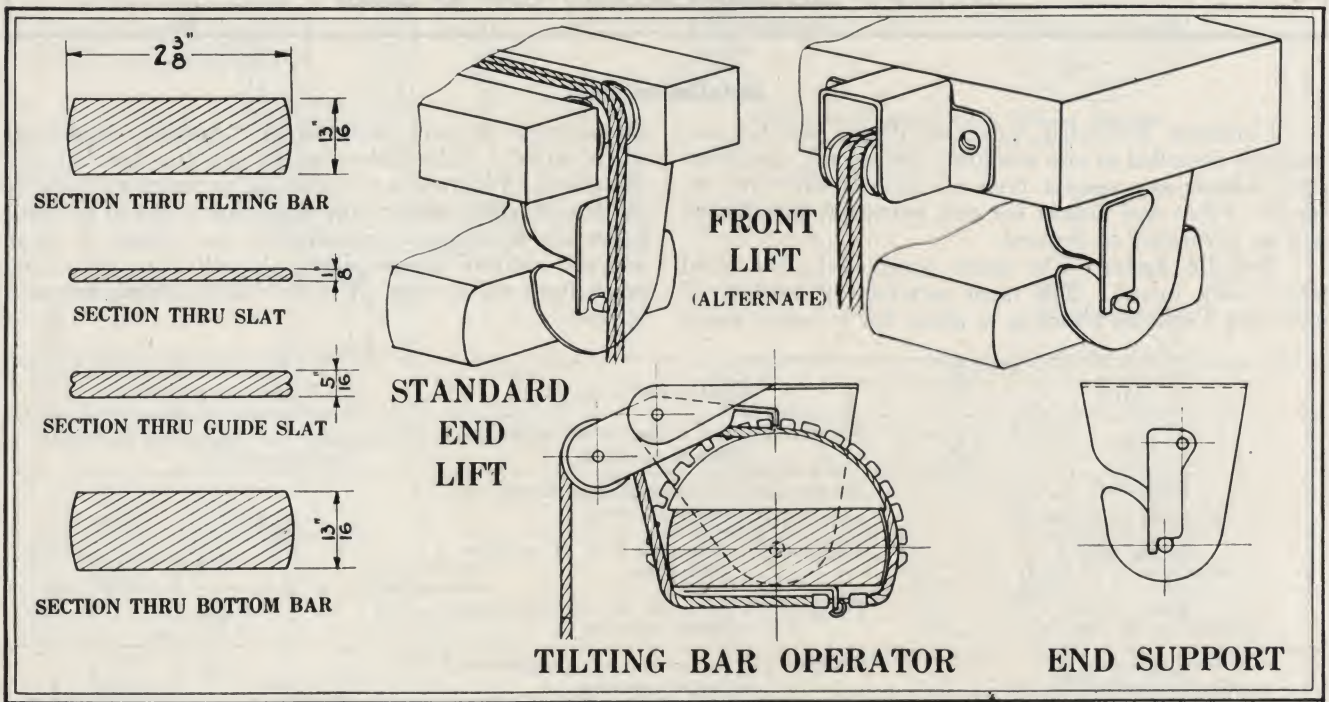
Materials

The slats are of wood, ⅛ in. thick and 2⅜ in. wide for general use. If desired, 2-in. slats may be furnished when ordered, for medium or small size openings. Unless otherwise specified, we use genuine Port Orford cedar, which we consider the best for general use. Light in weight and very serviceable, it does not warp, check or split easily, and is especially adapted for taking almost any kind of finish. The fabric cross strips supporting the slats are interwoven in the ladder type.

All materials entering into the manufacture of "Kane Quality" Venetian Blinds are of highest quality, selected as best suited for such equipment.

Colors

"Kane Quality" Venetian Blinds are finished in three standard colors—Ivory, Light Green or Light Gray. They can, however, be finished in any color, or in the natural wood with varnish finish, at slight extra cost.



KANE - QUALITY - VENETIAN - BLINDS

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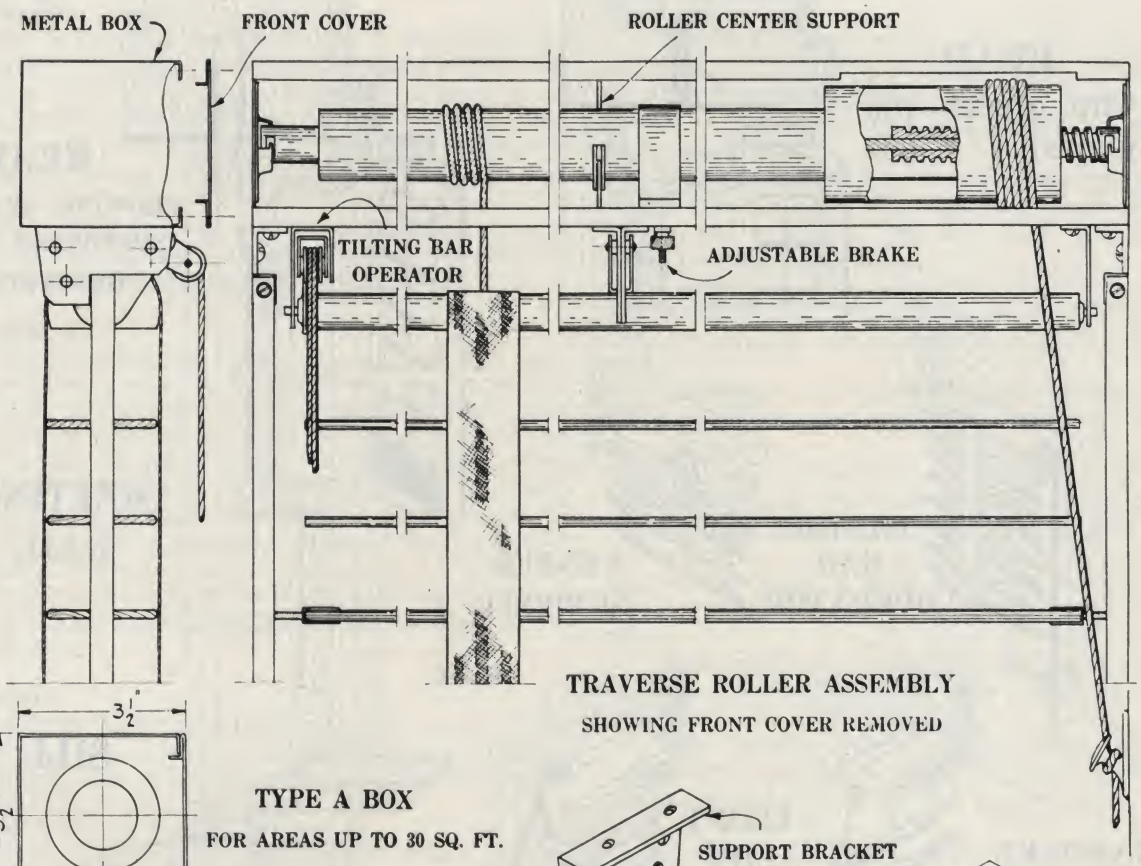
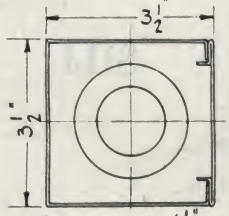
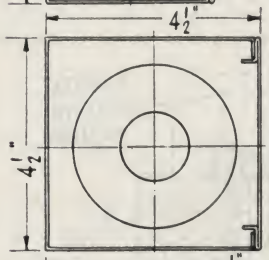


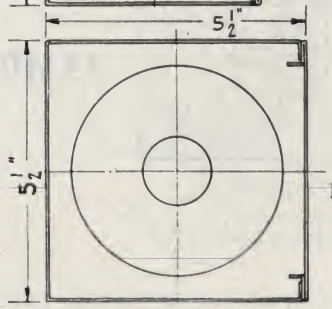
TRAVERSE ROLLER ASSEMBLY
SHOWING FRONT COVER REMOVED



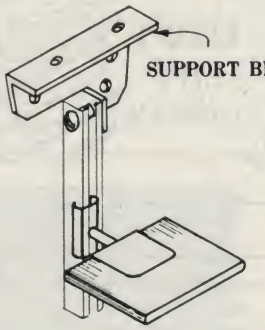
TYPE A BOX
FOR AREAS UP TO 30 SQ. FT.



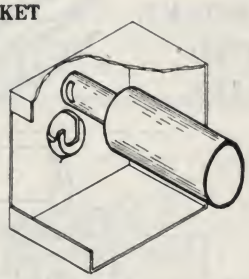
TYPE B BOX
FOR AREAS 30 TO 50 SQ. FT.



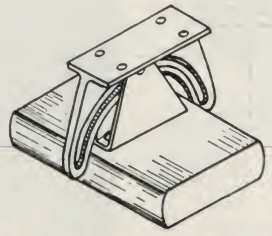
TYPE C BOX
FOR AREAS 50 TO 80 SQ. FT.



SLAT GUIDE



REMOVAL ROLLER BEARING



TILTING BAR CENTER SUPPORT

KANE - QUALITY - VENETIAN - BLINDS

TRAVERSE ROLLER FOR LARGE OPENINGS

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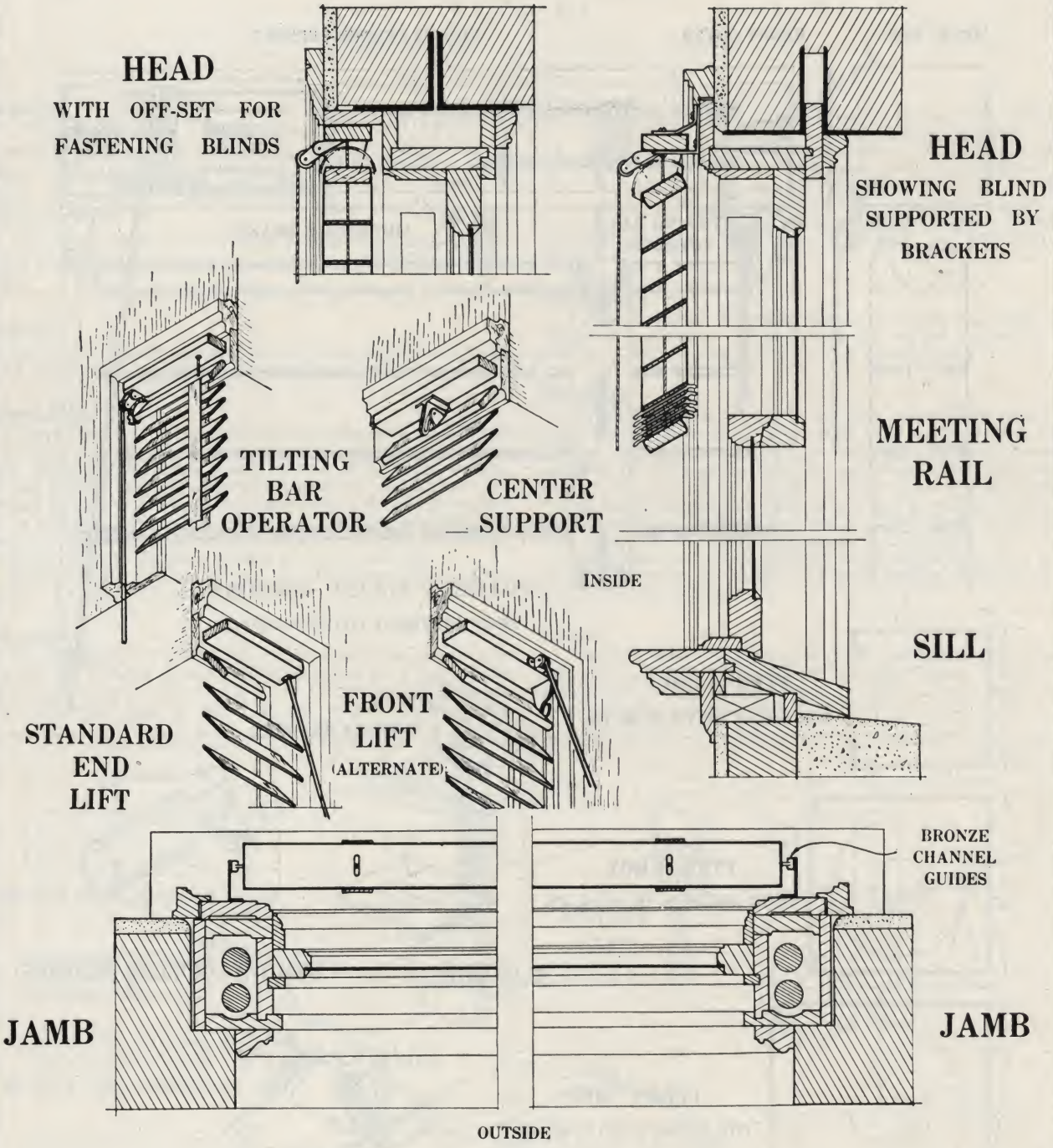


KANE - QUALITY - VENETIAN - BLINDS

APPLICATION TO WOOD DOUBLE HUNG WINDOWS

WARREN SHADE COMPANY

Manufacturers of Venetian Blinds—Wood Fabric Porch and Industrial Shades

1115 Buchanan Street, N. E., MINNEAPOLIS, MINN.

WARREN'S VENETIAN BLINDS

Adaptability

They are suitable for use in banks, office buildings, hotels, public buildings, residences, sleeping porches and solariums. The use of roller shades and awnings is not necessary when Warren's Venetian Blinds are installed. They provide perfect control of light and ventilation. By properly tilting the blind slats, all direct sun rays are excluded, flooding the room with an abundance of soft, diffused light; while at the same time the air currents may pass between the slats where they are deflected upward, eliminating any direct drafts.

Operation

Warren's Venetian Blinds are supplied with suitable operating devices to insure all blinds of operating easily with a minimum of wear and attention. The blinds can be completely raised or lowered or can be secured at any height by a turn of the lift cord around the horned hook placed on the window trim. The slats may be tilted to any desired angle by a slight pull on the tilting cord which is generally placed at the left end of the blind. A positive action friction-brake holds the slats at any angle securely without fastening the tilting cord. It is possible to completely close the slats to exclude all light.

Installation

Warren's Venetian Blinds are made to order and come completely finished with all hardware necessary for installing. The installations are comparatively simple.

Service

We welcome inquiry from architects and owners. Complete data and sample blinds will be sent them for the asking.

Materials

Wooden Parts—All wooden parts are of either basswood or Port Orford cedar. Both of these woods are light in weight and do not cup or twist. Slats are $\frac{1}{8}$x2$\frac{3}{8}$ in.; top and bottom rails, $\frac{13}{16}$x2$\frac{3}{8}$ in.; head members, 1$\frac{1}{8}$x2$\frac{3}{8}$ in.

Ladder Tape—We use only best quality interwoven cotton tapes. The tape is eyeleted with brass eyelets and secured to the rails with brass screws to allow for easy dismantling.

Cords—All cords are of the best grade of tubular woven glazed cord. The tubular weave eliminates twisting and snarling; the glazing prolongs the life of the cord.

Hardware—All parts, except horn hook, are of heavy gauge auto body steel, brass plated and lacquered to resist rust.

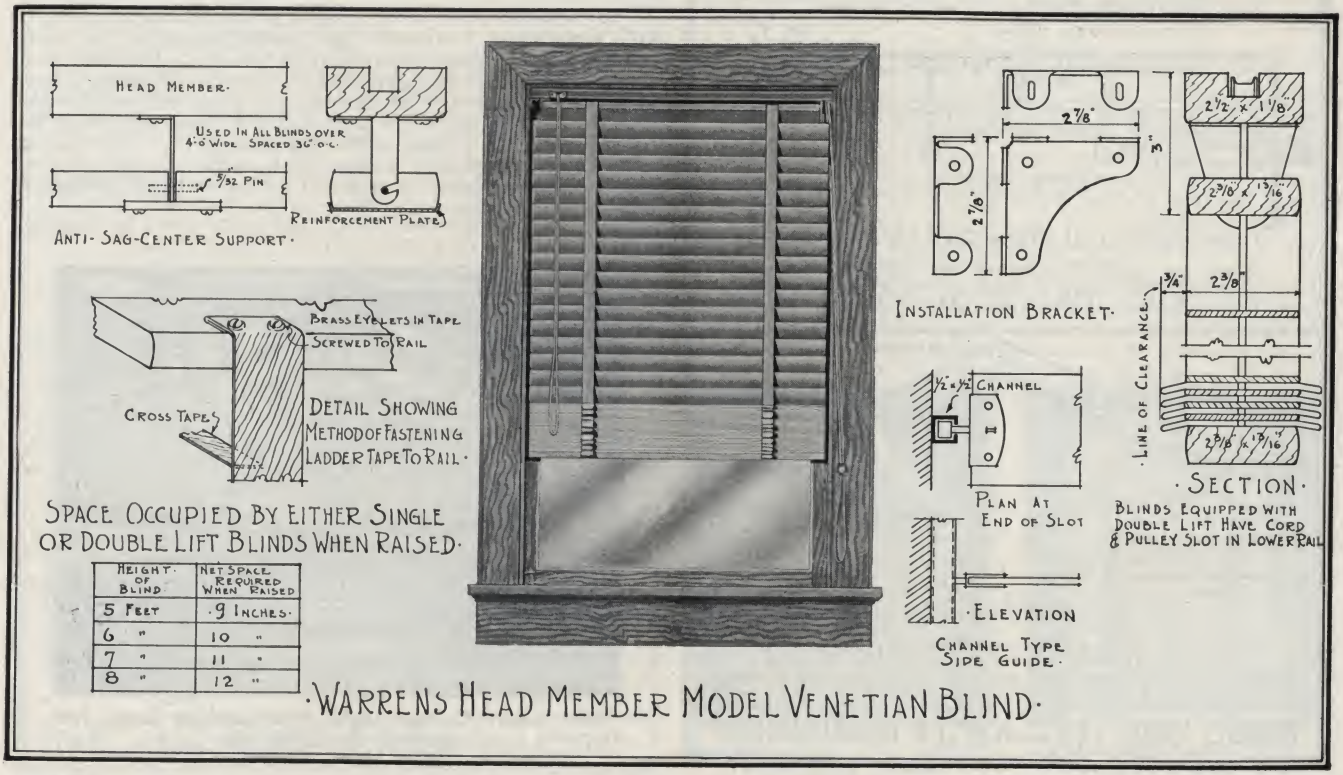
Pulleys—All pulleys are $\frac{1}{2}$x$\frac{7}{8}$ in. steel, double race ball bearing type and mounted on $\frac{1}{8}$-in. shafts.

Friction Brake—All blinds are provided with a positive action friction brake; guaranteed to hold the slats at any angle in all sized blinds. There is nothing to get out of order; no springs or screws to adjust.

Anti-sag Center Support—All blinds over 48 in. in width are provided with center supports to insure against any sag in the tilting rails.

Side Guides—When desired, blinds can be furnished with a special channel side guide. Pins attached to each end of every sixth slat engage into a $\frac{1}{2}$x$\frac{1}{2}$-in. brass guide channel.

Finish—All wooden parts are given a special lacquer finish, making them impervious to heat or moisture. They can be had in a wide range of colors.



HEIGHT OF BLIND	NET SPACE REQUIRED WHEN RAISED
5 FEET	9 INCHES
6 "	10 "
7 "	11 "
8 "	12 "

SIMON VENTILIGHTER CO., INC.

(ALSO KNOWN AS VENTILIGHTER CO.)

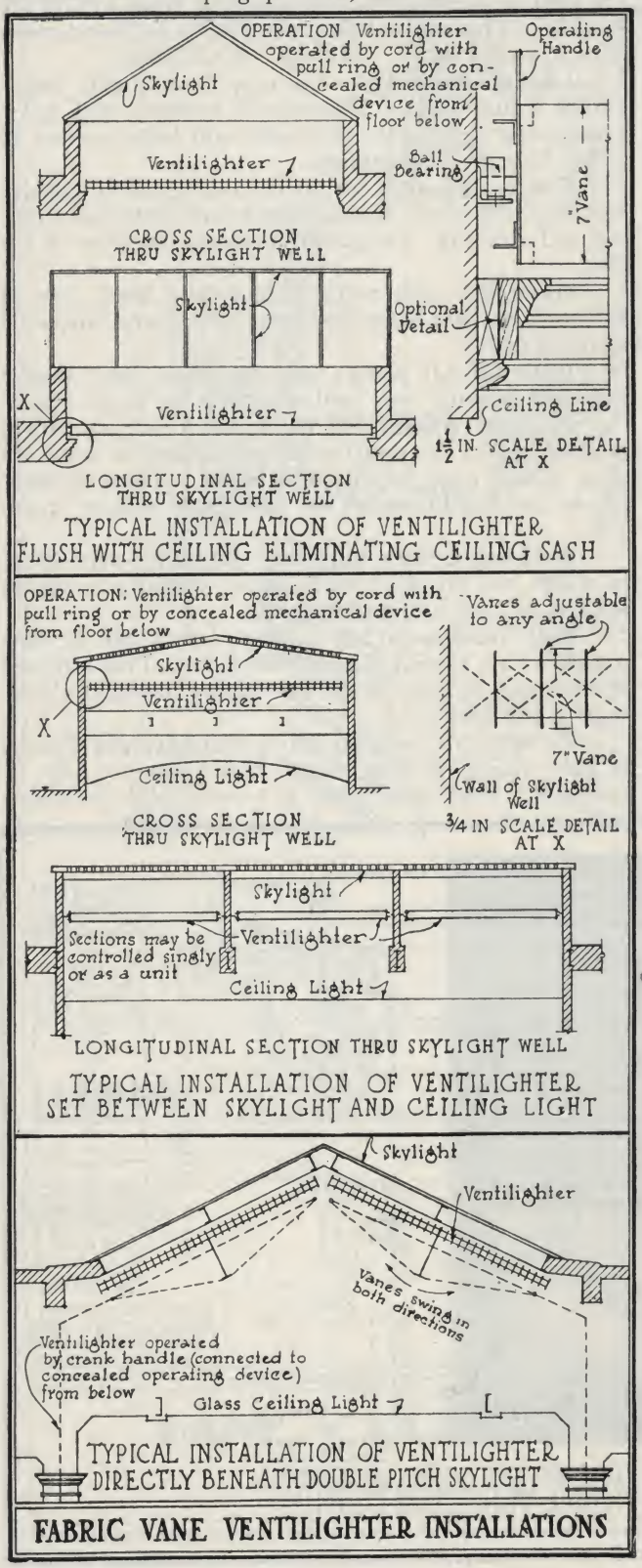
Ventilating Vane Shades for Skylights, Windows and Sleeping Porches

101 Park Avenue, NEW YORK, N. Y.

Product and Service

VENTILIGHTER, a scientific light controlling device adapted to skylights, windows and sleeping porches, and encompassing within its uses the complete control of light in all its phases.

We shall be pleased to consult with you concerning special requirements.



Principle of Ventilighter

Ventilighter consists of a series of specially woven fabric vanes (although metal or other material may be substituted in special instances) mounted in a metal lattice framework. The vanes may be opened or closed so as to overlap, ventilation remaining unimpaired (except in metal darkening problems). The use of various types of vanes corresponding to the individual problem permits the concentration, diffusion or elimination of light rays.

Fabric Skylight Ventilighters

Ventilighter for skylights is a special louvre construction as illustrated, with the louvres or vanes adjustable within the area covered, so that they overlap or open wide at will. When fabric is used the heat of the sun is tempered and a soft diffused light results, which can be controlled in the desired direction.

Glare and shadows are absolutely eliminated. When the vanes are completely closed they overlap but do not touch, hence ventilation is unimpaired. *To emphasize again, light is perfectly controlled, heat reduced, glare eliminated, and ventilation unimpaired.*

Estimates and Installation

In writing for information please submit a sketch illustrating conditions. For skylight Ventilighters show construction of skylight opening and possible obstructions such as columns, piping, etc. For window Ventilighters show section of jamb, head and sill.

We furnish blue prints showing an easy method of installing. Our staff, if desired, will undertake complete installation.

Write for catalogue of construction, and installations.

Specification

All skylights [windows] [sleeping porches] shall be equipped with Ventilighter, a scientific light controlling device, as manufactured by the SIMON VENTILIGHTER CO., INC., 101 Park Avenue, New York, N. Y., consisting of a series of special vanes, adjustable as desired by the operation of a movable metal lattice frame, in which the vanes are mounted, thus permitting the control of light without impairing ventilation. Material of vanes to be a specially woven fabric with selvedge on both edges (or metal vanes as desired). Frames to be finished to match surroundings.

Note: Where metal vanes are used eliminate reference to unimpaired ventilation.

View Above Ceiling Light, Breckenridge Long Art Gallery, St. Louis, Mo.
GUY STUDY, Architect

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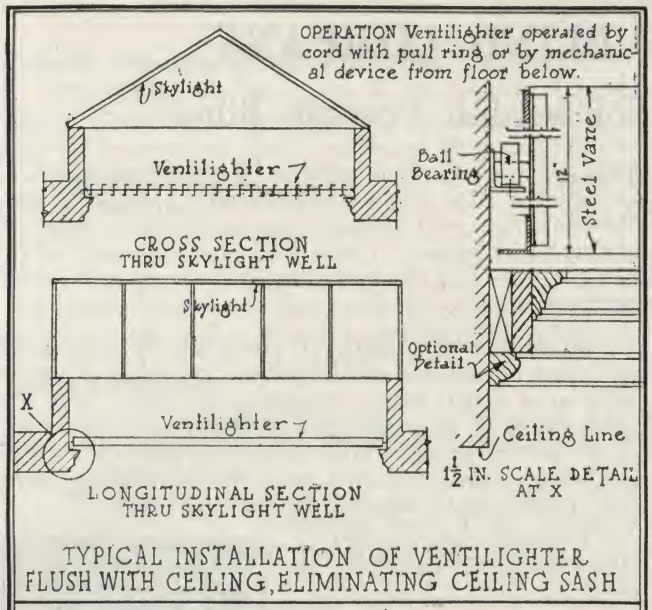
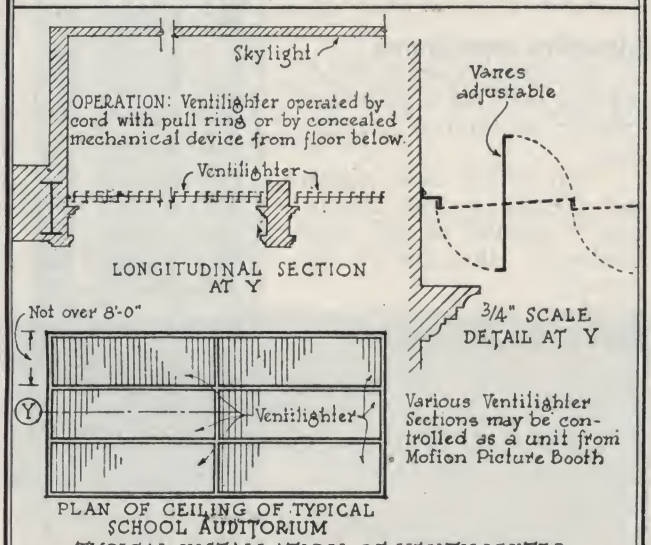
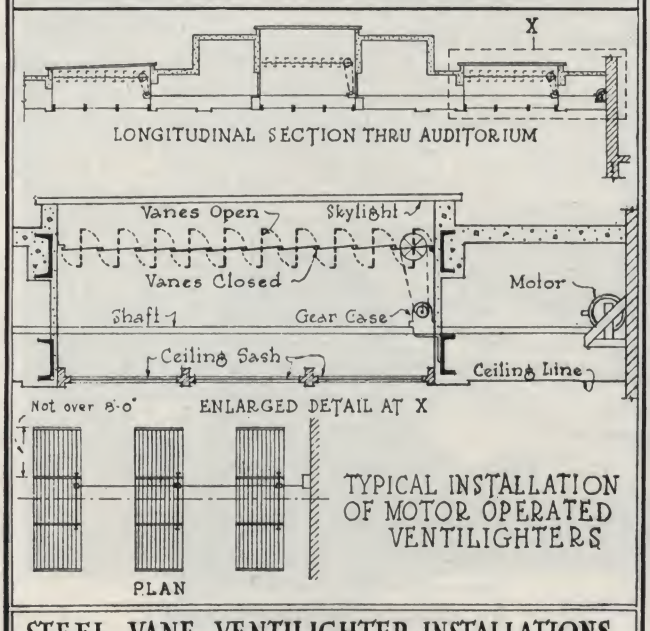


TYPICAL INSTALLATION OF VENTILIGHTER FLUSH WITH CEILING, ELIMINATING CEILING SASH



TYPICAL INSTALLATION OF VENTILIGHTER FLUSH WITH CEILING, ELIMINATING CEILING SASH



TYPICAL INSTALLATION OF MOTOR OPERATED VENTILIGHTERS

STEEL VANE VENTILIGHTER INSTALLATIONS

All-metal Skylight Ventilighters (Darkening)

A most important phase of our work is the use of metal vanes flanged at the edges so that when the louvres are closed they overlap and darkness is instantly effected. Ofttimes *skylights in auditoriums must be darkened* when motion pictures are shown and the value of causing instant darkness by merely pulling a cord or turning a crank is apparent.

Reversing the above, very often the vanes are made similar in design but enameled white. Thus the vanes when closed act as a big reflector to the artificial lights, creating an *ideal indirect lighting system,* yet when daylight is strong enough to be used, the vanes are opened at the proper angle to reflect natural light to the proper operation point. Ventilighters may be operated from predetermined points of convenience when proper provision is made; electrically also if desired.

Some Buildings Where Ventilighter Is Installed

Building and Location	Architect
Fogg Art Museum, Harvard University	Coolidge, Shepley, Bulfinch & Abbott (French & Hubbard, Eng'rs)
Union & New Haven Trust Co., New Haven	Cross & Cross
New York Public Library, New York	Carrere & Hastings
Detroit Institute of Arts, Detroit	Paul P. Cret and Zantzinger, Borie & Medary
Auditorium Bldg., California Institute of Technology, Pasadena	Bertram G. Goodhue
Annex, Pierpont Morgan Library, New York	Benj. W. Morris
Art Gallery, University of Rochester	McKim, Mead & White
L. Cass Ledyard Jr. Residence, Syosset, N. Y.	Chas. A. Platt
Gallery of Fine Arts, Yale University	Egerton Swartwout (French & Hubbard, Eng'rs)
Savings Bank of Newport, R. I.	Thos. M. James
Free Library of Philadelphia	Horace Trumbauer
Museum of Natural History, New York	Trowbridge & Livingston
Mitsui Bank, Tokio, Japan	Trowbridge & Livingston
Chemical Laboratory, Princeton University	Day & Klauder
Schools, Wilmington, South Orange, etc.	Guilbert & Betelle
Packard Memorial, Lehigh University	Visscher & Burley
First National Bank of Hawaii, Honolulu	York & Sawyer
New York State Office Bldg., Albany	Wm. E. Haugaard
Hon. Alfred E. Smith Apartment, New York	
Westchester County Park Com., Bronxville	
Long Island State Park Com., Babylon	
Mellon National Bank, Pittsburgh	Trowbridge & Livingston
Essex County Courthouse, Newark	Guilbert & Betelle
Providence Institution for Savings, Providence	Howe & Church
Providence County Courthouse, Providence	Jackson, Robertson & Adams
Centerville National Bank, Arctic, R. I.	Hutchins & French
Col. H. H. Rogers Residence, Southampton	John Russell Pope
U. S. Depart. of Commerce Bldg., Washington	York & Sawyer
Government Museum, Quebec, Canada	Wilfrid Le Croix

Window Darkening Ventilighters

We also now manufacture a special sliding sheet steel device electrically or manually controlled for darkening purposes, so devised that a battery of windows may be darkened at one time, such as proves necessary in auditorium work. When not in use the plates collapse into a pocket out of sight and at the press of a button or the turn of a crank reappear and extend so as to completely cover the openings.

Window and Sleeping Porch Ventilighters

Ventilighters for windows and sleeping porches consist of a series of specially woven horizontal fabric strips or vanes mounted in a framework and so devised that the vanes may be tilted up or down without impairing ventilation. For windows we have standardized on a gold colored fabric designed to eliminate the heat and glare of the sun without loss of light. For sleeping porches we have standardized on a cravenetted opaque green material which is impervious to snow or rain and withstands the strongest winds.

Window and sleeping porch Ventilighters collapse to the side jamb (occupying ½-in. space to the running foot) by pulling a cord. The entire construction is absolutely noiseless and rattleproof, easily controlled on the largest windows, and by virtue of folding to the side takes away no light.

Circular Head and Window Ventilighter Closed

Circular Head Open; Window Ventilighter Folded to Side

ESTABLISHED 1856

SWEDISH VENETIAN BLIND COMPANY

Manufacturers and Distributors of Swedish Venetian Blinds

TELEPHONE
PENNSYLVANIA 1620

1265 Broadway
NEW YORK, N. Y.

CABLE ADDRESS
"VENETBLIND"

LOCAL FACTORY: BROOKLYN, N. Y.

Products

SWEDISH VENETIAN BLINDS.

For our page on Partitions, Rolling Doors, Shutters and Sectionfold Partitions, see Manufacturers' Index.

Catalogues, details, prices sent on request.

Uses

Swedish Venetian Blinds are used in buildings wherever shading and ventilation are required.

Adaptability

They are suitable for private residences, sun porches, libraries, offices, hotels, etc.

Manufacture

Manufactured and imported by us, made of the highest grade material, Port Orford Cedar, thoroughly kiln-dried; also of Norway Pine, straight grained. They excel in material, improved construction, ease of operation, durability and harmony of colors.

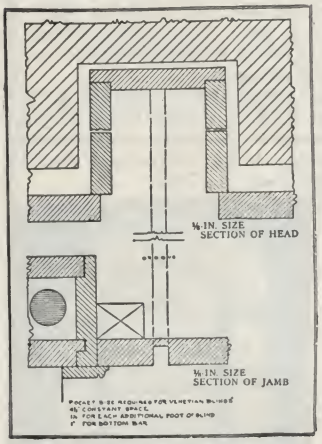
Added to their excellence of construction are the conveniences, refinements and niceties which, together with the perfect service and easy control, afford a luxury only to be expressed by the term "Swedish Venetian."

Slats (Imported Blind)

Made of Norway pine, straight grained, very thin and due to our secret process, are guaranteed not to warp.

Finish

High class painted or stained finish; all colors. Also natural wood.



Detail of Jamb and Pocket

When above is followed, it will result in a most satisfactory installation of Venetian blind, either outside, between screen and sash, or on the inside, giving a better service than any other blind of its kind

Ladder Tape and Fixtures

Best imported tape, good quality cord, and neat brackets and hardware for hanging.

Either brass pulleys or glass rings to prevent the cord from wearing are used.

Installation

Installation is quite easy, inasmuch as all the necessary material is furnished.

Operation

Different systems of operation are applied according to the individual job.

Blinds can be adjusted to any angle by a patented regulating device, and can be put up and taken down as easily as a roller shade, requiring no tools. Side attachments such as brass rods or heavy wire, or metal guides with attachment on intermediate slats are recommended for blinds attached to doors or swinging transoms and wherever exposed to a strong wind.

Years of practical service have brought about operating ease.

Attractive Appearance

Swedish Venetian Blinds enhance both the interior and exterior appearance of buildings.

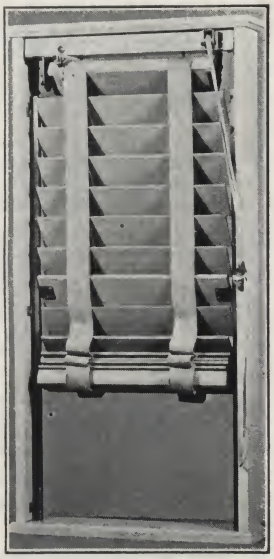
Our blinds close tightly and present a neat appearance. Installed in the finest residences throughout the country.

Sliding Venetian Blinds

For outside and inside purposes, with or without grooves.

Also made with extensions, taking the place of awnings.

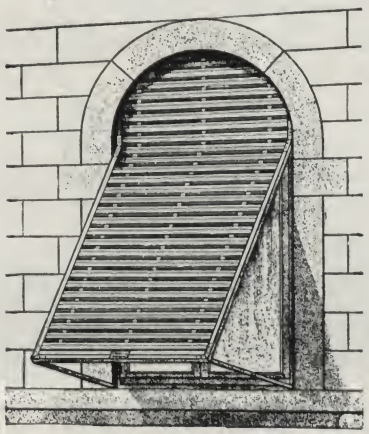
They answer the purpose of a shutter to a certain degree when let down.



Sliding Venetian Blind in Brass Grooves with Brass Attachments on Heavy Slats

Outside Roller Blind

Made of heavy wood slats connected with non-rustable metal connectors. The slats slide in a neat metal groove. Slats can be adjusted so as to give ventilation and privacy, with only one tape operation inside. Rolls completely out of the way up into a pocket on the inside.



Roller Blind Open and Extended Out Like an Awning

Continued on next page

As satisfactory and durable a blind as there is on the market.

Outside Venetian Blind with Metal Tape

Illustrated on this page is an outside Venetian blind, a long-felt commodity. It is made of materials and so constructed that it will give long and satisfactory service; there is nothing that will wear out or go out of order. The slats are made with a center cut to operate on an L-shaped metal groove on the side. A metal hoisting tape and metal chain of non-rustable material are used; will not wear out and will withstand any atmospheric conditions, making this blind practically indestructible, and a very low cost blind installation.

Office Installation

Improper distribution of light in any office, industrial building or factory lowers the efficiency of the entire working force.

Swedish Venetian Blinds afford a highly effective method of so distributing light as to completely eliminate eyestrain when working or reading. Windows may be open without fear of drafts or papers blowing about, as the blinds only permit a continuous uninterrupted circulation of air.

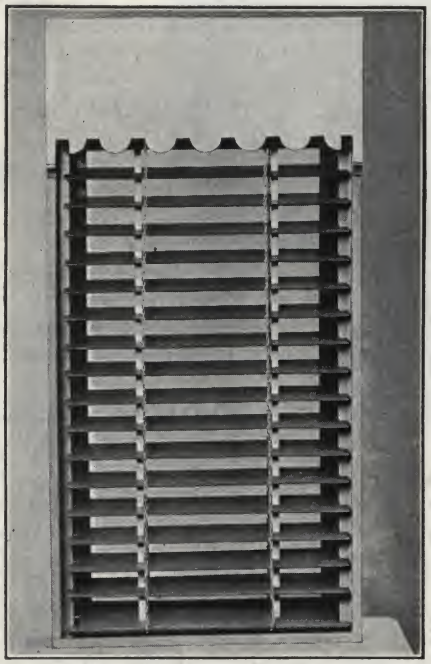
Our blinds pass many times as much light through windows as can be passed by fabric shades or awnings with direct sunlight cut off. They do not invite fire, or disaster through windstorm.

Sizes

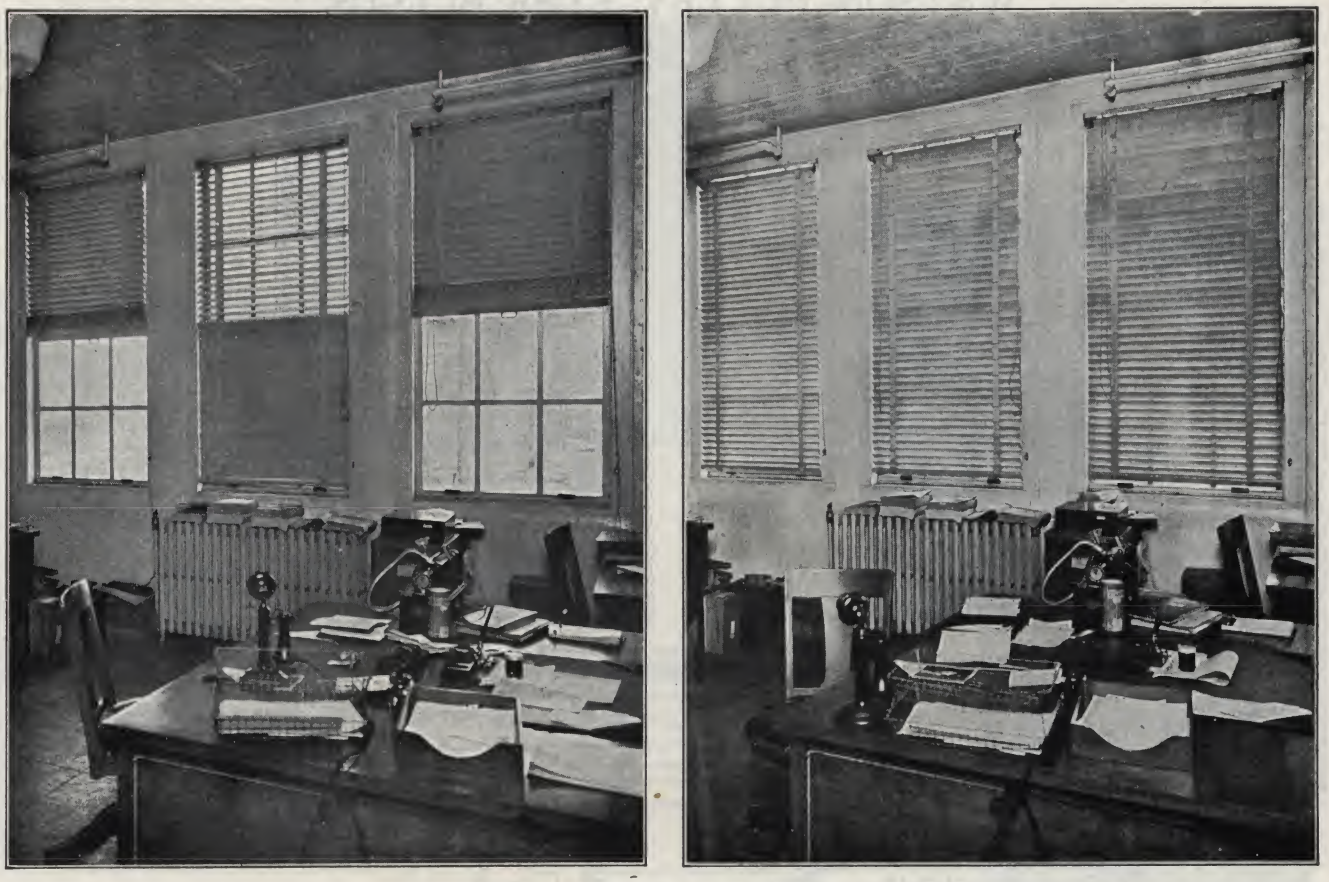
Swedish Venetian Blinds can be had for all sizes and types of windows.

Service

This company is rendering and will promptly give expert advice to architects when consideration is given blinds during preliminary work so that proper provision can be made for same.



Outside Venetian Blind with Slats Partly Tilted and with Metal Facia



A Typical Office Installation

WATSON MANUFACTURING COMPANY

Manufacturers of Watson Venetian Blinds

630 Taylor Street
JAMESTOWN, N. Y.

For Watson Frame and Roll Insect Screens and Office Furniture, see Watson Manufacturing Company in the Manufacturers' Index

Products

VENETIAN BLINDS of all kinds for all types and sizes of windows.

Watson Quality

The name Watson is a guarantee of quality. All of our products are made only of the best materials, selected after careful investigation and thorough tests. The best mechanics only are employed in our factory.

Watson Venetian Blinds in All Types

There is a type of Watson Venetian Blind to fit any type of window in either the roller or pulley types of blinds.

They are made principally for interior use but may be used outside on porches, etc., where ventilation with shade is required.

GENERAL DESCRIPTION AND OPERATION

All types of Watson Venetian Blinds are made of wood with metal brackets and hardware. The slats are supported by woven fabric ladder tapes. All pulleys operate easily on hardened steel ball bearings which are standard construction and provide for a minimum of effort in raising and lowering the blinds.

The slats are tilted by means of a cord attached to the tilting bar. The tilting bar is supported from the head bar by metal brackets. At the left end of the tilting bar there is a strong spring which compresses against the bracket and causes enough friction to hold the bar at any angle desired without the necessity of fastening the cord.

A drum style adjustable friction brake can be furnished.

The tilting of the bar and slats is entirely independent of the raising and lowering of the blind.

Bottom bar holding brackets, metal slat eyelets, channel or rod guides and other accessories can be supplied with all types of blinds.

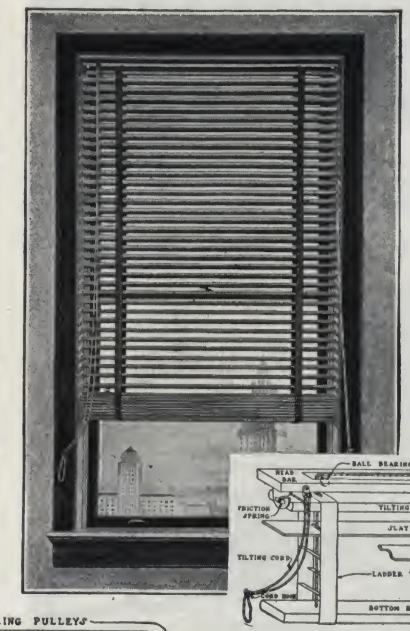
WATSON PULLEY TYPE BLINDS

Two Styles to Meet Practically Any Window Condition

Watson Pulley Type Blinds are offered in two styles—Single Lift and Double Lift (Easy Lift)—to cover practically any ordinary window condition.

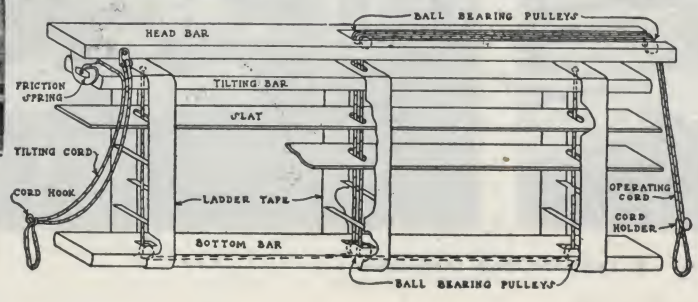
Double Lift Blinds

For windows over 40 sq. ft. in area. Not recommended for windows over 75 sq. ft. in area



Single Lift Blinds

For small and medium sized windows not over 50 sq. ft. in area. For larger windows use Double Lift Blinds

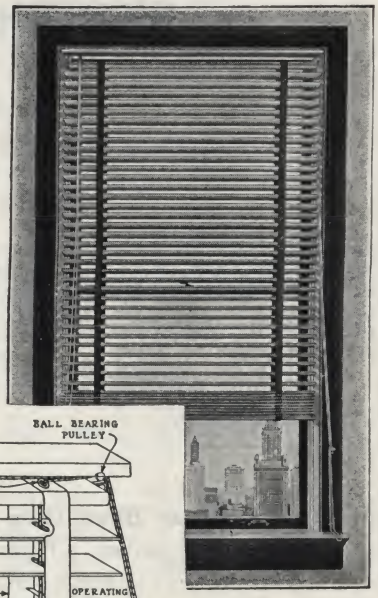


Operating cords through front of head bar (Front Left) and other accessories can be supplied.

Continued on next page

Watson "Efficiency" Venetian Blinds

Not Recommended for Windows Over 50 Sq. Ft. in Area



This is one of the oldest, simplest, and lowest priced blinds. It is a high grade blind for general use. The materials and workmanship are of the same high quality as in our higher priced blinds.

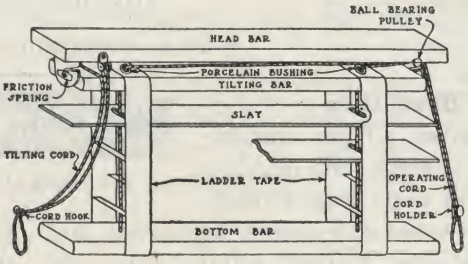
The "Efficiency" blind is raised and lowered by a double cord which passes through glazed porcelain eyelets in the tilting bar, then over a ball bearing pulley in the right hand bracket and down at the side of the blind.

The blind is securely held at any desired height by fastening the operating cord to the horned hook at the side of the jamb or trim.

Roller Type Blinds

The Roller Type Blinds are distinguished from the Pulley Type by a roller placed between the top bar and the tilting bar. The operating cord is wound around one end of the roller, which revolves on hardened ball bearings as the blind is raised or lowered.

The particular advantage of the roller type blinds is their ease of operation. The slats are always truly horizontal, which makes them particularly desirable when side guides are required.



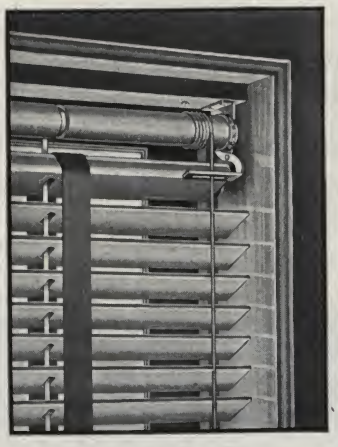
Traverse Roller Blinds

Heavy Type—These blinds are designed for use in very large windows, such as show windows, banks, etc., when the area to be covered is 100 sq. ft. or more.

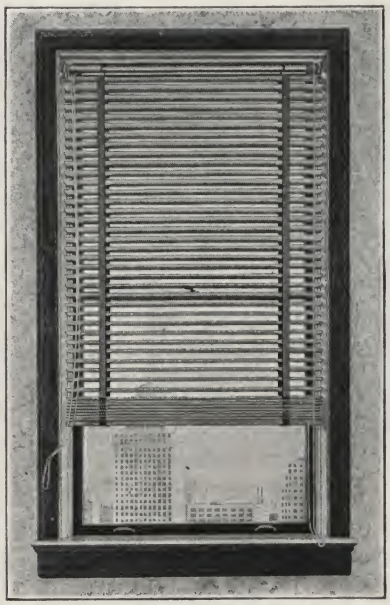
They are operated with the greatest ease, made possible by the use of ball bearing rollers, practically eliminating all friction.

Ratchet Roller Blinds

The Ratchet Roller Type Blind has a stamped steel ratchet and pawl at the right hand end of the roller which automatically holds the blind stationary at any desired height, the instant the cord is released, without the necessity of securing the cord.



Ratchet Roller Blind

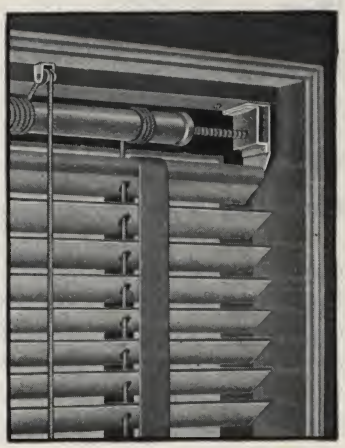


Ratchet and Plain Roller Type
Recommended for windows up to 90 sq. ft. in area

Plain Roller Blinds

The Plain Roller Blinds are the same as the Ratchet Roller Type except that the ratchet is omitted which makes it necessary that the cord be fastened to hold the blind at the desired height.

Light Type—These blinds are similar to the plain roller type but with a lateral traverse motion which insures both the operating and lifting cords rolling flat and smooth on the roller. Cord must be fastened to hold blind at desired height. Not recommended for windows over 90 sq. ft. in area.



WESTERN VENETIAN BLIND COMPANY

FORMERLY WESTERN BLIND & SCREEN COMPANY

Manufacturers of Venetian Blinds

101 Park Avenue
NEW YORK, N. Y.

2700 Long Beach Avenue
(Vernon Branch Post Office)
LOS ANGELES, CALIF.

WESTERN VENETIAN BLIND AGENCIES

ATLANTA, GA.	DETROIT, MICH.	MILWAUKEE, WIS.	SALT LAKE CITY, UTAH
BOSTON, MASS.	FRESNO, CALIF.	MINNEAPOLIS, MINN.	SAN ANTONIO, TEX.
BOULDER, COLO.	HOUSTON, TEX.	PHILADELPHIA, PA.	SAN DIEGO, CALIF.
CHICAGO, ILL.	INDIANAPOLIS, IND.	PHOENIX, ARIZ.	SAN FRANCISCO, CALIF.
CLEVELAND, OHIO	KANSAS CITY, MO.	ROCHESTER, N. Y.	SEATTLE, WASH.
DALLAS, TEX.	MEMPHIS, TENN.	SACRAMENTO, CALIF.	STAMFORD, CONN.

Agencies to Be Established in All Large Cities and Listed in Local Directories as WESTERN VENETIAN BLIND SALES CO.

FOREIGN AGENCIES

ANCON, C. Z., PAN AMERICAN SALES CO. HONOLULU, T. H., WATERHOUSE CO. LTD.
BUENOS AIRES, ARGENTINE, W. D. CONE

Western Venetian Blind Uses

Western Venetian Blinds combine the functions of awnings and window shades. They deflect and diffuse sunlight and regulate air currents and control ventilation and temperature. They give daylight without glare and ventilation without draft.

TRADE-MARK

Adaptability

Venetian Blinds are used in banks, hospitals, office buildings, schools, public buildings, solariums, homes, sleeping porches, prism store fronts, transoms, automobile and other showrooms, apartment houses and many other window openings.

Installation

All the necessary hardware and fixtures for Western Venetian Blinds are furnished with each order, together with complete instructions for installing.

Installations are under the supervision of the territorial representative. Service is localized through various agencies. The Sales Company contracts for installation of large or complicated jobs.

Operation

Descriptive details and illustrations shown in the following pages cover the different operating devices, which vary in accordance with the sizes of the blinds. A suitable operating device is supplied to make all blinds operate freely and positively, with minimum wear.

Prices

Owing to the varying sizes of windows and finishes of blinds, it is impracticable to quote prices here. Estimates may be had, however, by furnishing to the nearest office shown above, a list of windows, filling in sizes called for on the Measurement Diagram.

Oscillating Roller Type Blinds

This type of blind is designed for use in very large openings, such as found in banks, etc. Regardless of the size of the opening, these blinds are made to operate easily and freely. See illustration following page. Standard as to slats, ladder tape, and finish. Lifted on $\frac{1}{16}$-in. flexible wire cables by means of a single No. 6 sash cord. Recommended for blinds containing more than 100 sq. ft.

Rod Guide Blinds for Doors and Transoms

Blinds for transoms that swing into the room should be equipped with rod guides. This attachment consists of small swivel rings securely attached to the ends of slats which operate on $\frac{7}{32}$-in. brass rods, holding the blind firmly to the sash at all times.

This arrangement is also preferable for doors, as it prevents the blind from flapping as the door is operated, but in no way interferes with the operation of the blind or the door.

This attachment is also recommended for blinds which are exposed to strong winds.

Skylight Blinds

This type of Western Venetian Blind overcomes the disadvantages presented by skylights which are often difficult to cope with.

Skylight blinds entirely eliminate glare and subdue bright sunlight that without them would flood through the skylight. Also heat from the sun, which is intensified by glass, is minimized and almost excluded by them.

They can be had in any size for all types of skylights.

Type F Circular Head Blinds

This type of blind is made with stationary slats tilted to 45° angle, housed into a solid circular sawn frame 1¼x1¾ in. in section.

Where there is no transom bar in the window, Type A or B blinds may be attached directly underneath the bottom rail of Type F blinds; adequate supports are provided, regardless of width.

Description

Slats—Made from clear Port Orford white cedar, a wood of fine texture, finished ⅛ in. thick. Standard width 2⅜ in.; also made in 1½-in. and 2-in. width. Guaranteed against warping, splitting or breaking.

Slats made from other woods are furnished, but not recommended or guaranteed; 1½-in. and 2-in. slats recommended only for small windows.

Continued on next page

Ladder Tape—Best quality cotton and linen fabric interwoven ladders; imported or domestic.

Cord—Hollow, specially braided, glazed to prevent wear.

Finish—Western Venetian Blinds are finished in any color required, preferably in cream or natural lacquer. Only the highest grade of lacquer is used, giving a clean, smooth finish that will withstand the strong rays of sunlight and weather conditions to which the blinds are subjected. Dark finishes are not recommended where daylight must be considered.

Attractive Appearance

Western Venetian Blinds not only outwear the ordinary fabric window covering, but distinguish the building by reason of the clean cut exterior.

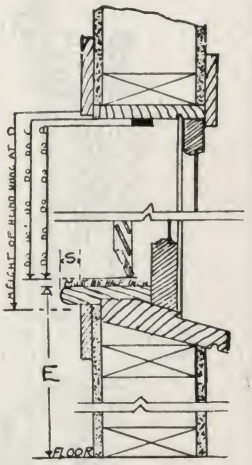
The architectural lines are maintained and both interior and exterior appearance is enhanced.

How to Measure for Western Venetian Blinds

For Ordinary Windows—When blinds are to hang between stops or jambs (B or C) always give full net width and height of opening between such points and mention where measured.

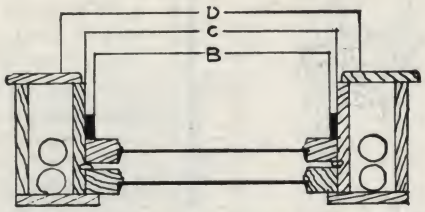
When to be hung on face of casings (D) give the actual width and height of the blind wanted, mentioning where measured. For example—"Width D, 48 in.; height of blind, 84 in."

For Doors or Hinged Transoms—When measuring these for Western Venetian Blinds, always give the actual size of the glass. It is also desirable to mention the distance from the edge of the glass to the nearest point of any hardware which occurs on the transom sash or door stiles.

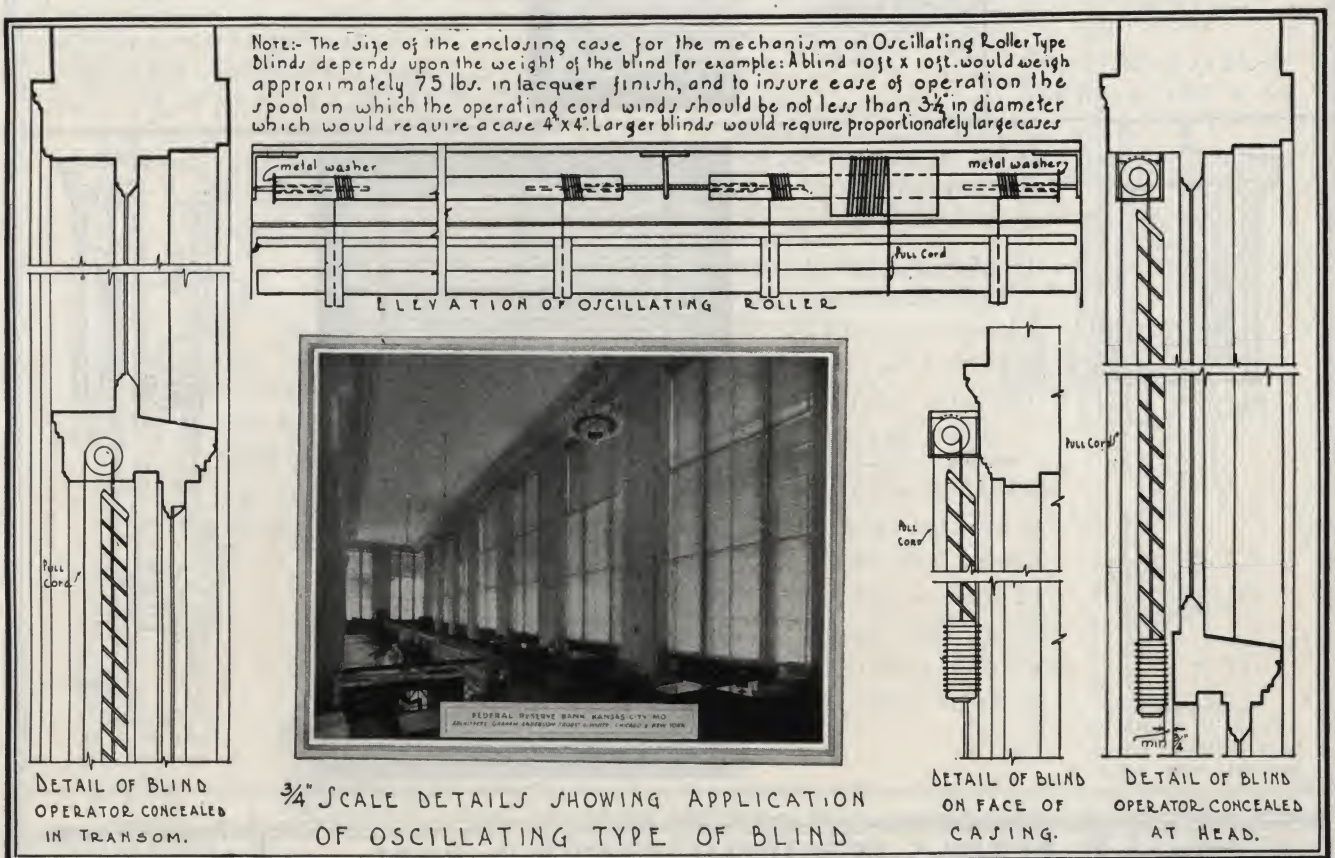


For Circular Windows—In furnishing working measurements for circular transoms, etc., it is usually best to cut a paper templet the size and shape of the opening where the blind is to go.

Note: Always give distance from floor to bottom of blind, so that operating cords may be made the proper length.

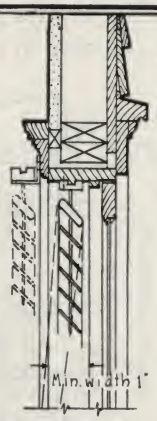


Measurement Diagram of Western Venetian Blind

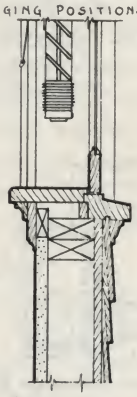


DETAILS OF OSCILLATING TYPE OF WESTERN VENETIAN BLINDS.

Continued on next page

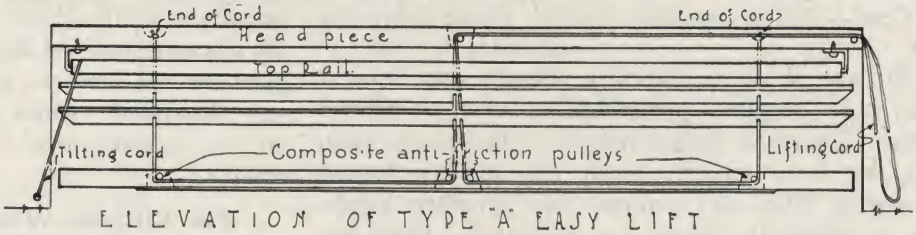


SECTION THRU HEAD SHOWING ALTERNATE HANGING POSITIONS.



SECTION THRU SILL.

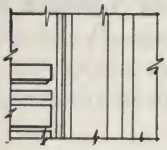
¾" SCALE DETAILS OF "A" TYPE BLINDS.



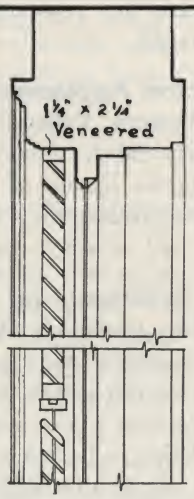
ELEVATION OF TYPE "A" EASY LIFT

NOTE:- CIRCULAR TRANSOMS.
Where the circular transom sash swings in, the blind is attached directly to the sash either by means of screws through the bottom rail and uprights of the blind, or by the use of a special button which makes the blind quickly removable, yet holding same firmly to the sash. Section at right shows TYPE "F" CIRCULAR BLIND and method of attaching TYPE "A" BLIND to the bottom rail of same.

SECTION THRU JAMB

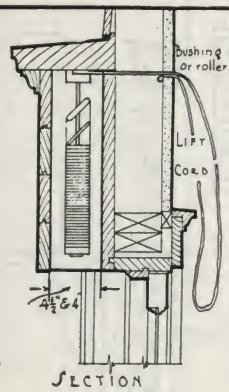


PART ELEVATION AT BOTTOM RAIL

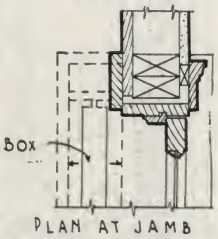


SECTION THRU CIRCULAR WINDOW TRANSOM "F" TYPE BLIND

¾" SCALE DETAILS SHOWING APPLICATION OF TYPE "F" CIRCULAR HEAD BLINDS.



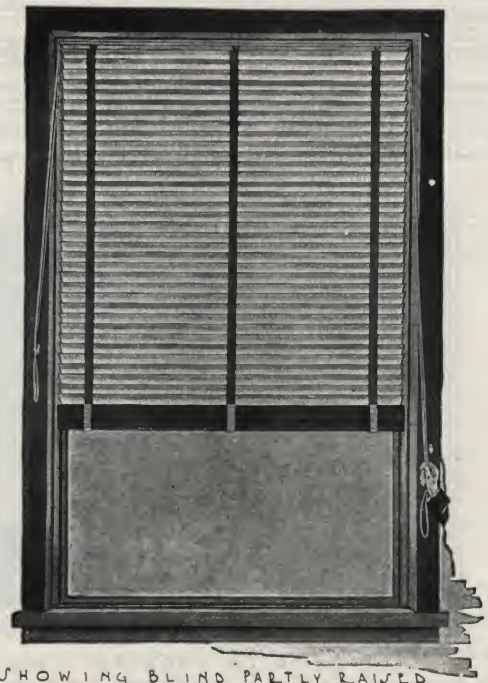
SECTION



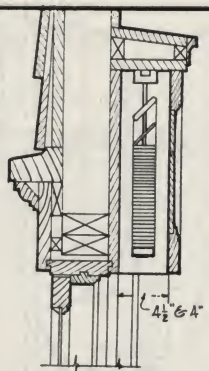
PLAN AT JAMB
BLIND CONCEALED OUTSIDE OPERATED FROM ROOM

NOTE BLINDS WITH 2⅜" SLATS REQUIRE A POCKET 4½" WIDE TO DETERMINE DEPTH OF POCKET BEGIN WITH 3" AND ADD 1¼" FOR EACH FOOT IN HEIGHT OF ACTUAL WINDOW OPENING

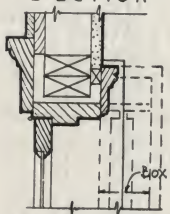
BLINDS WITH 2" SLATS REQUIRE A POCKET 4" WIDE FOR DEPTH BEGIN WITH 3" AND ADD 1½" FOR EACH FOOT IN HEIGHT OF ACTUAL WINDOW OPENING.



SHOWING BLIND PARTLY RAISED



SECTION



PLAN AT JAMB
BLIND CONCEALED IN ROOM.

VENETIAN BLINDS

DETAILS OF CIRCULAR HEAD & TYPE A WESTERN VENETIAN BLINDS

VENETIAN BLINDS

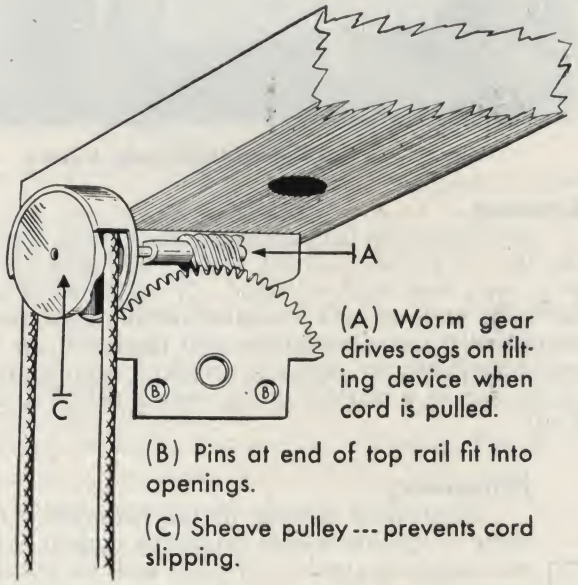
Continued on next page

Hanger

Worm gear tilt hanger for adjusting the angle of slats (see illustration in detail).

This patented tilt hanger is exclusive to the WESTERN VENETIAN BLIND COMPANY, and is positive in its action in fixing and keeping the slats at desired angle. Slats cannot shift their angle except upon operation of the tilt. It is noiseless in operation.

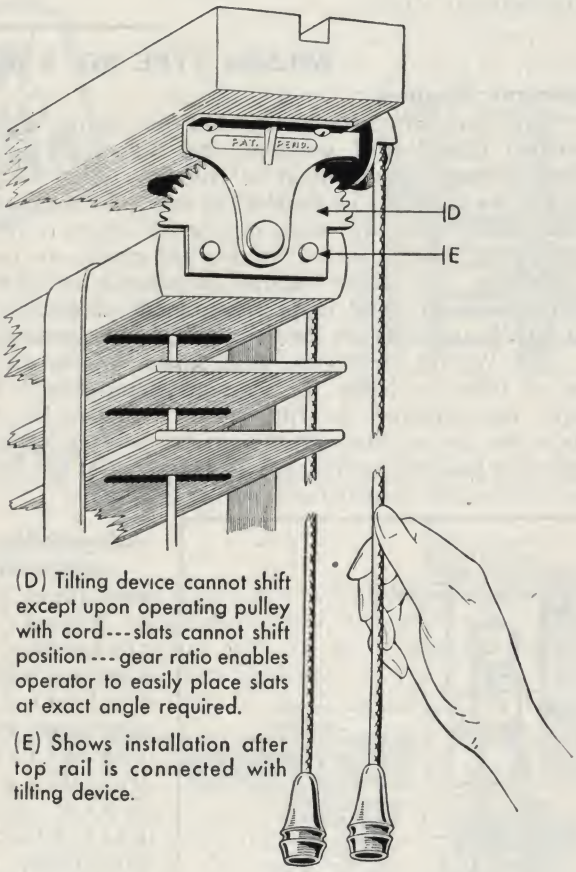
The top rail is easily disconnected from the head rail, and is so simple of installation its detail is gathered at a glance.



(A) Worm gear drives cogs on tilting device when cord is pulled.

(B) Pins at end of top rail fit into openings.

(C) Sheave pulley --- prevents cord slipping.



(D) Tilting device cannot shift except upon operating pulley with cord --- slats cannot shift position --- gear ratio enables operator to easily place slats at exact angle required.

(E) Shows installation after top rail is connected with tilting device.

DETAILS OF WESTERN VENETIAN BLIND COMPANY HANGERS

THE J. G. WILSON CORPORATION

Manufacturers of Diffuselite Blinds and Awnings

GENERAL OFFICES

11 East 38th Street
NEW YORK, N. Y.

Box 1194
NORFOLK, VA.

For Branch Offices See Our Other Sections

Products

WILSON DIFFUSELITE INSIDE BLINDS, LOUVRE BLINDS, AWNING BLINDS, PORCH BLINDS.

For Rolling Steel Doors, Shutters, Sectionfold Partitions, Rolling Partitions, see Manufacturers' Index.

Wilson Blinds

Wilson—the name that has long stood for supreme quality in Venetian Blinds, offers the profession a new, yet tried and proven product —the Metal Ventilating Awning.

WILSON TYPE NO. 8 METAL VENTILATING AWNING

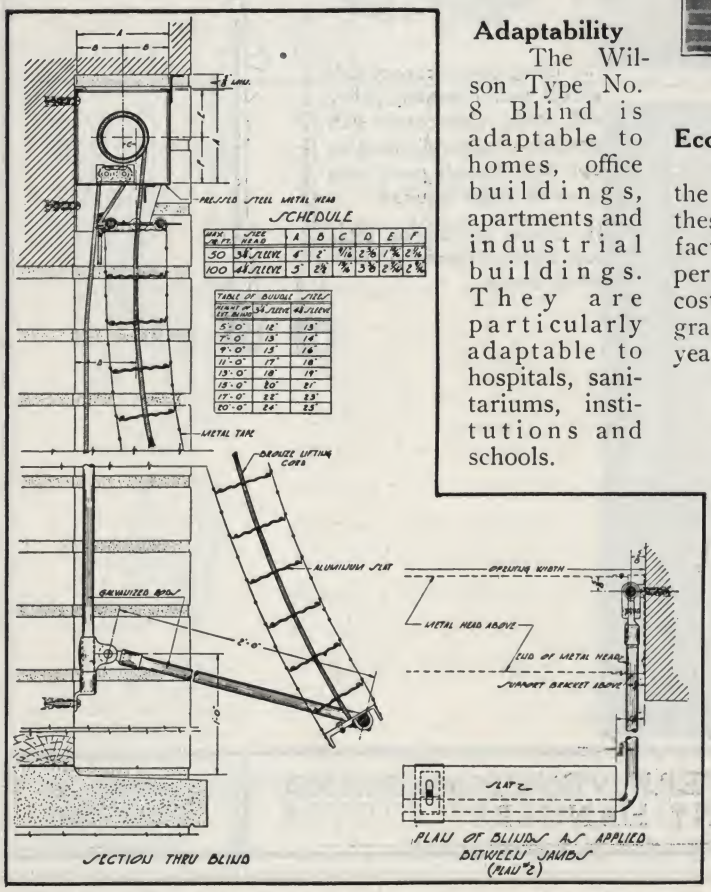
Important Features

Fireproof, windproof, foolproof, yet having all the combined qualities of awnings and Venetian blinds, without a single disadvantage of either.

The awning can be finished in any color to match or harmonize with the color of the building to which it is applied. Lacquers of the highest grade are used in finishing. It cannot become discolored or faded. When raised, the blind folds into a small, compact and neat bundle and does not give a cumbersome appearance.

The Wilson awning is unsurpassed by any other type of blind or baffle for ventilating purposes. By simply manipulating the tilting cord one can tilt the slats to any desired angle thereby giving privacy to those within the building, cutting off all glare and at the same time receive full benefit from the air outside.

Wilson Type No. 8 Metal Ventilating Awning



Details of No. 8 Metal Awning Construction and Application

Adaptability

The Wilson Type No. 8 Blind is adaptable to homes, office buildings, apartments and industrial buildings. They are particularly adaptable to hospitals, sanitariums, institutions and schools.

Economy

For more than half a century, Wilson has advocated the use of outside awning blinds, but until recently, these have been made of wood. Now, improved manufacturing methods and extensive metallurgical research permits the use of aluminum and bronze at an initial cost but slightly in excess of ordinary awnings of good grade, and at a marked saving over a period of a few years.

Permanency

Permanent because of the materials they are made of, giving lasting protection against fire hazard; assuring absolute privacy; and, by proper manipulation of the louvres, light or darkness, at will, without interrupting the proper circulation necessary for ventilation.

Guarantee

The guarantee of the makers of the Wilson Diffuselite Inside Blind Type No. 11, for fifty years the Venetian Blind for discriminating users, stands behind this new product.

Data and Booklet

Consult with our nearest representative for further data, or send for booklet describing and illustrating completely this new article.

ESTABLISHED 1880

YARDLEY SCREEN & WEATHERSTRIP CO.

Manufacturers of Yardley Improved Venetian Blinds

COLUMBUS, OHIO

REPRESENTATIVES IN PRINCIPAL CITIES

YARDLEY IMPROVED VENETIAN BLINDS

Wood

All wood parts are selected and well seasoned basswood, guaranteed against splitting and warping for three years.

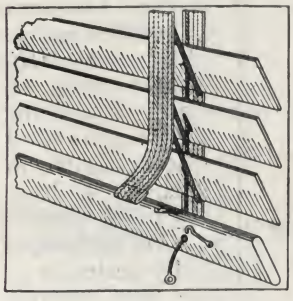
Slat size, 1/8 in. x 2 3/8 in.

Top tilt bar, 7/8 in. x 2 3/8 in.

Easy to Clean

Tape

Carr's quality, patented and trade-marked Best English Tape. Guaranteed against ordinary wear and tear for three years.

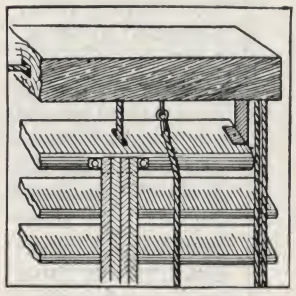


Tape Release—(Patent pending.) All blinds are equipped with tape release so that tapes may be removed from blind for cleaning and replacement at minimum cost.

Cord

No. 4½, glazed hollow braided Samson Cord, manufactured by Samson Cordage Works, guaranteed against ordinary wear and tear for three years.

Special Cord Feature—Yardley Improved Venetian Blind elevating cord (patent pending) is secured to bottom rail by means of a movable device which permits of the ready release and removal of this cord so that slats may be easily removed for cleaning; also it permits a ready and rapid re-assembling. This feature has been adapted to use with channel guides as described in the paragraph on guides.



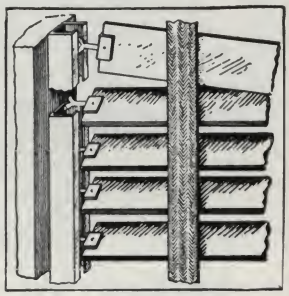
Cord Brake—Yardley Improved Venetian Blind is equipped with cord brake (patent pending) so arranged that blind can be stopped at any point on the window and cords will hang free, not requiring a cord cleat to be fastened into the wall.

Finish

Lacquer enamel or lacquer stain (Pittsburgh Plate Glass Co. product) or equal, guaranteed against checking and cracking for three years.

Guides

Yardley Improved Venetian Blind Guides are of brass box channel type, ½ in. square (patent pending). The guide pins on end of each seventh slat are engaged into channel in such manner that they may be readily disengaged, an important consideration where window weights or mechanism adjustment involves removal of jamb.



Pulleys

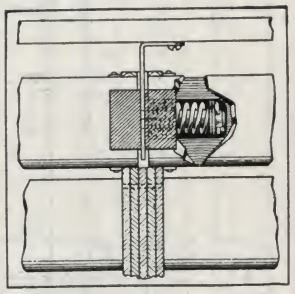
¾ in. x 5/16 in. special self-lubricating fibre pulleys. They are noiseless.

Hardware

All working parts are of Eradydo alloy metal. Non-corrosive. Lacquered bronze, or any selected color. For windows of more than 42 sq. ft. we recommend the multiple pulley easy lift type.

Tension Device

All blinds are provided with a permanently adjusted friction feature which does not require attention after installation. With this tension device it is possible to tilt the blind front or back at any angle desired. (Pat. Pend.)



Easy to Clean

Three words, but express one feature of Yardley Improved Venetian Blinds which probably has won more architects, building owners and building managers than any other.

Yardley Blinds are quickly, easily dismantled for *thorough*, rapid cleaning, and as readily assembled. Over a period of years, this feature will result in a very considerable saving, to say nothing of the better appearance and sanitation.

Provision for the Purchase of Tapes and Slats

The manufacturer will maintain a permanent record of size of each blind, numbering each unit, so that purchaser may at any time order either slats or tape by stating serial number of blind.

ESTABLISHED 1872

F. J. KLOES, INC.

Built-in Awning Mechanisms for Metal Store Fronts

TELEPHONE
CANAL 6-2330, 6-6109

269 Canal Street, NEW YORK, N. Y.

Products

AWNINGS; BUILT-IN GEAR ROLLER AWNING MECHANISMS for Bronze Store Fronts, Hand or Power Driven; DISAPPEARING FLEXIBLE FOLDING AWNING OUTRIGGERS, for awnings on low store fronts, porches and large open terraces.

Also manufacturers of Window Shades, Curtains and Sidewalk Canopies.

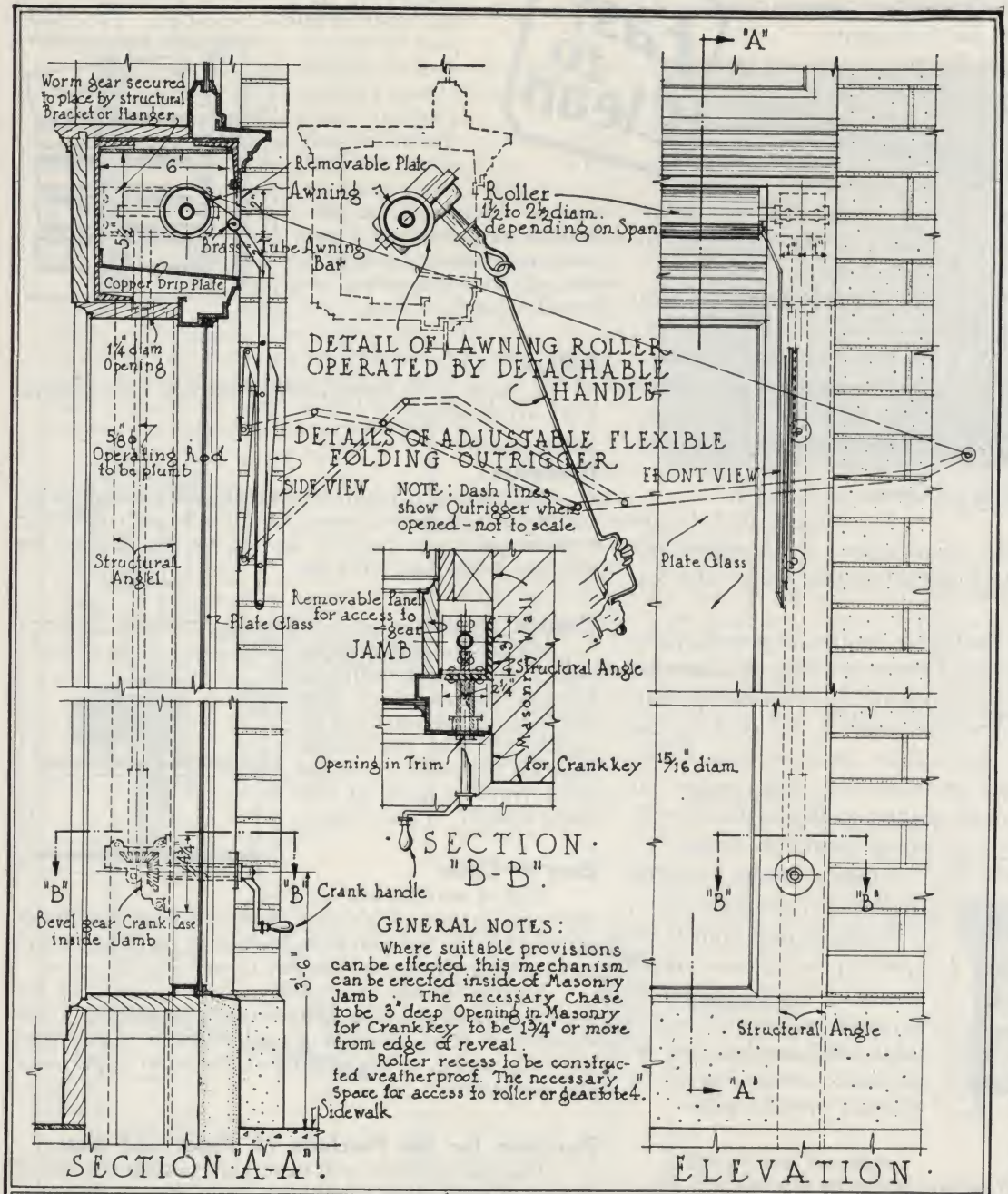
Complete Awning Construction

F. J. KLOES, INC., plan, manufacture and install complete awning equipment for all types of buildings; stores, hotels, public buildings and residences.

Long experience and extensive facilities enable this company to offer architects and contractors promptest co-operation and service. F. J. KLOES, INC., have also developed several special improvements in awning construction and manipulation which greatly simplify certain awning problems.

Kloes Built-in Gear Roller Awning Mechanism

This built-in mechanism obviates the unsightly exposed mechanical features of the old-fashioned type of awning and keeps awnings practically out of sight when they are not in use. It may be operated either by hand or power, as desired.



DETAILS OF KLOES BUILT-IN ROLLER AWNING MECHANISM

The Kloes Built-in Gear Roller Awning Mechanism is most economically installed during original building construction. It can, however, be installed in existing building fronts made of wood, stone, or iron, provided space available in jambs is at least 2½ in. in width.

Its use is especially desirable in the case of fine store fronts and wherever else it is important to preserve the best architectural harmony of the building.

Construction—The Kloes Built-in Gear Roller Awning Mechanism consists of a worm gear awning roller designed to set into a recess which is provided in the construction of the window framing either at the head of the opening or at the transom bar. A bevel gear crank box with a connecting shaft to operate the roller is built into one of the window jambs. An opening in the

Continued on next page

face of the jamb for admission of the crank key is usually placed 3 ft. 6 in. above the pavement.

In some cases the roller control gear is not built in; a short shaft from the roller worm gear being carried directly through the face of the awning roller recess where it terminates in a pendant hook, which may be controlled by means of a long detachable handle.

The architectural design frequently calls for some special treatment of the operating connections and F. J. Kloes, Inc., are prepared to submit drawings outlining any necessary applications on receipt of request with drawings.

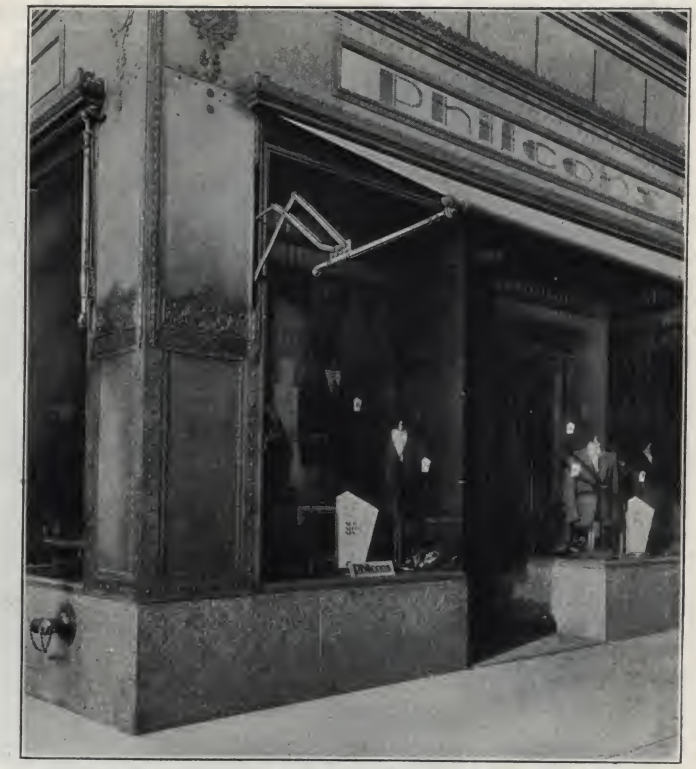
Ornamental Disappearing Awning Outriggers

These awning frames appear to be part of the store front design when in raised position.

Ornamental awning outriggers can be designed to conform with the general architectural design of the building.

The ordinary store front being less than 11 ft. high and the necessity of the awning being 7 ft. above the sidewalk restricts the possible space for awning outrigger to 4 ft. or less. The Kloes Disappearing Outrigger can be made to fold into a space of less than 4 ft. and to project from 6 to 7 ft. 6 in.

When laying out space in drawing, suitable provision should be made in the design of the window jamb to provide for the reception of the folding part of the outrigger. This outrigger can also be designed so that the outer member when raised back to building will completely close the opening to the recess, leaving absolutely no sign of an awning.



Corner of a Monumental Building Having Twenty Store Fronts All Equipped with This Type of Awning Frames

Note the very compact cornice construction in which the awning roller mechanism is located. When in raised position these awnings are entirely out of sight

Some of the Jobs Installed

New York
B. Altman & Co.
R. H. Macy & Co.
Best & Co.
Gimbel Bros.
Bloomingdale's
Saks & Co.

Brooklyn, N. Y.
Abraham & Straus
Frederick Loeser & Co.
A. I. Namm

Milwaukee, Wis.
Rosenberg's

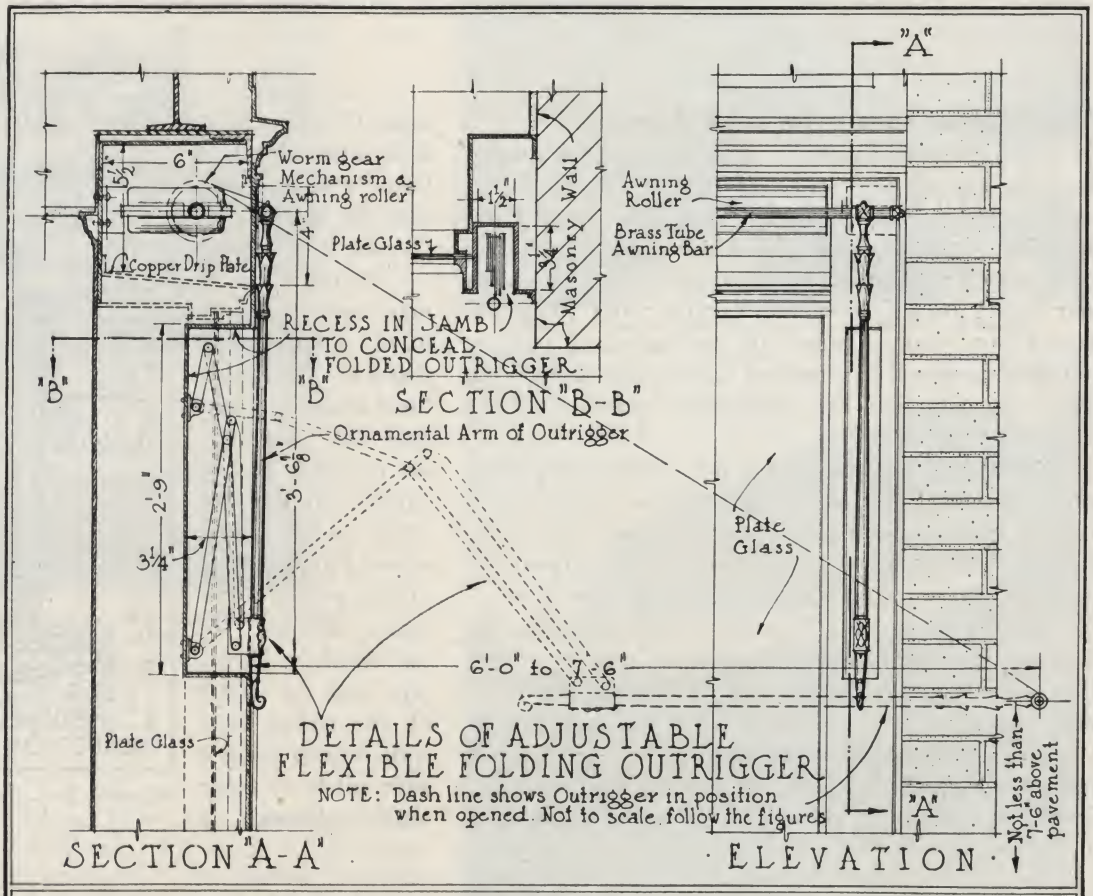
Newark, N. J.
Kresge Dept. Store
L. Bamberger & Co.

Philadelphia, Pa.
Strawbridge & Clothier
Bonwit Teller & Co.

Washington, D. C.
Garfinkel Dept. Store

Toledo, Ohio
Lamson Store

Toronto, Can.
T. Eaton Co., Ltd.



DETAILS OF ORNAMENTAL DISAPPEARING AWNING OUTRIGGERS

Continued on next page

Large Roller Awning for Penthouse Homes and Roof Gardens

This awning 48 ft. in width, 16 ft. projection is over a terrace on 23rd floor of the Heckscher Building, New York, N. Y. Extra heavy construction due to excessive exposure.

The photograph of this awning was taken after eight years of service. Automatic electric control

Vibrationproof Sockets for Roof Awnings

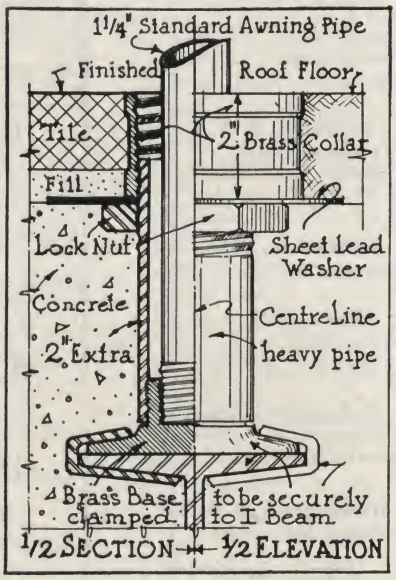
A socket which transmits all superstructure stresses direct to the building structural steel. The roof surfacing cannot be affected. A very popular demand has developed for the construction of awnings over building roofs, such as penthouse terraces, hospitals, clubs, outdoor dining rooms, recreation centres, etc. Many instances have occurred where the application of awnings for such purposes has seemed impractical due to the danger of affecting the waterproof qualities of the roof.

These sockets are used for the erection of awning frames or other structures, which may be required subsequent to the completion of a building. Any such structure may be attached to these sockets without endangering the waterproofing in any way.

Sockets are made in lengths to reach from the top of structural roof beams to the finished surface of the roof. Also made in another type to be bolted to concrete arches.

The waterproofing is protected by having the sheet lead washer flashed into the felt and tar roof covering. The brass collar on upper end of the socket is made to equal thickness of the tile surfacing. The sockets when delivered have a brass plug screwed into the brass collar to close the opening.

Whenever it may be desired to have an awning frame or other structures attached to the roof the plug may be removed and a length of 1¼-in. standard pipe screwed into the base of the socket. The space between the outside of the 1¼-in. pipe and the inside of the socket sidewalls should be filled with pitch or other elastic substance.



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Motor Driven Awnings—Large Awnings for Open Terraces, Country Clubs, Hotels, Restaurants and Office Buildings

Kloes Flexible Folding Awning Outrigger (patented) is the most durable awning extension arm for awnings on low store fronts, porches, and large open terraces. It does away with uprights and slide rods and prevents awning from lowering below the desired level. Electrically operated or hand operated. Furnished in 17 standard sizes, for extensions from 4 to 20 ft.

Electrically Operated Awning Made for Westchester Biltmore Country Club, Rye, N. Y.
Awning is 114 ft. wide, extending 24 ft. Has electric worm gear drive, 6 folding outriggers, weighing 800 lb. each. Cloth: 50 yd. 15-oz. army duck. Positive emergency shelter for an outdoor dining room

Interior View of the Westchester Biltmore Awning

Large Residence Awning, Electrically Operated, Cincinnati, Ohio
This awning, 66 ft. wide, projecting 14 ft., is over a terrace and overlooks a sunken garden pool

Terrace Awning 100 Ft. Wide, Electrically Operated, Lakeville Country Club House, Great Neck, L. I., N. Y.

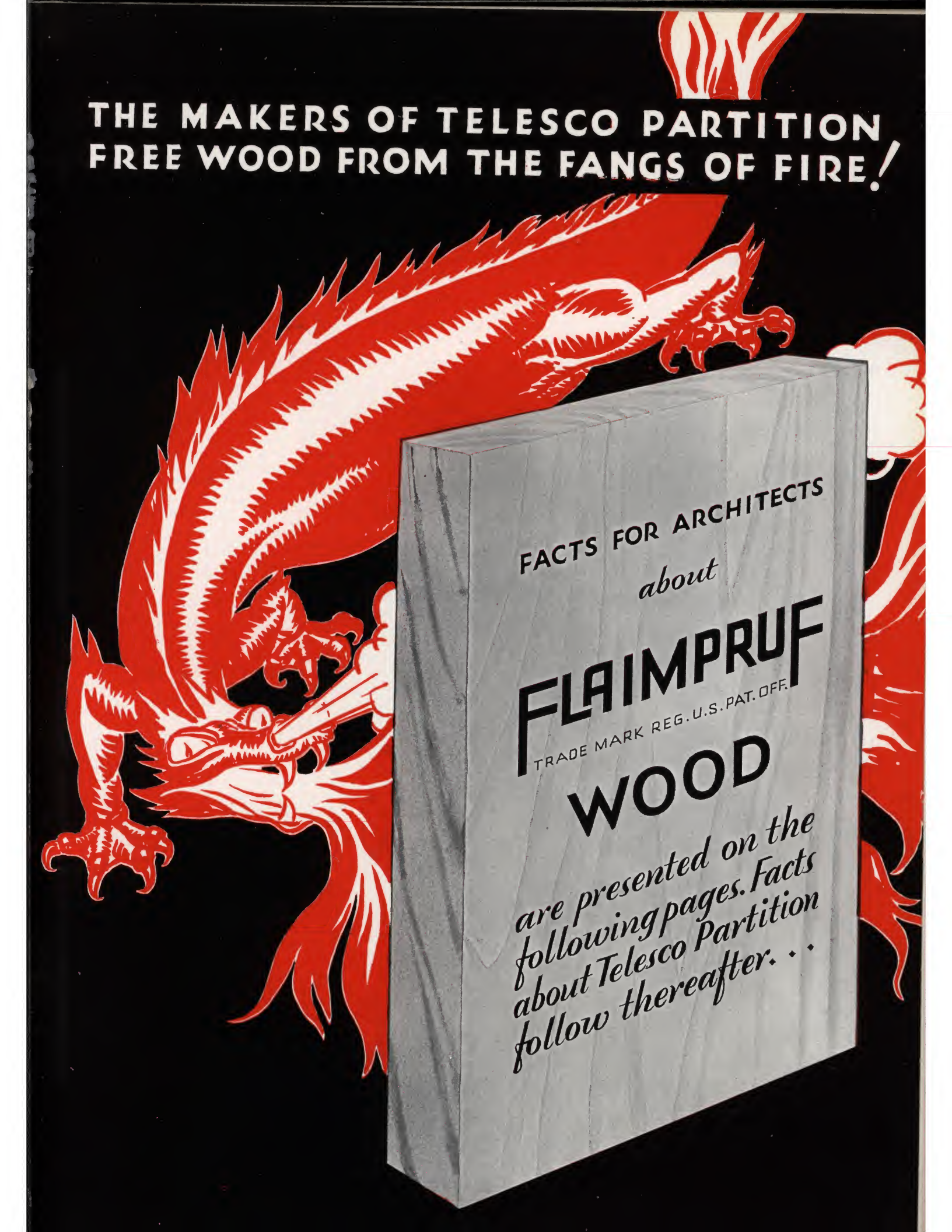
Designing, Estimates and Service

We will gladly submit plans, and estimates on all types of awning installations. We invite co-operation with architects and contractors in the solution of their awning problems.

Complete detailed drawings made up and furnished to cover any desired application.

PARTITIONS

Acme Partition Co., Inc. B2946–2947
Albatross Steel Furniture Co., Ltd. B2900
Alberene Stone Co. B2901
Allen-Drew Co., Div. of Babcock-Davis Corp. B2948–2949
American Steel Furniture Co. B2902–2903
Art Metal Construction Co. B2869–2875
Circle A Products Corp. B2957–2959
Coburn Trolley Track Mfg. Co. B2960–2963
Dahlstrom Metallic Door Co. B2876–2877
Ebinger, D. A., Sanitary Mfg. Co. B2904–2905
Empire Steel Partition Co., Inc. B2878–2879
Fiat Metal Mfg. Co. B2920
Folding Products Corp. B2980
Folding Wall Co. B2976–2977
Gardner-Vail, Inc. B2944–2945
General Service Co. B2943
Globe-Wernicke Co. B2880–2881
Hart & Hutchinson Co. B2906–2915
Hauserman, E. F., Co. B2882–2885
Horn Folding Partition Co. B2950–2956
Klein, Henry, & Co., Inc. B2829–2840
Kocher Rolling Partition Co. B2964
Mills Co. B2841–2852
Milwaukee Stamping Co. B2916–2919
Norwood-White Co. B2886–2887
Park, Winton & True Co. B2965
Sanymetal Products Co. B2890–2899
Snead & Co. B2888–2889
Swedish Venetian Blind Co. B2966
Weis, Henry, Mfg. Co., Inc. B2921–2942
Wilson, J. G., Corp. B2967–2975
Wright & Gamber B2978–2979
Wright Metal Inc. B2853–2868


THE MAKERS OF TELESCO PARTITION
FREE WOOD FROM THE FANGS OF FIRE!
FACTS FOR ARCHITECTS
about
FLAIMPRUF
TRADE MARK REG. U.S. PAT. OFF.
WOOD
are presented on the following pages. Facts about Telesco Partition follow thereafter. . .

HENRY KLEIN & COMPANY, INC.

WITH WHICH ARE CONSOLIDATED

THE IMPROVED OFFICE PARTITION CO., AND DRIWOOD CORPORATION (EST. 1909)

Manufacturers of Flaimpruf Wood, Office Partition and Architectural Cabinet Work

GENERAL SALES OFFICE AND DISPLAY STORE

40-46 West 23rd Street, NEW YORK, N. Y.

PLANT: ELMHURST, NEW YORK

BRANCHES OR REPRESENTATIVES IN PRINCIPAL CITIES

FLAIMPRUF
TRADE MARK REG. U.S. PAT. OFF
WOOD

Origin

Flaimpruf Wood is an achievement of the Research Laboratories of HENRY KLEIN & CO., INC., who for 21 years have served architects with the highest quality woodworking products and materials.

It represents over five years of experiment to apply the latest scientific knowledge to the task of making wood fire-safe; the lack of this important advantage having compelled the use of substitute materials unsatisfactory as to beauty, strength, flexibility, ease of repair, durability, insulation against heat, soundproofness, etc. To architects who prefer the richness and beauty of wood but who have hitherto been compelled, for reasons of fire-safety, to accept a substitute, Flaimpruf Wood is recommended.

Process

Nature provides cell spaces in wood. Under high pressure, in specially built pressure tanks, a solution of chemicals is forced into these spaces. The wood is then dried and the chemicals that are used are left deposited in the cell spaces. A control system has been developed which gives us definite information as to whether each given piece of lumber has been thoroughly and properly impregnated or not. The impregnation must be thorough. Surface treatment is no protection.

Properties

Flaimpruf wood will not carry a flame, spread a flame or support combustion. It is passive in a fire. It is a non-conductor of heat. It can be beautified by finish just like ordinary wood and retains this beauty like ordinary wood. In fact, it is impossible to tell the difference in appearance between products made of ordinary wood and products made of Flaimpruf wood. Flaimpruf wood is natural wood, to which has been added fire safety.

Description of Door Test Shown Below

Under the direction of Professor Albin H. Beyer, Director of Testing Laboratories, Columbia University, many tests of Flaimpruf Wood have been made in the presence of architects, manufacturers, State, City and Federal officials, etc. For example in the test illustrated here, a door made of Flaimpruf Wood, 2 in. thick, was tested in an actual fire at 1700° F. in comparison with a metal door of the approved type.

After 5 minutes the metal door permitted the passage of panic-producing smoke and gases so dense that existence in the adjoining room was impossible.

After 10 minutes the temperature of the exterior surface of the door rose above 800° F. A few minutes later flames broke through.

The Flaimpruf door *after 60 minutes,* was still giving full protection. It passed no smoke or flame and the transmission of heat was very low. In fact, the hand could be placed on its outer surface without discomfort. The room adjoining was free from smoke, and occupancy in the room was not only possible, but possible in comfort.

Typical Uses

Interiors of homes, offices, buildings, banks, theatres, factories, institutions.

Office furniture, filing cabinets, safes.

Marine field in staterooms, libraries, saloons, lounges, partitions between cabins, mouldings, mantels.

Railroads, airplanes, elevators and escalators, stables, etc.

Continued on next page

FLAIMPRUF WOOD

Many questions have been asked by officials of Building Departments, Architects, Engineers and Builders, regarding Flaimpruf Wood. We are quoting below the questions and the answers we have furnished.

1. *What is Flaimpruf Wood?*
   Flaimpruf Wood is ordinary wood impregnated with chemicals to make it safe against fire. Nothing is taken away from the beauty and quality of wood, but its usefulness is increased and a new quality added—Fire Safety.
2. *What kinds of wood can be treated?*
   We have successfully treated Walnut, Birch, Red Oak, Maple, White wood, Basswood, Pine, Spruce, Fir.
3. *What thickness of wood can be treated?*
   We have treated wood up to 3 in. in thickness.
4. *Is the treatment thorough?*
   Every board is thoroughly treated and controlled. No surface or partial treatments are considered by us as fire safe.
5. *Is it necessary to dry the wood before treatment?*
   The wood is air dried and kiln dried before treatment as boards may contain ten, twenty, or forty per cent moisture. It would be impossible to impregnate such boards uniformly if the moisture content differs. Therefore, careful air and kiln drying to a uniform moisture content *before* impregnation is not only necessary for the treatment itself, but essential for control of the treatment later.
6. *How is Flaimpruf Wood treated?*
   The wood is impregnated under pressure up to and above 1000 lb. per sq. in. No successful treatment has been found at lower pressures. Porous wood structures may be impregnated with lower pressures, but in the same board a denser cell structure would withstand thorough impregnation. Therefore, no thoroughly impregnated and controlled material is possible with low pressure facilities.
7. *How is Flaimpruf Wood dried after treatment?*
   Treated wood must be dried very slowly, otherwise it will become brittle and hard to work. We air dry Flaimpruf Wood slowly and in specially equipped dry kilns reduce its moisture content to about 7%, which is required for wood used in cabinet work in this section of the country.
8. *Is the structure of wood interfered with by impregnating same?*
   For thorough impregnation some woods require high pressures up to 1000 lb. per sq. in., but impregnation by the Flaimpruf Process is so controlled that no injury whatever is done the cell structures. The wood is treated uniformly, thoroughly and without distortion or discoloration.
9. *Is the uniformity of the Flaimpruf Process assured and can the treatment be controlled?*
   Since wood is homogeneous matter and in every piece the cell structure differs materially, a thorough control is essential. It starts with the selection of material and ends with the final drying. We know absolutely whether each piece is thoroughly treated or not.
10. *Is there any increase in weight after treatment?*
    The weight increases about 18% to 20%.
11. *Can the wood be worked with ordinary woodworking machinery or are special machinery and tools required?*
    Ordinary woodworking machinery can be used, but the work would be comparatively slow. We have developed special tools for the working of Flaimpruf Wood.
12. *Can Flaimpruf Wood be finished like untreated wood?*
    It requires special knowledge of finishing, but otherwise the finish is the same in appearance and will last as long as untreated wood.
13. *Is the treatment of Flaimpruf Wood permanent?*
    The treatment is permanent and Flaimpruf Wood will last as long as untreated wood. The chemicals used in the treatment of Flaimpruf Wood are non-hygroscopic and therefore, at all times inactive to moisture. Only chemicals that absorb moisture become active, sweat, leach and so impair the permanency of treatment and finish.
14. *Will hardware corrode in Flaimpruf Wood?*
    Corrosion occurs only if the chemicals absorb moisture. Since the chemicals are non-hygroscopic and inactive no corrosion takes place.
15. *Will Flaimpruf Wood sweat or leach?*
    It does neither sweat nor leach.
16. *Can Flaimpruf Wood be used for exterior work?*
    It can be used for exterior work under certain conditions. The present treatment is intended for interior work.
17. *Where can Flaimpruf Wood be used to advantage?*
    Flaimpruf Wood can be used wherever wood is used today and as well in many places where other materials, because they are considered incombustible, have taken its place.
18. *How long has Flaimpruf Wood been in commercial use?*
    For over four years, for hospital and bank equipment and for partitions, wainscoting and many other products.
19. *Is there any difference in appearance between Flaimpruf Wood and ordinary wood, after manufacturing and finishing?*
    There is no difference in appearance as the treating process does not interfere with either grain, structure or color of the wood. It simply adds to the wood the quality that it does not accept, spread or carry a flame.

Our Research Laboratory will be glad to furnish any additional information you may desire.

Typical of those who have used Flaimpruf are the following:

Buildings

Bank of New York and Trust Co.
Chrysler Building
Columbia Presbyterian Medical Centre
New York and Queens Electric Light & Power Co.
New York Life Insurance Co. Building
Williamsburgh Savings Bank Building
Ziegfeld Theatre

Architects

Delano & Aldrich
Cass Gilbert
Halsey, McCormack & Helmer, Inc.
Morris & O'Connor
James Gamble Rogers
William Van Alen
Voorhees, Gmelin & Walker

Companies

Brooklyn Parking Terminal, Inc.
Electric Bond & Share Co.
Hanover Fire Insurance Co.
Harrisburg Power Co.
New Orleans Public Service Co.
Standard Accident & Insurance Co.
Standard Oil Co.

Contractors and Builders

Cauldwell-Wingate Co.
Marc Eidlitz & Son, Inc.
Charles L. Fraser
William Kennedy Construction Co.
Fred T. Ley & Co., Inc.
Starrett Bros., Inc.
Wharton Green & Company, Inc.

Continued on next page

TELESCO PARTITION

IT TELESCOPES

REG. U. S. PAT. OFF.

MOVABLE OFFICE PARTITIONS AND RAILINGS, PANELLED ROOMS, BANK SCREEN, CABINET WORK, ETC.

Features and Advantages of Standard Telesco Unit Partition (Design No. 6)

Design—In appearance, Telesco is simple, beautiful and modern. The posts are flush, and all mouldings are rounded to avoid dust-catching corners. The design may be modified or an entirely different design employed, according to the architect's requirements. There are no exposed metal fasteners.

Wood—Telesco partition is carried in stock for immediate delivery in genuine American Black Walnut, African Rope Striped Mahogany and Quartered Sawed Oak. Special woods are available upon architect's specifications.

Panel—5-ply laminated ¾-in. panel is used. This sturdy panel resists the hardest blows and knocks and brings an unusual degree of soundproofness.

Telescoping Post—The telescoping post, exclusive with Telesco Partition, can be raised or lowered to varying ceiling heights, making the partition flexible vertically as well as horizontally; thus Telesco can be taken down and re-erected with a maximum salvage value, without regard for the various ceiling heights encountered.

Simple Assembly—The assembly of Telesco is entirely sectional, all parts being fastened together with screws. It can be taken down and re-erected quickly and easily by any local carpenter or handy-man, guided by our erection booklet, which shows photographically the progressive steps of erection.

This feature is an important factor in economy of time and money, especially when emergency tenant changes are required.

Hollow Built-up Post

The post that makes New Telesco Partition different. It makes Telesco easy to erect or take down and houses the extension top that can easily be adjusted to different ceiling heights

Base—Water, acid and mop-proof. This avoids refinishing expense. Its slate-like color harmonizes with the Bower Barff finish of the Yale & Towne hardware.

Rigidity—Its sturdy construction through the use of full ¾-in. thick panels, substantial built-up posts and a heavy box-like cornice, affords the maximum degree of stability obtainable in a partition of this type.

Durability—Telesco partition, erected 21 years ago—in 1909—is still in use, proving that, even after many years of service, Telesco will still be in good condition. This is particularly true today, due to the special lacquer finish, the telescoping posts and the easy erection features which make it possible to erect and re-erect Telesco indefinitely without loss or damage.

Full Wood Panels Available—Where the architect desires to form a paneled room, full length wood panels are available. If desired, Telesco partition can also be furnished with wood panels above chair-rail, allowing glass to be substituted later.

Typical Installation of Telesco Partition in the New York Life Building, New York, N. Y.

Shows ceiling high partition in walnut

Typical Installation of Telesco Bank Screen in a Bank in Fleetwood, N. Y.

One of several types of Telesco Bank Screen which are obtainable in various woods to harmonize with surroundings. Check desks, coupon booths, counter compartments and other bank equipment in keeping with design and appearance of the bank screen

Continued on next page

Transoms

It is standard practice to have one transom over each door. However, extra transoms over section units are available, if required for extra ventilation.

Doors

The standard type of partition door is a full-light, low-glass type, as shown in the photographs. Doors can also be supplied with wood panels.

Specifications for Telesco Unit Office Partitions

Manufacture—The Contractors shall furnish and erect adjustable office partitions having hollow built up posts. Partitions shall be Telesco partitions as manufactured by HENRY KLEIN & Co., INC. (formerly Improved Office Partition Co.), 40-46 West 23rd Street, New York, N. Y.

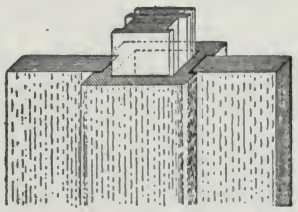
Locations — Partitions shall be installed where indicated on drawings or in the following locations (describe locations).

Material—Material shall be genuine American Black Walnut (African rope striped Mahogany or Quarter Sawed Oak).

Finish—All exposed surfaces shall be finished in a special processed durable lacquer at the factory, and shall be cleaned and wiped down after erection with approved finishing material supplied by the manufacturer.

Type—Partitions where indicated on the drawings (or mention locations) shall extend from the floor to ceiling; partitions where indicated on the drawings (or mention locations) shall be 7 ft. 1½ in. high.

Panels—Panels shall be 42 in. high, built up and veneered, 5 ply laminated, ¾ in. thick.



Sectional View of Hollow Built-up Post

A section through the post showing the substantial construction. Note how the standard sections of the partition are held in place—no flimsily fastened pilasters and base blocks, but one solid piece of cabinet work. The extension member is shown inside

Posts—Posts shall be built up, hollow, housing, telescoping extension posts.

Doors—Doors shall be 34 in. wide by 6 ft. 8 in. high by 1⅜ in. thick, built-up and veneered, single full light type, with transom over doors where they occur in ceiling height partition.

Base—Base shall have a special water and mop-proof treatment, slate colored to match hardware.

Hardware — Hardware shall be Yale & Towne manufacture, Bower Barff finish, with bit key mortise locks. Transoms shall be provided with friction pivots, top and bottom.

Glazing — Glass lights below the 7 ft. high cornice shall be glazed with (....). Doors shall be glazed with (....). Transoms and superstructure shall be glazed with (....).

Erection—Partition shall be erected in strict accordance with the manufacturer's instructions and erection manual.

Top Filler—Where ceiling height partition crosses under beams, the space between the top cornice and the floor slab—represented by the beam drop—shall have double face wallboard filler to be finished the same color as the ceiling.

Telesco Partition As a Corridor

Installation in the Nottingham Lace Works, New York, N. Y. Note the effective privacy without the loss of light

Subdividing a Reception Room

This shows how a reception room can be divided into beautiful individual offices

Continued on next page

Stock

Telesco is carried in stock in large quantities for immediate shipment, whether of Walnut, Mahogany or Quartered Oak. Daily this stock is renewed in our 10-acre plant at Elmhurst, N. Y.

Service

Although any carpenter or handy-man can assemble Telesco, we are equipped to handle complete installations.

Telesco Number 12 Partition

For surroundings that do not require the elegance of standard Telesco Partition. No. 12 Partition at a lower price will be found highly satisfactory. It retains such Telesco advantages as the telescoping post, waterproof base and easy erection characteristics.

Booklet containing specifications and complete information, sent on request.

Telesco Special (Design No. 15)

For conditions demanding a partition that is more than ordinarily ornamental Telesco Special (Design No. 15) will be made to order. The posts are fluted; the chair-rail and base have a modern trend harmonizing with the posts; the ensemble presents a richness of appearance that will distinguish the office in which the partition is used

Panelled Rooms

Our cabinet work is notable for its faithful execution of architectural detail and specifications. We have panelled many exquisite offices in fine woods. Panelling is made to order in any period or special design desired.

Our cabinetmakers are craftsmen of many years' experience. Our factory and facilities are large and modern.

Flaimpruf Wood

All products of Henry Klein & Co., Inc., including partition, railings, panelled rooms, banking screen, etc., are also obtainable in Flaimproof Wood.

Display Store and Exhibit

A large store-level display room at 40-46 West 23rd Street, New York (just off Fifth Avenue), is maintained especially for the convenience of architects and their clients. Here are exhibited actual installations of Telesco Partition, panelling, railing, bank equipment, etc, just as they would look in every-day use. A permanent exhibit is also maintained for the further convenience of the architect in the Architects' Sample Building, 101 Park Avenue, New York.

Some Prominent Users of Telesco Partitions

American Radiator Company
Burroughs Adding Machine Company
Colgate & Company
E. I. duPont de Nemours & Company
General Electric Company
International Silver Company
Lorillard Tobacco Company
New York Stock Exchange
New York Telephone Company
Remington Cash Register Company
Travelers Insurance Company, Hartford, Conn.
United States Chamber of Commerce
United States Rubber Company
Westinghouse Electric & Manufacturing Company
Western Electric Company

Office Buildings Equipped Throughout with Design No. 6 Telesco

Building	Architect	General Contractor
Irving Trust Co., 1 Wall St., New York, N. Y.	Voorhees, Gmelin & Walker	Marc Eidlitz & Son, Inc.
Bank of New York & Trust Co., New York, N. Y.	Benjamin W. Morris	Marc Eidlitz & Son, Inc.
Baltimore Trust Co., Baltimore, Md.	Taylor & Fisher, Smith & May	J. Henry Miller Inc.
Ohio Savings Bank Bldg., Toledo, Ohio	Mills, Rhines, Bellman & Nordhoff	C. A. Bentley & Sons
National Savings Bank Bldg., Albany, N. Y.	Halsey, McCormack & Helmer, Inc.	Wm. G. Sheehan Construction Co.
New York Life Bldg., New York, N. Y.	Cass Gilbert	Starrett Bros. & Eken, Inc.
Genesee Valley Trust Bldg., Rochester, N. Y.	Voorhees, Gmelin & Walker	A. Frederichs & Sons
Title Guarantee & Trust Bldg., New York, N. Y.	John Mead Howells	Thompson Starrett Co.
Reynolds Tobacco Bldg., Winstom-Salem, N. C.	Shreve, Lamb and Harmon	Jas. Baird Co., Inc.
City National Bank, Bridgeport, Conn.	Dennison & Hirons	Dwight P. Robinson & Co., Inc.

Two Views of the Rejuvenated Pier of the Ward Line, New York, N. Y.

The view at the left shows our complete facilities for equipping an entire office, and the one at the right an example of a panelled directors' room

Continued on next page

A Panelled Room at the Office of the Consolidated Indemnity Co.

This room is formed entirely of standard Telesco units. Should tenant changes be necessary this paneling can be taken down and re-erected with practically no loss of material

NEW YORK LIFE INSURANCE COMPANY BUILDING

51 MADISON AVENUE MADISON SQUARE NEW YORK, N Y

STANLEY BARNABY
SUPERINTENDENT OF BUILDING

Henry Klein & Company, Inc.
40 West 23rd Street,
New York City

Gentlemen:

Following the completion of the partition installations for many of our tenants in the New York Life Building we wish to express our approval and complete satisfaction with the work and service rendered.

Several times we have found that the many problems presented by modern office arrangement make it desirable to have partition that is movable, and flexible, thus anticipating future alterations. It is also necessary that partition have an appearance and finish that blends favorably with desks and furnishings, giving an office the effect and appearance of being "one harmonious whole".

These qualities are fully embraced in your new Telesco Partition and this together with its other special features, and a remarkably quick erection time, make it most fitting for our tenants' needs. It may also interest you to know that many of our tenants have proudly commented upon the rich, full-grained Walnut, Mahogany and Oak Woods that are used throughout.

We hope to use this partition on many future occasions and unhesitatingly commend its outstanding value and superiority.

With best wishes

Yours very truly,

NEW YORK LIFE INSURANCE CO. BLDG.

Stanley Barnaby
Superintendent

SB:WS

WILLIAM MARTIEN & COMPANY, INC.
REALTORS
COMMERCIAL AND INDUSTRIAL REAL ESTATE
1701 BALTIMORE TRUST BUILDING
BALTIMORE, MD.

September
Twenty-sixth
1 9 3 0

Henry Klein & Company, Inc.
Elmhurst, Long Island, New York

Gentlemen:

In the operation of the Baltimore Trust Building it was our desire to as speedily as possible put tenants in possession of space.

With this in mind, we looked favorably upon the adoption and use of Telesco Partition as a means of accomplishing this end. From past experience we have found this partition readily adaptable to all forms of office division and arrangement; is easy to errect, requires the minimum time and in later years when moved, the salvage is from 95 to 97%.

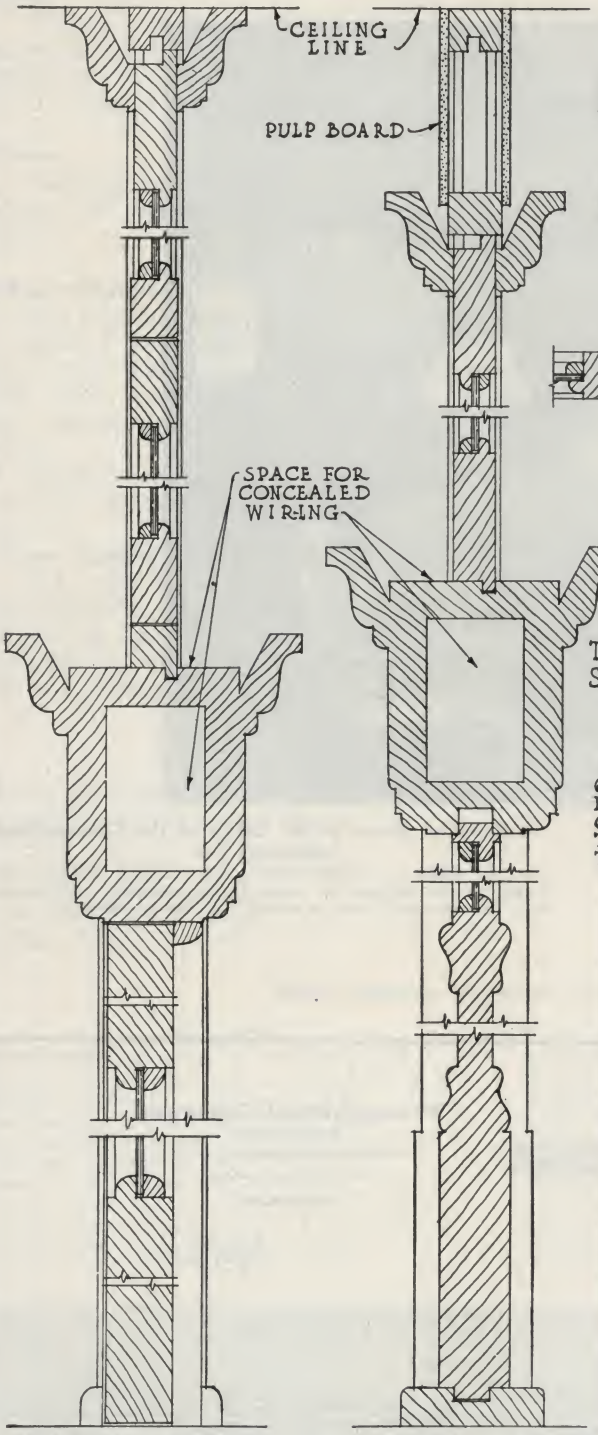
Another feature of Telesco Partition is that construction work may be carried on quietly with a minimum of dust and dirt producing in the end artistic, handsome and attractive quarters.

Yours very truly,

Irwin L. Sperry
Operating Manager.

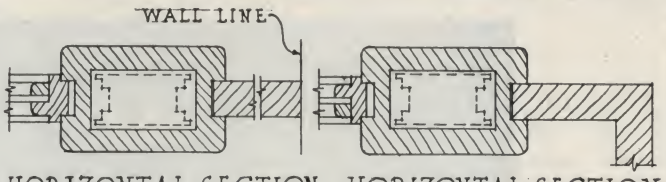
ILS:RH

Continued on next page



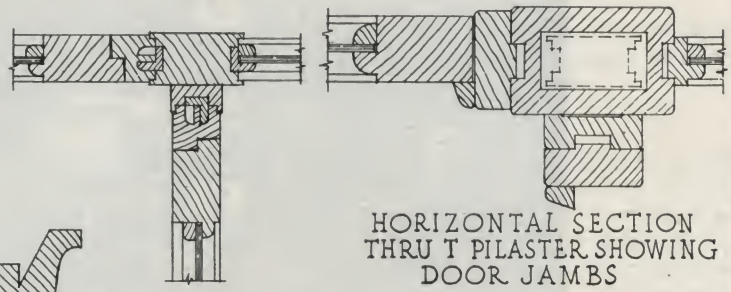
VERTICAL SECTION A-A

VERTICAL SECTION B-B



HORIZONTAL SECTION THRU PILASTER SHOWING SCRIBING BOARD

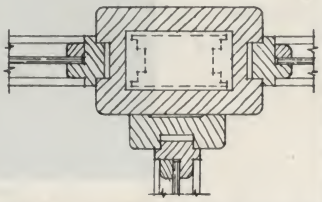
HORIZONTAL SECTION THRU PILASTER SHOWING CORNER CONSTRUCTION



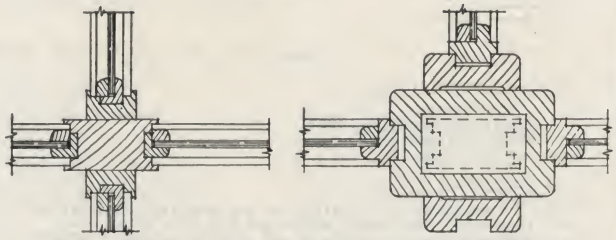
HORIZONTAL SECTION THRU T PILASTER SHOWING DOOR JAMBS

HORIZONTAL SECTION THRU SUPERSTRUCTURE SHOWING T EXTENSION POSTS & TRANSOM

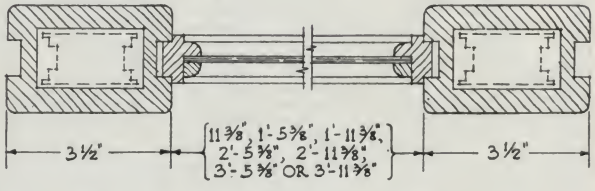
EACH POST IS BUILT UP HOLLOW 6'-11" HIGH AND ENCLOSES THE EXTENSION POST, WHICH IS 6'-0" HIGH AND CAN BE RAISED TO ACCOMODATE CEILINGS UP TO 12'-3" HIGH



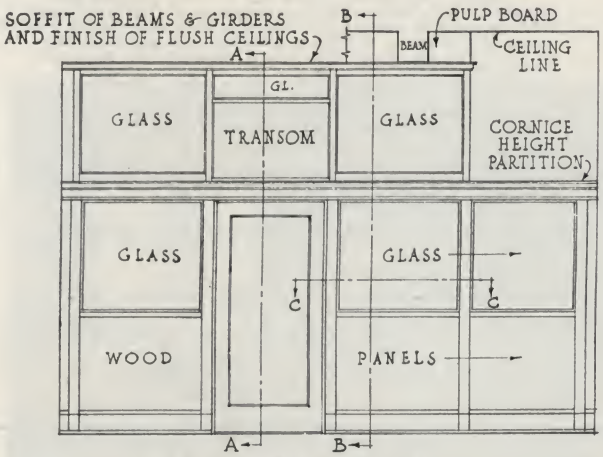
HORIZONTAL SECTION THRU T PILASTER



CONSTRUCTION OF 4 WAY PARTITION



HORIZONTAL SECTION C-C



ELEVATION

HENRY KLEIN & CO., INC.	Nº6 TELESCO UNIT PARTITION	SCALE 3"-1'-0"

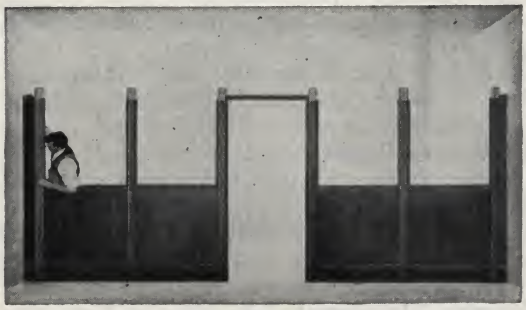
Continued on next page

Typical Installation of Telesco Partition

Setting Door Posts

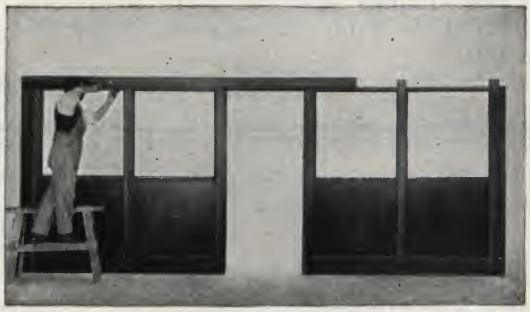
Setting Panels—the Panel Fits Snugly in Grooves of Post and Floor Shoe

Setting Post—Post Is Secured to Floor Shoe with Angle Iron



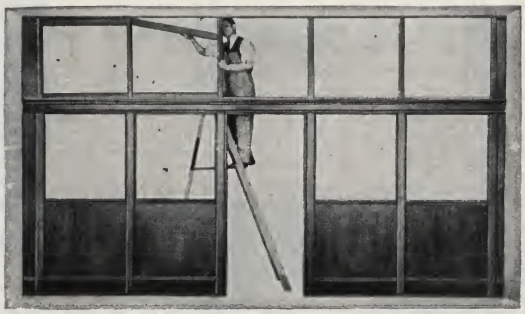
Scribing to Wall

Setting Headers—Headers Dropped Into Place Between Grooves in Post



Screwing in Fascia

Raising Telescoping Posts and Securing Same to Ceiling Strip



Setting Sash Bars—Complete Frame for Glass in Top Section

This page shows the simple steps in the erection of New Telesco Partition—nothing complicated is involved, as you will readily see. When changes are necessary, New Telesco can be taken down and re-erected in the same easy manner—without damage, without loss, conveniently and quickly.

The Complete Job Erected and Finished with Door and Transom

All units are standardized and kept in stock ready for immediate shipment. You are always sure that any additional material you purchase will match that which you have on hand and furthermore, there is no delay, no confusion—when New Telesco is used for subdividing office space.

Continued on next page

TELESCO RAILINGS

Telesco Sanitary Style Railing

Harmonizes with Telesco Partition in appearance, design, construction and flexibility.

Furnished in American black walnut, striped African mahogany and quartered oak; with 5 ply laminated ¾-in. panels that prevent bulging or warping regardless of length of section. Ample space is left between panels and floor for mop or vacuum to clean up.

Anchored to floor with iron rods that run through center of the posts. Each post is 2¼x3½ in., and is set into a deep iron floor socket, which holds the railing rigid. This construction avoids the necessity of projecting braces. The post is flush, and grooved on two sides to receive panel unit.

Cap—4¼ in. is standard width. A wider cap is available if desired, or it can be fitted with a shelf to provide working space.

Gates—Single or double swung. Single acting gates are provided with gate latches.

Height—Standard heights are 36 and 42 in.

Specifications for Telesco Unit Office Railing

Manufacture—The contractor shall furnish and erect portable office railings where indicated on plans. Railings shall be Telesco as manufactured by Henry Klein & Co., Inc. (formerly The Improved Office Partition Company), 40-46 West 23rd Street, New York, N. Y.

Location—Railing shall be installed where indicated on drawings or in the following locations (mention locations).

Material—Material shall be genuine American Black Walnut (African rope striped Mahogany or Quarter Sawed Oak).

Height—Railings shall be 36 in. (42 in.) from the finished floor to top of railing.

Type—Railing shall be of the solid panel type; panels to be built up and veneered, 5 ply laminated, ¾ in. thick.

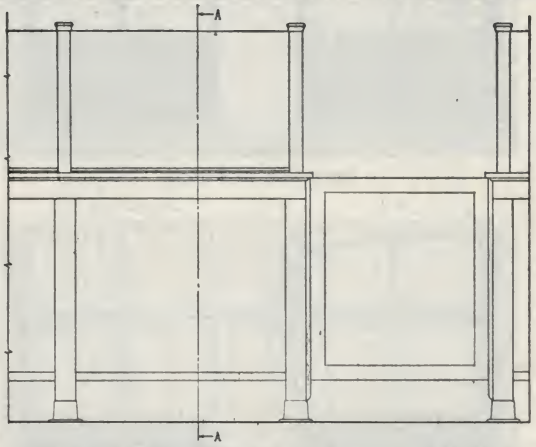
Posts—Posts shall be built up, grooved on two sides to receive section units, and shall rest in cast-iron base or floor shoe, and shall be secured to the floor with ⅝ in. steel through bolts, extending from the under-side of the cap into the floor slab below, as required by manufacturer's instructions.

Gates—Gates shall be of 2 ft. 6 in. wide, equipped with Bommer double acting spring hinges (or if single acting with latches of standard design) finish to be Bower Barff.

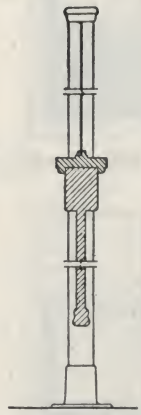
Base—Base shall be sanitary type, in accordance with the manufacturer's standard design.

Finish—All exposed surfaces shall be finished in a special processed durable lacquer at the factory, and shall be cleaned and wiped down after erection with approved finishing material supplied by the manufacturer.

Erection—Railing shall be erected in strict accordance with the manufacturer's instructions.



ELEVATION OF 42" HIGH RAILING WITH 24" HIGH GLASS EXTENSION
Scale ⅜"-1'-0"

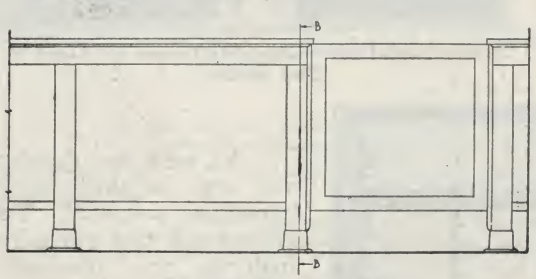


VERTICAL SECTION A-A
Scale ¾"-1'-0"

TELESCO RAILING WITH PLATE GLASS EXTENSION ABOVE. AN IDEAL METHOD OF FORMING SEMI-PRIVATE OFFICES OR CORRIDORS ON LARGE FLOOR AREAS.

NOTE THE ⅝" STEEL ROD EXTENDING FROM THE UNDER SIDE OF THE RAILING CAP INTO THE FLOOR SLAB BELOW. THIS BOLTED INSIDE ANCHORING ELIMINATES STUB TOE BRACES, AND AFFORDS THE MAXIMUM DEGREE OF RIGIDITY.

TELESCO RAILING IS SIMILAR IN DESIGN TO TELESCO PARTITION, HAVING THE SAME BASE, MOULDING, POSTS, AND FULL ¾" THICK PANELS.



ELEVATION OF 36" HIGH RAILING
Scale ⅜"-1'-0"

VERTICAL SECTION B-B
Scale ¾"-1'-0"

HENRY KLEIN & CO. INC.	Nº 6 TELESCO UNIT RAILING	SCALES ⅜" & ¾"-1'-0"

Continued on next page

TELESCO AND SPECIAL BANK SCREEN AND BANK EQUIPMENT

The Telesco line of bank fixtures is modern and complete. It includes bank screen, bronze wickets, check desks, coupon booths, counters, benches and settees, and directors' room furniture.

Standard Bank Screen

Bank Screen is made in three distinct designs, and is available for immediate shipment. Full size detailed drawings will be furnished upon request.

The assembly is sectional, and retains the portable features of Telesco partition. Only the finest walnut and mahogany woods, carefully selected for figure and grain, are used.

Its design is the modern "friendly type. Panels are ¾ in. thick, 5-ply laminated, with our special acid-proof and mop-proof base. Arm rest on customer's side is supported by ornamental brackets.

Quantity production permits an unusually moderate price.

Wickets

Our standard wicket is of solid bronze, with black carrara glass deal plate located 48 in. from the floor level.

These wickets may be hinged or sliding.

Coupon Booths

Telesco Coupon Booths are supplied in genuine Walnut or Mahogany, and are sectional. They may be obtained in any size or arrangement of units, giving a maximum degree of flexibility.

Check Desks

Check Desks are of sturdy construction, and can be obtained either in single, double, or wall types, with polished plate glass tops. The number of check compartments is optional.

Counters

Telesco sectional counters are of eight (8) types, permitting any arrangement of money drawers and tills, pistol pockets, shelves and drawers. As with Telesco Bank Screen, the assembly is sectional. Panels are ¾ in. thick, and our acid and mop-proof base is standard on all counters. Linoleum or wood top is optional. Counters are furnished in either walnut, mahogany or birch.

Bank Furniture

Directors' tables, benches, settees, and coat racks, constructed of genuine woods, beautifully finished, complete a most comprehensive line of bank equipment.

Special Bank Screen

We are equipped to execute specially designed banking screen and counter units in accordance with architect's details. Individuality can be achieved through the use of inlays, various rare woods and decorative mouldings.

At the Left Is an Illustration of One of Our Standard Stock Bank Screens
Parts of which are available for immediate shipment

The Bank Screen at the Right Is of Modern Design and Constructed of Beautifully Inlaid Woods
It was fabricated and installed in strict accordance with the architect's designs and specifications

HENRY KLEIN & COMPANY · Inc.

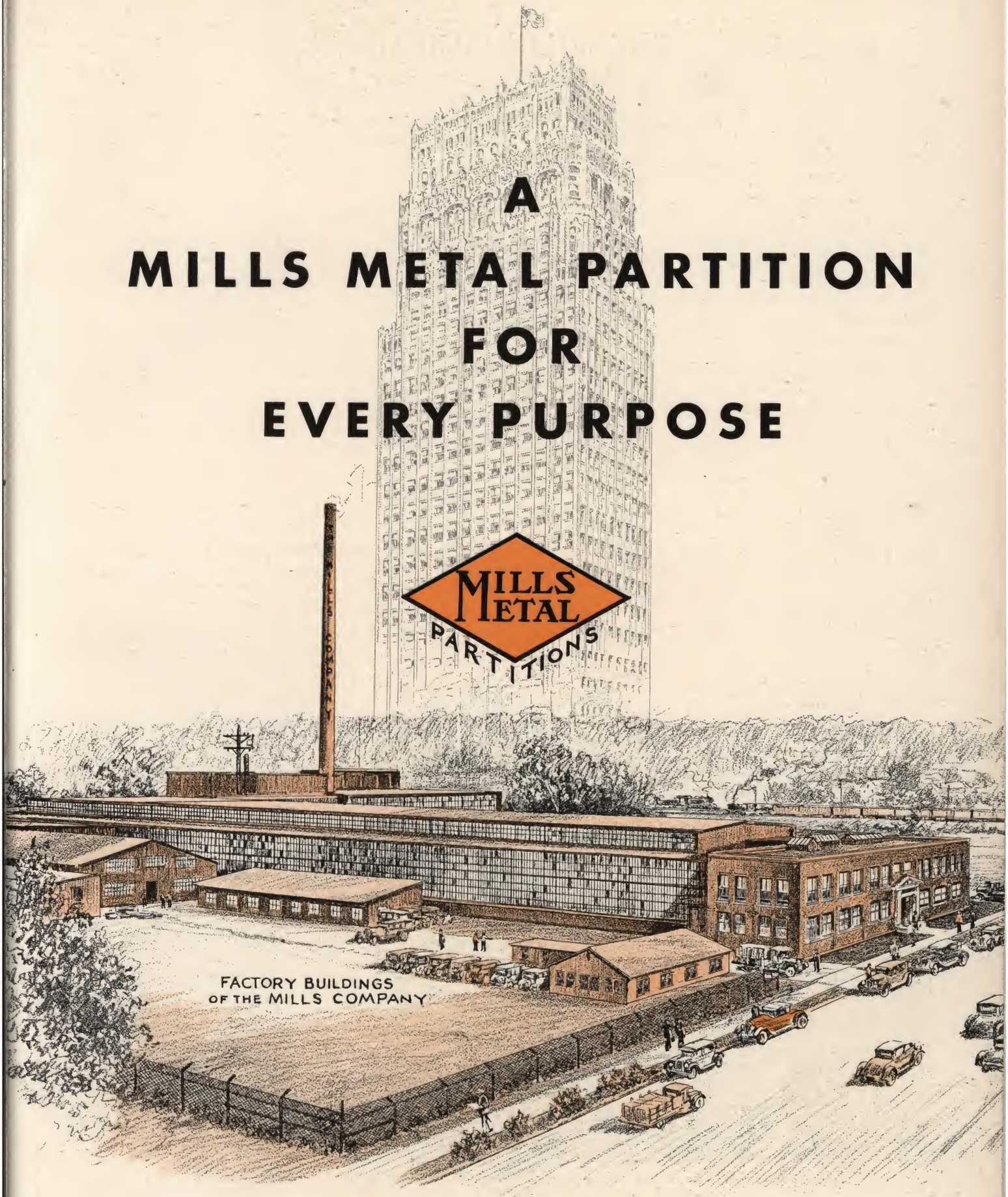
ESTABLISHED 1909

40 to 46 West 23rd Street · New York City

Branches or Representatives in Principal Cities

PLANT · Elmhurst, Long Island, N. Y.

A MILLS METAL PARTITION FOR EVERY PURPOSE



THE MILLS COMPANY

Mills Metal Partitions for Every Purpose

Wayside Road at Nickel Plate Railroad

CLEVELAND, OHIO

NEW YORK OFFICE, 11 West 42nd Street
SALES AGENTS IN ALL PRINCIPAL CITIES

Products

MILLS METAL EXECUTIVE OFFICE PARTITIONS.

MILLS METAL GENERAL OFFICE PARTITIONS.

MILLS METAL COMMERCIAL PARTITIONS.

MILLS METAL STANDARD TOILET PARTITIONS.

MARBLMETAL TOILET PARTITIONS.

MILLS METAL SHOWER DRESSING ROOMS AND BEAUTY PARLOR PARTITIONS.

MILLS METAL CUBICLES AND SCREENS.

The Mills Company

With a background of eighteen years metal working experience The Mills Company is a pioneer in making partitions of everlasting steel. Throughout the entire period of the development of steel partitions we have been intimately familiar with the various developments and improvements that have marked the rapid progress of this swiftly moving industry.

We have in fact made important contributions to this development; improvements in design, construction and appearance that have played their own important part in gaining still wider acceptance of the idea of partitions built of interchangeable steel units.

Along with these developments in design and construction has come, also, as an integral part of the whole, a large factory devoted entirely to partition building; a substantial engineering organization schooled in partition design, and a national sales organization with offices in more than sixty of the leading centers of the United States.

The Mills Company offers, therefore, an organized experience that has all of the substantiality of years of experience and the vigor of youth to advance those pioneering ideas which make for constant betterment.

Office of chief executive of large concern showing how such an office looks partitioned with Mills Metal Executive Office Partitions.

Mills Metal Executive Office Partitions

Beautiful, entirely modern design. Lower panel is two steel sheets insulated with a sound-deadening material, a material entirely beyond the experimental stage. Actual tests have proved this partition to be practically soundproof.

Made standard in units from 20 inches wide to 60 inches wide in multiples of five inches so that wall fillers never have to exceed five inches. Panels are entirely interchangeable, a 40-inch panel is interchangeable with standard 40-inch door. Designed to accommodate any type or ordinary thickness of glass. The glass is inserted without the use of loose mouldings or screws. A corner is turned with standard units without any increase in post dimension.

Where exceedingly long runs of partition are required without intersecting partitions, the outside appearance is the same as short runs because a standard ceiling post inside regular post provides necessary reinforcements.

The cornice is double strength. Instead of one piece, we have provided two members, the outside architectural member being reinforced by an inside member and both rigidly anchored down to the post by a specially designed clip.

All transoms center pivoted and operated by positive-action concealed type operator. Floor channel is anchored absolutely tight to the floor which means that regardless of how uneven the floor may be (and nearly all floors are uneven) the partition base adheres tightly to the floor.

All vertical and horizontal sections are moulded instead of plain and each has twelve right angle bends giving greater strength, solidity and rigidity.

Additional Information

Opposite page gives additional information on design, construction, finish, etc.

Continued on next page

Mills Metal General Office Partitions

The Mills idea of interchangeable units has been further exemplified in our design and construction so that a partition for lesser important offices may be had in exactly the same beautiful design and exceptional structural strength as the Executive Offices Partition except the lower panels are not insulated.

This is our General Office Partition, an exact duplicate of our Executive Office except that the insulated panels are replaced with a single steel panel so assembled that they cannot rattle. Furnished at a lower price, it is widely used for general offices.

For both office types we recommend cornice height below the lowest ceiling obstruction, with a metal or plaster board filler to the ceiling with the filler finished the same as the ceiling.

A Large General Office

Effective use of Mills Metal General Office Partitions. Neat, attractive, but less expensive than the Executive Office Partition shown on the following page

Both Executive and General Office partitions are shipped from factory in units of four different cornice heights—7 ft. 4 in.; 8 ft. 8 in.; 9 ft. 2 in. and 10 ft. 4 in. —which will accommodate any ordinary ceiling heights with small filler above the cornice.

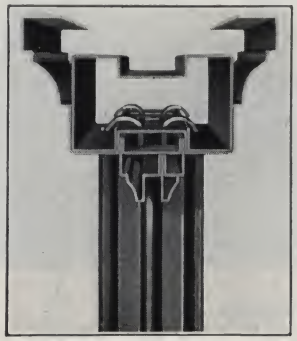
When it is desired we furnish superstructure for building any cornice height to ceiling. Transoms, grilles, wickets are all standardized and easily inserted in the field without changing units. Standard door punching is so designed as to accommodate seven grades of Yale and Towne locks.

Finishes

All Mills Metal Office Partitions are finished in any plain color, two-tone effects or grained in perfect representation of wood.

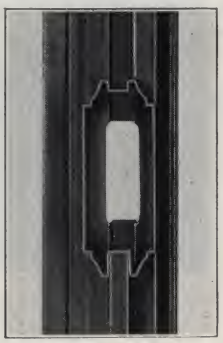
Showing How Ornamental and Structural Cornice Members Are Rigidly Anchored to the Panel Uprights

Only one screw, and it is concealed. Openings on each side of bolt provides for dropping wires down through the post



End View of Ornamental and Structural Cornice and Another View of Cornice Hook Bolt

Construction that is strong and rigid



End View of One-piece Chair Rail

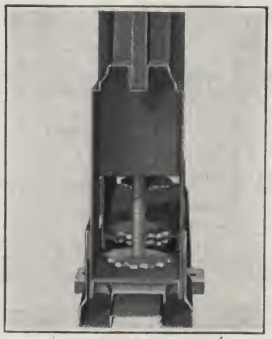
Note insulated panel below; groove for inserting glass above; opening in post for running of conduit

Telescopic Adjustable Double Wall Filler

Note how standard panel is anchored to the wall filler by through-bolted clip. Lower view shows how spacer forms four-point truss

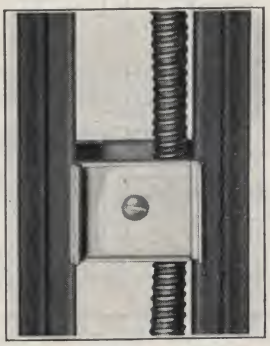
Plinth Block Removed to Show Adjustable Floor Fastening

Note how floor channel is anchored to floor. Above the leveling device is conduit; above conduit is friction clip for snapping plinth block into place



End View of Base and Floor Channel

Note how floor clamp holds floor channel to the floor and brings all floor channels into perfect alignment



Through-bolted Clip

Spacer holds post at four points and when clip is drawn tight the four points of spacer form a four-way truss giving great strength and extreme rigidity

Plinth Block Snapped into Place

(Note cut at left margin.) Note how tight and neat the plinth block fits. No screws or bolts exposed

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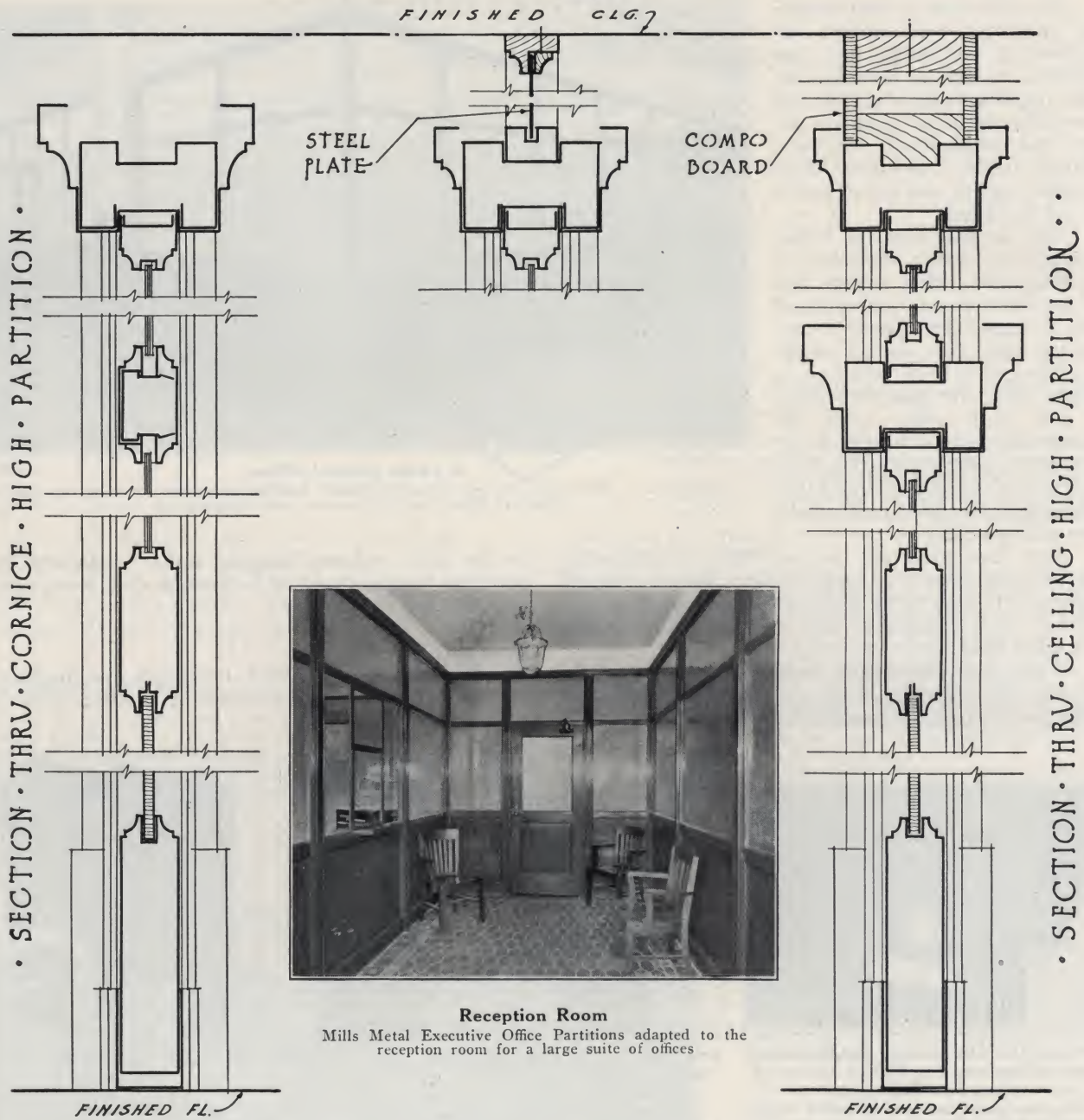
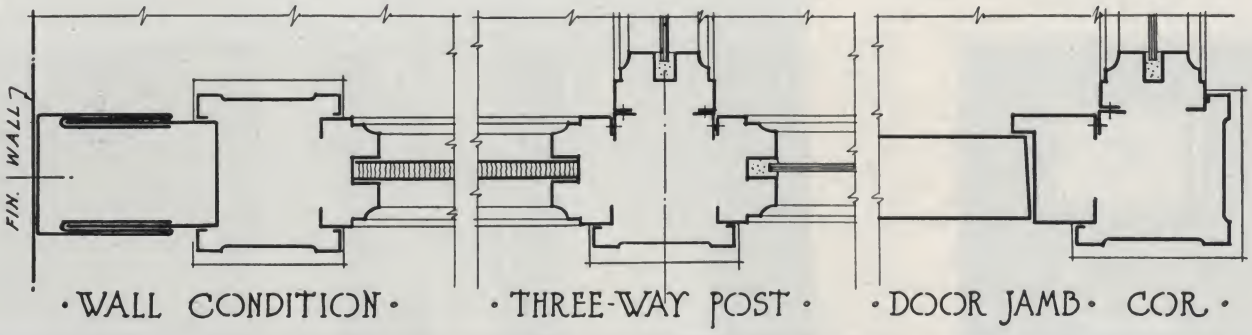


Reception Room

Mills Metal Executive Office Partitions adapted to the reception room for a large suite of offices



• DETAILS • OF • EXECUTIVE • OFFICE • PARTITIONS •

SCALE 3" = 1-0"

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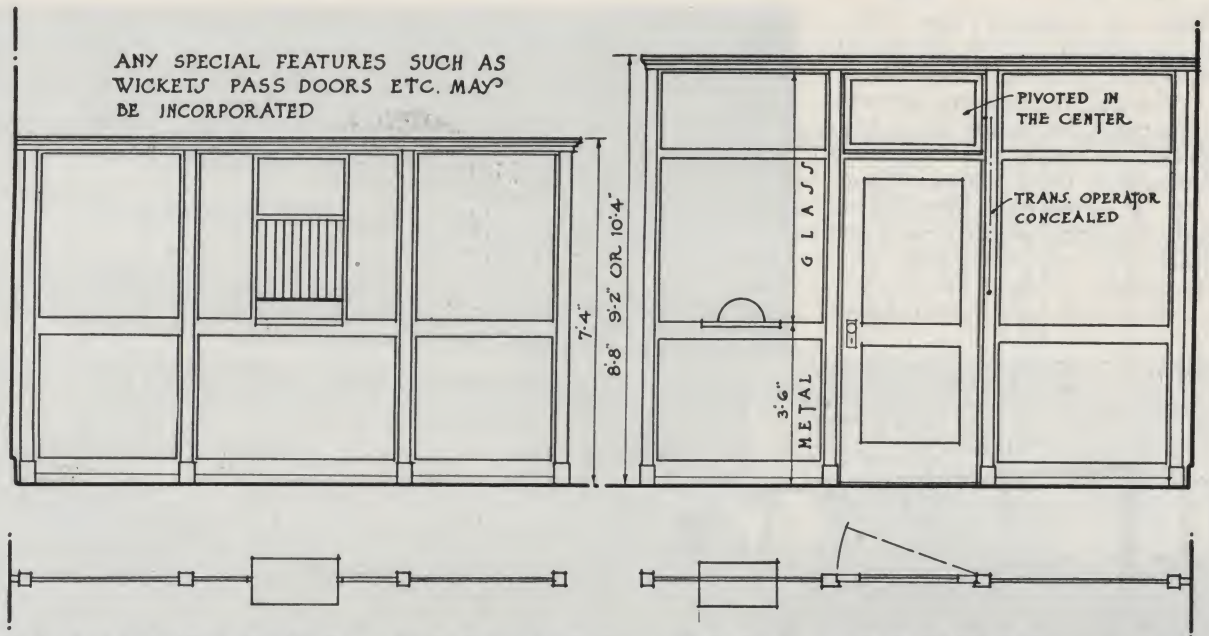
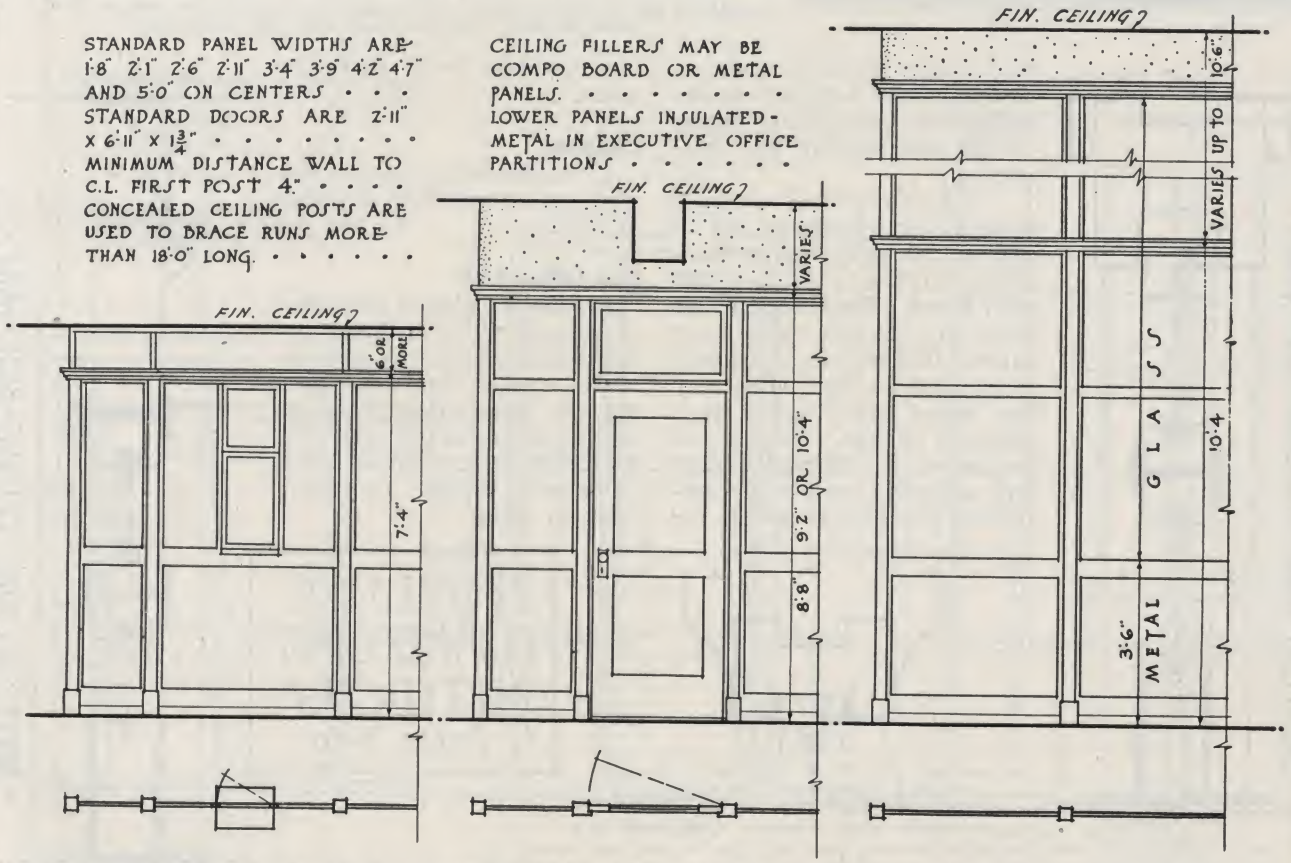


· ELEVATIONS · CORNICE · HIGH · PARTITIONS ·

STANDARD PANEL WIDTHS ARE 1'-8" 2'-1" 2'-6" 2'-11" 3'-4" 3'-9" 4'-2" 4'-7" AND 5'-0" ON CENTERS . . .
STANDARD DOORS ARE 2'-11" X 6'-11" X 1¾" . . . . . .
MINIMUM DISTANCE WALL TO C.L. FIRST POST 4" . . . .
CONCEALED CEILING POSTS ARE USED TO BRACE RUNS MORE THAN 18'-0" LONG. . . . . .

CEILING FILLERS MAY BE COMPO BOARD OR METAL PANELS. . . . . .
LOWER PANELS INSULATED - METAL IN EXECUTIVE OFFICE PARTITIONS . . . . . .



· ELEVATIONS · CEILING · HIGH · PARTITIONS ·

ELEVATIONS · OF · EXECUTIVE · & · GENERAL · OFFICE · PARTITIONS ·

SCALE ¼" = 1'-0"

Continued on next page

Mills Metal Commercial Partitions

Made in standard size interchangeable units of 20, 30, 40, 50, 60, 80 and 100 in. wide and 42 and 21 in. high. Vertical connections between units are made by means of a 3-in. 4-way post to which all units are bolted, the units being joined horizontally by a substantial interlocking I-section. A standard door is interchangeable with any 40-in. unit.

Adaptable to any factory use. Glass, wire mesh, grilles, ventilators can replace standard units as desired. Steel and glass panels easily interchangeable by means of the intermediate rail connection.

Telescoping floor channels provide for adjustment up to 2½ in. so that the partition adheres tightly to the most uneven floors. Permits plenty of room for electric wires and cables. The bottom of the post is punched so that wires may run across entire run of partition if desired. Because of its extreme durability, flexibility and attractive price our Commercial Partition is one of the most widely used partitions made.

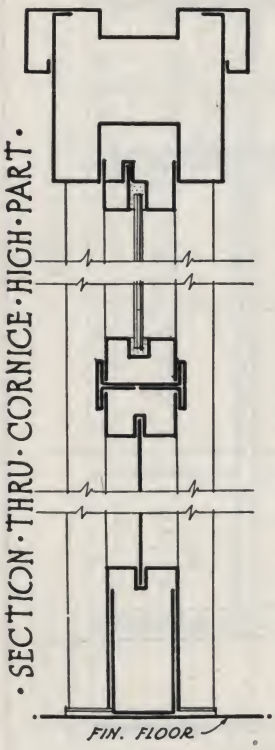
Mills Metal Commercial Partitions Ceiling High in Steel and Glass
Right-hand side of this illustration shows partition extended up into monitor 26 ft. 4 in. above the floor. Left-hand shows wide lights cornice high

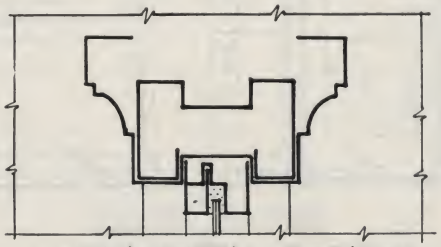
Finishes

Standard olive green. Any other color specified at small extra cost.

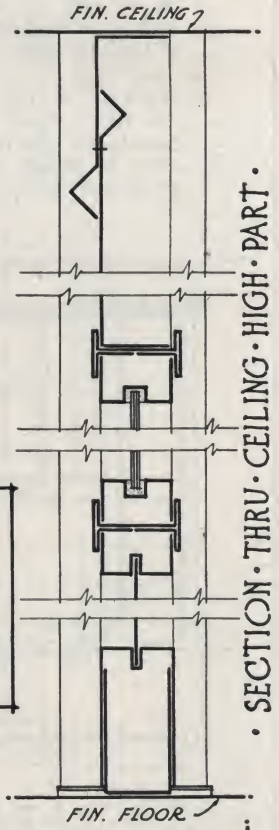
For Office Use

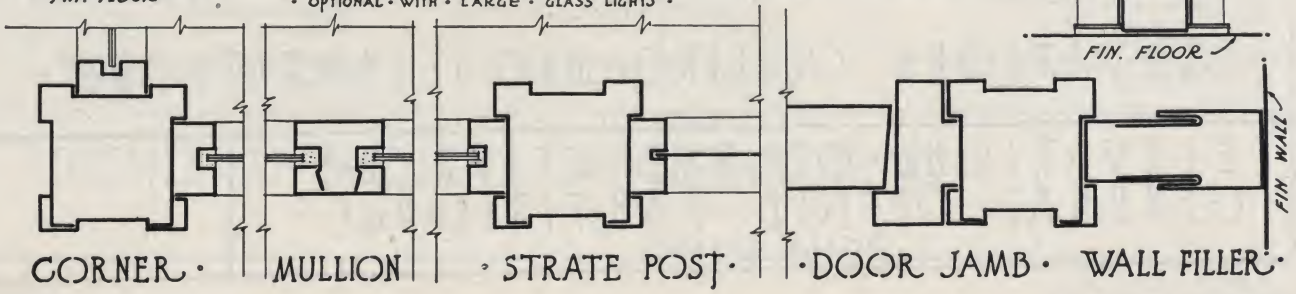
Narrow lights of glass may be replaced with wide lights and box cornice replaced by an ornamental cornice, thus transforming the Commercial Partition into a substantial neat and trim appearing office partition which is entirely suitable for many types of office.





DETAILS OF COMMERCIAL PARTITIONS
SCALE 3" = 1'-0"





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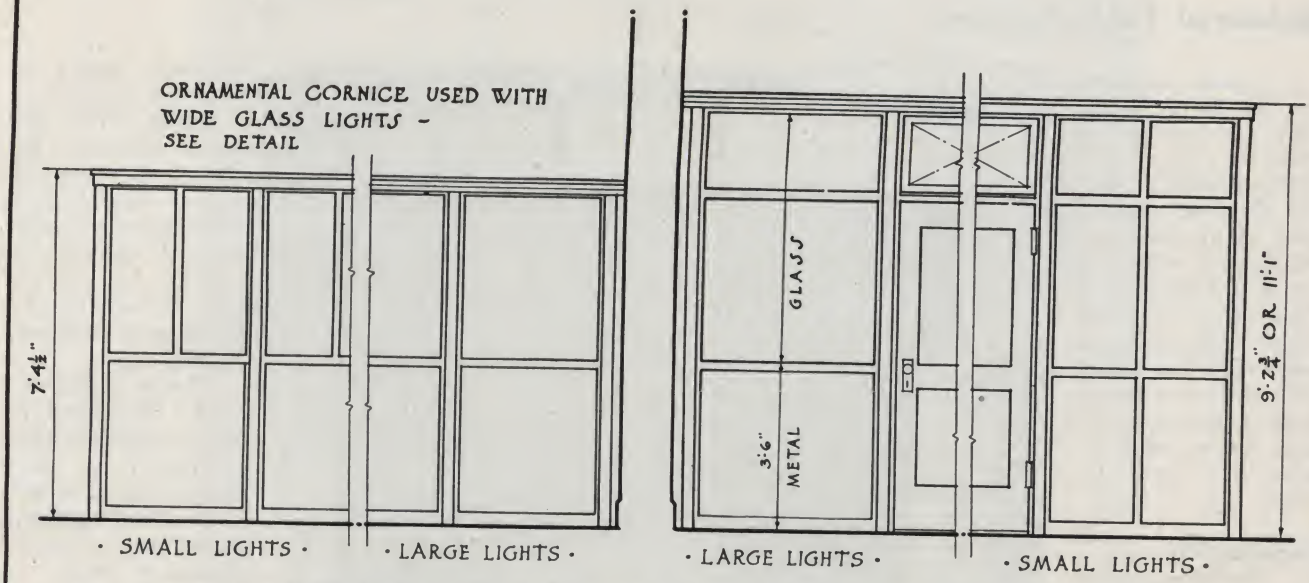
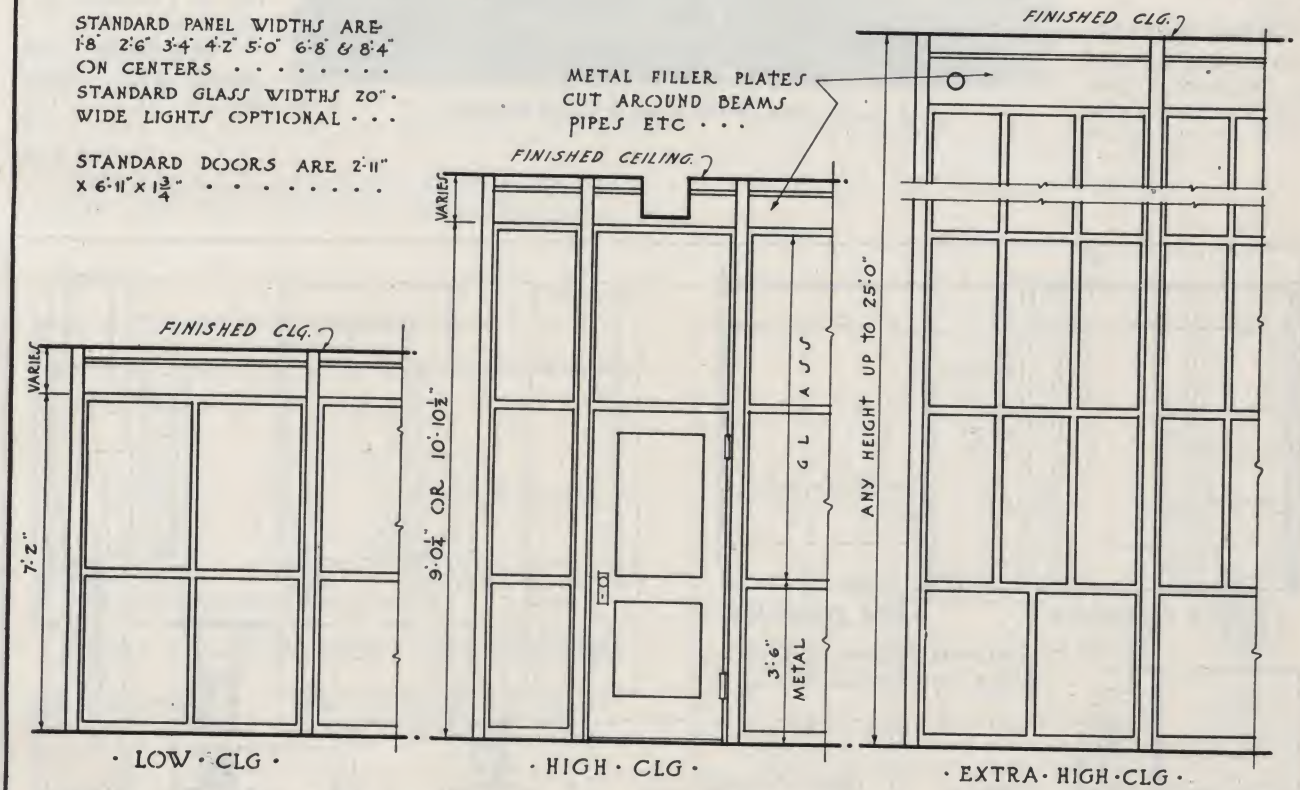


· ELEVATIONS · CORNICE HIGH · PARTITIONS ·

STANDARD PANEL WIDTHS ARE 1'-8" 2'-6" 3'-4" 4'-2" 5'-0" 6'-8" & 8'-4" ON CENTERS . . . . . .
STANDARD GLASS WIDTHS 20" · WIDE LIGHTS OPTIONAL . . .

STANDARD DOORS ARE 2'-11" X 6'-11" X 1¾" . . . . . .



· ELEVATIONS · CEILING · HIGH · PARTITIONS ·

· ELEVATIONS · OF · COMMERCIAL · PARTITIONS ·

SCALE 1" · 1'-0

Continued on next page

Marblmetal Toilet Partitions

A toilet partition for the finest buildings. A beautiful, smooth slab ¾ in. thick, insulated, giving the fine appearance of marble without the bad effects of porosity. Easy to keep clean. Can be refinished from year to year with the result the partition is always clean, neat and attractive. Being made of steel it lasts for years.

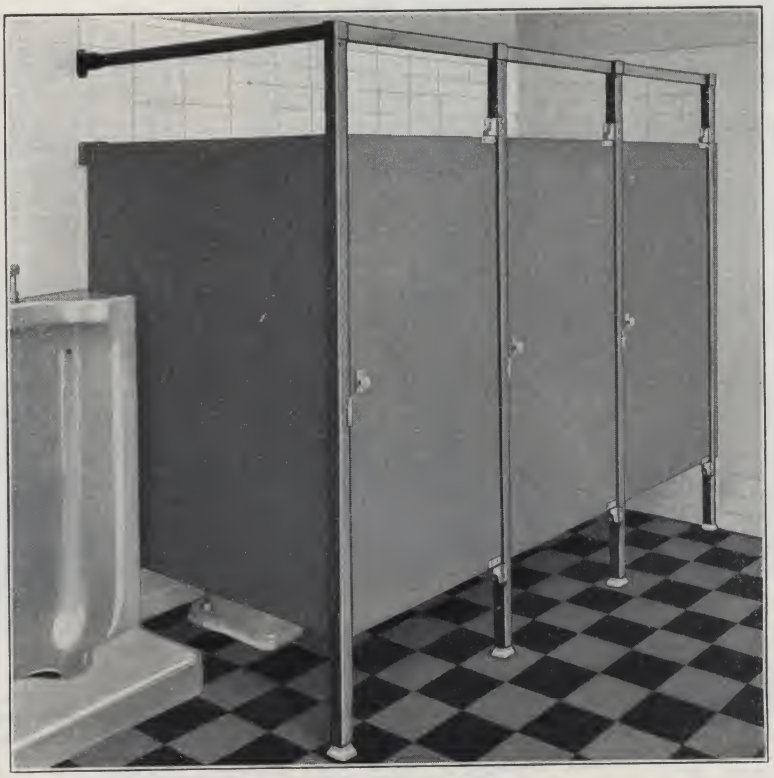
Construction

Posts—1¾-in. square seamless tubing, absolutely plain, no fluting, crevices or ledges of any kind to form lodging places for dirt.

Head Rail—1¾ x1-in. rectangular tubing. Designed in conformity with the general plain design of the entire partition.

Shoe—Will not rust or corrode. Inside of the post instead of outside, positive insurance against concealed failure. Adjustable for uneven floors. Beautifully designed and absolutely sanitary.

Cap — Pressed metal. Furnished die cast aluminum alloy if desired at extra cost. Designed to hold the head rail rigid and to conform to the architectural beauty of the installation.

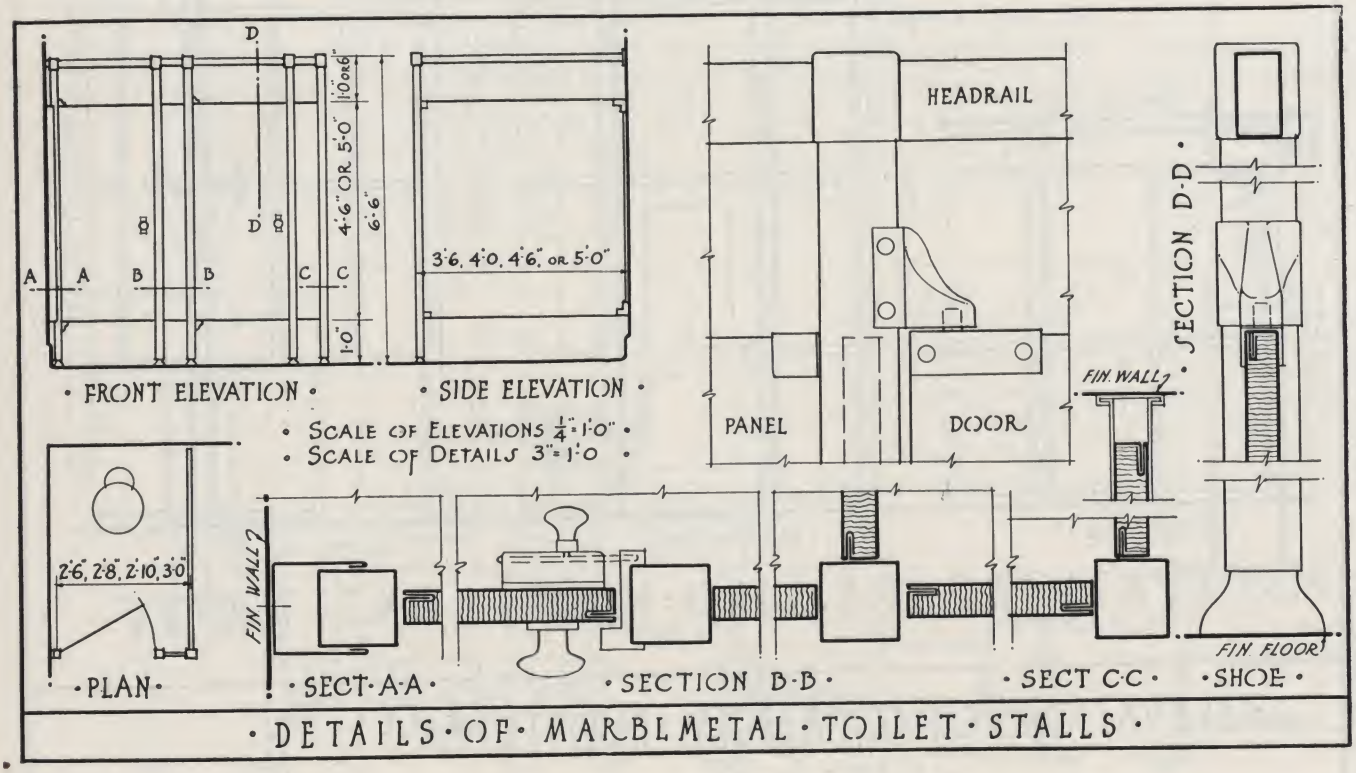


A Good View of Marblmetal Toilet Partition

Finish

Finished standard gray, special colors can be furnished at a small extra cost.

Hardware—See second page following.



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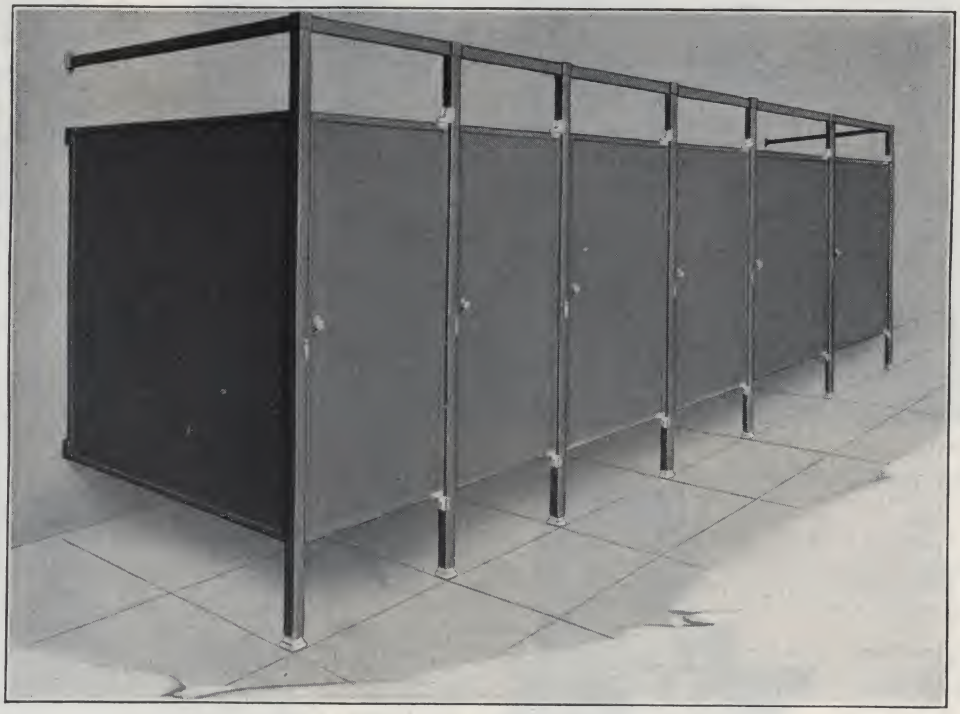
Mills Metal Standard Toilet Partitions



Mills Metal Standard Toilet Partitions

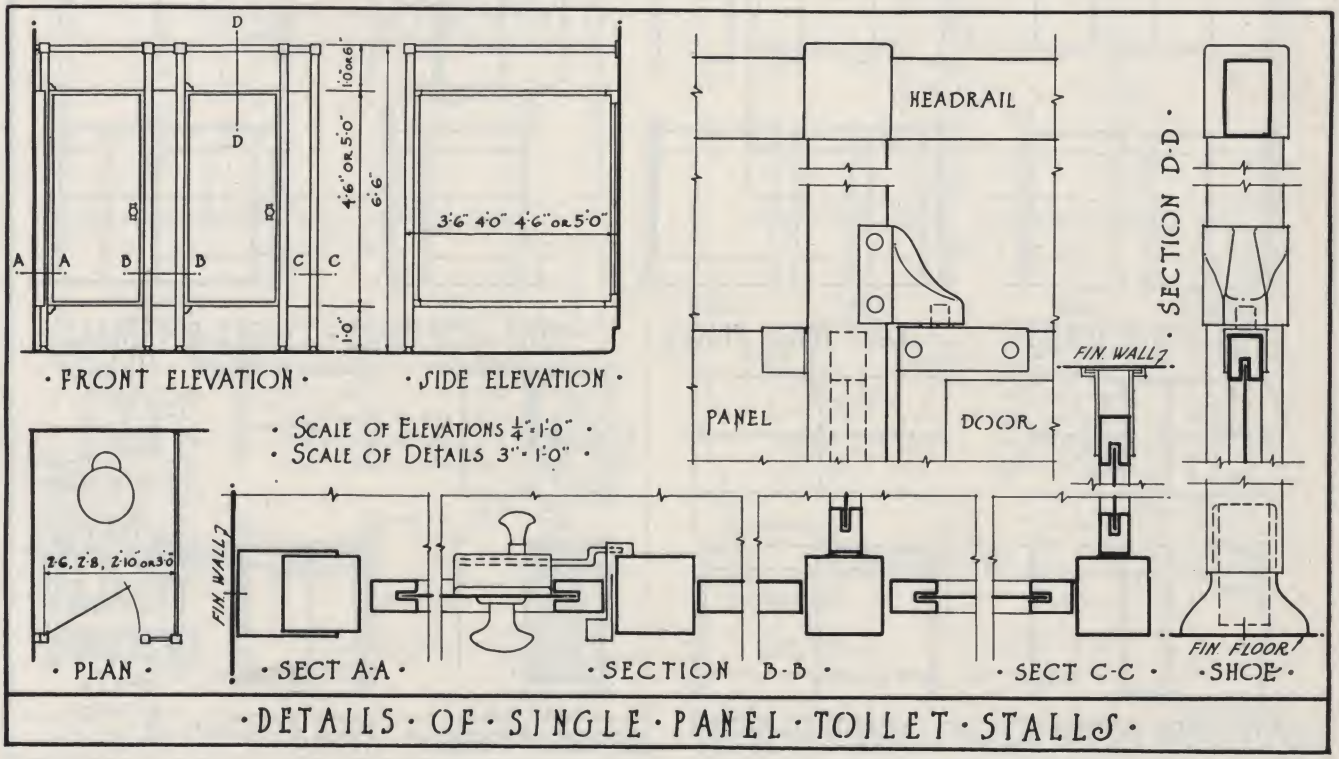
Head rail is standard 78 in. high (in accordance with recommendation of The Division of Simplified Practice Department of Commerce) with 54-in. panel set 12 in. off the floor and 12 in. to the head rail or 60-in. panel set 12 in. off the floor and 6 in. to the head rail.

Built in units to permit any desired arrangement. Legs fit over rather than into shoes, eliminating all lodging places for dirt and not a single opening to admit water or hold moisture.

Finish

Finished standard in olive green or gray. Special colors can be furnished at a small extra cost.

Hardware—See next page following.



· DETAILS · OF · SINGLE · PANEL · TOILET · STALLS ·

Continued on next page

Hardware for Toilet Partitions

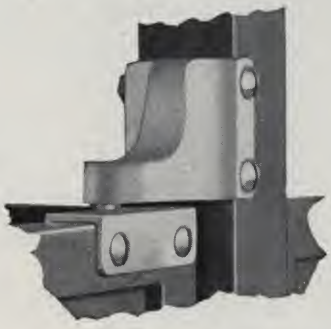
All standard hardware used on our toilet partitions, both Marblmetal and single panel is aluminum alloy.

Can be furnished either in nickel or chromium plated as specified at the necessary additional cost.

At the right are shown close-up photographs with explanatory notes together with close-up views of the new Mills Panel Clip and Wall Bracket with explanatory notes and below are architectural details.

New Mills Type Hinges

An entirely new conception of toilet partition hinges. Only two parts and these are through-bolted to both door and post. No cams, setscrews, rollers, lock-nuts or other parts—*nothing to get out of order.* Easy to keep clean, simple to adjust to allow door to come to rest at any desired position. Made of aluminum alloy



New Panel Clip

Absolutely new. Solid U-clip grips panel and holds it tightly to the post with two heavy prongs. Prevents rocking or sagging and gives completely finished appearance at every corner. Cuts production cost and helps make lower selling prices. No other toilet partition has this feature

Mills Latch

Heavy aluminum alloy, slide bolt type connected to the stile of the door with through-bolts as an integral part of the knob. Special interior spring to prevent rattle. Design and finish in harmony with the other hardware

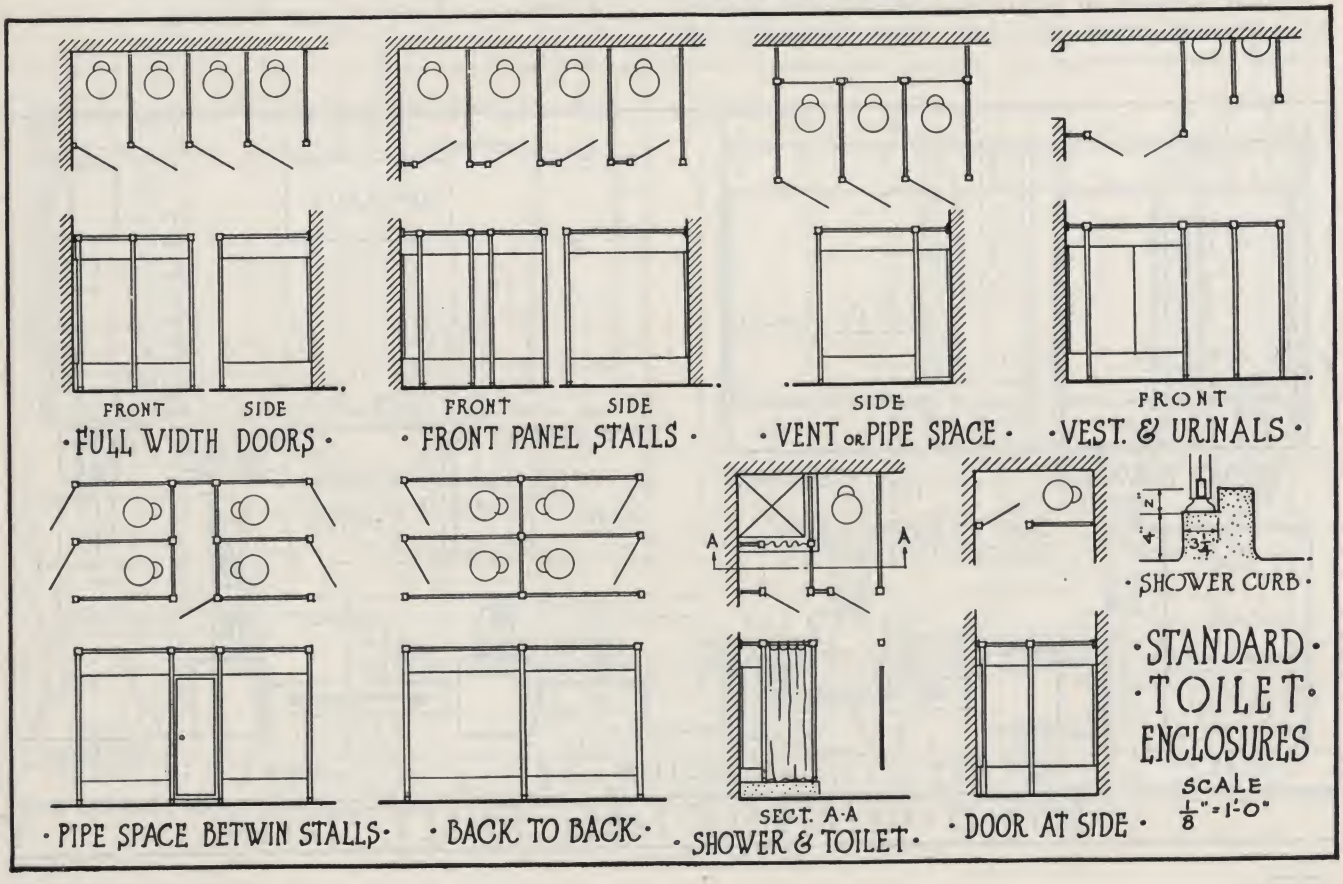
Mills Famous Internal Shoe

A valuable feature. Shoe *inside* the post so that moisture positively cannot lodge and cause failure. Shoe attached to the floor by means of an expansion bolt inside the shoe. Perfectly smooth surface to the floor and provides a 2-in. adjustment for uneven floors. No other toilet partition has a shoe like this

New Wall Bracket

Bracket and plate. The plate is adjustable and is attached to the wall before panel is put in position and is wide enough to cover screwhole and the unsightliness of plaster breaks around the hole.

After panel is in place the bracket is inserted by one simple, easy and quick operation and avoids any possibility of loosening wall connections in erecting the panel



Mills Metal Hospital Cubicles

Right hand view shows Marblmetal cubicle and at the left is illustration of the single panel cubicle.

Our cubicles are manufactured in the same two construction classification as our toilet partitions—one in the single panel and the other in the Marblmetal construction.

Both classifications are built in multiple widths of 6 inches ranging in depth from 30 inches to 120 inches. Where the depth of the cubicle is more than 60 inches, an intermediate post is used in the center of the total dimension. Glass may be either clear, reinforced or translucent, either single strength or ¼ inch thickness.

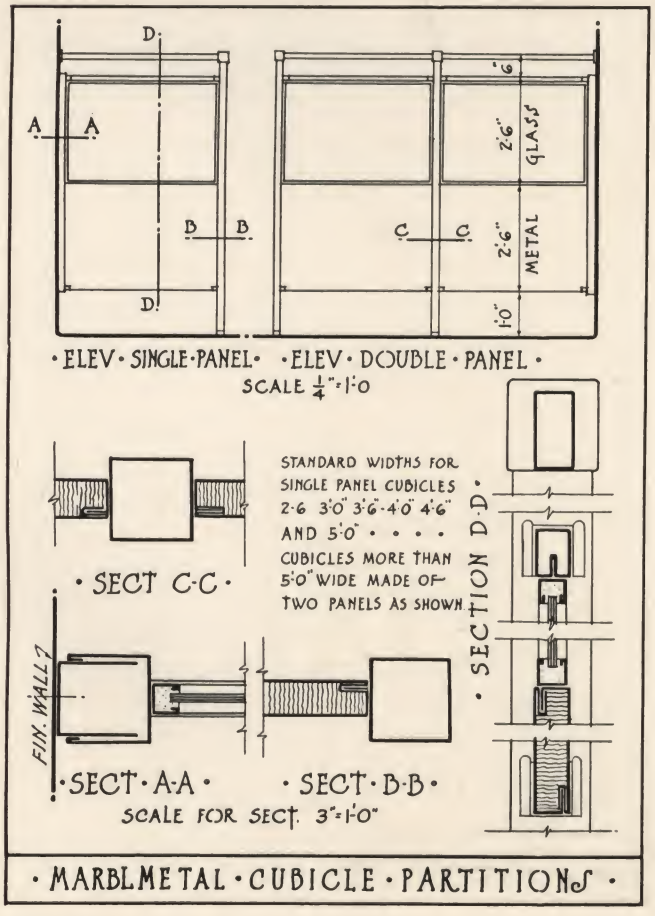
Overall height is 78 inches off the finished floor with lower panel starting 12 inches off the finished floor and with the glass line started 42 inches off the finished floor. Thus the top of the glass line finished 6 inches below the headrail or 72 inches off the finished floor.

Fittings

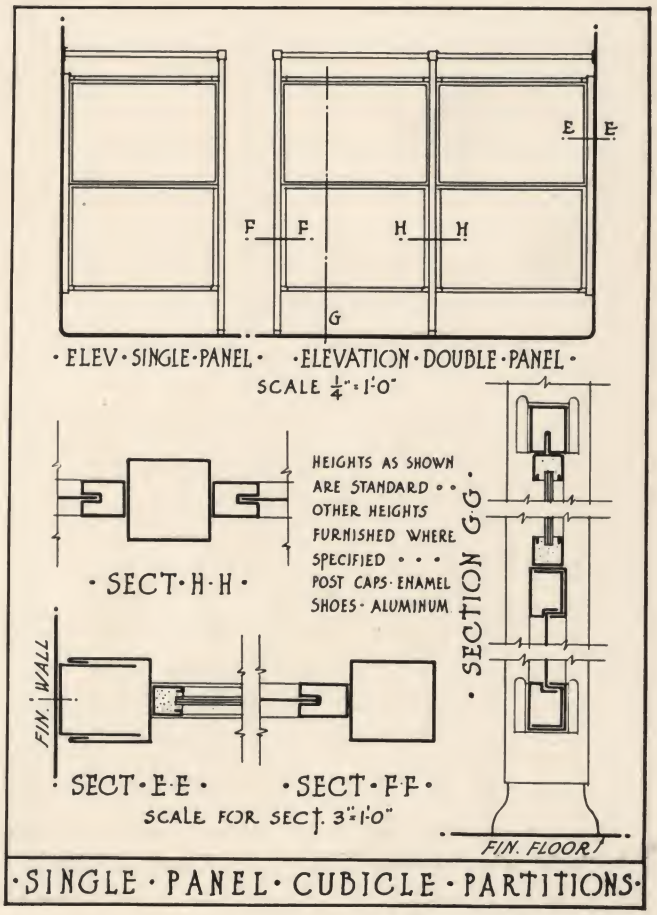
Shoes are plain aluminum. Post caps and wall fittings are enameled steel to match the finish of the partition.

Finish

Standard baked enamel in colors to harmonize with the hospital scheme.



• MARBLMETAL • CUBICLE • PARTITIONS •



• SINGLE • PANEL • CUBICLE • PARTITIONS •

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Mills Metal References

There is an old adage to the effect that a man is best known by the company he keeps and we feel that the kind of customers we have attracted and held since we began business is eloquent testimony to the forward-looking aggressiveness we have ever displayed in keeping our products in the forefront of new design and construction.

Below is a list of just a few of Mills Metal users, a list of names that is really a "Who's Who" of American business.

Aluminum Company of America
The National Carbon Company
The Eastman Kodak Company
Chimes Tower Building, Syracuse, N. Y.
Newark Public Service Building, Newark, N. J.
Pennsylvania R. R.
Board of Education, Cleveland
Standard Oil of Ohio
Railway Exchange Building, St. Louis
Bankers Building, Chicago
Guardian Building, Cleveland
Empire Trust Company, New York City
B. & O. R. R.
Reading R. R. Terminal
The Bell Telephone Companies
General Electric
Plaza Building, Pittsburgh
American Glanzstoff Corporation
Niagara Falls Power & Light Company
Black & Decker
Industrial Rayon Corporation
Western Electric Company
Nickel Plate R. R.
Acacia Mutual Life Building, Washington, D. C.
John Hopkins Hospital
General Motors Co.
Packard Motor Car Co.
Ford Motor Car Co.
Firestone Tire & Rubber Co.
Studebaker Co.
Proctor & Gamble
Gruen Watch Makers
R. C. A. Radiotron Co., Inc.

THE MILLS COMPANY

A Mills Metal Partition for Every Purpose

965 WAYSIDE ROAD - - CLEVELAND, OHIO

Representatives in All Principal Cities

MILLS MILLS METAL **METAL**

INTERCHANGEABLE PARTITIONS

A complete line of Interchangeable Partitions used in prominent buildings and manufacturing plants all over the United States.

WRIGHT METAL PARTITION

INTERCHANGEABLE

WRIGHT METAL INC.
JAMESTOWN, N.Y.

SPECIAL FEATURES OF WRIGHT METAL PARTITIONS

Unit Principle of Flexibility Wright partitions are constructed in a series of units—of varying widths—Each unit is complete in itself—The units can be used in any of the several types of Wright Metal partitions—THEY ARE FLEXIBLE.

—

Unit Cornice Not Continuous All cornice sections are perfectly straight and delicate in line—graceful in design—yet rugged in construction—They are jig mitered on both ends—hence they are absolutely interchangeable for any angle, straight or corner run of partition.

—

Salvage Value, the True Test of Economy All Wright Metal partitions retain their original value in salvage—When not in use they are ever ready for instant reerection—Any location—There are no extras—THEY ARE COMPLETE.

—

Durability Wright Metal partitions are built to last a lifetime.

Appearance and Finish Wright Metal partitions are unsurpassed in finish and appearance—Skill in design, ingenious machinery in manufacture—personal pride of the individual craftsman—these factors are producing a most beautiful partition—Every coat of finish, from the mineral filler and primer through to the final enamel coat, is of the best materials obtainable—All coats are applied by sprayers and grainers of many years' experience—Each coat is baked in modern temperature-controlled electric ovens—THE FINISH IS PERMANENT.

—

Interchangeability of Units All Wright Metal panel units of one type of partition are interchangeable with all other types—They can be reversed.

—

Utility Usefulness of Wright Metal partitions has been proved by ample trial—They have no weakness—They are adaptable for all partition requirements—THEY are UNEXCELLED.

"It Is Not What You Pay — But What You Get For What You Pay — That Counts"

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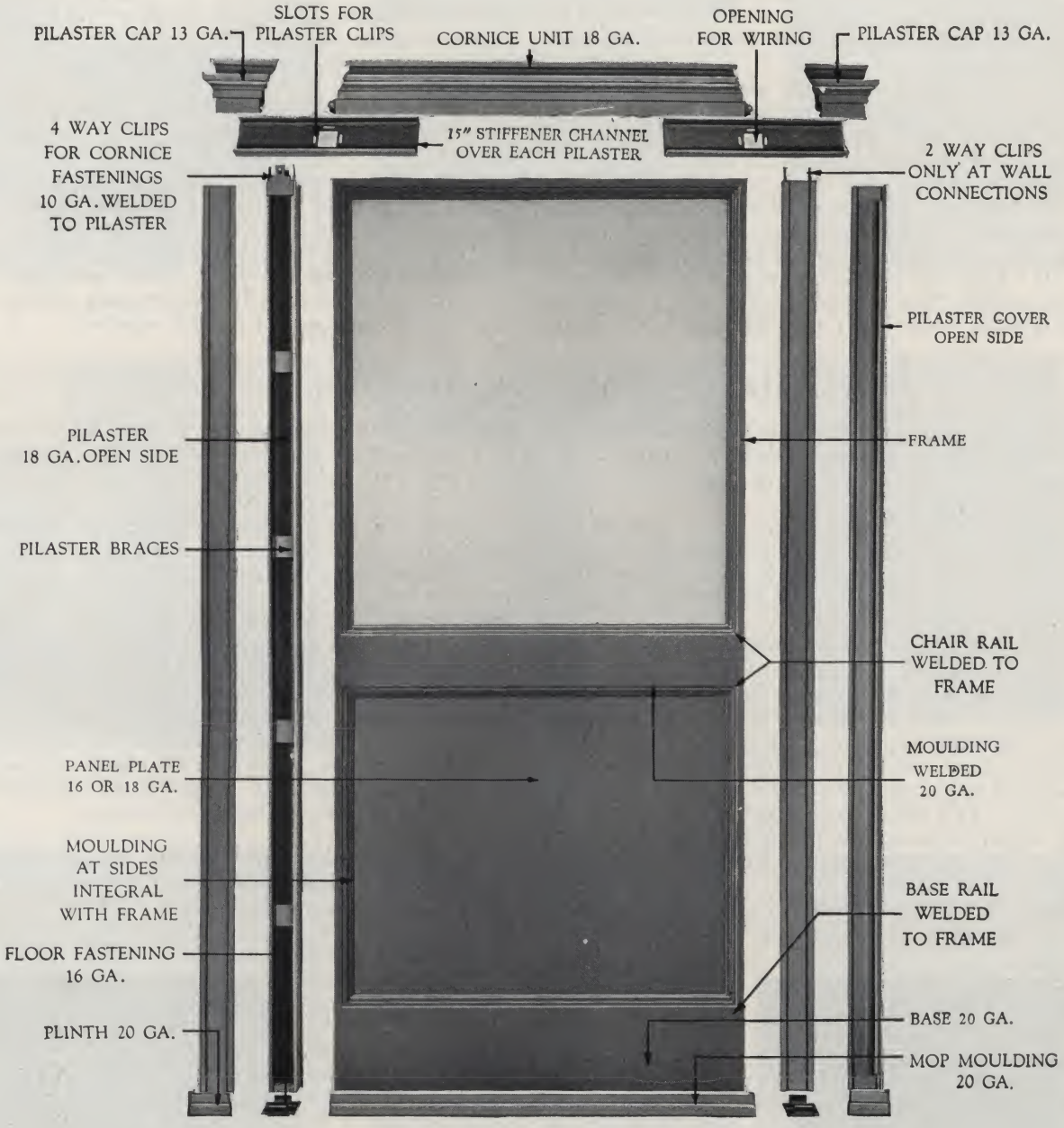
WRIGHT METAL PANEL UNIT



The above illustration shows all parts forming one complete panel unit of the Wright Metal Partition. All parts are interchangeable, making it possible to assemble Wright Metal Partitions in any arrangement desired to fit the space and floor plans. They may be rearranged, when necessary, easily and without loss.

Continued on next page

GENERAL CONSTRUCTION FEATURES

Wright Metal Partitions

On the following page a series of composite photographs illustrate the partition as completely erected as well as in detail without and with the pilaster face in place as follows:

(A) A pilaster section of the partition showing complete assembly.

(B) Floor detail at pilaster with snap-on pilaster cover removed. Panels with adjustable mop moulding are set in place against the pilaster. Conduit opening for electric conduits in the base is shown on left inside of pilaster.

(C) Detail at panel chair rail with snap-on pilaster cover removed. Conduit opening for electric conduits in the chair rail is shown on left inside of pilaster.

(D) Detail showing pilaster or cornice cap and snap-on pilaster cover removed and top corners of panels in place. Note the top of the pilaster extending up through stiffener channel for securing with key wedges.

(E) Plan looking down on detail at D. This shows how cornice units end at the pilasters and the method of key wedging the top of the pilaster to the stiffener channel with split key wedges. No chance to work loose.

(F) Same view as at D with cornice or pilaster cap set in place covering mitered ends of cornice units. Pilaster cover is also shown in place.

(G) Same view as at C with pilaster cover in place. All pilaster covers are carefully straightened, fitted and inspected before leaving the factory to assure an even spring pressure and accurate fit against the panel unit from top to bottom. *Note no screws.*

(H) Same view as B with snap-on pilaster cover in place and mop mould plinths attached.

Wright Metal Partitions Are Very Simple to Erect

The well planned simplicity of construction of Wright Metal Partitions renders their installation a simple matter and makes for speed in erection with a resulting saving in labor costs.

Erection of these partitions is simply a matter of assembling the parts according to well defined plans and a few simple instructions. There is no cutting or fitting to be done except for the ceiling filler where it passes around beams, pipes, etc.

To install Wright Metal Partitions the center lines are first laid out according to the architect's floor plans. The posts are then spaced according to the approved panel layout. Posts are secured in place by means of using an improved expansion bolt to the floor. Where required on long runs of partitions an extension compression bolt is placed in the top of each post as shown on page 12. This bolt is backed up against plates at the ceiling, which forms sufficient pressure to hold the posts in place. This will eliminate the drilling of holes in the ceiling.

Next the cornice is set in place on top of posts. The cornice is in sections which extend from center of post to center of post so that it is possible to remove any portion from floor to cornice between posts. After cornice has been placed on top of posts the bottom panel and top sash for ceiling high partitions are then assembled and mop moulding connected to bottom base-rail of panel. The entire section is then raised and set in place between the posts.

The pilaster trim forms part of the post on one side and on the opposite side is snapped on after the panel sections are in place. The pilaster caps and base caps are next applied, leaving only the ceiling filler to be cut to fit the space. Ceiling fillers of asbestos millboard or steel are finished at building, if required, to match color of ceiling.

The placing of doors is equally simple, as the frames are interchangeable with standard 40-in. panels. Hinge leaves and strikes are applied at the factory. Therefore, where a door is to be placed the frame is installed as described above for a panel and later the door is hung.

Glazing is simply a matter of removing the loose glass stop, setting the glass in putty or rubber channels and screwing on the stop moulding.

Cleaning and polishing—the final operation—is practically negligible with Wright Metal Partitions, due to the high grade finish applied at factory.

Provide Economical and Flexible Means for Installing Electrical Wiring

Another economy presented by Wright Metal Partitions is the ease with which electric wires for lighting and telephone service may be installed after the partitions are erected. Ample space for all necessary wiring is provided in all posts, cornices, chair rails and base. Removal of the snap-on pilaster covers affords instant and convenient access to the cables. Outlets for any purpose can be provided wherever desired. This feature eliminates the necessity of running conduits in the floor and provides great flexibility.

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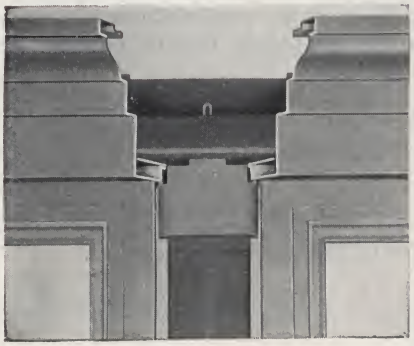
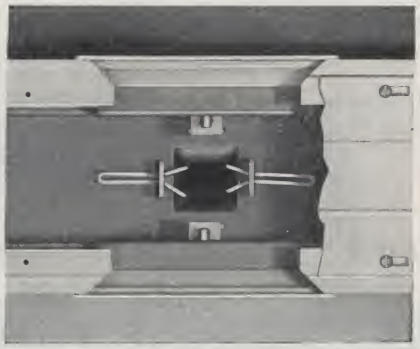
GENERAL CONSTRUCTION FEATURES

Wright Metal Partitions

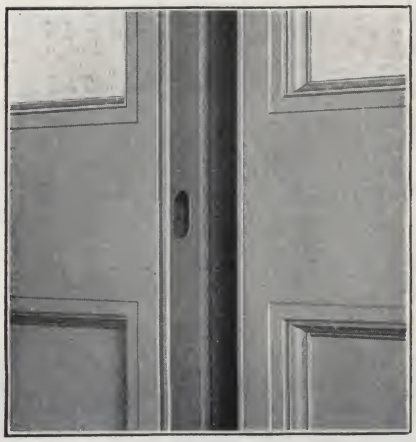


Detail D



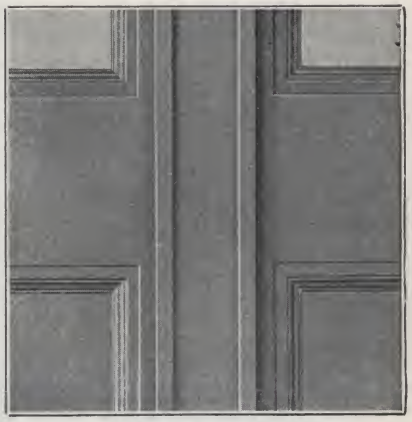
Detail E

Detail F



Detail C

Detail A



Detail G

Detail B

Detail H

For Description of Illustrations, see preceding page

Continued on next page

INTERCHANGEABILITY OF WRIGHT METAL PARTITIONS

Wright Metal Standard Partitions and Railings are absolutely interchangeable—a revolutionary advance in the hollow metal industry. This is made possible through the Wright Metal unit system of panel, cornice, mop moulding and pilaster construction. They are all reversible. Door frames and doors are also interchangeable with panel units.

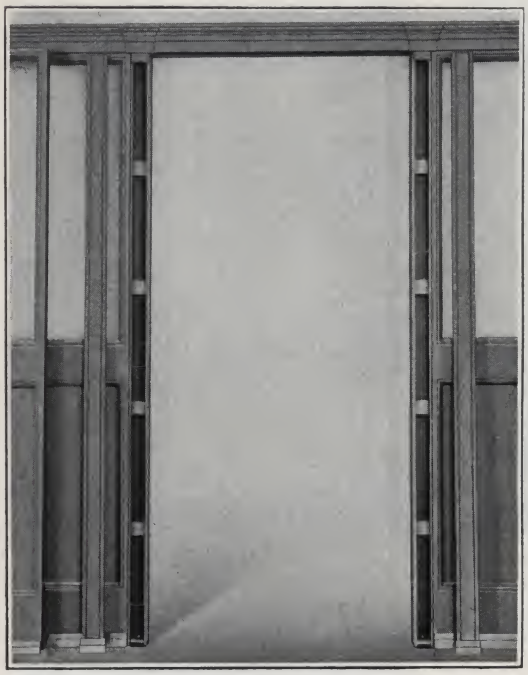
Wall fillers provide necessary adjustment in all manner of rearrangements in any location.

Pilasters are recessed on four sides for instant setting of panel units, forming any type of enclosure—tee, cross, corner and straight run in erection. All cornice sections are mitered on each end for interchangeable accuracy. Mop moulding on bottom of panel units, pilasters and wall fillers is completely interchangeable—fastening is concealed.

All Wright Metal Partitions and Railings are foolproof in erection—they are handsome in design and finish—they are sturdy and rigid.

All Panels and Door Units Are Interchangeable

Every 40 and 64-in. panel unit is constructed so that instant change from panel to our standard stock door frame and swing door or doors can be made. The removal of snap-on pilaster covers on each side of the panel unit permits instant change of the entire panel section. Door frame is then set in the opening and rigidly locked in place by concealed bolts located on inside of pilasters. Pilaster covers are then snapped on, door is hung, and the change from panel section to new door opening through partition is completed.



Above:

Detail A

Illustrates 40-in. unit with our standard stock metal door frame set in same space previously occupied by panel section

Left:

Detail B

Illustrates same standard 40-in. panel unit with panel removed

Right:

Detail C

Illustrates same 40-in. unit and door frame with our standard 3x7-ft. stock metal door, properly hung in position. The change is complete

Continued on next page

FLEXIBILITY OF WRIGHT METAL PARTITIONS

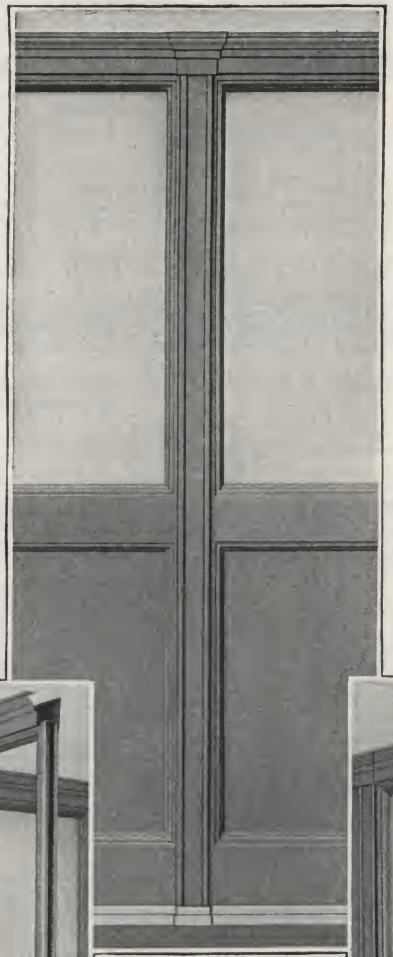
Panels Can Be Inserted at Pilasters to Form Straight, Angle or "T" Connections

All Wright Metal Standard Partitions are constructed for expeditious erection, taking down, or re-erection into various runs, as illustrated, by any one, with no alterations. Every unit and every part of every unit is interchangeable. They are built to outlast the coming generation.

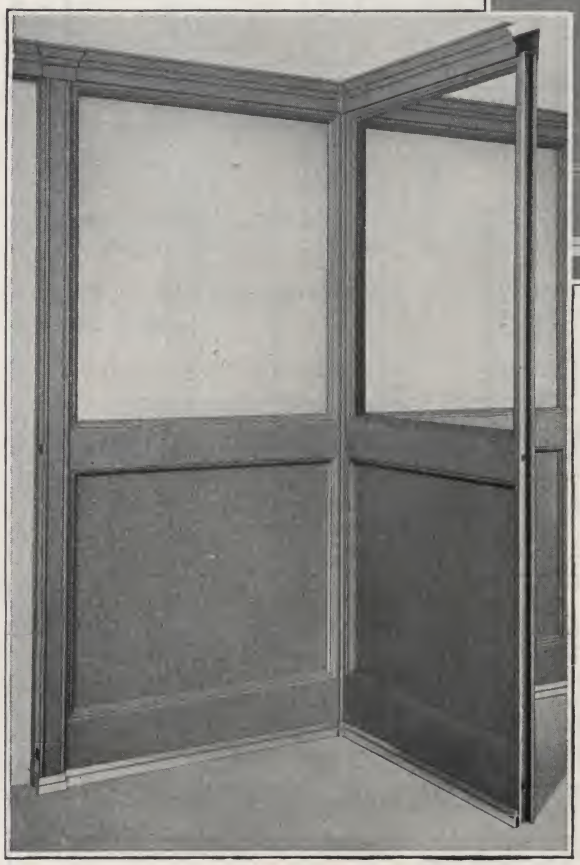
Detail A—Illustrates complete panel units connected to pilaster, in straight run, Wright Metal Standard Partition.

Detail B—Illustrates complete panel units connected to pilaster, forming "T" assembly of Wright Metal Standard Partition.

Detail C—Illustrates complete panel units connected to corner and end pilaster, also take-up wall filler, Wright Metal Standard Partition.



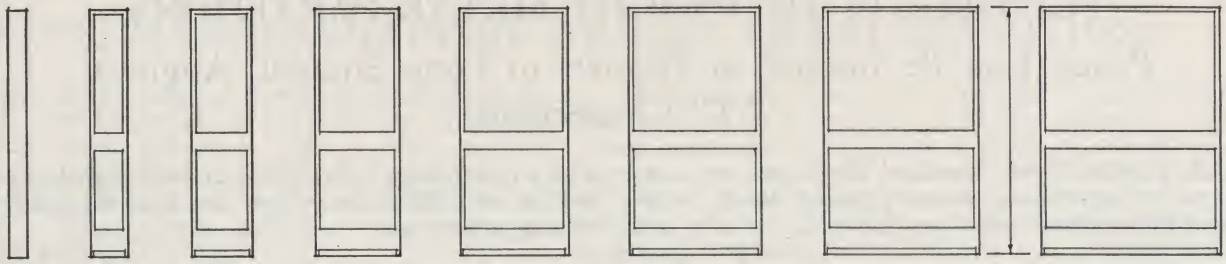
Detail A



Detail B

Detail C

Continued on next page



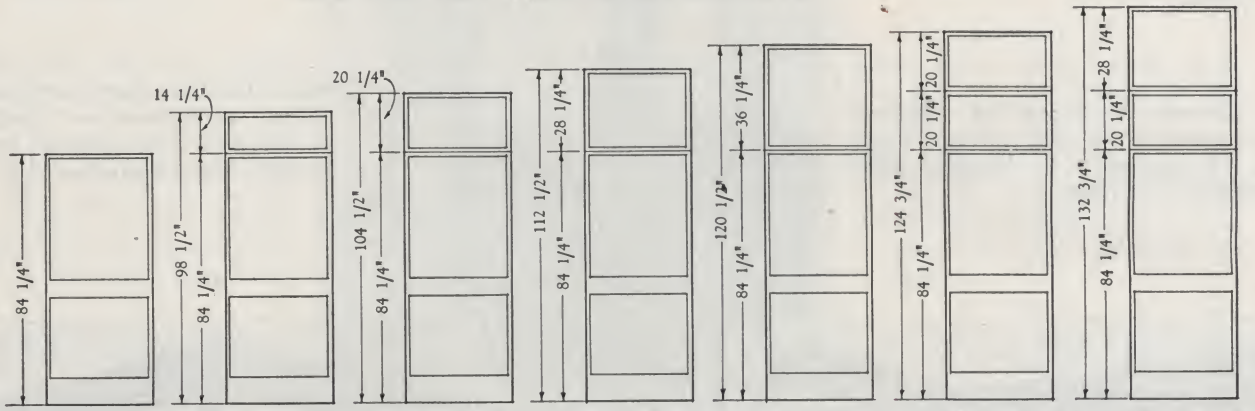
TYPICAL PANEL UNITS FOR TYPE A E PARTITION AND BOTTOM PANELS FOR TYPE E PARTITION

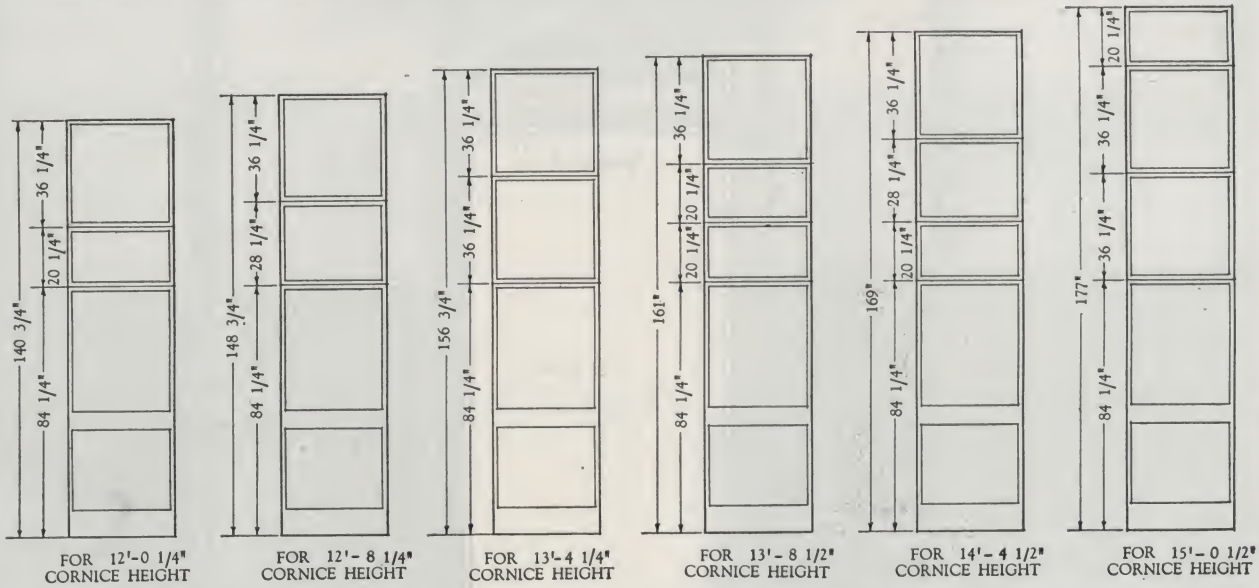
40" D A DOOR AND FRAME

TYPICAL TOP SASH UNITS FOR TYPE E PARTITION

THE FOUR SASH SHOWN ABOVE ARE FURNISHED IN STANDARD PANEL WIDTHS OF 16", 24", 32", 40", 48", 56" & 64", AND ARE CARRIED IN STOCK. THESE SASH TELESCOPE TOGETHER. THEY ALSO TELESCOPE WITH THE BOTTOM PANELS SHOWN ABOVE TO MAKE THE UNITS SHOWN BELOW.

40" D B DOOR AND FRAME



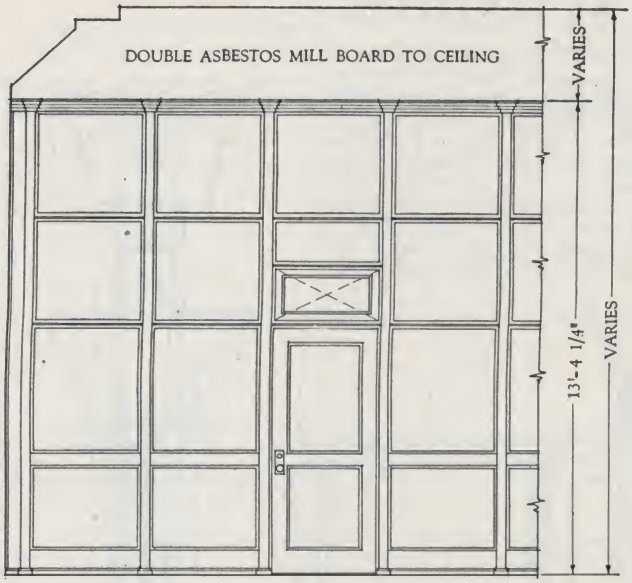


TYPICAL COMBINATIONS OF TOP SASH UNITS AND BOTTOM PANEL UNITS

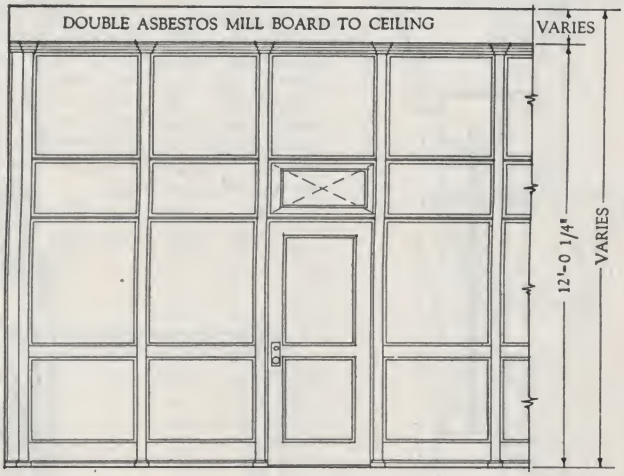
THIS DETAIL SHOWS THE VARIOUS SIZE SASH ABOVE THE PANEL, AND THE ARRANGEMENT OF DIFFERENT SASH FOR VARIOUS CORNICE HEIGHTS. THE CEILING HEIGHT IS USUALLY ABOUT 12" HIGHER THAN THE CORNICE HEIGHT, AND THE SPACE BETWEEN IS CLOSED WITH A FILLER. (BEAM AND GIRDER CONDITIONS MUST BE CONSIDERED.)

SASH AND PANEL STANDARDS

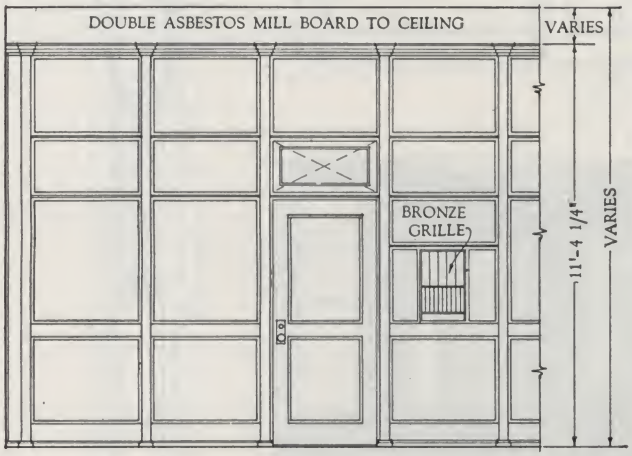
Continued on next page



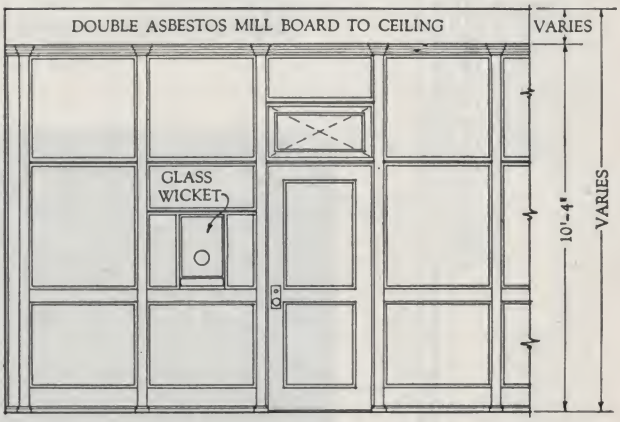
TYPE E PARTITION 13'-4 1/4" CORNICE HEIGHT



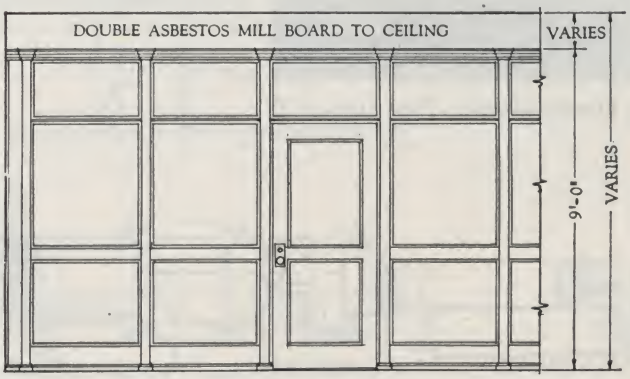
TYPE E PARTITION 12'-0 1/4" CORNICE HEIGHT



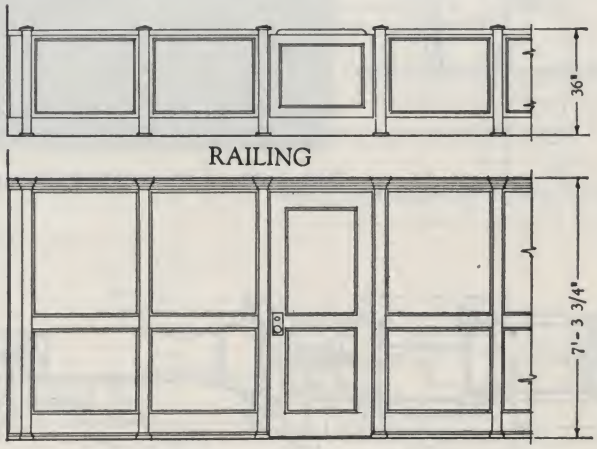
TYPE E PARTITION 11'-4 1/4" CORNICE HEIGHT



TYPE E PARTITION 10'-4" CORNICE HEIGHT



TYPE E PARTITION 9'-0" CORNICE HEIGHT



TYPE E PARTITION 7'-3 3/4" CORNICE HEIGHT

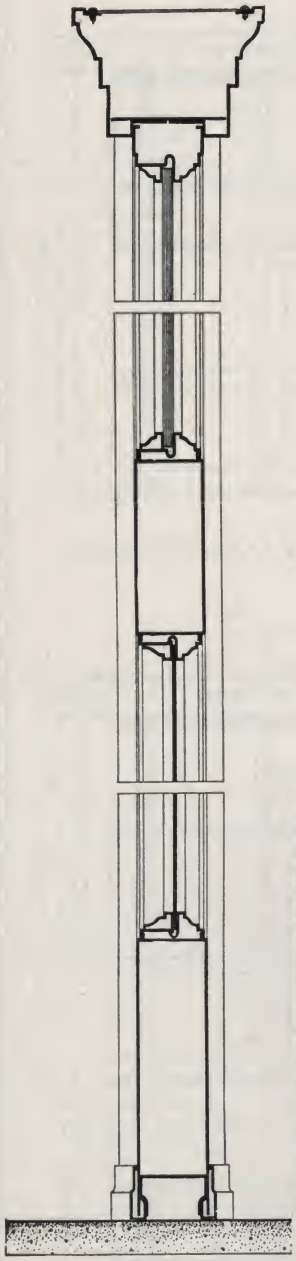
STANDARD E AND A E PARTITIONS AND RAILING

Continued on next page

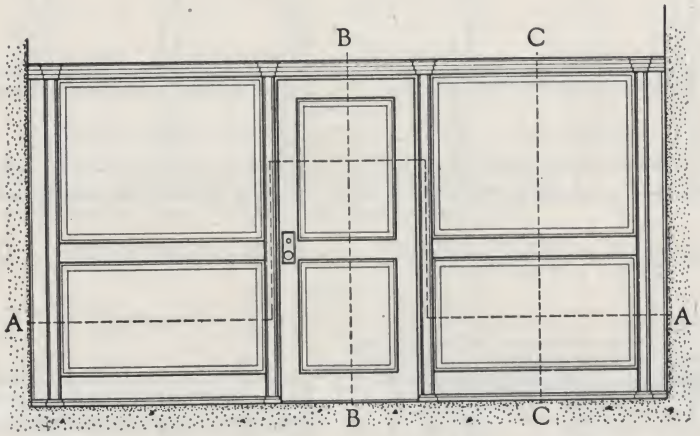
STANDARD TYPE AE PARTITION

Standard Type AE Wright Metal Partitions are manufactured in 7 ft. 3¾ in. height, floor to top of cornice. Cornice is constructed in sections equal in length to panel unit widths and mitered at both ends. Panel sections are interchangeable with all other standard types of Wright Metal Partitions. Pilasters are cold drawn 18 gauge steel with snap-on covers. Wall fillers have take-up feature for adjustment and alignment. All pilasters are capped with heavy cornice profile caps covering mitered ends of cornice, and are rigidly held in place with concealed wedge split keys. All panel units and pilasters are fitted with adjustable mop moulding, applied with concealed fastening.

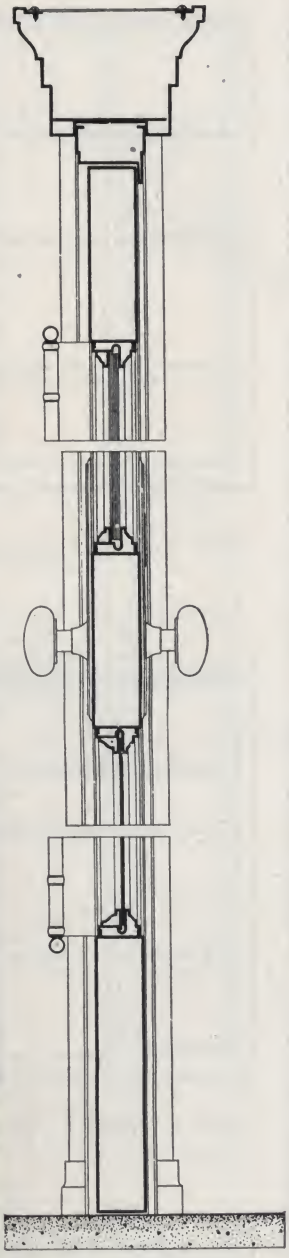
Standard Type AE partitions are particularly adaptable for fine office enclosures.



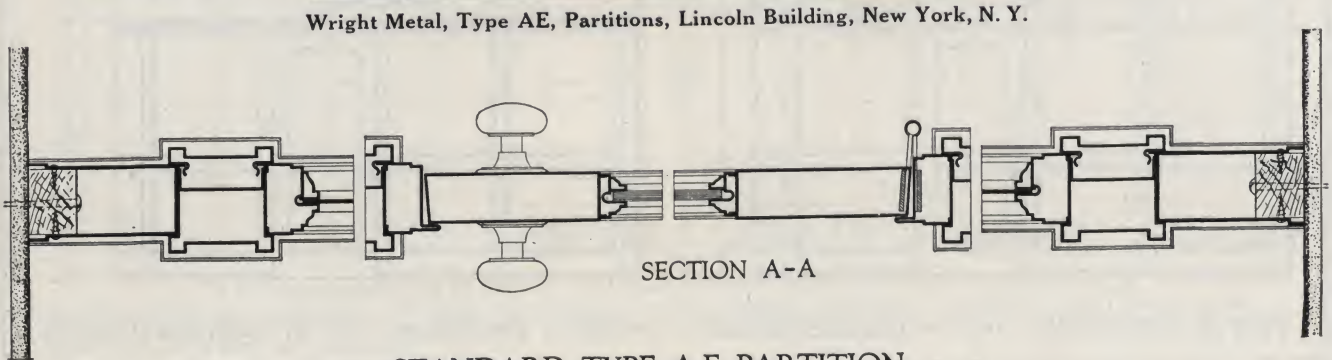
SECTION C-C



Wright Metal, Type AE, Partitions, Lincoln Building, New York, N. Y.



SECTION B-B



SECTION A-A

STANDARD TYPE AE PARTITION

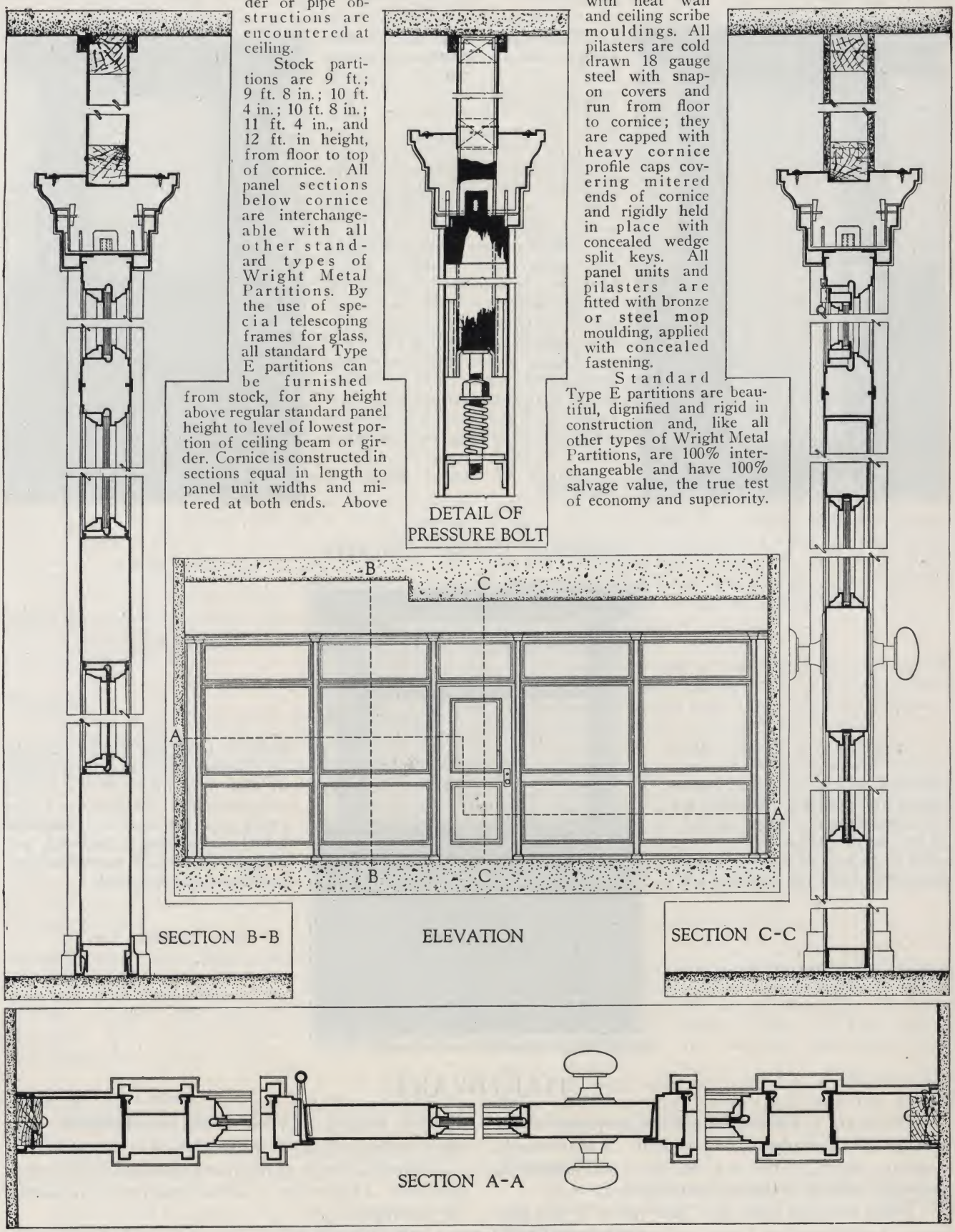
Continued on next page

STANDARD TYPE E PARTITIONS

Standard Type E Wright Metal Partitions are manufactured for enclosures where different floor levels and beam, girder or pipe obstructions are encountered at ceiling.

Stock partitions are 9 ft.; 9 ft. 8 in.; 10 ft. 4 in.; 10 ft. 8 in.; 11 ft. 4 in., and 12 ft. in height, from floor to top of cornice. All panel sections below cornice are interchangeable with all other standard types of Wright Metal Partitions. By the use of special telescoping frames for glass, all standard Type E partitions can be furnished from stock, for any height above regular standard panel height to level of lowest portion of ceiling beam or girder. Cornice is constructed in sections equal in length to panel unit widths and mitered at both ends. Above cornice to ceiling a filler of either single or double steel plates, plaster or composition boards is erected and firmly held in place with neat wall and ceiling scribe mouldings. All pilasters are cold drawn 18 gauge steel with snap-on covers and run from floor to cornice; they are capped with heavy cornice profile caps covering mitered ends of cornice and rigidly held in place with concealed wedge split keys. All panel units and pilasters are fitted with bronze or steel mop moulding, applied with concealed fastening.

Standard Type E partitions are beautiful, dignified and rigid in construction and, like all other types of Wright Metal Partitions, are 100% interchangeable and have 100% salvage value, the true test of economy and superiority.



STANDARD TYPE E PARTITION

Continued on next page

WRIGHT METAL INTERCHANGEABLE UNITS

Hollow Metal Doors

The types illustrated cover Wright Metal Standard Stock Doors. They are carefully designed and constructed of first grade open hearth, cold rolled furniture stock steel, US standard gauge. Stiles and rails are formed true to gauge, and provided with compressed cork insulation for eliminating metallic sound. Mouldings are cold drawn, neat in profile.

All joints are fitted, reinforced for rigidity and hardware where necessary, and properly welded together. Metal panels are made up of two 20-gauge steel plates separated by heat retarding deadening felt filler.

Glass panels are carefully bedded and held in place by removable cold drawn steel moulding, perfectly fitted and securely attached to stationary moulding with countersunk oval head screws.

Single or double doors are available.

Standard Bronze Wickets

Standard type Wright Metal Bronze Wickets are made from seamless bronze tubing, all joints brazed and polished. Wickets are made standard size 15 in. wide by 24 in. high. These wickets are made to go into 24 to 64-in. panels inclusive. They are provided with glass or steel deal plates 12x15½ in. Frames for wicket constructed of same type material as specified for partitions. Wickets are of the swing type, provided with two 3-in. solid bronze hinges and flat key wicket lock. Finish natural bronze, polished and lacquered.

HARDWARE

Hardware in keeping with the high quality of our product has been adopted as standard. It is of simple, attractive design, sturdy in construction and is made by nationally known, reliable manufacturers.

Office entrance locks have face plates of the same size as communicating locks, and can be interchanged with one another. Cylinders are interchangeable with other makes and can be master-keyed to any system.

Standardization of hardware makes possible prompt deliveries. Delays due to lack of hardware information are eliminated.

Other types of hardware can be used if desired.

Continued on next page

SPECIFICATIONS

Materials

All materials shall be the best of their respective kinds. Steel shall be highest grade open hearth, cold rolled commercial furniture stock of US Standard gauge. All mouldings shall be cold drawn to insure true and uniform profiles.

General

Partitions shall be made up of units including cornice of standard widths, so manufactured as to allow the utmost flexibility of arrangement and to permit changes being made without disturbing units other than those to be rearranged. *Low partitions (Type "AE" approximately 7 ft. high) shall constitute the base of all types. Ceiling high partition shall be assembled on the low partition with the addition of top sash and pilasters of varying heights to meet job conditions.*

All partitions must permit wiring through base, chair rails, cornice, pilasters and wall fillers, also accommodate standard electrical outlets.

Description

Panels or sash in each and every case shall be assembled as one unit by welding. All rails and stiles being integrally welded with panels and mouldings. All panels shall be 16 or 18 US gauge single thickness plates. Stiles, rails and mouldings shall be of 20 US gauge. Where insulated panels are required, they shall be made of two 20 US gauge plates separated by heat and sound retarding insulation.

Door frames shall be formed of 18 US gauge steel, coped and welded at corners and reinforced for hardware. Door frames shall be interchangeable with panel units of same size.

Pilasters

Pilasters shall be cold drawn of 18 US gauge steel, substantially reinforced and so constructed as to permit two, three or four-way partition connections. Each pilaster shall be securely anchored to the floor.

Cornice

Cornice shall be of not less than 18 US gauge steel, cold drawn in lengths to conform with widths of panel units and mitered at both ends. Cornice shall be attached at each end to top of pilaster by split key, securely wedged in place.

Stiffener channels shall be provided at all joints between cornice and pilaster, shall be of 11 US gauge steel, shall extend into each end of adjoining cornice not less than 7 in. and shall be securely keyed to top of pilaster. Pilaster caps shall be fitted to cover cornice at joints. Top of cornice section to have cover of 16 US gauge steel securely fastened.

Partitions to Ceiling

Ceiling high partitions shall be of a design described above.

Transoms shall be provided where shown on general drawings and shall be equipped with bottom friction pivots and top ring catches.

Recess shall be provided in top of cornice coverplates to receive ceiling filler where required.

Mop Moulding

Continuous bronze or steel mop moulding shall be attached to both sides of the bottom of all panels and pilasters with concealed fastening to permit adjustment of panel units to floor unevenness.

Wall Fillers

Wall fillers shall be of double thickness 20 US gauge steel and of sufficient width and flexibility to accommodate all conditions. The fit to the wall shall be snug and of neat appearance.

Finish

Prime Finish—After assembling, all oil, dirt and rust shall be removed. Exposed surfaces shall be filled where required. Each coat is then baked and sanded. A priming coat of the best quality, rust-resisting enamel shall then be applied to all surfaces both inside and out and properly baked.

Standard Plain Baked Enamel—Priming coat, as above described, shall be thoroughly sanded. Additional coats of the best quality enamel, of color as selected, shall be applied to all exposed surfaces, each coat to be sanded and the final coat to be of a dull semi-gloss finish.

Hand Grained Finish—Priming coat, as above described, shall be thoroughly sanded, after which two coats of ground color for graining shall be applied, each coat baked and sanded, after which the hand graining coat is applied and baked. The final coats of the highest quality finishing varnish shall then be applied and baked to a dull or eggshell gloss surface.

Workmanship

All materials shall be fabricated in the most approved manner, true to alignment and free from defects, neat in appearance and equal to the standard practice of WRIGHT METAL INC., of Jamestown, N. Y.

Glass and Glazing

All glass shall be embedded in special steel sash putty, colored to match the partition, and to fit into rabbets of the partition sash, and shall be held in place by removable metal stops, securely fastened by oval head screws. All glass shall be of first quality and equal to the standard of the best manufacturing practice in every respect.

Hardware

Hardware shall be of standard design and highest quality as manufactured by (*insert name of manufacturer*). Locks shall be cylinder type or bitted key as specified for individual doors. All locks shall be interchangeable, one with the other and master-keyed where required.

Door checks shall be of liquid type with hold-open arms. All doors shall be equipped with one pair of 4½x4½-in. ball bearing steel butts.

Erection

All work shall be erected in a first-class workmanlike manner and to meet requirements of a recognized authority.

Continued on next page

WRIGHT METAL RAILINGS

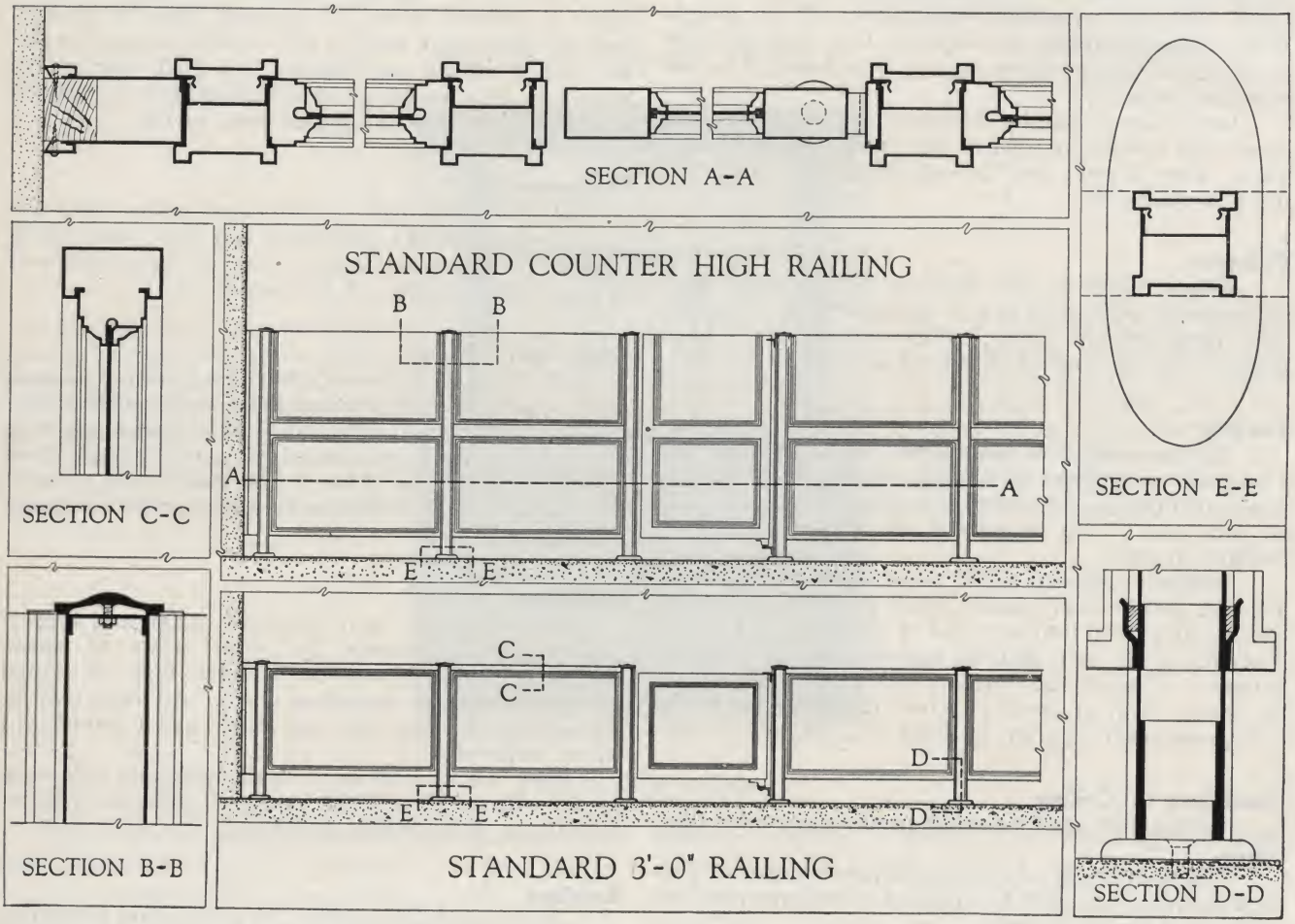
Wright Metal Standard Open Base Railings are manufactured and carried in stock in two types, 3 ft. and counter height from floor. Pilasters are cold drawn 18-gauge steel with snap-on covers. Pilasters are rigidly attached to ornamental cast iron base. Tops of pilasters are covered with either cast bronze or cold drawn bronze caps, securely attached by concealed fastening. Panel sections are constructed and made up of cold drawn mouldings for stiles and rails and 18-gauge sheet steel panel plate. Panel sections are correctly fitted and firmly held in place, between pilasters, by concealed fastening.

Rail is heavy, pleasing in design and rigidly attached to pilasters without screws or bolts.

Wright Metal Standard Railings are made so they can be attached to any Wright Metal partition.

Gates are constructed perfectly square, with stiles, rails and panel moulding in strict keeping with all lines in panel sections. Gates are hung with latest approved double action sagless spring hinges.

All parts of Wright Metal Standard Railings are fully interchangeable. They combine great strength with minimum weight. They have no weak parts—they are absolutely rigid.



SOME TYPICAL WRIGHT METAL INSTALLATIONS

Federal Reserve Bank	Baltimore, Md.
Atlantic National Bank	Boston, Mass.
Glens Falls Insurance Company	Glens Falls, N. Y.
First National Bank	Sharon, Pa.
Yonkers National Bank & Trust Co.	Yonkers, N. Y.
Bank of Jamestown	Jamestown, N. Y.
Roberts Building	Jamestown, N. Y.
Genesee County Court House	Flint, Mich.
Erie County Court House	Erie, Pa.
N. Y. State College of Agriculture	Ithaca, N. Y.
North Office Building	Harrisburg, Pa.
J. H. Carpenter, Jr., Inc.	New York City
Madison Ave. & 52nd St. Building	New York City
Standard Oil Co. of New York	Albany, N. Y.
Ohio Oil Company	Findlay, Ohio
Statler Building	Boston, Mass.
O'Brian, Potter & Stafford	Buffalo, N. Y.
Lincoln Building	New York City
Columbia Broadcasting Building	New York City
Realty Managers, Inc.	New York City
Plaza Building	New York City
Jamestown Telephone Building	Jamestown, N. Y.
Meadville Telephone Company	Meadville, Pa.
Bell Telephone Company of Penna.	Wilkinsburg, Pa.
Home Telephone Company	Johnsonburg, Pa.
New York Telephone Company	Buffalo, N. Y.
N. E. Telephone & Telegraph Co.	Worcester, Mass.
N. E. Telephone & Telegraph Co.	Lawrence, Mass.
Michigan Bell Telephone Company	Port Huron, Mich.
New York Telephone Company	Albany, N. Y.
New York Telephone Company	Ellenville, N. Y.
New York Telephone Company	Liberty, N. Y.
New York Telephone Company	Monticello, N. Y.
Peoples Telephone Corporation	Butler, Pa.
Rochester Telephone Corporation	Rochester, N. Y.
Olean Central Office Building	Olean, N. Y.
W. T. Grant Ready-to-Wear	New York City
Garfinkle, Rosenblatt & Company	New York City
Eclipse Machine Company	Elmira, N. Y.
Hale Desk Company	New York City
Firestone Tire & Rubber Company	Akron, Ohio
Jewel Tea Company	Barrington, Ill.
Associated Gas & Electric Company	Meadville, Pa.
Worcester Pressed Steel Company	Worcester, Mass.
Alcoa Ore Company	E. St. Louis, Ill.
Bethlehem Steel Company	Buffalo, N. Y.
National Biscuit Company	Pittsburgh, Pa.
Dupont Rayon Company	Buffalo, N. Y.
Sylvania Products Company	Emporium, Pa.
Hookless Fastener Company	Meadville, Pa.
Larkin Store	Buffalo, N. Y.
N. Y. School of Design	New York City
Livermore & Knight	Providence, R. I.
Sterling Engraving Company	New York City
New York Automobile Club	New York City
N. Y. County Court House	New York City
M. Rothkrug	New York City
Kaplan & Rodnick	New York City
Pan-American Airways	New York City
American Maize Products Company	New York City
National Biscuit Company	New York City
Dobbs & Company	New York City
Spang-Chalfant & Company, Inc.	Pittsburgh, Pa.
Paramount Publix Corporation	Chicago, Ill.
United Artists Corporation	Toronto, Canada
General Fireproofing Company	Brooklyn, N. Y.

Lincoln Building, 42nd Street and Madison Avenue, New York, N. Y.

J. E. R. Carpenter, Architect
Lincoln 42nd Street Corporation, Owners
Warren & Wetmore, Supervising Architects
Dwight P. Robinson & Co., Inc., General Contractors

All metal partitions—many miles in total length —in the new Lincoln Building have been installed by Wright Metal Inc.

WRIGHT METAL INC., JAMESTOWN, N. Y.
NEW YORK OFFICE — 205 EAST 42nd STREET
TELEPHONE — MURRAY HILL 5889

ART METAL CONSTRUCTION COMPANY

GENERAL OFFICES AND FACTORIES
JAMESTOWN, N. Y.

For Branch Offices, see Bank, Office and Library Equipment Section
For Hollow Metal Doors and Trim; for Ornamental Bronze Work; for Bank, Office and Library Equipment, see Art Metal Construction Company in Manufacturers' Index

ART METAL SECTIONAL OFFICE PARTITIONS

Art Metal Partitions Embody Many Features of Value

Low in price, because manufactured and carried in stock in large quantities, Art Metal Partition offers unusual values in construction, appearance and adaptability to varied requirements. In design and construction it embodies improvements and refinements that win the instant approval of all who have investigated the subject of enclosing office space. Art Metal Office Partition is different in such features as:

TRADE-MARK

(1) Cornice, posts, sash framing and other parts are of *drawn shapes*. Roller-die drawn moldings are more expensive to make, but they present true, sharp profiles impossible with pressed moldings.

(2) All joints of panel and sash framing are mitered, accurately fitted and ground smooth to produce a flush connection.

(3) All doors, transoms and frames are mortised and reinforced for the proper reception of hardware.

(4) No exposed screws in posts. The Art Metal Partition Post has a removable snap-on molding which obviates the necessity for screws.

(5) Electric wires encased in flexible conduit can be passed through all members of Art Metal Partition. Base, chair rail, cornice and posts provide a continuous passage for wires.

Hollow Metal Partitions Showing Door and Wicket
Caille Bros. Co., Detroit, Mich.

(6) Glass panels have glazing stops punched off center so that either ⅛ or ¼ in. glass can be used without change.

(7) Weight of partition has been kept as low as consistent with rigid construction.

(8) Ceiling height posts can be secured at top either by screwing into ceiling or by use of pressure bolts where it is not desirable to screw into ceiling.

(9) Wall and ceiling fillers so designed that considerable adjustment is possible without trimming.

(10) Panels are carried in stock in sizes ranging from 20 in. on centers of posts to 80 in. in multiples of 10 in. A sufficiently wide range to take care of practically all conditions without recourse to special parts.

(11) Permanent, part-of-the-building appearance, yet all Art Metal Partition is easy to change without marring the finish.

(12) High re-sale value.

(13) Absolutely incombustible and cannot warp, split or crack.

(14) Units are quickly and easily erected without fuss, waste or dirt.

(15) A minimum of noise in erecting. This permits the work being done during office hours.

Easily and Quickly Installed to Meet Any Condition

With seven widths of panel units, ranging from 20 in. wide to 80 in. wide in multiples of 10 in., Art Metal Partition provides for enclosing any office space at either railing height, cornice height (7 ft. 6 in.) or ceiling height. By a careful selection of the proper panel widths, any desirable effect can be achieved through the use of stock parts ordered right from this catalogue.

For the quick changes that are sometimes necessary, Art Metal Partition is unequaled for convenience, economy and appearance of the finished job. Building managers have found it profitable to carry in stock a reasonable quantity of panels and parts to meet the changing requirements of tenants.

Where partition must be installed during office hours, there is an especial advantage in using Art Metal Partition because it can be installed with a minimum of noise.

Posts That Make Art Metal Partitions Easy to Erect and Change

An outstanding feature of Art Metal Partition is the unique construction of the posts. The removable, snap-on molding on one side of each post affords several advantages, among which are:

Speed—Just snap the molding into place. It holds rigidly and permanently.

Adjustability—Where one or more panels are to be changed, or where it is desired to relocate a door, or to insert an additional door, just remove the post molding, and the panel fastenings are exposed for easy removal. No need to tear down extra lengths of partition to make the change.

Appearance—No screws in evidence. An alteration cannot be detected after it is made, so far as finished appearance is concerned. Clean, sharp profiles produced by roller dies.

Regular Posts Can Be Made Extension Type After Installation

The inner extension post member can be inserted from the front in cornice height posts after partition has been erected if desired. With this exclusive Art Metal feature, future changes to ceiling height partition are readily accomplished without tearing down the partition.

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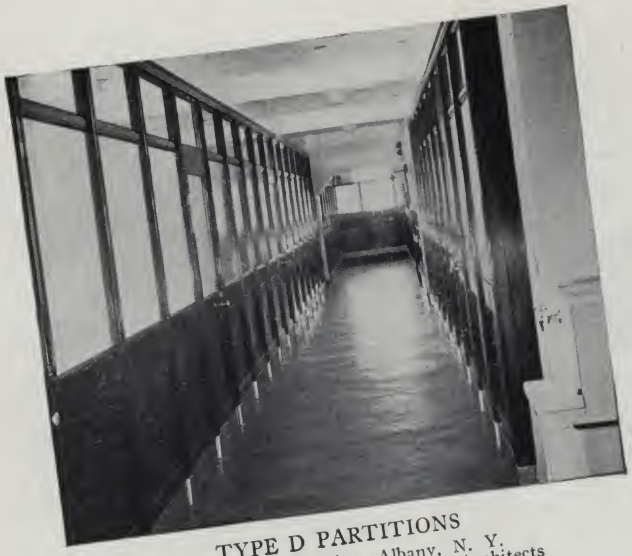
TYPICAL INSTALLATIONS OF ART METAL PARTITIONS

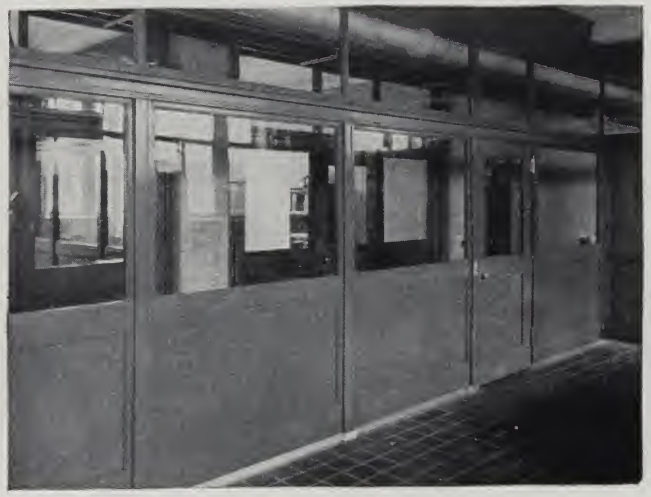


TYPE D PARTITIONS
State Office Building, Albany, N. Y.
Wm. E. Haugaard, Commissioner of Architects

CORRIDOR FORMED BY CEILING HEIGHT PARTITIONS
State Hospital for Insane, Trenton, N. J.

Left:
DOOR AND TRANSOM, TYPE D PARTITION
State Office Building, Albany, N. Y.
Wm. E. Haugaard, Commissioner of Architects

Right:
PARTITION WITH TELESCOPE TYPE WICKET, CARRARA GLASS DOORS AND TRANSOMS
New York Life Insurance Co., New York, N. Y.
E. F. Abell, Equipment Engineers



CEILING HEIGHT PARTITION
Aluminum Co. of America, New Kensington, Pa.
P. R. L. Hogner, Architect

PHYSICIAN'S OFFICES, CEILING HEIGHT PARTITIONS
State Hospital for Insane, Trenton, N. J.

Continued on next page

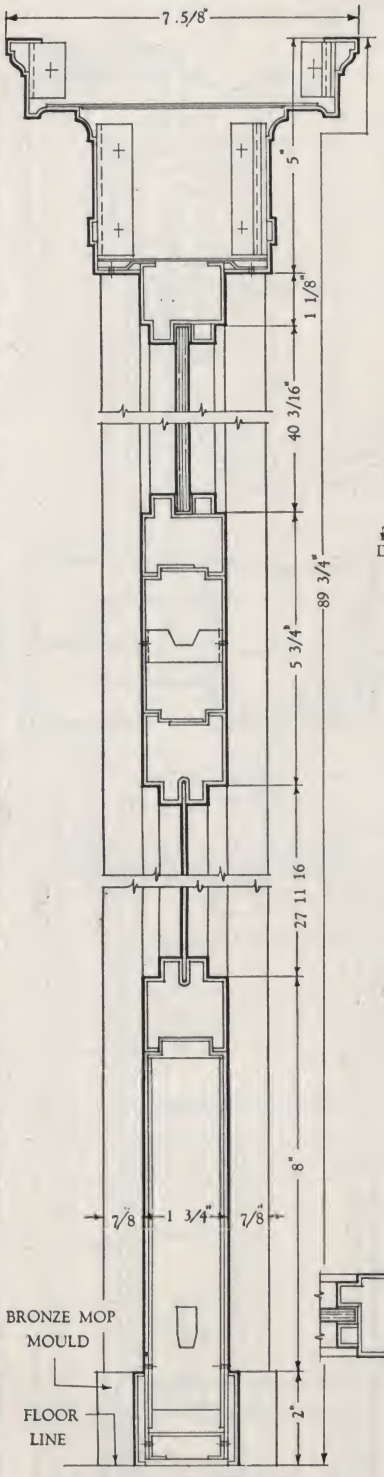
SCALE 3"=1'

ART METAL PARTITION

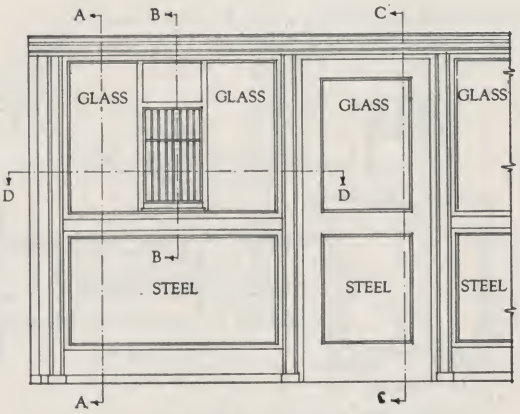
PLATE 1

ART METAL TYPE A PARTITION CORNICE HEIGHT

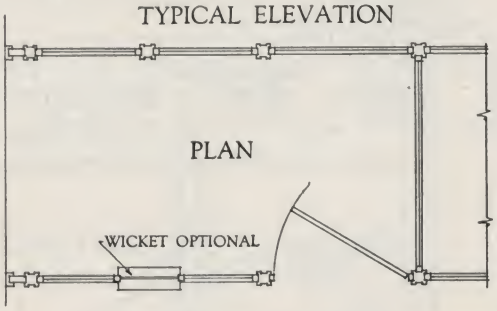
WHEN IT IS DESIRED TO MOVE OR RE-ARRANGE PARTITION, REMOVABLE FACE OF PILASTER GIVES ACCESS TO PANEL CLIPS WHICH WHEN REMOVED PERMIT DIS-ASSEMBLY THE PROCESS IS REVERSED IN RE-ERECTING

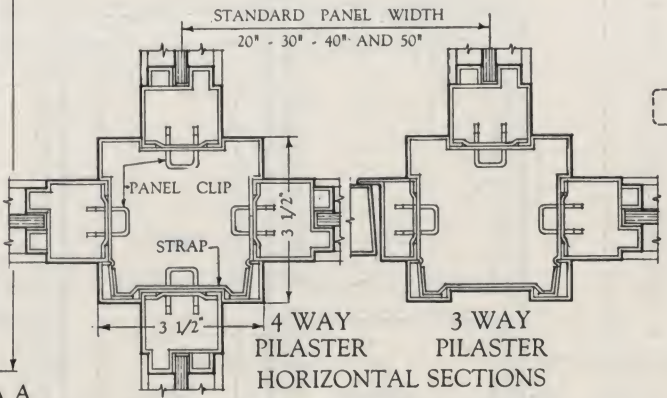


VERTICAL SECTION A A

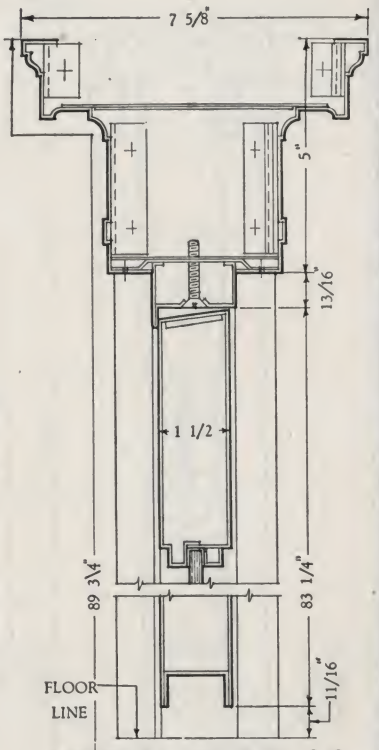


TYPICAL ELEVATION

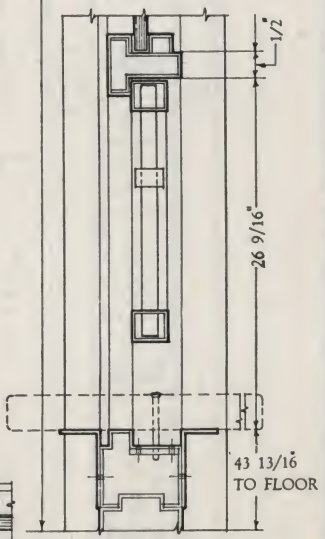




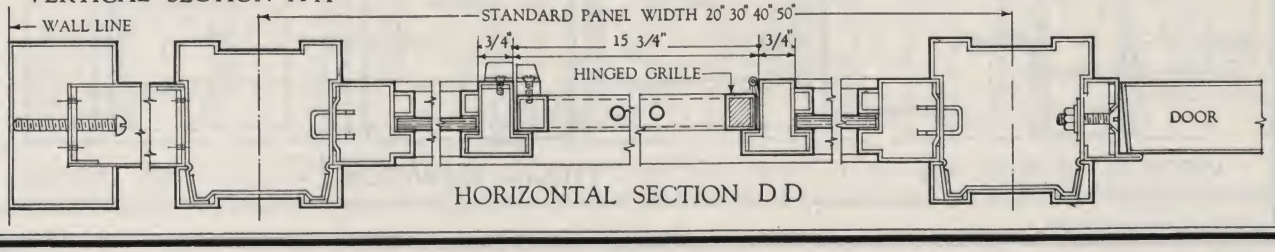
HORIZONTAL SECTIONS



VERTICAL SECTION C C



VERTICAL SECTION B B THRU WICKET



HORIZONTAL SECTION D D

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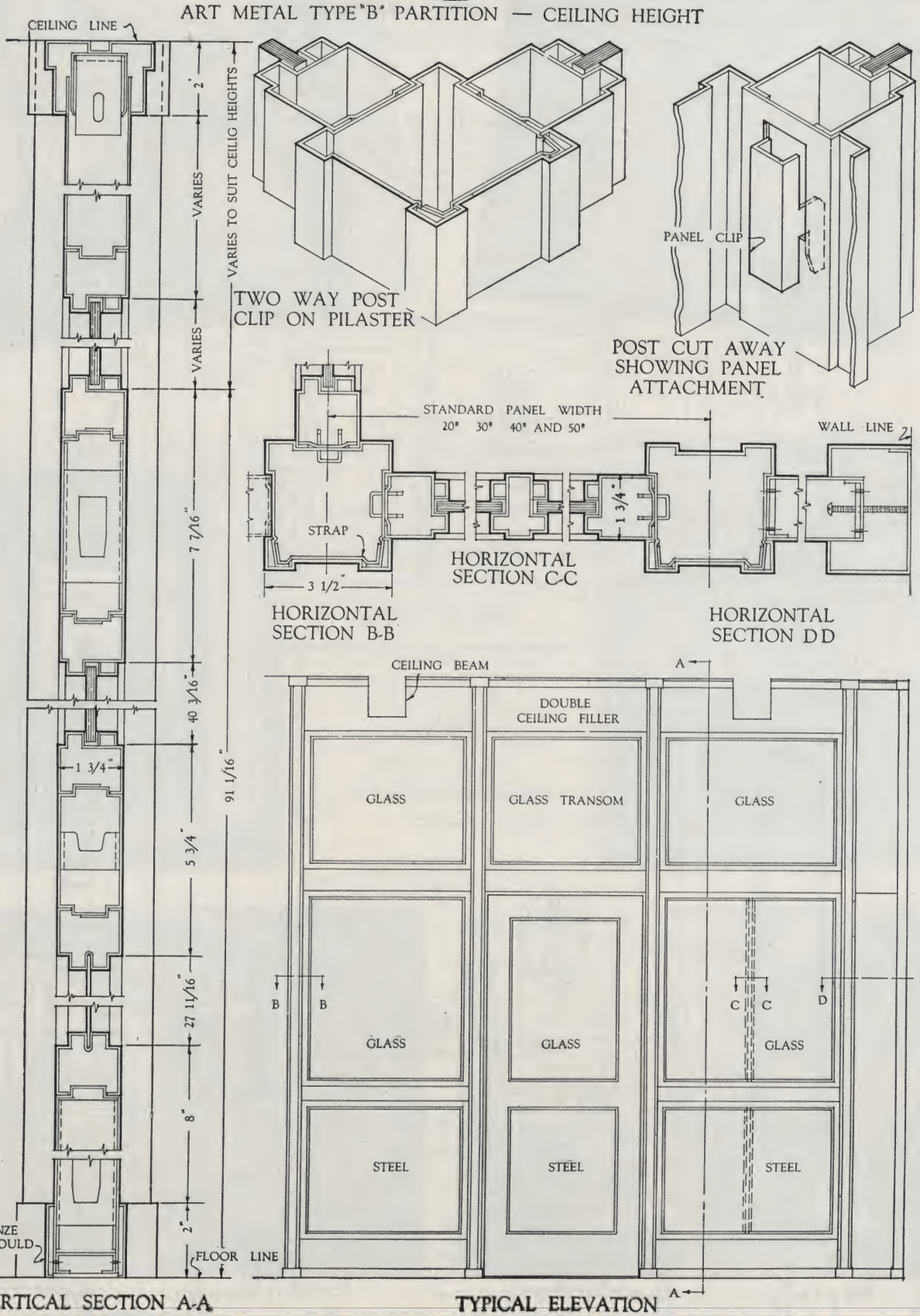
SCALE 3"-1'

ART METAL PARTITION

PLATE 2

ART METAL TYPE "B" PARTITION — CEILING HEIGHT



VERTICAL SECTION A-A

TYPICAL ELEVATION

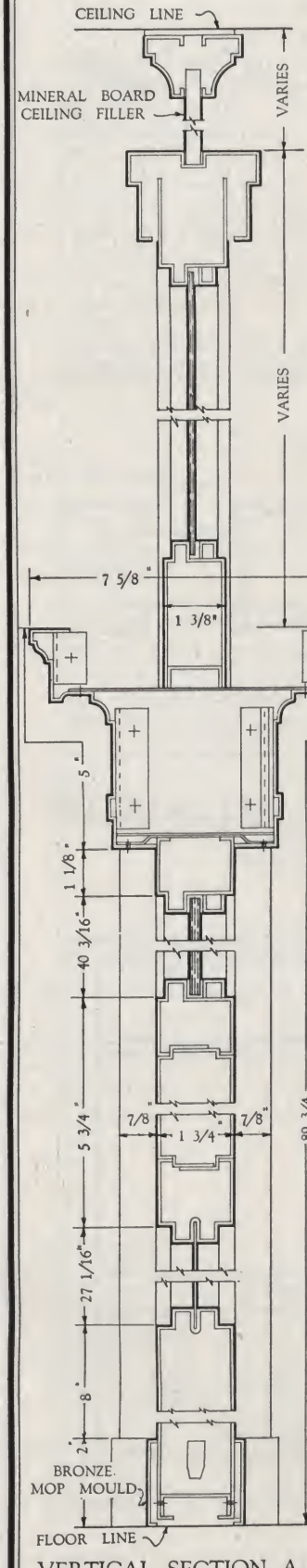
Continued on next page

SCALE 3"-1'

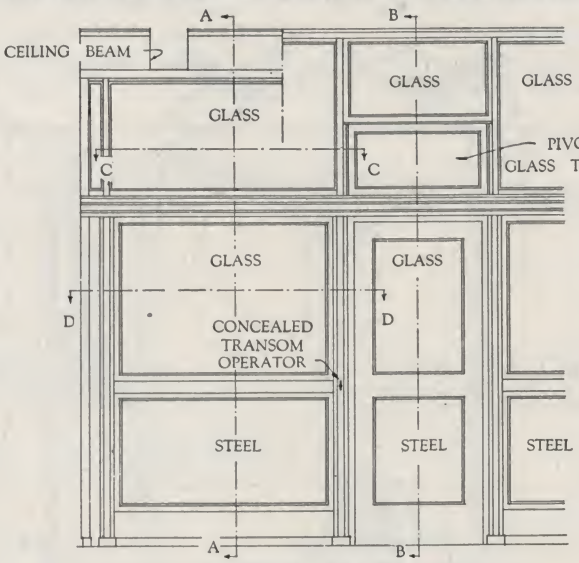
ART METAL PARTITION

PLATE 3

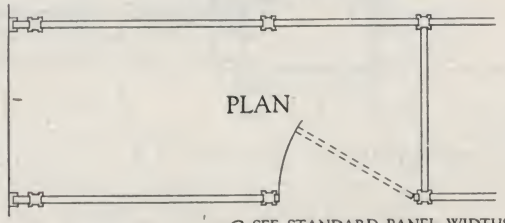
ART METAL TYPE "C" PARTITION — CEILING HEIGHT

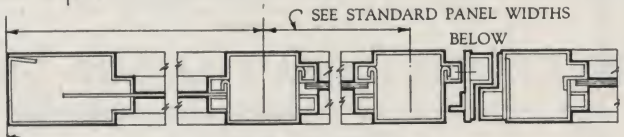


VERTICAL SECTION A-A

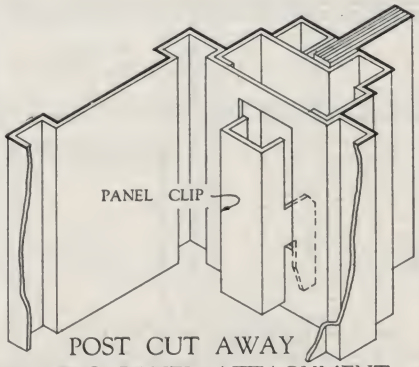


TYPICAL ELEVATION





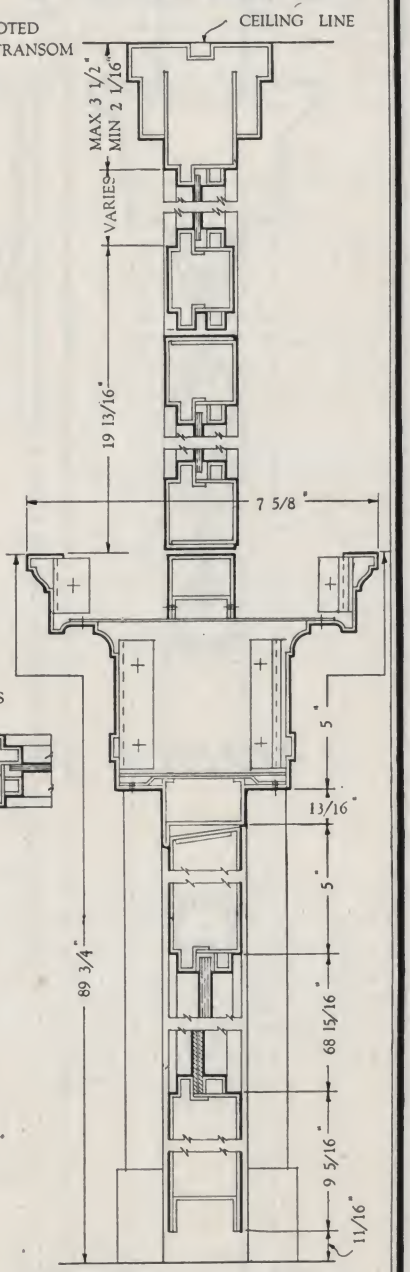
HORIZONTAL SECTION C-C



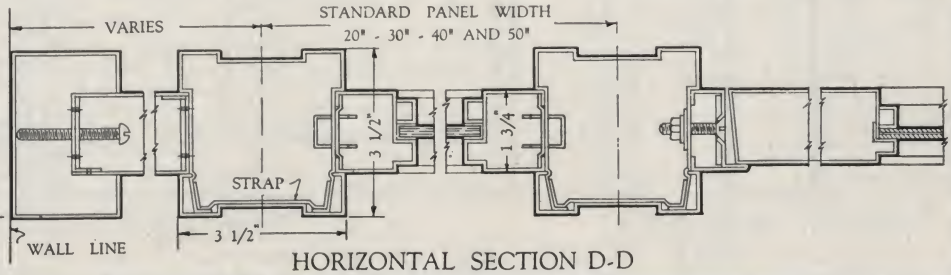
POST CUT AWAY SHOWING PANEL ATTACHMENT

WITH BEAM CEILING A MINERAL BOARD CEILING FILLER IS USED AND SCRIBED AROUND BEAMS AS SHOWN IN DETAIL AT LEFT OF DRAWING

WITH FLAT CEILING THE STEET IS CARRIED UP TO THE CEILING AS SHOWN BELOW



VERTICAL SECTION B-B



HORIZONTAL SECTION D-D

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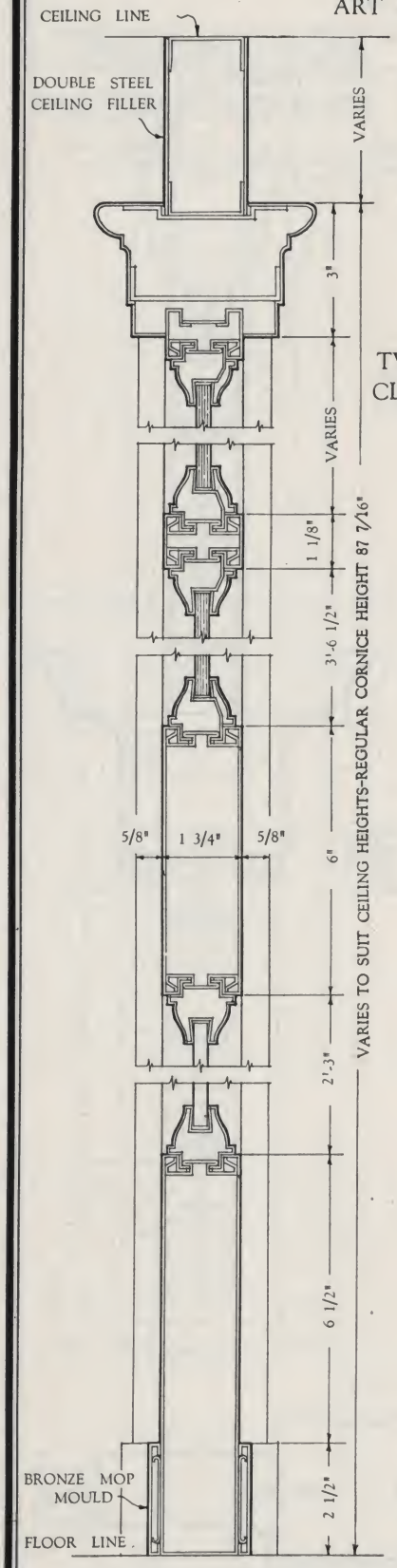
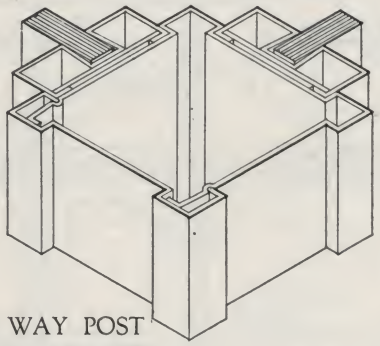
SCALE 3"-1' | ART METAL PARTITION | PLATE 4

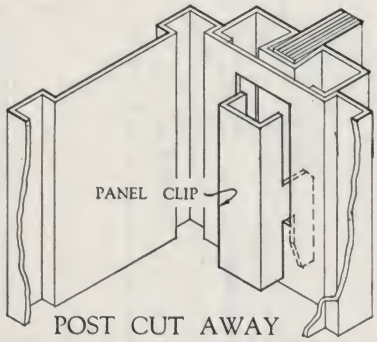
ART METAL TYPE "D" PARTITION — CEILING HEIGHT



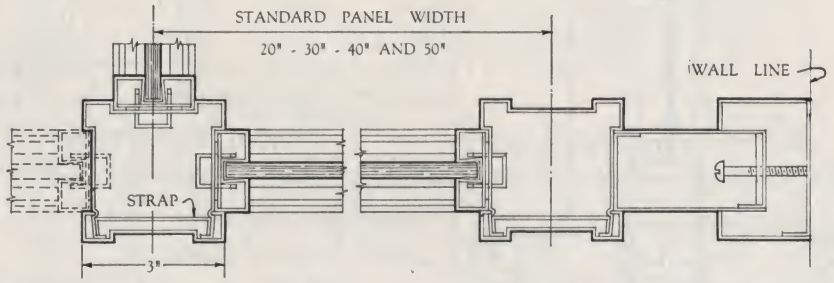
VERTICAL SECTION A-A



TWO WAY POST CLIP ON PILASTER

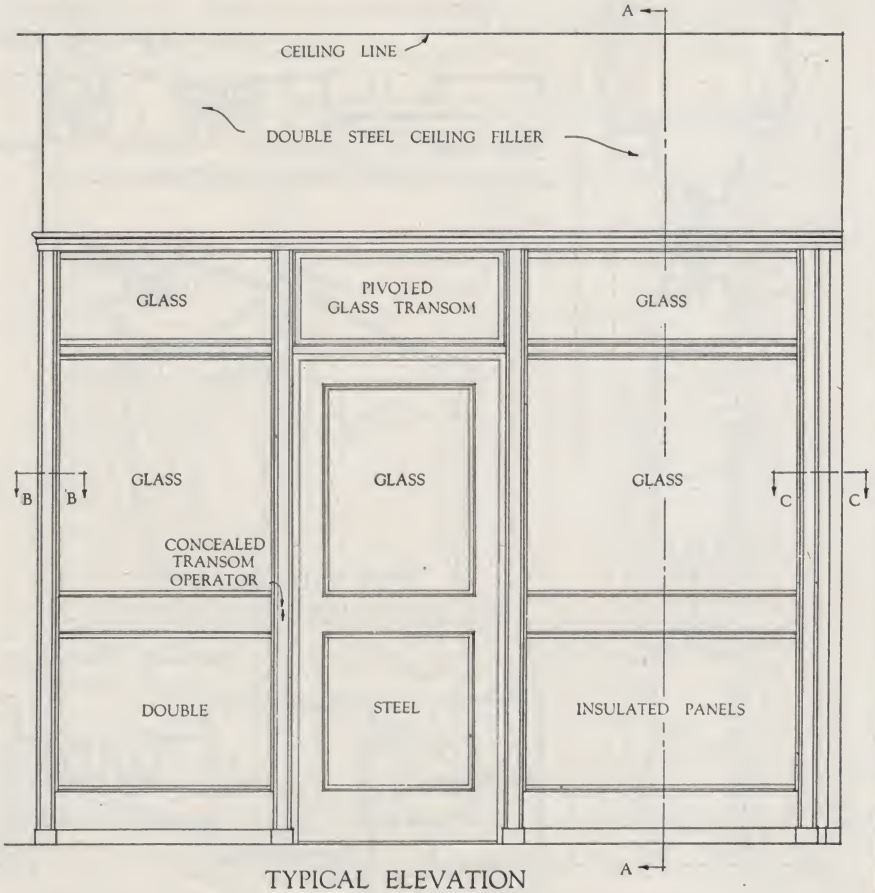


POST CUT AWAY SHOWING PANEL ATTACHMENT



HORIZONTAL SECTION B-B

HORIZONTAL SECTION C-C



TYPICAL ELEVATION

Continued on next page

FEATURES OF ART METAL VERTICAL UNIT PARTITION, TYPE D

(1) All units in Art Metal vertical partition, Type D are made one piece full height without cornice.

(2) Units are made in the following widths: 20, 30, 40 and 50 in. Larger units when specified must be specially built and are not recommended.

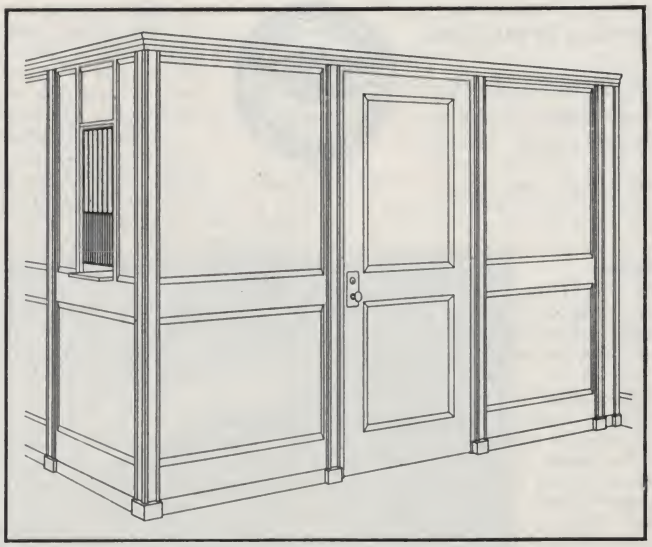
(3) All shapes required to make this partition are roller die drawn with true profiles and sharp corners and made from the best grade cold rolled steel.

(4) Cornice height partition is 7 ft. $3\frac{7}{16}$ in. high, based on using 7-ft. high door.

(5) Special ceiling height partition may be any height up to 12 ft. 0 in.

(6) All openings in partition for wiring are made large enough to accommodate two ¾-in. cables in all directions except in posts having concealed transom operators.

(7) The erection of this partition is simple. It has less parts than any other make we know of.



(8) The posts or pilasters consist of two pieces.

(9) Units are in one piece full height.

(10) The cornice is made in the following lengths: 40, 60, 70, 100, 120, 200 and 210 in. straight lengths. 40 in. mitered both ways and coped lengths 10, 20, 30, 40 and 50 in.

(11) Ceiling filler consists of 10-in. corner return both ways and all other lengths to suit layout of partition.

(12) Wall fillers are made from 6 in. up to and including 15 in. in width. From wall to center of post. In variations of 1 in. Fillers are held in contact with wall by means of pressure bolts.

(13) All units are keyed to posts. Three keys to each side of unit.

(14) Cornice is keyed to top of posts. Two keys at each post.

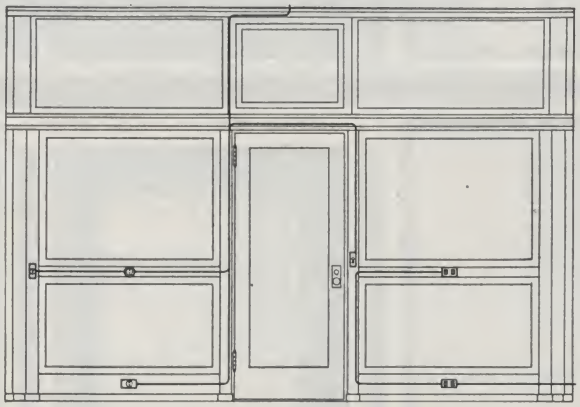
(15) All doors are furnished with standardized hardware, such as hinges and locks and door check if required.

(16) Transoms are equipped with Rixson concealed, center-hung operator or Monarch center-hung friction pivot.

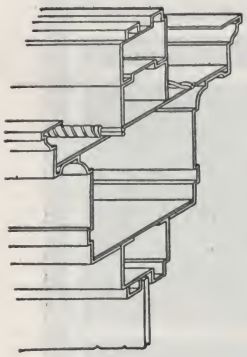
(17) Glass can be furnished in the following thicknesses: ⅛ in. double strength, $\frac{3}{16}$ in. polished plate, ¼ in. polished plate, or any make of obscure glass not exceeding ¼ in. in thickness. All glass is set in special flexible putty.

WIRING OF ART METAL PARTITION, TYPES A, B AND C

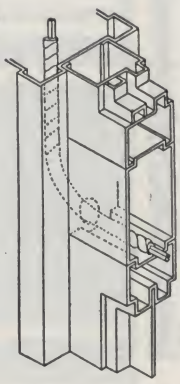
Provision has been made for the passage of electric wires through all members of Art Metal Partition. Ample space is available in the base, chair rail, cornice and posts for the passage of wires encased in a flexible conduit.



Perforations have been provided in all posts for the convenient passage of wires as they emerge from adjacent panels. The cornice is punched every 10 in. on centers for the passage of wires into the posts.



CORNICE



CENTER RAIL

Electrical Outlet Devices

Recommended for Use:

For Base or Posts

Single flush receptacle H and H 1493.

Duplex flush receptacle H and H 1494. (Cover plate must be specified if wanted.)

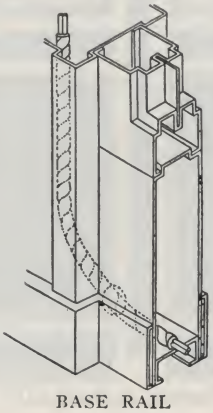
For Base or Intermediate Rail

Convenience Outlet (round type), Arrow 8230.

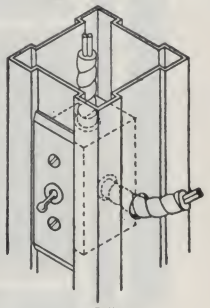
Tumbler Switch

Bryant 5171 is a suitable Tumbler Switch for installation on posts.

Where BX cable is used it is necessary to use a shallow outlet box, 1½ in. deep, for which the Austin 1½ in. box is suitable.



BASE RAIL



POST

DAHLSTROM METALLIC DOOR COMPANY

EXECUTIVE OFFICES AND FACTORIES
JAMESTOWN, N. Y.

BRANCH OFFICES
NEW YORK, N. Y., 475 Fifth Avenue CHICAGO, ILL., 19 So. La Salle Street DETROIT, MICH., 1331 Dime Bank Building
PACIFIC COAST PLANT: 3350 East Slauson Avenue, LOS ANGELES, CALIF.
REPRESENTATIVES IN PRINCIPAL CITIES

Products

Manufacturers of ADJUSTABLE STEEL PARTITIONS.

Also Conduo Base, general trim for office buildings, hotels, apartments, hospitals, schools, banks, theaters; Hose Cabinets and Switch Box Panels.

For Metal Doors and Trim, see Manufacturers' Index.

TRADE-MARK

Improved Dahlstrom Partition

To service the user properly, a partition should be carefully designed. A partition is essentially a "Service" unit. The purpose to which it is to be applied constitutes its service. A design is the result of analyzing what is necessary in flexible units to render that service.

To give service, the manufacturer must have an article that can be quickly fabricated and erected. To have such an article, he must standardize it to the limits of its possibilities. Ceiling heights and ceiling conditions are variable. It would be difficult to standardize ceiling height partitions and still maintain good proportion combined with good construction. This is recognized as a factor of utmost importance. Dahlstrom Standardization devlopments are based on a known factor—Cornice Height Partitions. This is the standard unit. Consequently it is possible to furnish Dahlstrom Cornice Height Partition in any quantity without waiting for information as to conditions at the building.

This means service to the building tenants as the Cornice Height can be obtained on short notice. The owner will be able to service his tenants by partitioning off the offices at the required time. This cuts the waiting time for occupancy of the building and means revenue to the owner.

Where partitions are to be built to the ceiling, information on the ceiling conditions can be forwarded later. Extensions harmonizing with the design of the Cornice Height Partitions can be made up to suit that particular condition. From an economic standpoint, we recommend that interoffice partition be Cornice Height. This offers the utmost flexibility and is particularly suitable for ventilation.

Careful and rigid paint tests have proven the best pigments and finishing materials for use on Metal Doors and Trim. The results of these tests, experience and experiments are all incorporated in the New Improved Dahlstrom Partition.

Flexibility

One of the major qualities in the New Improved Dahlstrom Partition is its flexibility. For example: the location of a door cannot always be predetermined when an office layout is made. It is therefore important that the sections be so constructed that a door can be taken out and a panel inserted or vice versa.

This is flexibility and is possible in the New Improved Dahlstrom Partition, as shown in the illustration on the opposite page.

Illustrating the Small, Easily Handled Members of Dahlstrom Standard Steel Partition

Continued on next page

Again, it must be so flexible that the floor space may be divided as desired. In the New Improved Dahlstrom Partition a new unit can be extended from each vertical pilaster, making it possible to divide the floor space in very small units.

In addition, a variety of design combinations can be effected, such as changing cross rail heights and interchanging of steel and glass panels.

The application of the glass retainer moulding is such that a variety of glass or metal panel thicknesses can be accommodated. It is adjustable from a small part of an inch up to $\frac{5}{16}$ in.

Another feature is the telescoping wall filler. This does away with the necessity of cutting such fillers on the job, which is the general practice.

(1) Dahlstrom Standard Steel Partition is stocked and comes in lengths of 10¼-in. multiples, i. e., No. 1, 10¼ in.; No. 2, 20½ in.; No. 3, 30¾ in.; No. 4, 41 in.; No. 5, 51¼ in.; No. 6, 61½ in.

(2) There are six widths of panels members increments of a multiple width. Thus a space for one six width panel can be filled with either two No. 3 panels; one No. 2 and one No. 4 panel; one No. 1, one No. 2 and one No. 3 panel, etc.

Dahlstrom Adjustable Ceiling Height Partition in the Lincoln National Life Insurance Building, Fort Wayne, Ind.

(3) Door units are made to suit the same multiple width factor. Irrespective of what type or width of panel, a door can be installed at any given point without disturbing adjacent panels.

(4) Standard pivoted transom can likewise be interchanged with stationary panels.

(5) Any panel can be removed without disturbing other parts of the partition, except where a change is desired.

(6) A partition can be set in any direction from a pilaster without use of special fillers.

(7) All pilasters are prepared to receive door jamb.

(8) Cross rail heights may be either Counter Height or File Height.

(9) Upper panels may be in either steel or glass or interchanged as desired.

Adaptability

Partition must be adaptable to all uses and needs of the modern office. A clothes closet may be needed or perhaps a wash stand within the office is desired. Then again a private telephone or coupon booth is essential in the larger offices. It may be desired to partition off the telephone operator's booth, or to install a railing around the information desk.

After the installation seems complete and a tenant has moved in, there are usually many changes such as these that must be made.

With the flexibility of Dahlstrom Standard Partition such additions can readily be made with standard units. It is unnecessary to remove an entire section of partition, even though it is desired to tie these additions into the present or erected partition.

Specifications for Metal Partitions

General Description—The partitions designated on the plans as "Metal Partitions" shall be of the unit type interchangeable steel and glass partitions having standard sections consisting of base rails, upper and lower panels, intermediate rails, continuous cornice on a line seven feet above the finished floors, and ceiling extensions consisting of panels similar to the one below the cornice line with a continuous upper cornice member finishing 1½-in. below the lowest ceiling beams and ceiling fillers made up of two parallel steel sheets to take up the variations in ceiling and beam heights. Bronze mop mouldings and bronze pilaster plinths shall be provided.

Pilasters—The pilasters shall be constructed of rolled shapes of not less than No. 20 U. S. S. ga. steel supported by rigid interlocking skeleton members. The four faces of the pilasters shall be symmetrical in design and construction so that intersecting partitions can be set up at any pilaster without recourse to intermediate filler members.

Panel Units—The base and intermediate rails shall be formed of not less than No. 20 U. S. S. ga. steel so constructed that they will fit snugly into the recesses in the pilasters and interlock with the panels. The panels shall be formed of rolled shapes of not less than No. 20 U. S. S. ga. steel, reinforced with interlocking stiffener channels of not less than No. 18 U. S. S. ga. steel. The corner miters shall be neatly formed and welded. The panels shall have collapsible channel members of No. 14 U. S. S. ga. steel, so formed and so attached to the panels that they will fit snugly into the recesses in the pilasters and hold the panels rigidly and securely in place. The loose mouldings for the panels shall have welded miters and shall be secured in place by means of adjustable concealed clips.

Cornice—The cornice on a line seven feet above the finished floor shall be formed of two continuous rolled shapes of not less than No. 20 U. S. S. ga. steel. Concealed between the two cornice shapes there shall be a heavy member formed of not less than No. 12 U. S. S. ga. steel, so designed and constructed that it will furnish a rigid support for the pilasters and form the basis for a rigid cornice structure. The upper cornice which finishes 1½-in. below the lowest ceiling beams shall consist of two rolled shapes of not less than No. 20 U. S. S. ga. steel and shall be secured in place by means of concealed clips.

Wall Fillers—Collapsible wall fillers formed of not less than No. 20 U. S. S. ga. steel shall be provided to fill the spaces between pilasters and adjacent plastered walls or columns. These fillers shall have an adjustment of one inch in either direction.

Ceiling Fillers—The ceiling fillers shall consist of two parallel steel sheets not less than No. 20 U. S. S. ga. supported by means of extension channels at each pilaster formed of not less than No. 12 U. S. S. ga. steel.

Sizes of Panels—The panels shall be made to suit the spacing of pilasters in some fixed multiple, as for instance 10 in., 20 in., 30 in., 40 in., 50 in., 60 in. The 40-in. spacing of pilasters shall be considered standard, and the other spacings shall be used only to fill out spaces where the standard cannot be accommodated.

Interchangeability—The partition shall be so designed and constructed that door units can be interchanged with panel units without the necessity for disturbing any other units than those to be interchanged.

Finish—All concealed members shall be given at least one coat of rust inhibiting paint. All exposed surfaces shall be finished in baked enamel (color to be selected) equal to the standard finishes employed by recognized manufacturers of hollow metal doors and trim.

Erection—The partitions shall be erected with a minimum of floor fastenings and without the use of screw fastenings into walls, columns or ceilings, except in the case of free-standing partitions, which must necessarily be fastened to walls or columns. In such cases screw fastenings will be permitted to secure the cornice member to the walls or columns. No other defacements of the plaster on walls, columns or ceiling will be permitted. The partitions shall be rigidly held in place by means of jack screws engaging against steel shields to protect the plaster, thus making it possible to remove any partition without unnecessary defacement of walls, columns or ceilings.

EMPIRE STEEL PARTITION CO., INC.

Fifteenth Avenue and 120th Street, COLLEGE POINT, N. Y.

Products

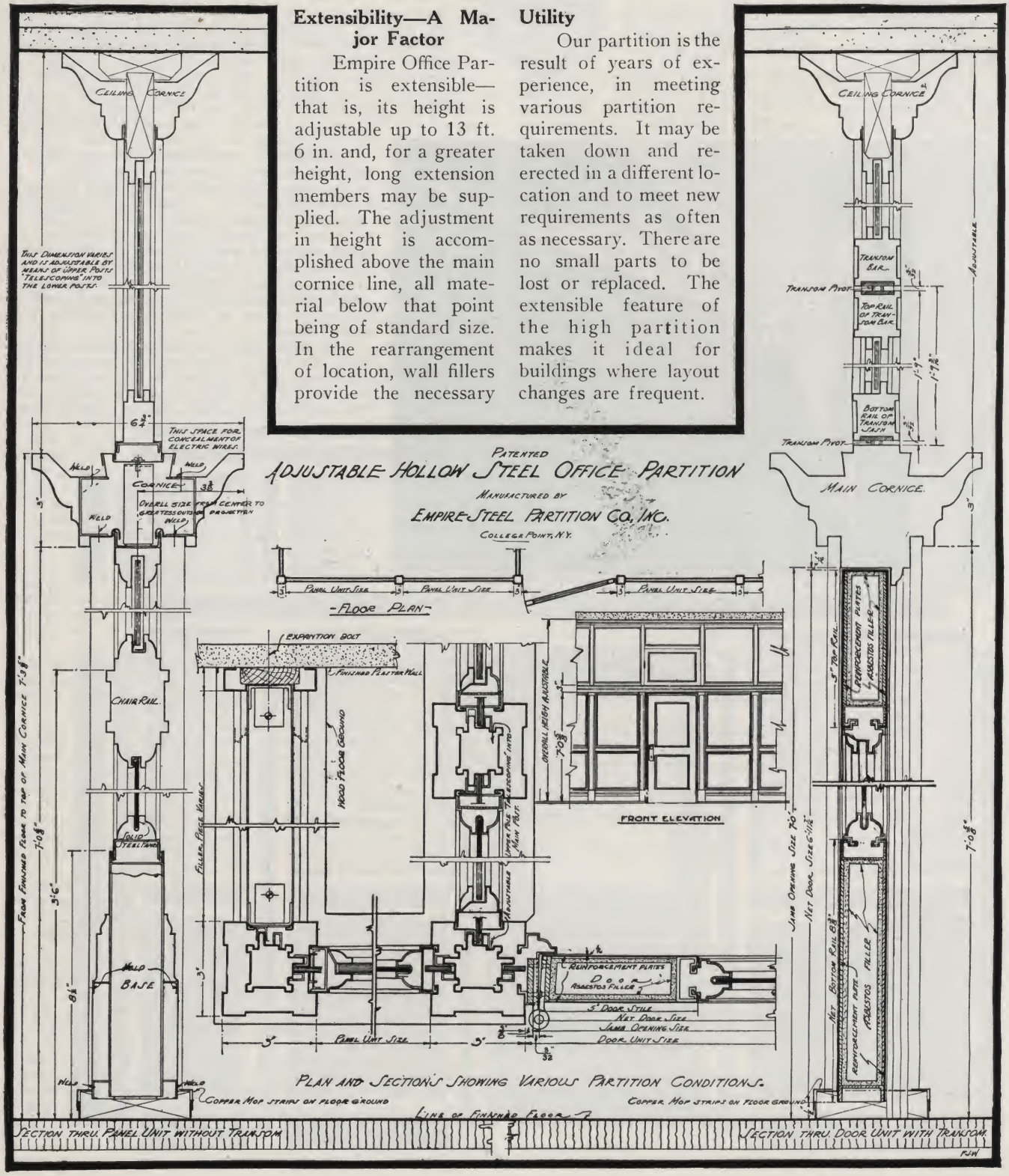
EXTENSIBLE STEEL PARTITIONS.
STEEL OFFICE RAILINGS.
STEEL COUPON BOOTHS.
Also Toilet Stall Partitions.

Extensibility—A Major Factor

Empire Office Partition is extensible—that is, its height is adjustable up to 13 ft. 6 in. and, for a greater height, long extension members may be supplied. The adjustment in height is accomplished above the main cornice line, all material below that point being of standard size. In the rearrangement of location, wall fillers provide the necessary adjustment. The floor leveling ground, covered with bronze or copper, serves also as a mop strip. This ground, being of a continuous straight line, with no pilaster bases protruding, has no corners or pockets to collect dirt. It thereby makes for a sanitary condition.

Utility

Our partition is the result of years of experience, in meeting various partition requirements. It may be taken down and re-erected in a different location and to meet new requirements as often as necessary. There are no small parts to be lost or replaced. The extensible feature of the high partition makes it ideal for buildings where layout changes are frequent.



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Strength

Empire Extensible Partition remains sturdy at any height. Its pilaster members are firmly interlocked, thereby insuring strength and durability. Units are fully reinforced and welded by means of the acetylene and electric spot-weld process. All fastenings are concealed.

Economy

Empire Extensible Partition is designed so that all parts may be fitted together quickly on the job.

City of New York—District Attorney's Offices
Empire Steel Office Railing. We also make paneled office railing of same design as partition units

The extensible feature insures real economy, particularly in rearranging layout. The adjustable upper pole takes care of the varying ceiling heights so common to present day building construction. Purchasing of extra parts is therefore unnecessary.

Sizes

Standard sizes of units run in multiples of 6 in. from 12 to 48 in. but special sizes may be provided if required. Standard size of door is 3x7 ft. Other sizes, however, may be furnished if required. The height of the low partition is 7 ft. 3⅝ in. from floor to top of main cornice. Transoms, wickets, pass windows, etc., are furnished in doors or units if required.

Design and Finish

Empire Partitions are designed to combine beauty with strength and durability.

Finishes are baked-on enamels, in a variety of plain colors, or imitation of the finest grained natural woods. This makes it possible to have the finish of partition harmonize with office furniture or other surroundings. The baked-on enamel combines toughness, hardness and elasticity—a combination of features not possible to attain with air-dried finishes.

Erection

Empire Partition, due to its unique construction, may be taken down and re-erected in a minimum of

Brooklyn Municipal Building, Brooklyn, N. Y.
Empire Steel Partition—cornice height with grille, and ceiling height with glassed-in upper portion

time, and at a minimum of cost, and without loss or damage to material. It therefore may be used over and over again.

Service

We maintain a force of skilled erection mechanics and carry in stock at all times at our factory a large quantity of partitions, ready for finishing. Our engineering staff is available at all times to assist in laying out and detailing partition requirements. The small order receives the same prompt attention as the larger order.

Installations

We shall be glad to furnish, upon request, a partial list of notable installations we have made.

Office of Celluloid Corporation, 38 West 40th Street, New York, N. Y.
Empire Steel Partition—walnut finish, ceiling height, all metal panels

THE GLOBE-WERNICKE CO.

FACTORIES

CINCINNATI, OHIO AVENEL, N. J.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Products

MOVABLE STEEL PARTITIONS, RAILINGS AND HOLLOW METAL DOORS.

Globe-Wernicke also manufactures Steel Counters, Steel Shelving, Steel Desks, Standard and Special Filing Equipment, etc.—a complete line of Interior Equipment in wood and steel.

The Globe-Wernicke Line of Steel Partitions makes available "A Globe-Wernicke Partition to Meet Every Condition."

Steelpact panels possess insulation value that is equal to wood 1 in. thick, or to plaster 2½ in. thick.

Lower panels of Steelpact reduce radiation losses and permit of efficient control of the temperature of the enclosed space. Partitions of Steelpact from floor to ceiling form a sound resistant construction and a sanitary substitute for plaster walls.

Construction Features of GlobeArt Partition

GlobeArt Partition is made in cornice height units, each unit being a complete section of partition from center to center of post and from floor to cornice. Units are made in widths of 20, 30, 30, 50 and 60 in. Each unit contains a base and lower panel of Steelpact 42 in. high and a glass or Steelpact panel 42 in. to door height. An additional glass or Steelpact panel of 12, 18, 24, 30 or 36 in. height can be incorporated into the unit. Over the doors this panel can be filled to contain a horizontally pivoted ventilator, controlled by a concealed operator. Adjacent units are abutted and locked together with clips engaging the adjacent flanges.

GlobeArt Installations

Note continuous top filler above cornice for low ceilings (left) and superstructure above cornice for high ceilings (right)

Partitions

GlobeArt—A partition made in factory assembled vertical units that assemble by means of interlocks.

Executive—A beautiful post and panel partition, with mitered and welded panels.

Highline—A post and panel partition made with continuous posts, especially adapted for high ceiling installations.

Unit Steel—An economical industrial partition formed of interchangeable rails and panels, that can be assembled to any height or width. Glass panels installed with felted glazing strips. No putty necessary.

Adaptability—Although each line of partition is individual and designed for a different type of service, they are so constructed that they may be used together with a complete harmony of lines and finish.

Information

GlobeArt Partitions are described herewith. For complete details regarding other types of partitions, write to THE GLOBE-WERNICKE CO., Steel Partition Division, Cincinnati, Ohio.

Construction of Steelpact Panels

These panels are composed of Celotex securely cemented between carefully selected stretcher leveled steel sheets.

The elasticity of the Celotex permits of contraction and expansion of the steel sheets without loosening. The panels hold their original true surface and withstand the shock of accidental contact of chairs or similar equipment.

Erecting GlobeArt Vertical Sections

Continued on next page

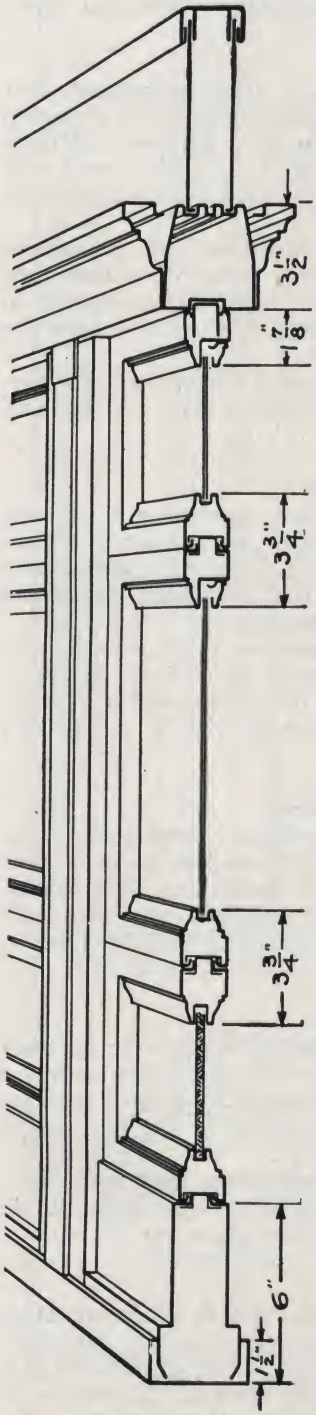
Pilasters having spring flanges in continuous engagement with verticals of adjacent units are snapped into place covering the opening between the units. Consider the improvement over the conventional method of spanning pilaster from clip to clip.

A neat, artistic cornice rolled from one piece of 18-gauge steel is placed continuously over adjacent units and securely fastened. Cornice is furnished in length as long as possible and in welded corner and T-pieces. Abutting ends of cornice are bolted and wedged to form a joint as strong as the cornice itself and insuring continuation of all surfaces.

Base mould of steel (or copper or bronze) follows the irregularities of floor and conceals all shims and floor fastenings. This mould is furnished in panel lengths and is so designed as to provide a mopping strip the entire length of partition from wall to wall in continuous line, unbroken except at doors and eliminating all projecting dirt-catching plinths.

Doors and door frame units are furnished right- or left-hand, swing-in or swing-out, as specified, but can be very readily reversed as to hand or swing without the addition or substitution of parts. Doors are hung on three ball-bearing steel butts, 4½x4½ in., polished and heavily plated. A complete line of high grade standard locks offering any desired operation is available, and each door is so mortised and reinforced that any standard lock can be installed without changing cut-out or screwholes. Door units are made standard 30 or 40 in. and will exactly replace a partition unit of similar size.

Any unit can be removed from an installation at any time and replaced with other standard units or door unit without disturbing the balance of installation.



Cross Section of GlobeArt Partition

GlobeArt Partition Specifications

Steel partitions to be of standard manufacture, similar and equal to GlobeArt type as manufactured by The Globe-Wernicke Co.

Steel to be of best grade commercial cold-rolled furniture stock, generally 18 and 20-gauge, reinforced where necessary to satisfaction of architect.

Partition to be made up of vertical sections in 20, 30, 40, 50 and 60 in., center to center of post dimensions. Cornice heights shall be as shown on plans.

Widths of sections shall be so arranged to form the most economical and symmetrical layout possible for the required space.

Cornice to be continuous, rolled of one piece of 18-gauge metal.

Panels shall consist of two sheets of stretcher leveled steel securely cemented to an inner core of sound deadening material.

All horizontal and vertical members must permit the carrying of wiring and switch outlets.

Floor mould shall follow lines of floor, insuring a snug fit of base to floor, and shall provide a continuous unbroken mopping strip.

Door shall be one (or two) panel. Units to be 30 or 40 in. for single doors, 60 in. for double doors. All doors and door frames shall be completely reversible as to hand and swing without the use of additional parts and without change of hardware. Rails and stiles of all doors to be cork filled to deaden metallic sound.

Hardware to be manufacturers' standard, subject to approval. Each door to be equipped with 1½ pairs of 4½x4½ in. ball-bearing butts.

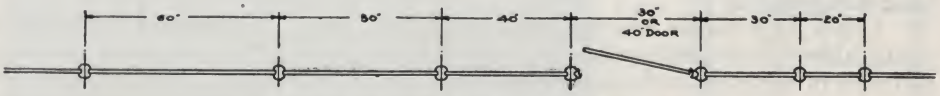
Glass, where shown on plans, to be of the kind and weight shown, and shall be subject to the approval of architect. Each light of glass shall be bedded in special steel partition putty, colored to match the partitions. Loose glazing strips, where used, shall be held in place with concealed clips, no screws to show.

Top filler space above cornice to ceiling to be neatly filled with two continuous sheets of steel or composition board scribed to walls, beams and ceiling, and painted to match ceiling.

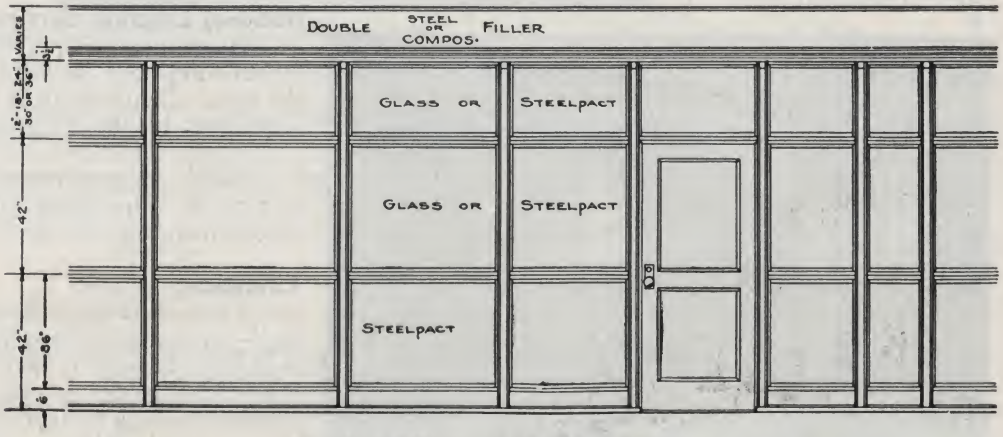
Or—

Space above cornice to be filled with a superstructure and an additional cornice under lowest beam or pipe with continuous filler above second cornice to ceiling. Either top filler to be designed so that it is not necessary to disturb existing partitions if added at a later date.

All shims, clips, etc., shall be copper plated to avoid rust. All work to be thoroughly cleaned and then given a baked-on prime finish, then given two coats of the color selected.



Layout Showing Standard Post Spacing



Typical Elevation of GlobeArt Partition

THE E. F. HAUSERMAN COMPANY

PLANNING SERVICE—MANUFACTURING—INSTALLING

Partition Specialists—"Organized for Service Nationally"

6994 Grant Avenue
CLEVELAND, OHIO

DIRECT FACTORY BRANCHES

NEW YORK, N. Y.	KANSAS CITY, MO.	DETROIT, MICH.	CINCINNATI, OHIO	PHILADELPHIA, PA.	BUFFALO, N. Y.
BOSTON, MASS.	PITTSBURGH, PA.	CHICAGO, ILL.	WASHINGTON, D. C.	NEWARK, N. J.	ST. LOUIS, MO.

Product

HAUSERMAN MOVABLE STEEL PARTITIONS: used to divide and subdivide office and industrial space.

A type suitable for every partition requirement. One hundred colors, duotone combinations and wood grain effects. Practical and businesslike in appearance. Quality in every detail to harmonize with the finest surroundings.

Flexibility

Hauserman Movable Steel Partitions are an assembly of standard units of all-steel, steel and glass, or steel and wire mesh, rigidly interlocked with concealed fastenings to form a staunch, durable partition. A wide range of panel sizes give adaptability to varying conditions of height and width. Top fillers are scribed neatly to the beam and are painted to match the color of the ceiling. End fillers extend from nearest post into the steel moulding on the wall.

Wiring

All wires ordinarily unsightly are completely concealed in large easily accessible chases in Hauserman Partitions. These chases, such as posts, base, chair rail and cornice, lead to desired locations for switches, outlets and telephones. The nuisance and expense of using "jumpers" under door openings is avoided by passing the wire up the posts through the head rail over the door and down the other post.

Interchangeability

Doors and panels of the same width are interchangeable. Transoms, grilles and ventilators may be installed in any standard Hauserman unit.

Finished at the Factory

All parts, however small, are completely finished at the factory so that they go immediately into assembly when installation starts. It is never necessary to touch up the component parts when a partition that has been in use is taken down and rearranged in different form.

Permanence and Economy

The only partition that is truly permanent, that endures through the inevitable necessity of changing floor layouts, is the movable steel partition. Money invested in partitions built up of perishable outer-wall materials is often lost with the first rearrangement of the original layout.

Hauserman Movable Partitions are permanent because they have 100% salvage value. The more they are rearranged, taken down, added to, re-erected in different form, the more dollars they reclaim from the original expenditure.

The enduring quality of steel supplements the versatility of Hauserman Partitions to give a lifetime of unfailing service.

Rejuvenating Old Buildings

Many an old office building, occupying a strategic location, can successfully compete with newer structures if rehabilitated by rearranging space with Hauserman Movable Steel Partitions. Greater dollar return per square foot is immediately assured.

The cost of such rejuvenation is surprisingly low and can be spread out to meet a maintenance budget—a single office, a suite or a floor converted at a time. Steel partitions can be installed while rooms are occupied.

Color and Decorating Service

We have developed one hundred exclusive colors and grained finishes that may be used singly or in combination to obtain interiors of charm and individuality. The services of our Colorist and Decorator are available without obligation, in connection with our installations.

National Erection Service

Hauserman sells a finished result—the partition layout completely installed to the entire satisfaction of the user. Every detail is handled by trained partition specialists in the exclusive employ of THE E. F. HAUSERMAN COMPANY.

This factory-directed planning and installation service is immediately available from each of the Hauserman branch offices listed above.

Literature

Free—a 40-page Book—"Office Planning Studies"—Presents the best features found in 2500 practical office layouts of varying uses. Eighteen full-page floor layouts are graphically shown. It will be of inestimable help to everyone who lays out floor space.

A copy will be sent without obligation.

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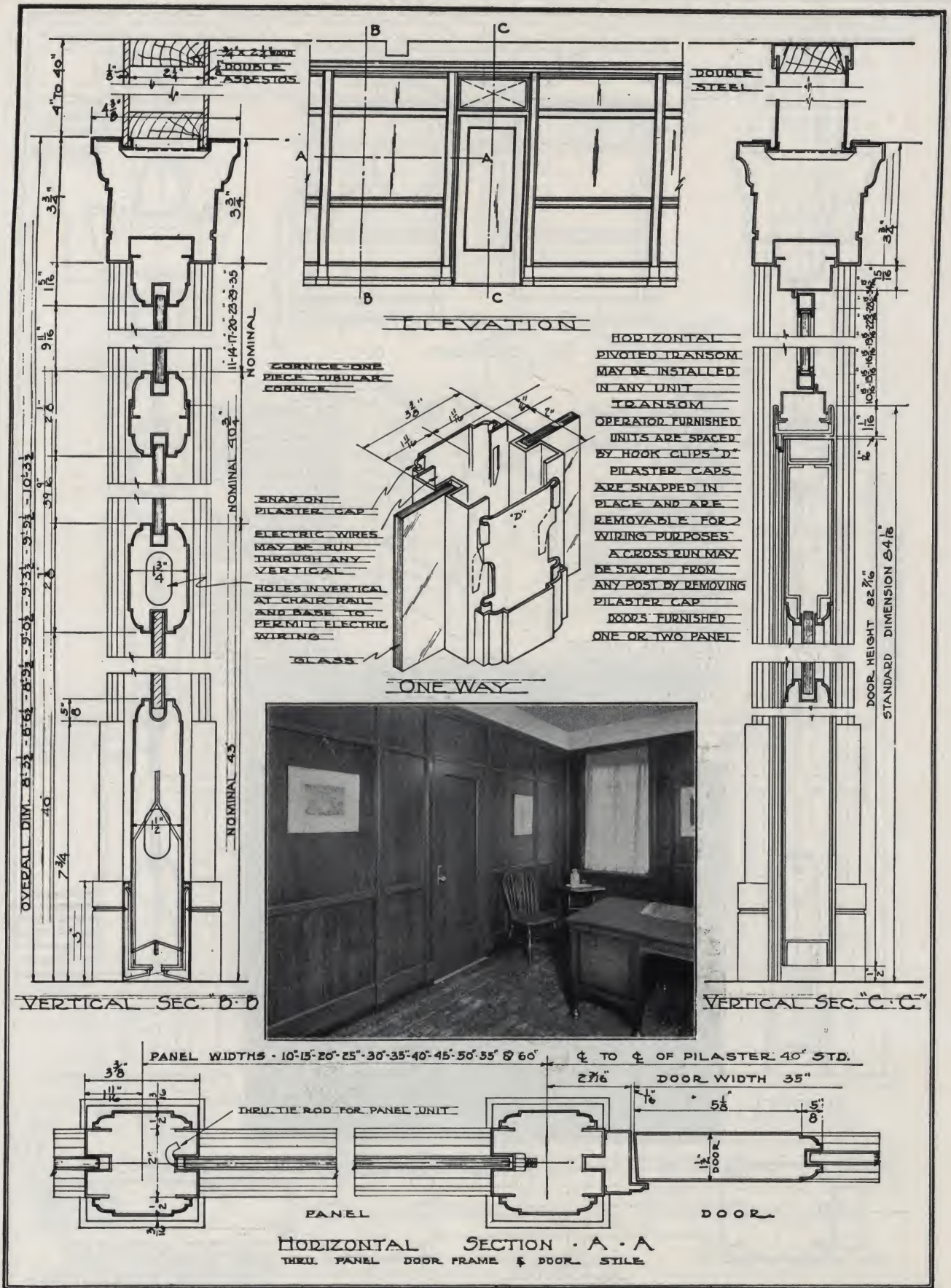

THE E. F. HAUSERMAN COMPANY CLEVELAND, OHIO.	· STANDARD · DETAILS · HAUSERMAN · MOVABLE · PARTITIONS ·	TYPE T A DRAWING DATE 10-17-29

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DOUBLE STEEL TOP FILLER

ELEVATION

ALTERNATE ADJUSTABLE SUPER-STRUCTURE

OVERALL DIMENSION 7-2½"-8-2½"-8-8½"-9-2½"-10-2½"

CORNICE
ONE PIECE TUBULAR SHAPE BOLTED TOGETHER IN STANDARD LENGTHS

PANEL
MADE IN HEIGHTS SHOWN BOLTED ASSEMBLY FOR READY ALTERATION IN SIZE END VERTICAL CONSTITUTE HALF POST WHICH ARE CLIPPED TOGETHER AS SHOWN

POST CAP
ARE OF THE SNAP-ON TYPE HELD BY THE PANEL ASSEMBLY CLIPS

ONE WAY POST
SHOWING SIMPLICITY OF ASSEMBLY & ACCESSIBILITY FOR WIRING
A CROSS RUN MAY BE STARTED FROM ANY POST BY REMOVING POST CAP
1 2 & 3 WAY POSTS ARE SYMMETRICAL

PLINTH
ARE SNAPPED OVER BOTTOM OF POST CAPS TO HIDE SHIMS & PROVIDE FOR INEQUALITIES IN FLOOR LEVEL

TRANSOM
TRANSOM MAY BE INSTALLED IN ANY OPENING AT ANY TIME

WIRING
ALL MEMBERS ARE PROVIDED WITH WIRING HOLES & ARE ACCESSIBLE AT ALL TIMES
A COMPLETE LINE OF FLUSH PLATES & FITTINGS IS STOCKED

WIRE HOLE

TIE ROD

SINGLE STEEL PANEL STOCK STANDARD

ALTERNATE PACKED PANEL WHEN SPECIFIED

MOP STRIP IS SEPARATELY ADJUSTABLE ON EITHER SIDE TO PROVIDE FOR RUG OR LINOLEUM AND IS READILY REMOVABLE FOR PAINTING

SECTION-A-A

SECTION-C-C

PANEL WIDTHS 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60

℄ TO ℄ PILASTER 40" STD.

1½" DOOR

SECTION-B-B

DOORS ARE FURNISHED ONE PANEL OR TWO PANEL, SINGLE IN PAIRS, DOUBLE ACTING OR SLIDING

THE E. F. HAUSERMAN COMPANY
CLEVELAND OHIO

STANDARD DETAILS HAUSERMAN MOVABLE PARTITIONS

TYPE R A DRAWING
SET
DATE 10-17-29

Continued on next page

DOUBLE STEEL TOP FILLER FURNISHED OVER CONTINUOUS CORNICE.

4" TO 40"

5¾"

3⅜"

21-24-30-36-42

42"

HEIGHT VARIABLE TO SUIT CONDITION

42"

ADJUSTABLE RIBBED TOP BETWEEN CEILING HIGH POSTS

ONE WAY

ELEVATION POSTS MAY EXTEND TO STRUCTURAL CORNICE WITH FILLER OVER OR MAY BE EXTENDED DIRECTLY TO CEILING. UNITS ARE MADE IN STEEL OR GLASS AND MAY BE ASSEMBLED IN ANY COMBINATION. DOORS ARE MADE IN ONE OR TWO PANEL PAIR, DOUBLE ACTING & SLIDE DOORS CAN BE FURNISHED.

ALL MEMBERS ARE READILY ACCESSIBLE FOR ELECTRIC WIRING.

TWO WAY

TOP FILLER 6 TO 12"

12 TO 42"

42

42"

CEILING HEIGHT VARIABLE

VERTICAL SECTION TYPE "K"

VERTICAL SEC. TYPE "H"

STANDARD DIMENSIONS 20"-40"-60"-80"-100"

℄ TO ℄ OF POSTS 40 STANDARD

DOOR WIDTH 35" STANDARD

3 WAY POST SHOWN

3¾"

3¾"

2½"

1⅛"

1 11/16"

¾"

5½"

5"

1½" DOOR

PANEL

DOOR

HORIZONTAL SECTION OF "K" & "H"

DOOR ALSO FURNISHED 25" - 30" & 10" ℄ OF POST

THE E. F. HAUSERMAN COMPANY CLEVELAND OHIO

STANDARD DETAILS HAUSERMAN MOVABLE PARTITIONS

TYPE H & K JUNE 1928 DWG. A

NORWOOD-WHITE COMPANY

Manufacturers of Sectional Movable Wood Office Partitions, Railings and Counters

GENERAL OFFICES

80 Broad Street, BOSTON, MASS.

REPRESENTATIVES

ATLANTA, GA., Applewhite & Lawler Co., Citizens & Southern Bank Building
BUFFALO, N. Y., Kenmore Builders Supply Co., Hinman Avenue
CLEVELAND, OHIO, Carver & Behan, 509 Insurance Center Building
PITTSBURGH, PA., Kirk-Grier Co., 434 Diamond Street

Products

Norwood White Movable Wood Partitions, Railings and Counters.

Features

Norwood White Partitions are entirely assembled with concealed wood screws and may be taken down and relocated any number of times without loss of material or damage to premises. The partitions have ample provision for both horizontal and vertical concealed wiring. Factory fitted parts and simplicity of construction assure a low erection cost even with unskilled mechanics.

Designs

Norwood White Partitions are carried in three types, the Executive, the Commercial and the Economy, covering ample price range and purpose. These partitions are available in American walnut, mahogany, quartered oak, plain oak and clear pine. Excepting the Economy type pine all partitions are *factory finished* in lacquer.

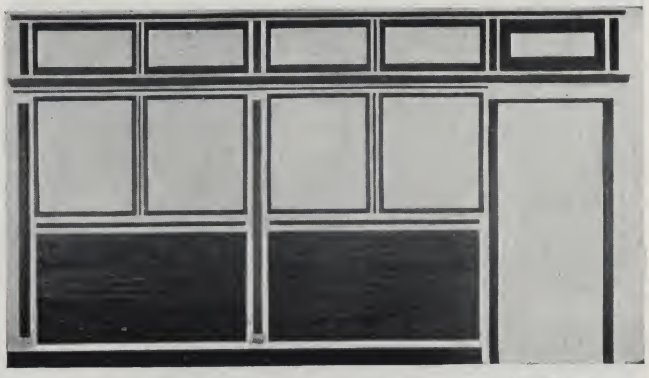
The Executive Type—Directors' rooms, executive offices, private offices, main corridors, brokerage offices, bank interiors, etc.

The Commercial Type—General office divisions, bank coupon booths, cashiers' cages, public utility offices, industrial offices, department stores.

The Economy Type—Garage offices, shop offices, storage rooms, warehouse offices and shipping rooms.

Stocked

Eleven standard unit widths make Norwood White Partitions adaptable to any conceivable layout. Partitions can be furnished either 7 ft. high or to the ceiling with an adjustable superstructure to accommodate any ceiling height. All types are furnished with a black *mop proof* baseboard impervious to floor washing compounds. The 13/16 in. 5-ply die panel is also a Norwood White feature on all types.



Showing Parts Assembly of the Commercial Type

Specifications, etc.

Further specification, catalogues and prices on request to Boston Office or nearest representative.

References

Norward White Partitions are standard in such buildings as:

Atlantic National Bank Bldg., Boston
Charles Chauncy Bldg., Boston
Insurance Exch. Bldg., Boston
North Station Industrial Bldg., Boston
Public Service Bldg., Boston.
Central Bldg., Worcester
R. I. State Office Bldg., Providence
Washington Bldg., Washington, D. C.

Typical Commercial Mahogany Installation to Ceiling Height

Commercial Mahogany Type Utilized as Wall Dado

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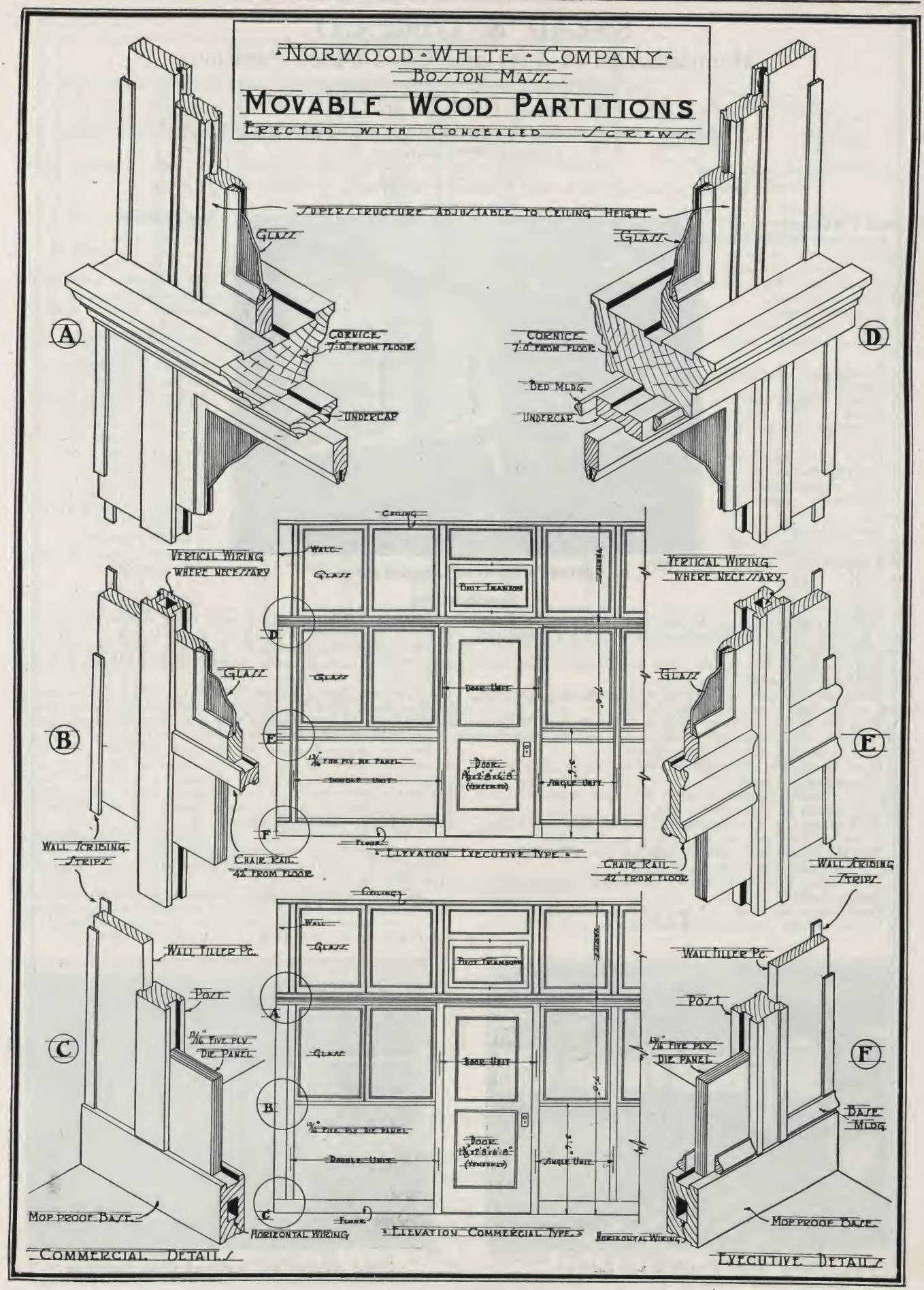
NORWOOD · WHITE · COMPANY
BOSTON MASS.
MOVABLE WOOD PARTITIONS
ERECTED WITH CONCEALED SCREWS
SUPERSTRUCTURE ADJUSTABLE TO CEILING HEIGHT
GLASS
CORNICE 7'-0" FROM FLOOR
UNDERCAP
DED MLDG.
A
D
B
E
C
F
VERTICAL WIRING WHERE NECESSARY
WALL SCRIBING STRIP
CHAIR RAIL 42" FROM FLOOR
WALL FILLER PC.
POST
13/16" FIVE PLY DIE PANEL
MOP PROOF BASE
HORIZONTAL WIRING
CEILING
WALL
PIVOT TRANSOM
DOOR UNIT
DOUBLE UNIT
SINGLE UNIT
DOOR 2'-6" x 6'-8" (VENEERED)
FLOOR
ELEVATION EXECUTIVE TYPE
ELEVATION COMMERCIAL TYPE
COMMERCIAL DETAIL
EXECUTIVE DETAIL
BASE MLDG.

FOUNDED IN 1849

SNEAD & COMPANY

Manufacturers of Steel and Glass Office Partitions

FACTORY, MAIN OFFICE AND WAREHOUSE

100 Pine Street, JERSEY CITY, N. J.

GENERAL AGENTS: MURRELL & KNIGHT, 205 E. 42nd Street, NEW YORK, N. Y.

BRANCH OFFICES

BOSTON, MASS., 168 Stuart Street — CINCINNATI, OHIO, 622 Broadway — NEW HAVEN, CONN., 30 Whitney Avenue

For pages on Armor-Grids and Metal Bookstacks for Libraries, see Manufacturers' Index

Snead Partitions

Backed by eighty years' experience in the manufacture of metal products, Snead partitions afford the following advantages:

A sound design.

Rigid construction.

Non-combustible material.

Adaptability to space requirements.

Ease in moving and rearranging.

Concealed chases for wiring.

Finish to harmonize with surroundings.

Low maintenance cost.

Competent engineering service.

Immediate delivery—by truck, from factory to New York metropolitan area.

Snead Partitions in Executive Office

Installations

American Can Co.
American Cyanamid Co.
Bayer Co., The
Bell Telephone Laboratories
Bradstreet Co.
Carnegie Institute Technology.
Joseph Dixon Crucible Steel Co.
Thomas A. Edison, Inc.
Graybar Electric Co.
Jenkins Television Corp.
Intertype Corporation
R. H. Macy & Co.
N. Y. Telephone Co.
Postal Telegraph Co.
Rex Cole, Inc.
Southern Railway Co.
Standard Statistics Co., Inc.
Universal Pictures Corp.
U. S. Rubber Co.
Western Electric Co.
Western Union Telegraph Co.
Yale University

Specifications

Steel partitions are to be of a standard manufacture equal to Type "M," as manufactured by SNEAD & COMPANY of Jersey City, N. J.

Steel to be of best grade open hearth cold rolled commercial furniture stock.

Partitions are to be of sectional type having a double steel panel with sound deadening filler between.

They are to be so constructed as to give complete flexibility and to allow changes to be made without disturbing units other than those to be rearranged.

Panels are not to exceed 60 in. center to center of pilasters and decreasing by units of 5 in. for the smaller sizes, the sizes used being arranged to secure the most economical and balanced layout of the required space.

All horizontal and vertical members must permit the carrying of wiring, and also receive outlets and switches.

Provide adjustable plinth at pilasters and adjustable mop strip to base insuring snug fit at floor.

Door units are to be 40 in. wide for single doors and 60 in. for double doors.

Doors to be one panel (or two panel) doors, 1¾ in. thick.

Cornice height free standing partition is to be 7 ft. 6 in. high.

Ceiling height partition will have cornice carried to (a) 8 ft. 8½ in., (b) 9 ft. 2½ in., (c) 9 ft. 8½ in., (d) 10 ft. 2½ in. with a double filler of Sheetrock extending from top of cornice to ceiling neatly pointed up and painted to match ceiling by this contractor.

Glass and glazing will be done by the Partition Contractor; all glass to be bedded in putty to match partition finish and to be held in place by removable strip without visible screw heads.

Hardware to be furnished by this contractor to be Yale & Towne or approved equal of the type specified. All locks, whether cylinder, bit key or communicating set, to be interchangeable with one another. Finish to be natural bronze polished. Door checks to be Norton or equal with holdopen arms. One pair of butts to each door to be 4½x4½-in. ball bearing butts, Stanley, or equal.

7 ft. 6 in. cornice height partitions are to be designed to receive superstructure without disturbing sections already erected, if it is desired to extend these partitions to the ceiling at a later date.

All work to be thoroughly cleaned in benzine to remove all dirt and grease, and given two coats of enamel of color selected.

After completion, this contractor is to go over work and rub down, leaving his work in a satisfactory condition.

Snead Dwarf Partitions and Railing

Snead All-steel and Steel and Glass Partitions

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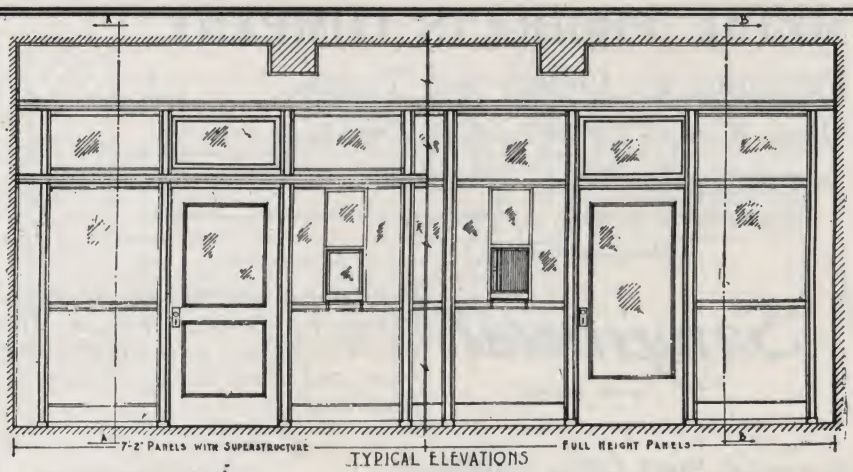
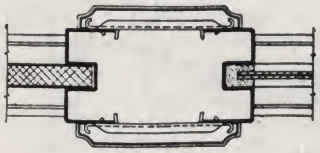
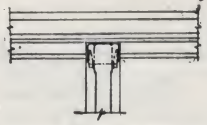
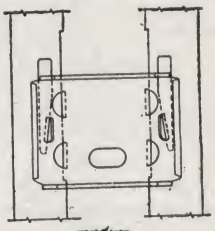


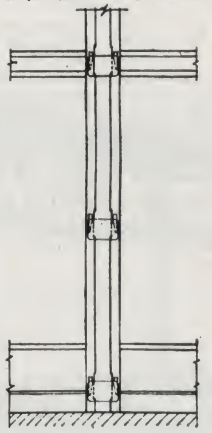
TYPICAL ELEVATIONS



HORIZONTAL SECTION
Post assembly
with pilasters snapped into place

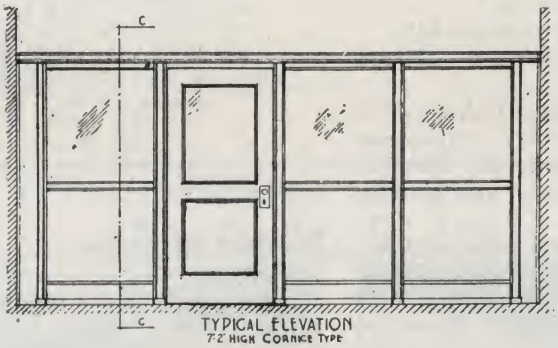






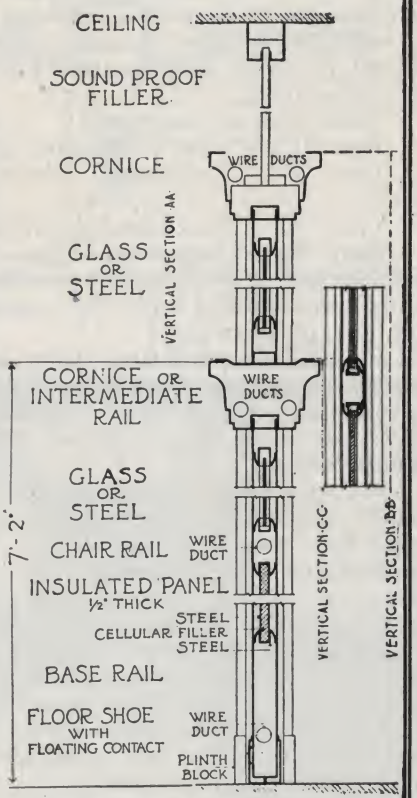
VERTICAL ELEVATION
of post with pilaster
removed to show
wedge linkplates

FOR CEILING HEIGHT PARTITIONS, PANELS WITH TRANSOM LIGHTS ARE FURNISHED IN STANDARD WIDTH PANEL UNITS 8'-2½", 8'-8½", 9'-2½", 9'-8½" AND 10'-2½" HIGH. THESE WILL CARE FOR CEILINGS UP TO 13'-6". ~ FOR HIGHER CEILINGS SUPERSTRUCTURE PANELS ARE ERECTED ON TOP OF THESE DETAIL AT LEFT SHOWS SUPERSTRUCTURE PANELS ON TOP OF 7'-2" HIGH PARTITION. ~



TYPICAL ELEVATION
7'-2" HIGH CORNICE TYPE

CORNICE, OR DWARF PARTITIONS, ARE MADE IN TWO STANDARD HEIGHTS, ~ 7'-2" AND 7'-6". SUPERSTRUCTURE PANELS OF VARYING HEIGHTS MAY BE ERECTED TO EXTEND THIS TYPE PARTITION TO ANY HEIGHT AFTER ORIGINAL INSTALLATION.



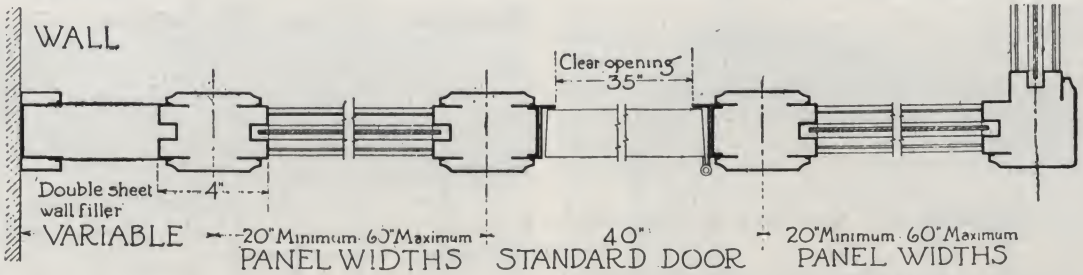
VERTICAL SECTIONS

VENTILATORS

TRANSOM VENTILATORS ARE AVAILABLE IN EITHER VERTICAL OR HORIZONTAL FRICTION PIVOT TYPE. ~

RAILING

OFFICE RAILING OF STANDARD DESIGN AND DOUBLE PANEL CONSTRUCTION FURNISHED IN STANDARD WIDTHS 42 INCHES HIGH, WITH 6" CLEARANCE AT FLOOR. ~



HORIZONTAL SECTION

SNEAD & CO
founded 1849
JERSEY CITY
NEW YORK CITY

DETAILS
SNEAD OFFICE PARTITIONS

TYPE-M
INSULATED
PANEL
~ Sept 1949

THE SANYMETAL PRODUCTS COMPANY

Metal Partitions for Offices and Toilets

1690 Urbana Road, CLEVELAND, OHIO

NEW YORK OFFICE: 536 East 133rd Street

AGENCIES IN PRINCIPAL CITIES

Products

SANYMETAL PARTITIONS for offices, factories, hospitals, churches, schools, hotels, etc.

SANYMETAL TOILET ROOM, DRESSING ROOM, SHOWER BATH and URINAL PARTITIONS, SCREENS and WAINSCOTS; SANYMETAL GRAVITY ROLLER HINGES for all toilet and part-length swinging doors and SANYMETAL TOILET ROOM HARDWARE.

Sanymetal
TRADE MARK U S REG

Sanymetal Steel Office Partitions

A Type for Every Purpose—Sanymetal Steel Partitions are made in three different types, which will be found to be carefully planned and economically adapted for every building from factory to high class office structures.

These types are designated:

Type "B"—"Bifold," described in Bulletin 42B.

Type "D"—"Drawnsteel," described in Bulletin 42D.

Type "E"—"Executive," described in Bulletin 42E.

Easy Re-arrangement—These latest Sanymetal partitions have special features permitting easy dismembering and relocation with 100% salvage, and without dust, dirt, or annoyance.

Flexible Construction—Door and panel sections are interchangeable. Cornice height partitions may be converted into ceiling height. The unique "4-way" post allows panels to be run in any direction from the same post.

Fit Any Space—Sanymetal construction is exceptionally substantial, yet the standard units are adaptable to any floor space or height.

Genuine Craftsmanship—The hollow steel sections are of high grade construction, drawn, not pressed. Every detail of trim and finish is faultlessly executed.

Choice of Finishes—Interior wall finishes and office color schemes can be matched or harmonized with the wide range of Sanymetal baked enamel finishes.

High Quality Doors—Unusually substantial hollow metal doors with lined stiles and rails, and fitted with very durable hardware.

Sound-deadening—Standard Sanymetal construction is highly sound-deadening. Partitions can be insulated if desired.

Readily Wired—Full provision is made for electric conduit to run through base, chair rail, cornice, and posts.

A Product of Long Experience—Nearly 20 years in the manufacture of steel partitions, and a record of over 20,000 successful installations, qualify this company to give you expert service in plan, manufacture, and erection.

Write for the address of your nearest Sanymetal representative.

STANDARD SIZES OF PARTITIONS AND DOORS FOR ALL THREE TYPES

Section widths center to center of posts	Glass widths for panels (actual)
22¼-in. panel	18 in.
28¼-in. panel	24 in.
35¼-in. panel and door section	31 in.
41¼-in. panel and door section	37 in.
52¼-in. panel	48 in.
60¼-in. panel	56 in.

Standard panel height from floor to chair rail—42 in. Other heights made to order.

HEIGHT OF STANDARD GLASS FRAMES

Frame height	Glass height
20¼ in.	18 in.
28¼ in.	26 in.
38¼ in.	36 in.
44¼ in.	42 in.
50¼ in.	48 in.
Standard doors	**Glass size**
3 ft. 0 in. x 7 ft.—2 panel	24¾ x 36½ in.
3 ft. 0 in. x 7 ft.—1 panel	24¾ x 65⅞ in.
2 ft. 6 in. x 7 ft.—2 panel	18¾ x 36½ in.
2 ft. 6 in. x 7 ft.—1 panel	18¾ x 65⅞ in.
Special size doors available if necessary at slight additional cost.	
Standard transoms	**Glass size**
33¼ x 20¼ in.	28¾ x 15¾
33¼ x 28¼ in.	28¾ x 23¾
39¼ x 20¼ in.	34¾ x 15¾
39¼ x 28¼ in.	34¾ x 23¾
Standard cornice height partition—7 ft. 4⅞ in. high.	

Standard Hardware

Doors—

4x4-in. Stanley butts No. 179-A or G.

1 Russwin cylinder lock No. 01248½M.

U. S. 8—Berk—2½-in. B.S. No. 11 or No. 46 finish. Can substitute Yale, Corbin or Sargent cylinders to conform to master-key of building if desired.

Transoms—

Russwin pivots No. 2005.

Russwin transom lifter No. 55½ with 4 ft. rod No. 11 or 46 finish.

Description of Type "E" Partition

The superior Sanymetal partition for high-class offices, libraries, court houses, city halls, churches, and monumental buildings. Dignified and distinguished in appearance. Master craftsmanship in every detail of design and workmanship.

Description of Type "D" Partition

A moderate priced Sanymetal partition for dividing office buildings or private offices. Handsomely finished in colors to harmonize with furniture or the painted walls of finely finished offices. Pleasing appearance and exactitude of workmanship characterize this Sanymetal design.

Hollow metal doors, lined in stiles and rails, hung on 3 4x4-in. butts and equipped with standard hardware.

Description of Type "B" Partition

An ideal partition for garages, showrooms, powerhouses and the better class of industrial buildings and offices. Strong, substantial, and of clean-cut, neat appearance.

Finished in three coats of green or gray, baked-on enamel. Full provision is made for easy electric wiring.

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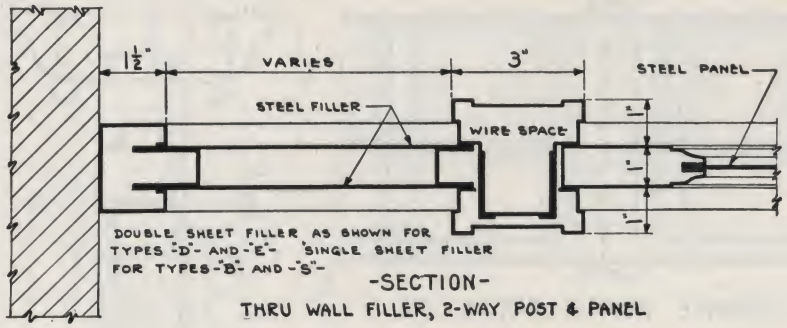
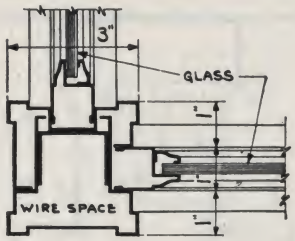
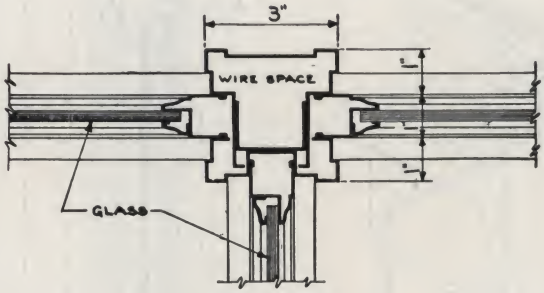


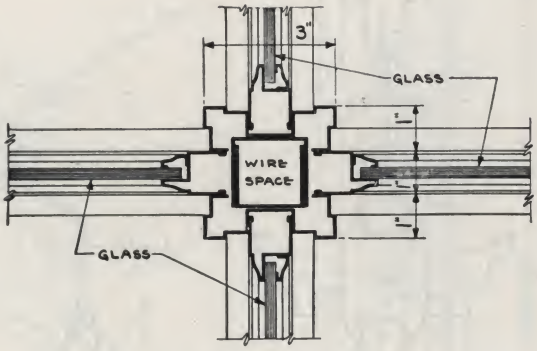
-SECTION-
THRU WALL FILLER, 2-WAY POST & PANEL



-SECTION-
THRU CORNER POST



-SECTION-
THRU 3-WAY POST



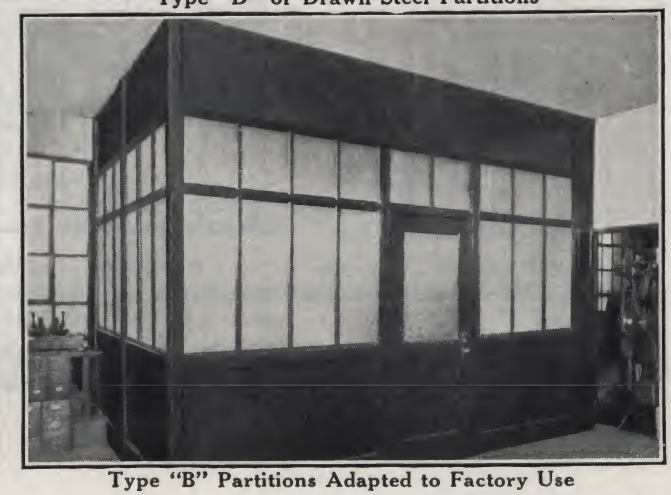
-SECTION-
THRU 4-WAY POST

THE SANYMETAL PROD. CO. CLEVELAND, OHIO.	STANDARD DETAILS WALL FILLER & POSTS	PLATE NO. 29 DATE – NOVEMBER 15-'28

Type "E" or Executive Partitions

Type "D" or Drawn Steel Partitions

Type "B" or Bifold Partitions



Type "B" Partitions Adapted to Factory Use

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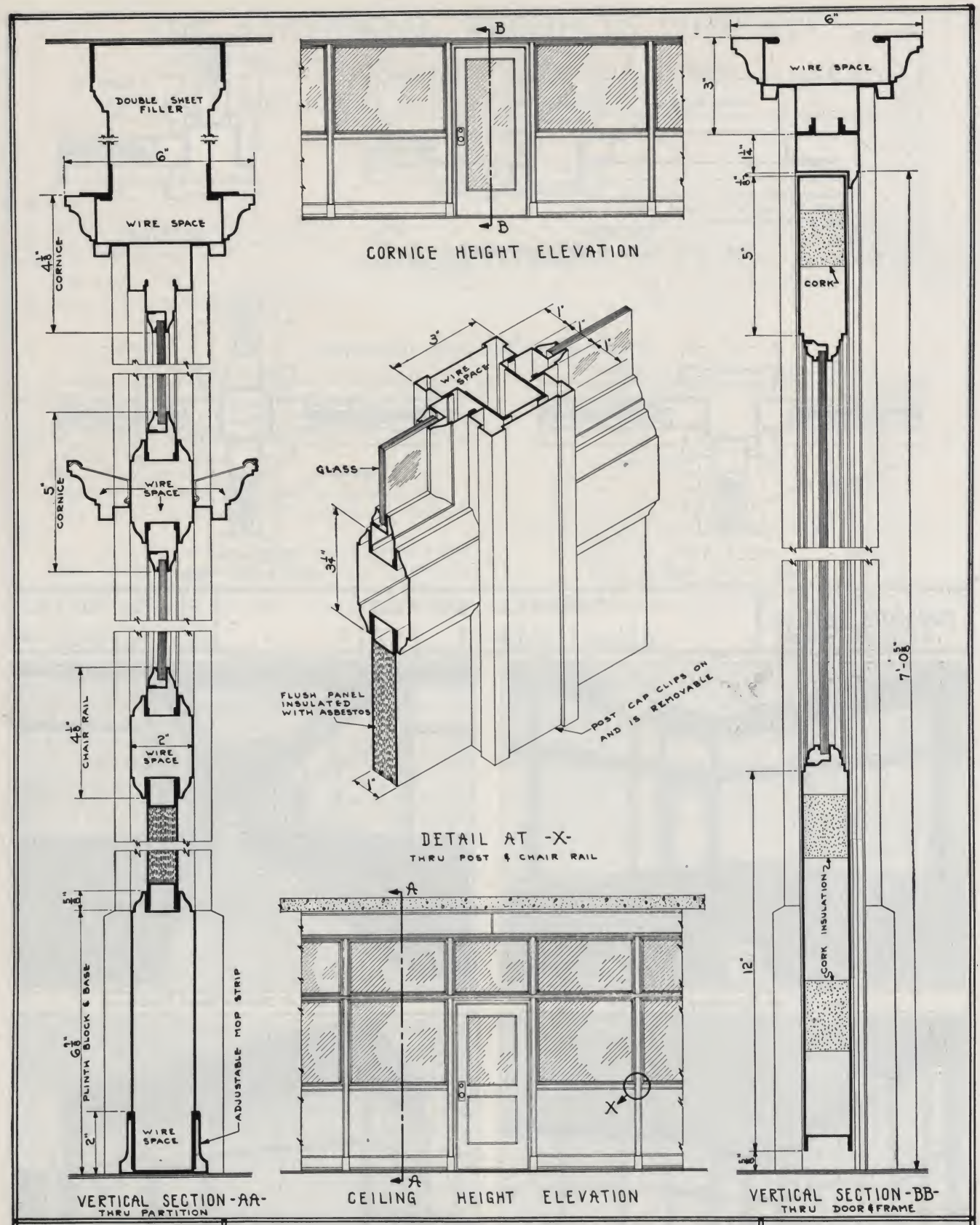

THE SANYMETAL PROD. CO. CLEVELAND, OHIO.	STANDARD DETAILS EXECUTIVE TYPE PARTITION	PLATE NO. 25 DATE – NOVEMBER 15-'28

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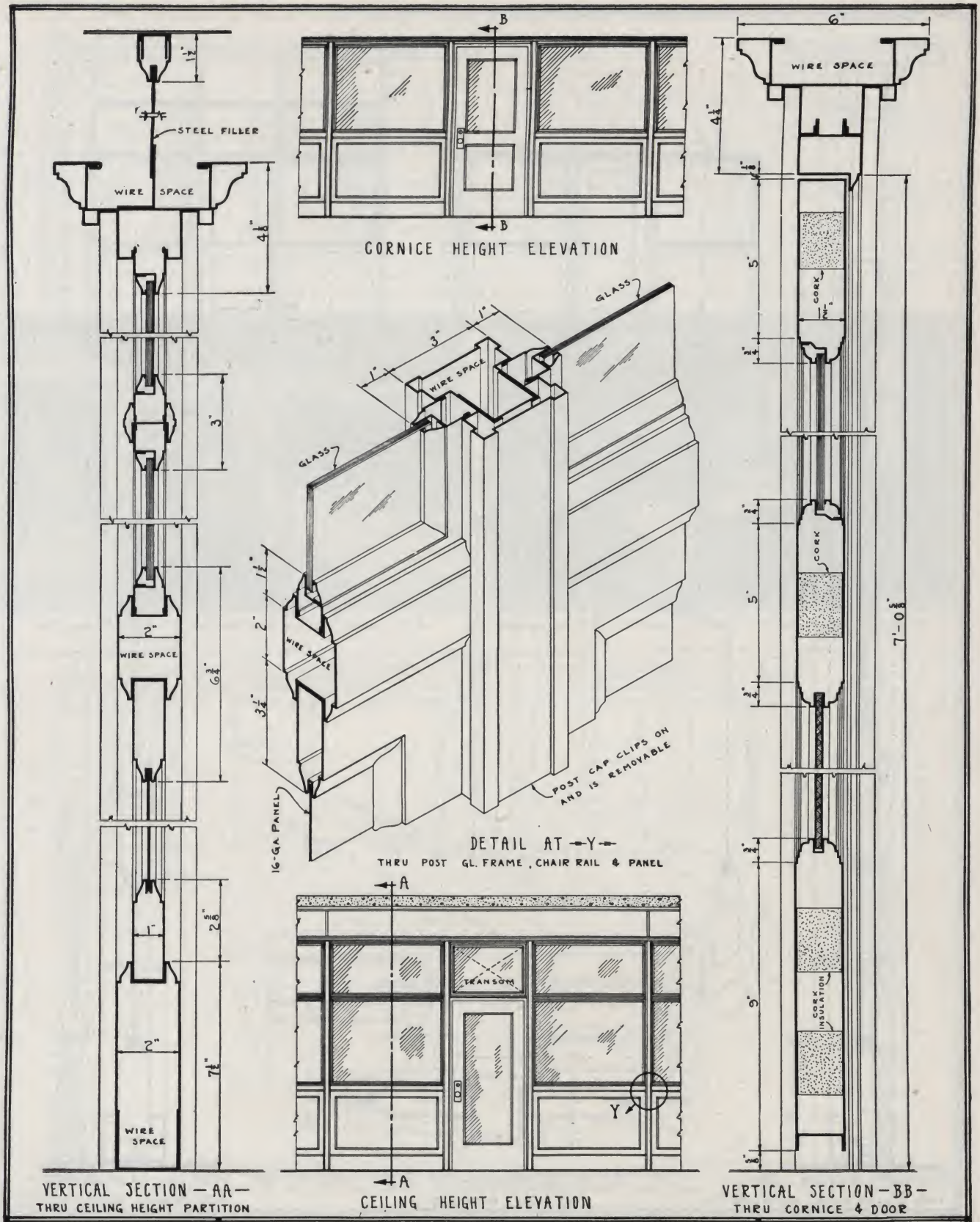

THE SANYMETAL PROD. CO. CLEVELAND, OHIO	STANDARD DETAILS TYPE —D— PARTITION	PLATE NO. 28 DATE — NOVEMBER 15 — '28

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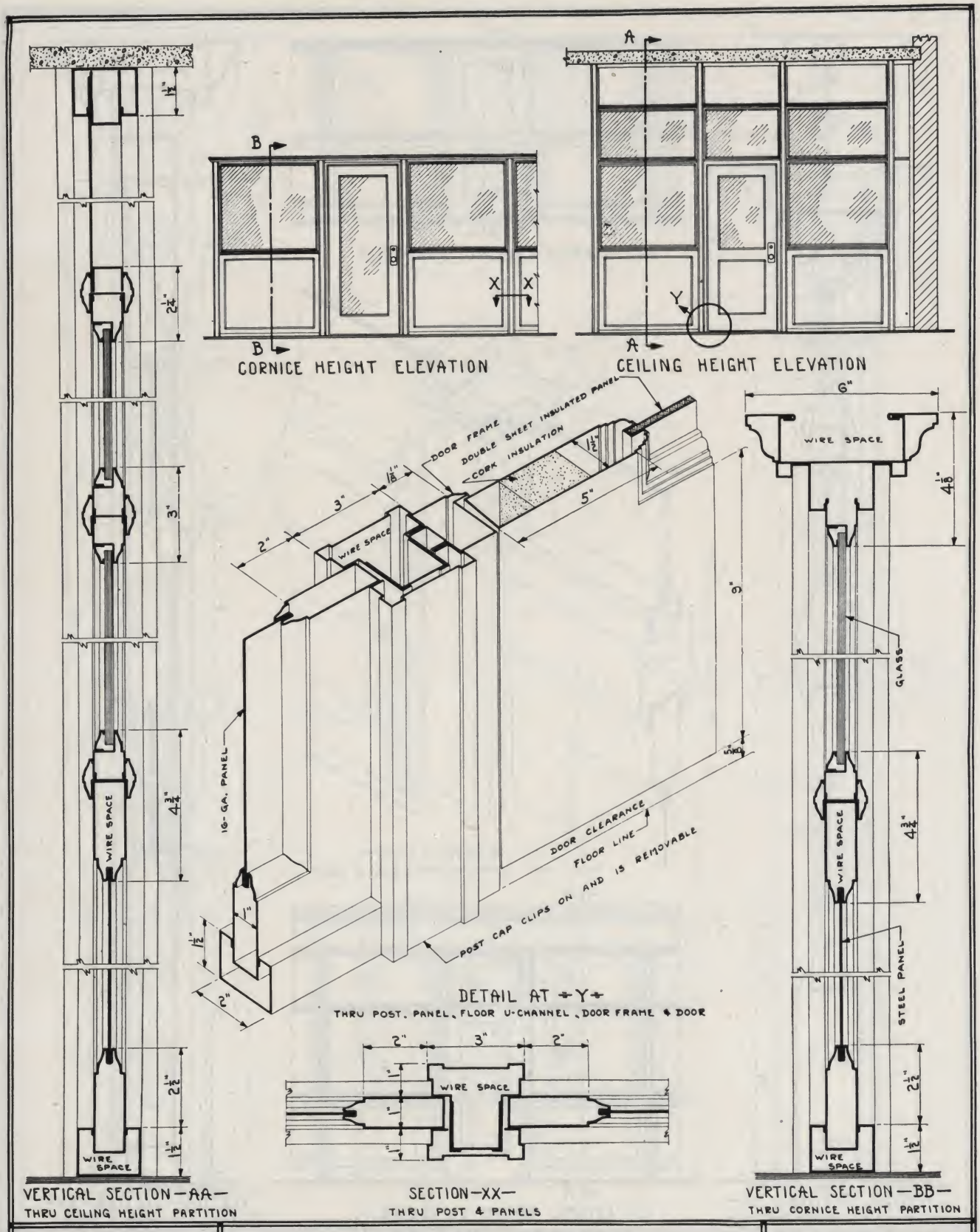

THE SANYMETAL PROD. CO. CLEVELAND, OHIO.	STANDARD DETAILS TYPE -B- PARTITION	PLATE NO. 27 DATE - NOVEMBER 15 - '28

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DETAILS AND SPECIFICATIONS FOR HOSPITAL CUBICLES AND SCREENS

Cubicle or Screen partitions to be of steel and glass as made by THE SANYMETAL PRODUCTS COMPANY of Cleveland, Ohio, as detailed and shown on plans (or specify sizes).

Upright Posts—Upright posts to be of hollow drawn steel 2 in. square. Gauge .040 with self-locking, concealed joint and sunken panel on each side, forming a recess into which the panel must be fastened. Each post to have a cast aluminum alloy base casting, fastened to floor with nickelplated wood screws. Each post to be capped with a top casting.

Bottom Panel—Bottom panel to be flush type without mouldings, constructed of two sheets of 20 gauge, asbestos filled.

All steel to be full cold rolled, full finished, patent leveled, open hearth sheets, free from scale and buckle.

Top Panel—Top panel to be of glass, either D.S.A., Polished Plate, Polished Plate Wire, or Rough Wire, as selected. Glass frame both sides to be of drawn steel mouldings, welded into one continuous piece and put in by spring clips without bolts or screws.

Top Rail—Top rail over glass panel to be formed of two drawn channels 1x1½ in., fastened between posts.

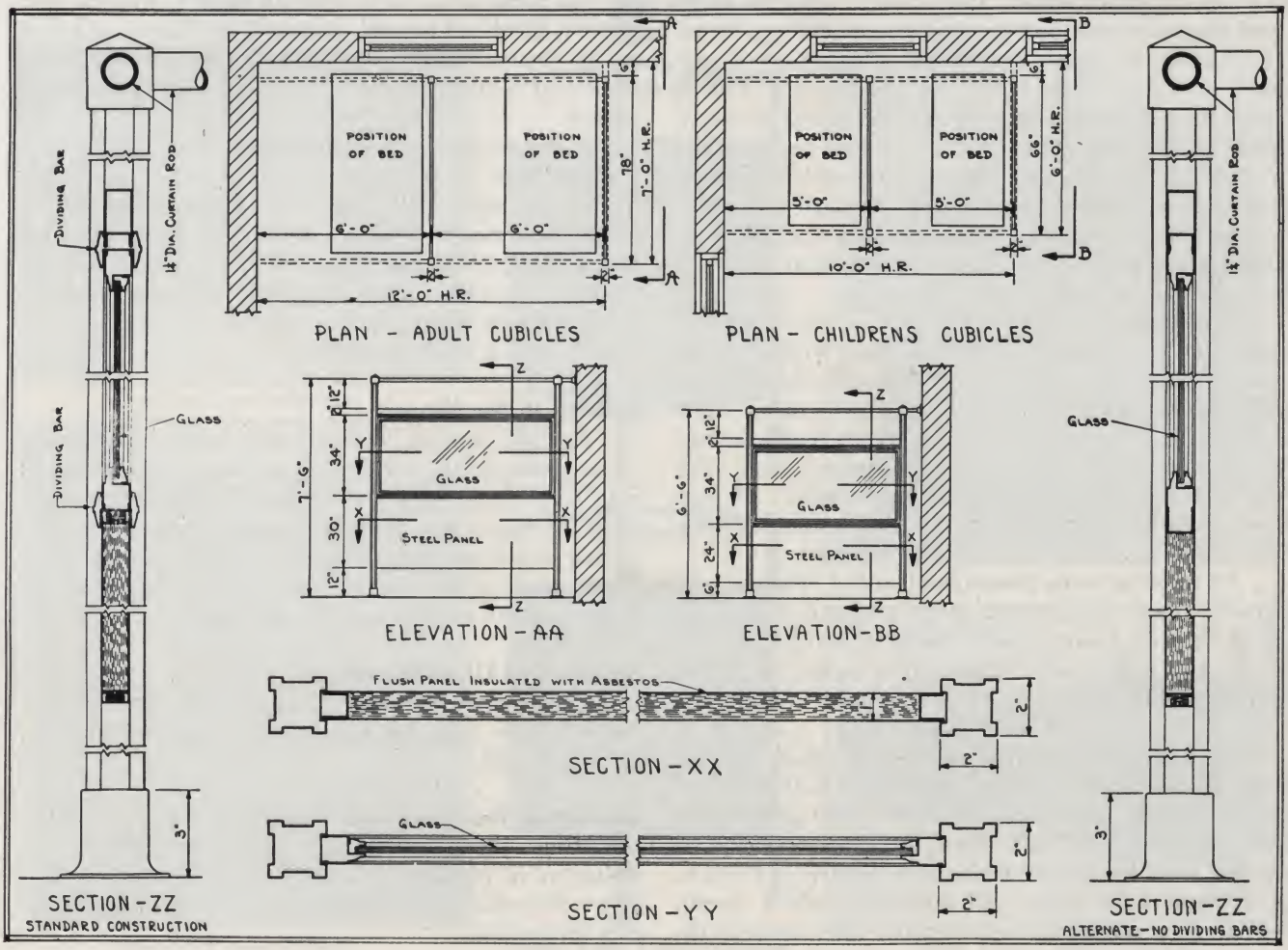
Head Rail—Head rail bracing shall be furnished between adjacent cubicles 1¼-in. outside diameter tubing, fastened to top of posts by means of castings. Where curtains are used, head rail bracing acts as a curtain rod.

Finish—All work to be thoroughly cleaned at factory with sandpaper and benzine and a prime coat of lead base, rust-resisting primer applied and baked on. Two finish coats to be applied of the best baking enamel and baked to at least 300° F. Standard finishes Gray, Olive Green or Battleship Gray.

Where white finish is specified, all work is to be cleaned and primed as above. Then finished in one coat of flat white enamel, baked on, and finished in two coats of Duco or Wiborite, or other approved lacquer finish, sprayed on.

Aultman Hospital (Children's Ward), Canton, Ohio

Contagious Ward, Willard Parker Hospital, New York, N. Y.



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Sanymetal

TRADE MARK U S REG

SANYMETAL STEEL TOILET PARTITIONS

Experience and Facilities

Partition builders since 1909. Over 20,000 installations throughout the United States. Over 40,000 sq. ft. factory space.

Architects and Engineers, in laying out toilet rooms, can use the following standard size compartments:

Width, 30, 32, 33, 34 and 36 in.

Depth, 36, 42, 48, 54 and 60 in.

Stock sizes of parts can be used with height of partitions above floor, 12 in.

Height of head rail above panel, 12 in.

Panel height, 54 or 60 in., making over-all height floor to head rail, 78 or 84 in.

Suggested Specifications for Toilet Partitions

Unit Panel Type

All toilet partitions and doors [entrance screens] [shower enclosures] [dressing rooms], are to be built of *Sanymetal Unit Panel Type* as manufactured by THE SANYMETAL PRODUCTS COMPANY, Urbana Road, Cleveland, Ohio.

Partitions are to be made with drawn hollow metal interlocking rails, *with all raw edges concealed,* having 16 gauge, stretcher leveled, full pickeled, full cold rolled panel sheets, securely interlocked into mouldings, forming a partition without spot welds. Front post of partition shall be drawn hollow metal, forming sunken panels on four sides, into which front flange of partition is set and securely welded. Partitions are to fasten to the wall by means of adjustable bracket. Install 1¼-in. drawn hollow metal tubing for head rail brace. Furnish polished brass nickelplated self-drained shoe for setting front post of partition to floor; also head cap for holding head rail.

Doors are to be made with 1-in. thick by 3¼-in. wide reinforced drawn metal stiles fitted with 16 gauge panel sheet same as partition. Doors are to be equipped with encased, full floating gravity ball bearing roller hinges with adjustment to make doors [outswinging] [inswinging] [self-closing] [self-opening], and with combination latch, pull and rubber tipped stop. All door hardware to be polished aluminum composition or brass nickelplated applied with bolts with cap nuts.

All metal is to be thoroughly sanded, washed with benzine, filled and primed with sublimed blue lead, baked on. If enamel finish, spray and bake on separately two additional coats of Olive Green or Battleship Gray color.

Flush Type

All partitions and doors are to be *flush type* as made by THE SANYMETAL PRODUCTS COMPANY of Cleveland, Ohio, and are to be made of 20 gauge sheet steel, full cold rolled and patent leveled, interlocked at top and sides by special drawn locking strip. These to be at least 1 in. thick and insulated with a sound-deadening, verminproof and fireproof filler between the sheets of steel, glued on the sheets with a waterproof cement and allowed to dry thoroughly in a press so as to keep the parts in true alignment. Corners of panels and doors to be welded and ground smooth and buffed.

The front post of partition to be drawn hollow metal, forming sunken panels on four sides, into which front edge of partition is set and securely fastened. Partitions are to fasten to wall by means of an O. G. drawn adjustable channel with at least three concealed screws or toggle bolts as required. Back edge of partition to be inserted in this channel and fastened by screws top and bottom.

Headrail to be 1¼ in. drawn hollow metal tubing. Furnish bronze alloy, self-draining shoe on each post, and also cap for each post.

Doors to be equipped with encased full floating gravity ball-bearing roller hinges and with adjustment to make doors [inswinging] [outswinging] [self-opening] [self-closing] and with combination latch, pull and rubber tipped stops. All door hardware to be aluminum or brass nickelplated, polished and applied with nickelplated bolts and cap nuts.

All metal is to be thoroughly sanded, washed with benzine, filled and primed with sublimed blue lead baked on. If enamel finish spray on and bake separately two additional coats Olive Green or Battleship Gray baking enamel.

Erection Simple—Adjustable base casting fastened to floor by screws; a bracket or U-channel (adjustable to any unevenness) is fastened to the walls; partitions securely fastened to the U-channel; caps inserted in tops of posts; head rail brace is installed and fastened to walls; doors are then hung on partition posts. No drilling necessary on job. Quotations furnished erected or f.o.b. factory.

Gravity Roller Hinges

For all doors of wood or steel, made to fit Sanymetal, slate, marble or wood partitions. The new encased type Sanymetal gravity ball bearing roller hinge, made of brass nickelplated is now adaptable to self-closing or self-opening doors of any type. A perfected development of the original Sanymetal springless hinge. Doors operate silently, and do not bang.

Shower and Urinal Partitions

Construction same as toilet partitions. Baked enamel finish. Can be furnished to fit special container or cement curb.

Aluminum Partitions and Doors

Where an especially high grade, extra durable installation is required, standard Sanymetal designs as above described are furnished of aluminum construction throughout.

Continued on next page

Post Cap

Wall Bracket

Post Shoe

Unit Panel Type Toilet Partition

Top Hinge

Door Trim

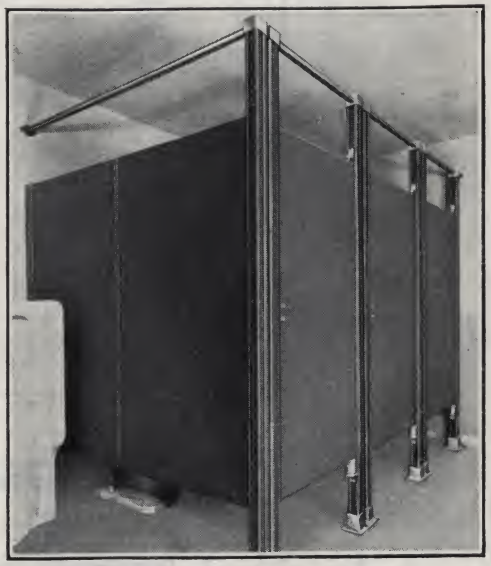
Bottom Hinge

Dressing Compartments

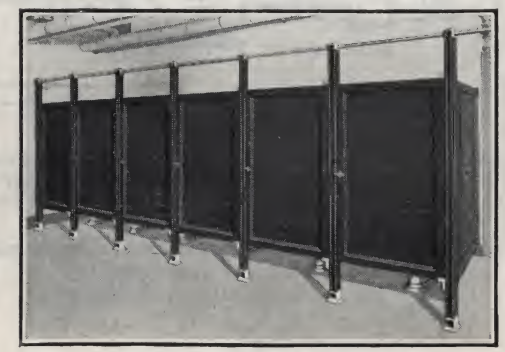
Shower Compartments

Flush Type Toilet Partition

Panel Type Toilet Partition



Flush Type Toilet Partitions



Panel Type Toilet Partitions

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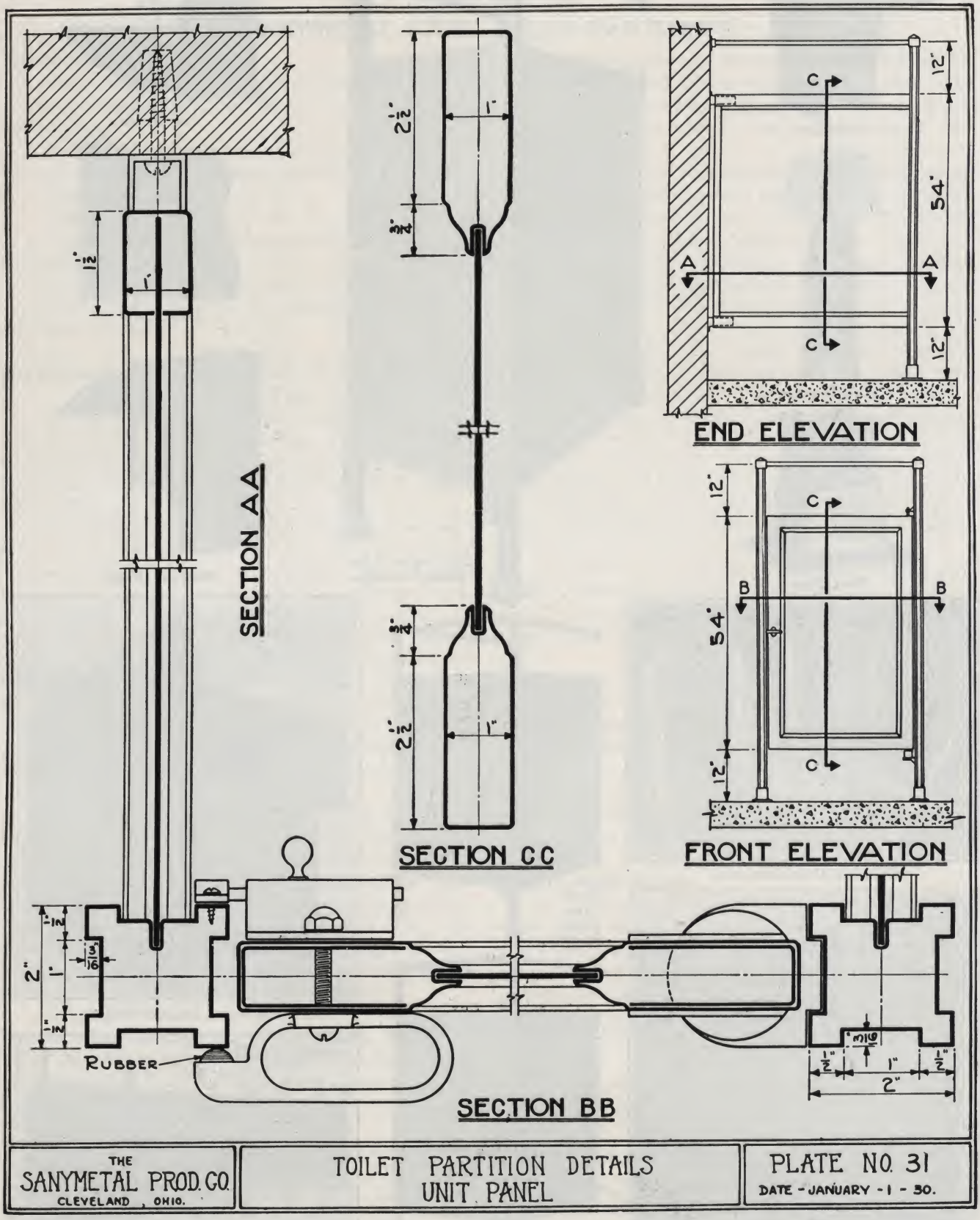

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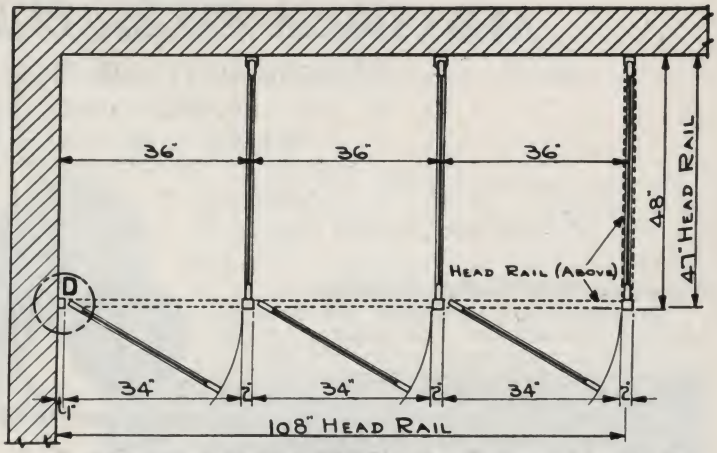
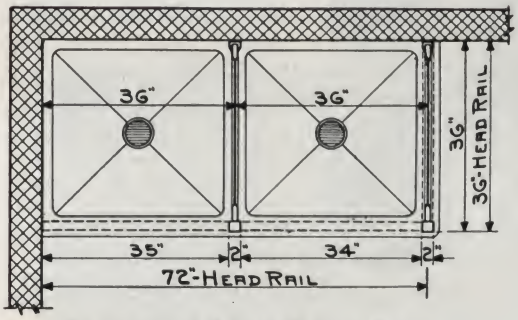
Typical Sanymetal Plans

The illustrations in this page show typical plans of the few common layouts. Standard size partitions can be furnished to any architectural layout which may be required for any building.

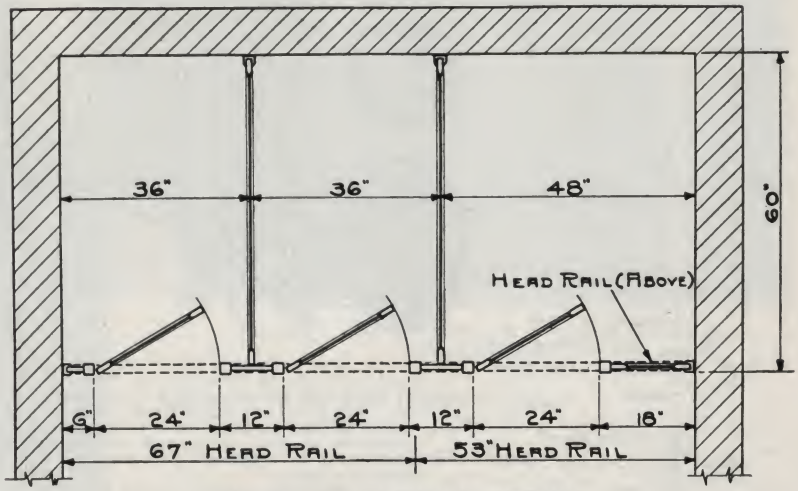
Catalogue No. 30, showing other layouts, will be mailed on request.



Construction of Back-to-Wall Ventless Toilets. Also Made Back-to-Back Ventless

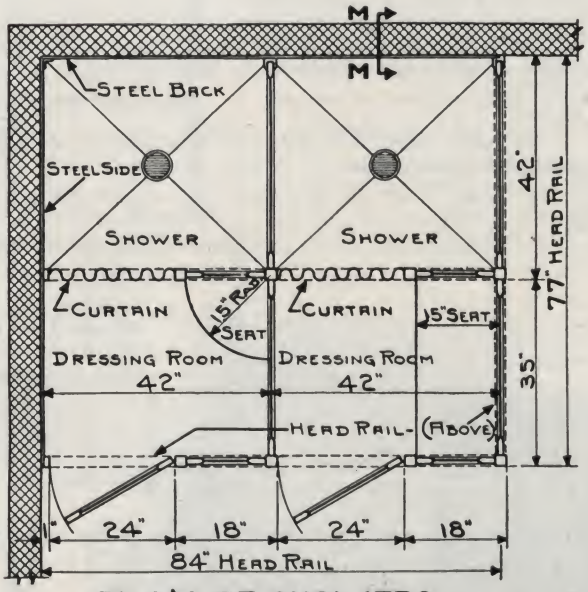


PLAN OF SHOWERS WITH CURB

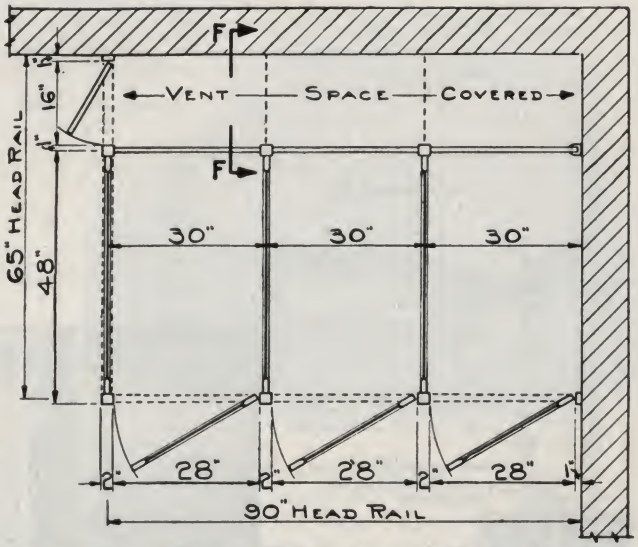


Construction of Wide Front Toilets

Note: Front panels are not necessary for steel partitions, except where aisle space is limited or with inswinging doors where depth will not permit full width doors clearing fixture.



PLAN OF SHOWERS WITH DRESSING ROOMS



Construction of Back-to-Wall Toilets with Vent. Also Made Back-to-Back with Vent

ALBATROSS STEEL FURNITURE CO., LTD.

Manufacturers of Steel Toilet Partitions

PLANT AND GENERAL OFFICES

WEST LOS ANGELES, CALIF.

BRANCH OFFICES: SAN FRANCISCO AND OAKLAND, CALIF., SEATTLE, WASH.

Agents in all the Principal Coast Cities and Hawaii

For our pages on Steel Cabinets for Hospitals, Bathrooms, and Fire Hose, see Manufacturers' Index

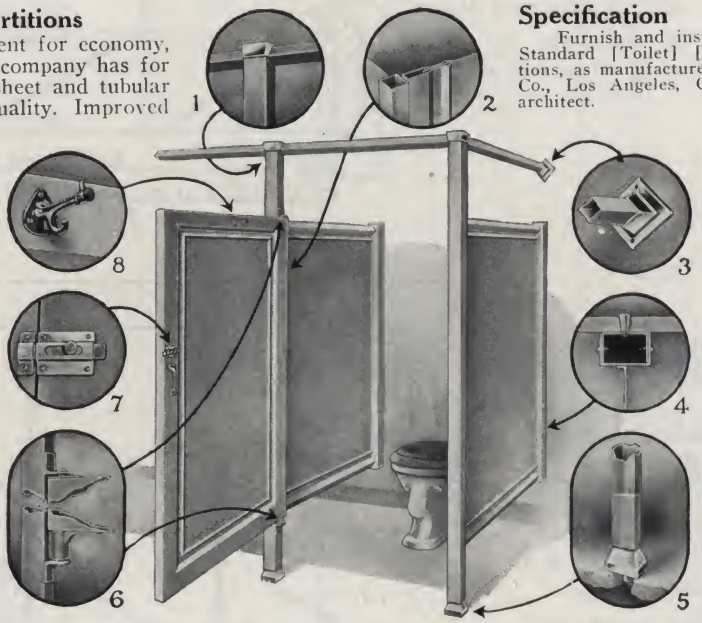
Albatross Steel Toilet Partitions

They meet every requirement for economy, sanitation and durability. This company has for 16 years been manufacturing sheet and tubular steel products of the highest quality. Improved Albatross toilet partition embodies all the features that practical experience and research have proved desirable.

Economy—Low in first cost; practically no upkeep.

Sanitary—No open seams. All joints carefully closed, sealed and finished smooth. No rough edges to collect dirt and germs.

Durable—Made of heavy gauge furniture steel. Fittings fit properly and are well finished.



(1) Highly polished cast aluminum adjustable cap conceals joining of front head rails to front post.

(2) Cross section view of front post and door construction in detail. Stile is formed from one piece of sheet steel.

(3) Diamond shape head rail prevents use for gymnastic purposes. Connection of head rail to wall is accomplished by insertion of head rail into an attractive polished, cast aluminum, adjustable fitting that is firmly attached to wall.

(4) Wall post. Inside channel is rigidly attached to wall by expansion or through bolts. Outer channel, which is attached to panel, is furnished with bolt holes and after alignment of wall post to inner channel is drilled on job and bolts inserted. This provides accurate and solid fittings and assures a close, tight fit to wall.

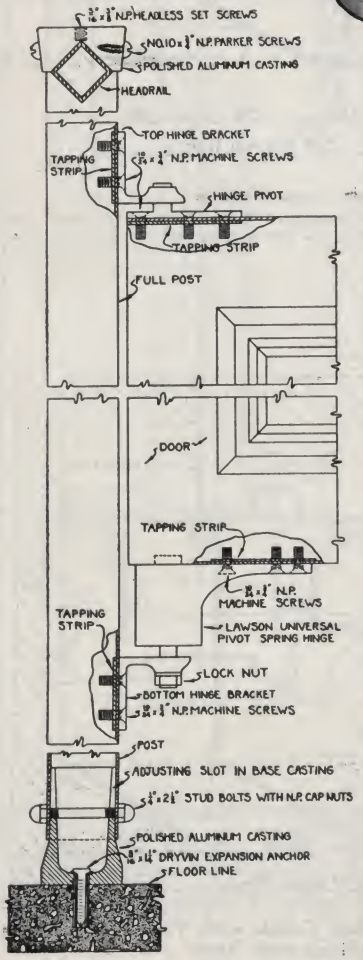
(5) Polished cast aluminum base (cast brass, if specified) connection is adjustable vertically and accommodates any variation in the level of the floor. Front post fits down over the outside of the casting, eliminating all cracks, crevices and pockets. Any moisture or dirt coming in contact with the front posts runs off and not in.

(6) Lawson Universal pivot spring hinges. They are double or single acting, holding door open or closed at any position desired. Pivot bearings prevent sagging of door. Sagless, adjustable alignment, adjustable spring tension. All working parts completely enclosed.

(7) Door is supplied with efficient but simple cast brass, nickel-plated slide catch to hold door in place when engaged.

(8) Combination clothes hook and bumper of cast brass nickel-plated.

CONSTRUCTION DETAILS



Detail Door and Full Post
One-fourth actual size

STANDARD SIZES OF ALBATROSS PARTITIONS

W door width ft.	W door width in.	D depth ft.	D depth in.	H height ft.	H height in.	W-1 width ft.	W-1 width in.	D-1
2	0	3	0	4	0	0	6	
2	6	3	6	4	6	0	10	
3	0	4	0	5	0	1	0	Variable
		4	6			2	0	
		5	0			3	0	

Note: Standard over-all height from floor to center of headrail, 6 ft. 6 in.

Albatross Toilet and Shower Partitions

Specification

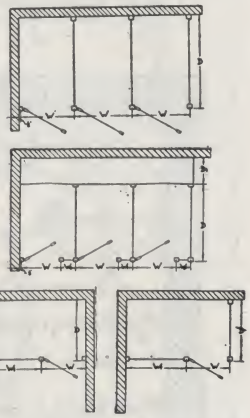
Furnish and install, as shown on plans, Albatross Standard [Toilet] [Shower] [Dressing Room] Partitions, as manufactured by ALBATROSS STEEL EQUIPMENT Co., Los Angeles, Calif., or equal, approved by the architect.

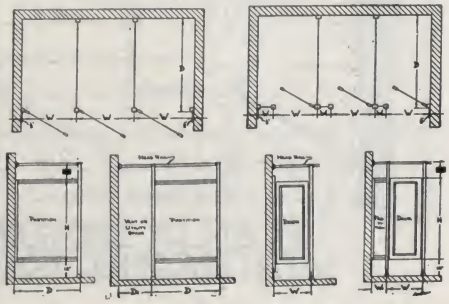
Installations

Bank of Italy Buildings, various California cities
Puget Sound Light & Power Bldg., Bellingham, Wash.
Wash. Athletic Club, Seattle
University of Arizona Stadium, Tucson, Ariz.
Herbert Hoover School, San Diego, Cal.
Calif. School of Industry, Ione
Southern Pacific R. R. Depot, Stockton, Cal.
Grand Avenue School, Phoenix, Ariz.
Brooklyn Public School, Portland, Ore.
Ore. Stage Term., Portland, Ore.
Alameda Airport, Oakland, Cal.
Western Sugar Refining Co., San Francisco, Cal.
I. Magnin Bldg., San Francisco
Garden Valley Canning Co., San Jose, Cal.
School of Agriculture Bldg., Honolulu
Police Building, Honolulu
Ford Motor Co., Long Beach, Cal.
Board of Education, Seattle

Los Angeles, Cal.

F. W. Woolworth Co., Pacific Coast buildings
J. J. Newberry Co., Pacific Coast buildings
Sears Roebuck Bldg.
Fox Motion Picture Studios
Warner Bros. Studios
Univ. of S. C. Gymnasium
Samson Tire & Rubber Co.
Willard Battery Co.
Los Angeles Board of Education
Safeway Stores, Fruit Dock





Typical Floor Plans

ALBERENE STONE COMPANY

Alberene Stone Sanitary Equipment, Tubs and Kitchen Sinks

153 West Twenty-third Street, NEW YORK, N. Y.

For Branch Offices, see our page on Stair Treads

Products

ALBERENE STONE, the natural quarried stone, is produced and fabricated for:

Sanitary Equipment (Toilets and Urinals)
Shower Compartments
Dressing Rooms
Laundry Tubs or Trays
Kitchen Sinks

For our pages on Interior and Exterior Architectural Uses and Laboratory Equipment, see Manufacturers' Index.

Sanitary Equipment (Toilet and Urinal Work)

For this purpose Alberene Stone provides a material which is sanitary in highest degree, pleasing in color, easily cleaned and kept clean, and at the same time reasonable in cost. Its dense, non-absorbent character and the watertight joints used in assembling, make fixtures which

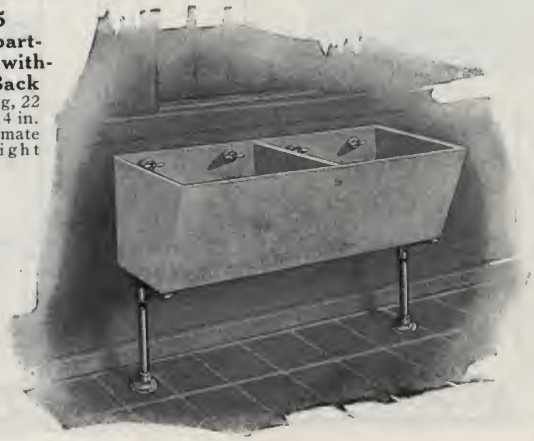
Typical Installation of Alberene Stone Toilet Partitions

are permanent, non-staining, free from odor and with no lodgement for filth. Generally this work can be assembled without using any exposed metal. Any of the approved types of toilet and urinal design can be furnished in Alberene Stone.

Shower Compartments and Dressing Rooms

With Alberene Stone, it is easily possible to build assemblies that are practically one-piece construction by means of tongue-and-groove and bolted-and-doweled joints. There is no opportunity for leakage, no lodgement for dirt or vermin.

K-104-5
Two Compartment Tray without High Back
40 in. long, 22 in. wide and 14 in. deep. Approximate shipping weight 300 lb.



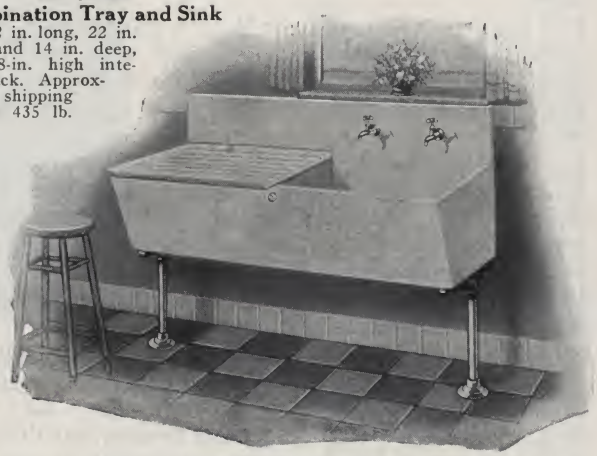
The color reflects light effectively and the surface finish is such that cleaning is easy. Here again it is possible to assemble without any metal exposed to corrosion. Installations in schools, institutions, public baths, etc., the country over, attest the serviceability of Alberene Stone.

Shower Compartments and Dressing Rooms of Alberene Stone

Laundry Tubs and Kitchen Sinks

For permanence, sanitation, cleanability, watertightness, and lasting smooth surface, these Alberene Stone specialties are beyond comparison. Because of the tongue-and-groove construction, they are to all intents one-piece units. The surface will not chip or flake or crack. The pleasing light color is permanent. The non-absorbent quality of the stone eliminates dampness and odor.

K-135-B4
Combination Tray and Sink
42 in. long, 22 in. wide and 14 in. deep, with 8-in. high integral back. Approximate shipping weight 435 lb.



Compact Models and Duco Colors

Pictured are two of the new compact models which are lower in price than any other sanitary fixture. Standard Alberene construction but lighter in weight.

These, and all other models, can be obtained in white, blue, green, pink and yellow at slight additional cost. Write for full details and prices.

AMERICAN STEEL FURNITURE CO.

Manufacturers of Super-steeL Toilet Partitions

FACTORY AND SALES OFFICE
27 West 24th Street
NEW YORK, N. Y.

TELEPHONE
CHELSEA 1236, 1237
WATKINS 10333

Products

SUPER-STEEL TOILET PARTITIONS and DOORS.

SUPER-STEEL SHOWER STALLS, SHOWER STALL DOORS and URINAL PARTITIONS.

SUPER-STEEL DRESSING COMPARTMENT and SCREENS.

Also Lockers, Cabinets, Shelving, Radiator Cabinets, Enclosures and Special Steel Equipment.

Super-steeL Partition

SUPER-STEEL Partitions are the last word in metal toilet enclosures, where strength, utility, serviceability and economy are concerned. They will give a most rigid and permanent installation that will withstand abuse. They are sanitary and pleasing in appearance and are adaptable for commercial buildings, schools, churches, hospitals, factories and bathhouses.

Being manufactured in New York, N. Y., permits us to make shipment in that vicinity with three days.

Without obligation, our engineering force is at your service for any information which may be desired.

Material—All SUPER-STEEL Partitions and door panels are constructed of No. 16 gauge, full-pickled, cold-rolled, patent-leveled, copper-bearing (rust-resisting) steel. No. 16 gauge is also used for all posts, head rails and sanitary shaped tubing.

Partitions—Are made of No. 16 gauge steel panel with No. 16 gauge 1¾-in. square tubing for front and rear posts and with No. 16 gauge 1⅛x2½-in. sanitary shaped tubing for top and bottom rails. The steel panel is forced into the four members full depth, interlocked and torch-welded to give a practically noiseless, rigid, single unit. No screws, no bolts to come loose.

Doors—Are made of No. 16 gauge steel panels with 1x3½-in. sanitary stiles, and rails of No. 24 gauge steel, drawn over a solid kiln dried wood core. Especially reinforced at corners to give a strong door.

Hardware—Each door is equipped with Lawson Universal adjustable spring hinge which permits the door to swing freely and be adjusted to stand open at any desired position; a specially designed (hold fast) rubber bumper; two cast manganese bronze hinge brackets; a manganese bronze, nickel plated coat and hat hook; door latch; and door pull.

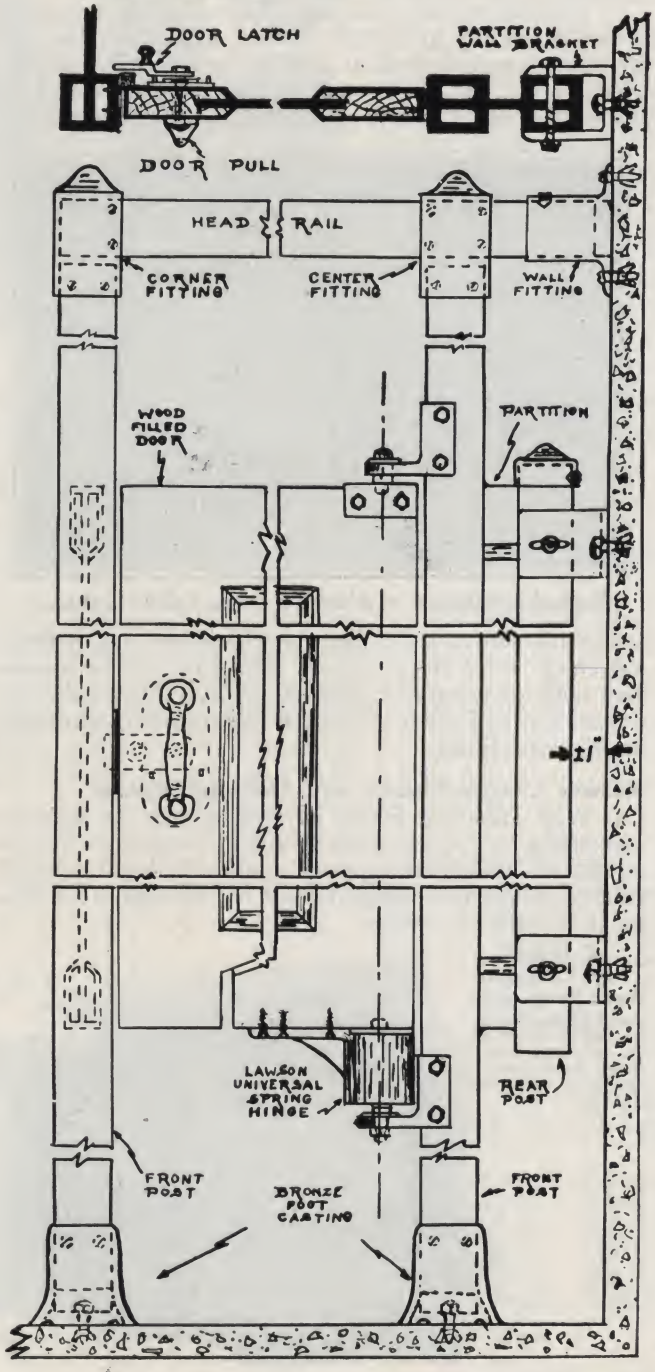
Fittings—For head rail, are of heavy malleable cast iron, secured to railing and posts with two concealed cone shaped setscrews at each point. Foot castings are of heavy cast manganese bronze, self-draining, 3 in. high, secured to floor with concealed bolt, and have vertical adjustment.

Full adjustment is provided at all points where partitions meet walls and floor.

Finish—Over a heavy metal oil primer our specially prepared green-gray finish is applied, which will harmonize with green or gray. Other colors may also be had.

Architects' Short Specifications

All toilet, shower, dressing room and urinal partitions, doors and screens, as shown on plans, shall be SUPER-STEEL as manufactured by the AMERICAN STEEL FURNITURE CO., New York, N. Y. All partitions and door panels shall be of No. 16 gauge steel. All door rails and stiles shall be of the No. 24 gauge steel drawn over a wood core. All posts and railings shall be of No. 16 gauge steel, 1¾ in. square.



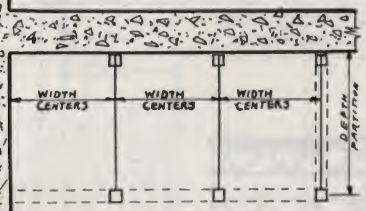
Continued on next page

TYPICAL LAYOUTS of STANDARD SUPER-STEEL TOILET PARTITIONS

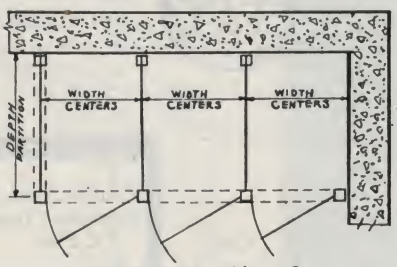
Stock Sizes — Partitions	
48 x 54	42 x 60
54 x 54	48 x 60
60 x 54	54 x 60

MADE BY
American Steel Furniture Co.
Twenty-Seven West 24th Street
Telephone Chelsea 1236-1237
NEW YORK CITY

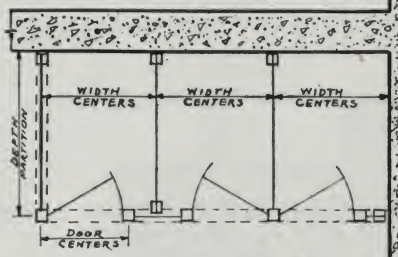
Stock Sizes — Doors	
24 x 54	24 x 60
28 x 54	28 x 60
32 x 54	32 x 60



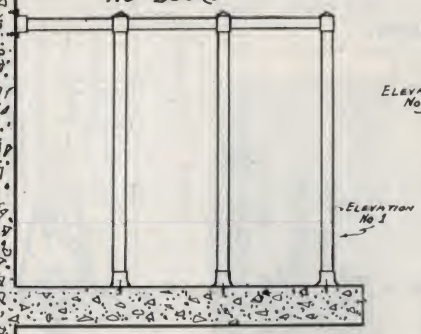
LAYOUT No 1
No Doors

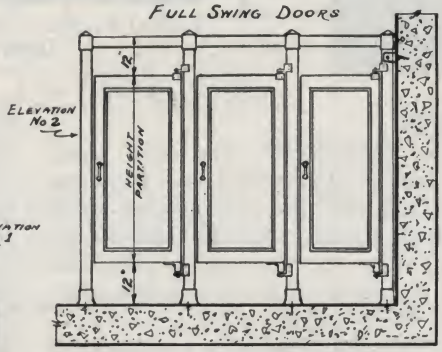


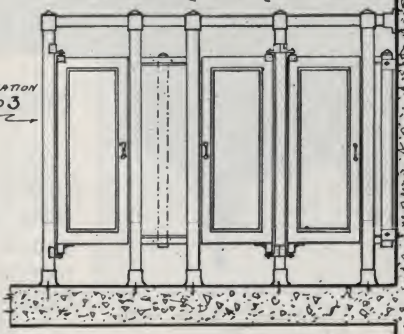
LAYOUT No 2
Full Swing Doors



LAYOUT No 3
Small Doors And Front Panels

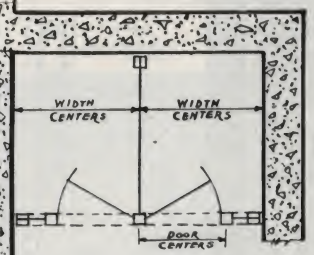




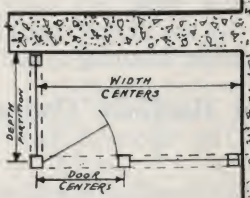


All dimensions are figured to finished walls.

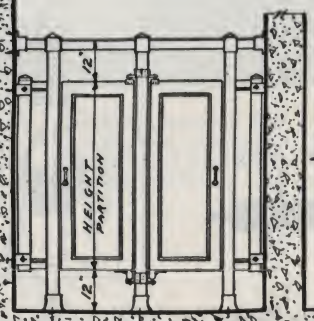
All dashed lines shown on plans indicate headrail.

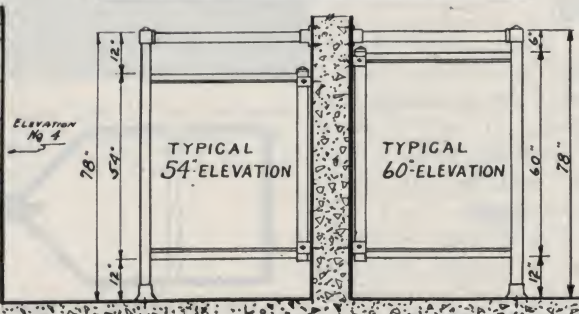


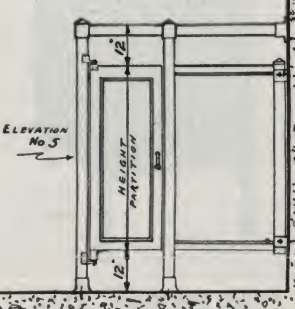
LAYOUT No 4



LAYOUT No 5







THE D. A. EBINGER SANITARY MFG. CO.

Manufacturer of "Ebco" Steel Toilet and Shower Enclosures

COLUMBUS, OHIO

AGENCIES IN ALL PRINCIPAL CITIES

Products

"Ebco" Metal Compartments for Toilet Partitions, Shower Enclosures, Dressing Compartments—two types of construction.

For "Ebco" Sinks and Drinking Fountains, see Manufacturers' Index.

"Ebco Silentsteel" Type with Silencing Filler

Materials

"Ebco" Metal Compartments are constructed of furniture stock steel, full cold rolled and patent leveled.

Construction

In the "Silentsteel" type—two panel sheets are electrically welded to a 14 gauge channel frame and the intervening space filled with a special silencing board—the panels and filler are thoroughly cemented together, insuring a rigid, *non-vibrating* partition unit.

The "Sturdibilt" partition consists of a substantial hollow metal frame completely surrounding a heavy gauge panel sheet—welded together, making a rigid partition unit.

By the "Ebco" method, the panel sheet is expanded during the welding operation, insuring a taut panel—free from buckles or warp.

Door Hardware (Patents Pending)

The doors in both types are suspended on encased roller bearing gravity hinges. The alignment of top and bottom hinges is insured by the continuous hinge rod.

Pull and latch are regularly furnished of polished "duraluminum" or of brass, chrome plated, when specified.

Foot casting on "Silentsteel" are polished "duraluminum" and on "Sturdibilt" are galvanized or brass as specified.

"Ebco Sturdibilt" Type
Panel type with full encircling stile

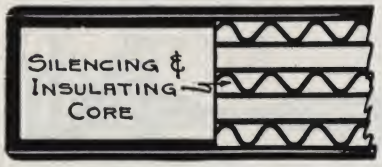
Finish

"Ebco" partitions are regularly furnished in "krinlac" finish—sage green color—baked on at a high temperature. Its artistic finish and durability make it especially suitable for metal compartments.

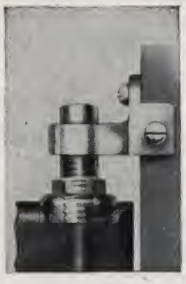
Prime coat, a special finish in lacquer, or baked enamel—may be furnished when so specified.

Specifications

For quiet operation specify, the "Ebco Silentsteel." For economical, sturdy construction specify, the "Ebco Sturdibilt."

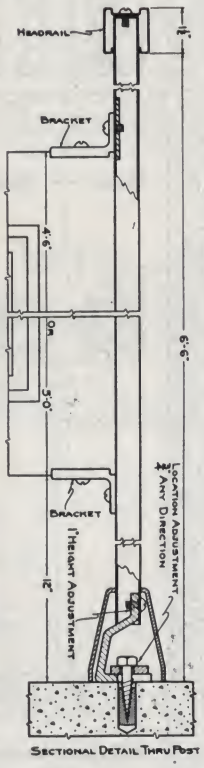


Typical Section of the Flush Panel Design

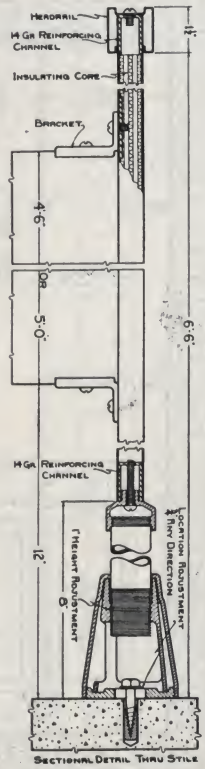


Top and Bottom Hinges
Aluminum bronze incased, roller bearing type. Top and bottom hinges aligned by rod continuous through stile of door

Typical Section of Recess Panel Design



SECTIONAL DETAIL THRU POST



SECTIONAL DETAIL THRU STILE

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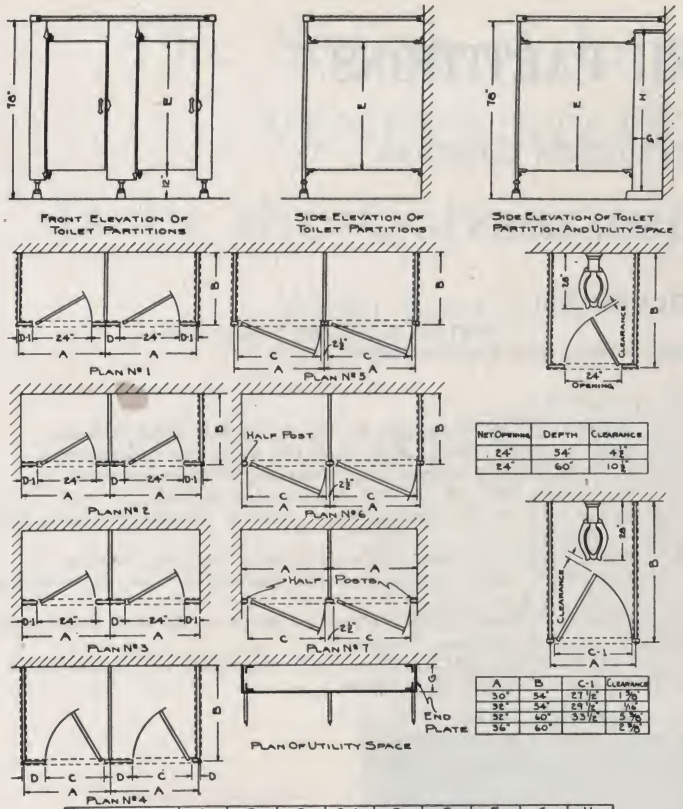
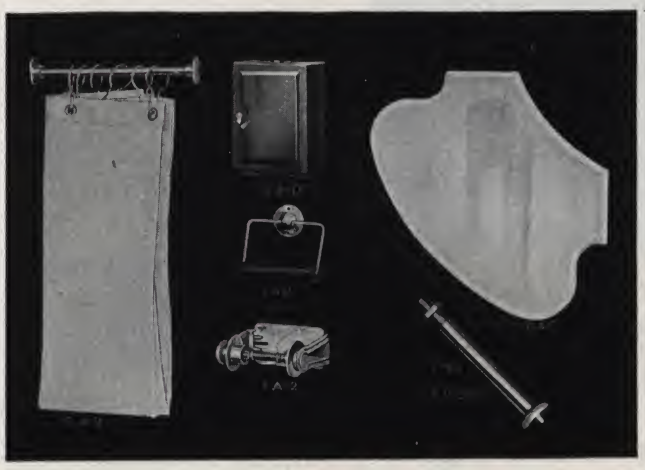


NET OPENING	DEPTH	CLEARANCE
24"	54"	4½"
24"	60"	10½"

A	B	C-1	CLEARANCE
30"	54"	27½"	1 3/16
32"	54"	29½"	1 1/16
32"	60"	33½"	3 3/16
36"	60"		2 3/16

	A	B	C	C-1	D	E	F	G	H
STANDARD SIZES "SILENT STEEL" AND "STURDI-BILT"	30"	36"	24"	27½"	2½"	54"	62"	9"	67"
	32"	42"		29½"	6"	60"	68"	12"	73"
	36"	48"		33½"	8"			15"	
		54"			10"			18"	
		60"			12"				

Details of "Ebco Silentsteel" and "Sturdibilt" Compartments

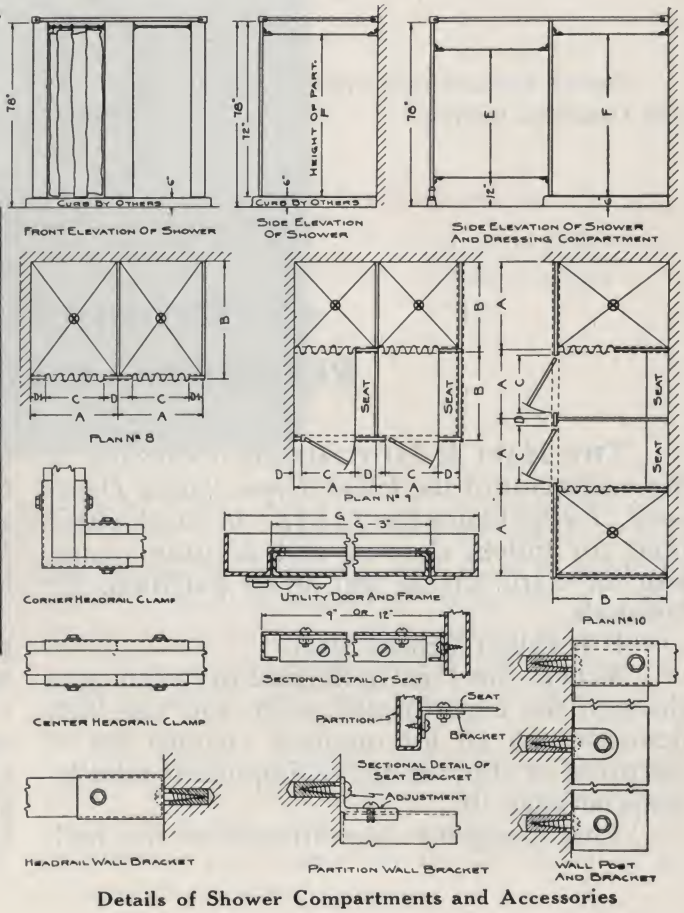


High Grade Accessories for "Ebco" Steel Compartments

EA-9	Shower curtain assembly	EA-12	Adjustable paper holder
EA-19	Onliwon paper holder	E-48	Corner shower seat
EA-11	Roll paper holder	E-49	Corner shower seat leg

Hardware Used on "Ebco" Compartments

EA-5	Slide latch	EF-46	Combination coat hook and bumper
EF-40	Door pull	EF-81	Comb. coat hook and bumper
EA-6	Center bolt latch	EF-82	Door bumper
EA-7	Indicator latch	EF-83	Door bumper and keeper
EA-8	Overthrow latch	EF-85	Comb. keeper and bumper outswing doors
EF-78	Three-prong coat hook	EF-87	Lock and keys
EF-79	Two-prong coat hook		
EF-80	Ceiling hook		



Details of Shower Compartments and Accessories

VENEER-STEEL PARTITIONS

BY

THE HART & HUTCHINSON COMPANY

NEW BRITAIN, CONN.

BRANCH OFFICES

NEW YORK, N. Y., 101 Park Avenue
BOSTON, MASS., 260 Tremont Street
PHILADELPHIA, PA., Architects Building, 17th Street at Sansom

DISTRICT AGENCIES

BINGHAMTON, N. Y., A. Roberson & Son, Inc.
BIRMINGHAM, ALA., L. L. Overstreet, 847 Martin Building
BUFFALO, N. Y., Hart & Hutchinson Co., care Buffalo Builders' Exchange, 303 Jackson Building
DALLAS, TEX., R. J. DeWees Company, 3015 Grand Avenue
DETROIT, MICH., Francis C. Bagby, Penobscot Building
JAMESTOWN, N. Y., Chautauqua Builders' Supply Inc., 132 Blackstone Avenue
KANSAS CITY, MO., J. T. Thurman Company, 303 Minor Building
MEMPHIS, TENN., Hoshall Machinery Company
MINNEAPOLIS, MINN., John F. Hurley Company, 802 National Building, 6th Street and Second Avenue
MONTREAL, QUE., Alfred H. Flint, 653 New Birks Building
NEW HAVEN, CONN., R. E. Copeland & Co., 185 Church Street
PITTSBURGH, PA., Kirk-Grier Company, 434 Diamond Street
ST. LOUIS, MO., W. E. Way, 825 Chemical Building
SYRACUSE, N. Y., Arnold Metal Door & Window Company, Hills Building
TAMPA, FLA., C. Sweeny, Tampa Builders' Exchange Building
TORONTO, ONT., Dominion Steel Equipment, Ltd., 9 Wellington Street, East
GRAND RAPIDS, MICH., Michigan Building Material & Specialty Co., 439 Houseman Building
SAN FRANCISCO, CALIF., Gates-Tatterson Co., 557 Market Street
LOUISVILLE, KY., F. W. Maury & Company, 128 E. Main Street

OTHER AGENTS IN VARIOUS CITIES

For our pages on Radiators, see Manufacturers' Index

Toilet Enclosures; Shower Stalls and Dressing Booths.

Veneer-Steel TRADE MARK REG.

Hospital Ward Screens; Hospital Special Equipment.

AN IMPORTANT STATEMENT REGARDING STEEL PARTITIONS

The Hart & Hutchinson Company is the originator of the *Flush Type, Sound Deadened, Fully Galvanized Type* of steel partitions for toilets, showers and dressing rooms, also for ward screens and dwarf partitions for hospitals.

It is called Veneer-Steel.

Veneer-Steel has in the past five years gone through the experimental stage and has fully demonstrated all the qualities claimed for it. As proof of this, see list of important installations on page 10.

This Company also introduced the ball-bearing, non-wearing feature in gravity hinges for toilet doors, as well as the special rear adjustment feature to keep the partitions away from the walls about an inch, the latter for better sanitation.

Every effort is devoted to manufacturing a product of highest quality in material, workmanship and finish.

The Hart & Hutchinson Company asks the architect to consider carefully the details on following pages, believing that because of proved permanence and service they warrant his specification.

Continued on next page

The Secret of Long Life Built Into VENEER-STEEL PARTITIONS Is In the Galvanizing of All Steel Parts

Within practical limits of cost, no other metal can equal the rustproofing that this affords—

Heavy galvanized sheets with special leveling process

Red metal primer, specially ground for lacquer finish

Gray or green lacquer finishing coats

EMINENT AUTHORITIES ATTEST TO THIS METHOD

" . . . This surface sealing alloy of iron and zinc furnishes a natural resistant against corrosion and when used in connection with paint, provides a background of protection that is not to be found in any other metal approaching its cost." — *Research Department, American Sheet and Tin Plate Company.*

"Of all the methods which have been adopted to coat the surface of iron and steel so as to offer resistance to corrosion, the applying of a coat of zinc seems up to the present, to be the most effective." — *From "The Galvanizing of Iron and Steel" by E. A. Atkins, M.I. Mech. E., M.I.W.E., before the Liverpool Engineering Society (E. A. Atkins, Member of Council; Messrs. Rylands Bros.; Warrington).*

"It has not yet been discovered how to regenerate steel. Until such a discovery is made we are compelled to resort to embalming.

"The metallic method of embalming consists of coating the steel with some other metal, and zinc is without doubt, the best protective coating for iron and steel." — *From "Galvanizing and Tinning" by W. T. Flanders of the Malleable Iron Fittings Company.*

Continued on next page

Typical Installations of Veneer-Steel Partitions

Continued on next page

THE SALIENT POINTS OF VENEER-STEEL PARTITIONS

All Steel—Galvanized Inside and Outside—Doors and Partitions Flush and Sound Deadened

Veneer-Steel Partitions Are Noiseless

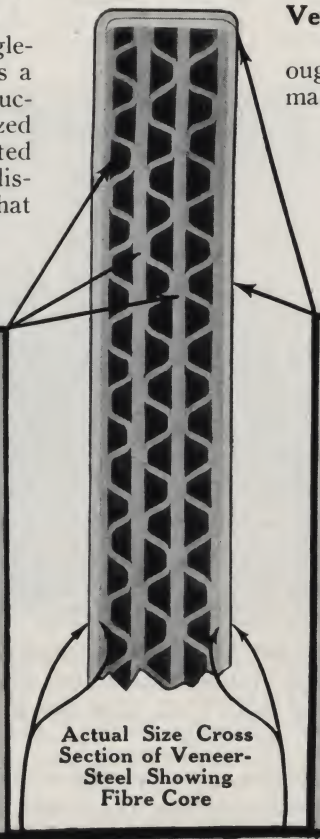
By the elimination of vibrating single-sheet panels and doors, Veneer-Steel offers a tremendous advancement in partition construction. Veneer-Steel is built of galvanized sheets overlayed on a fibre core and cemented thereto, with all edges soldered. It is a distinct achievement in steel partition design that appeals at once to those responsible for proper construction along modern lines.

Veneer-Steel Partitions Are Flush Type

Flush type partitions give more thorough sanitation as well as economy of maintenance.

No mouldings to collect dirt or water are found on Veneer-Steel—nothing but flat, smooth surfaces that require no attention and are very attractive in appearance.

Noiseless



Actual Size Cross Section of Veneer-Steel Showing Fibre Core

Flush-Type

Veneer-Steel Is Non-absorbent

This is a most important feature. Veneer-Steel, being solder-sealed, is impervious to moisture and cannot absorb and retain odors; neither can internal condensation occur.

Veneer-Steel Is Rust-proofed

In addition to galvanized sheets used in partitions, doors and panels, all posts are sherardized inside and out after fabrication. This precludes rusting and makes possible the use of steel partitions under conditions heretofore considered impossible. Attachments to walls are also sherardized. Hardware is solid brass, chromium plated. See detailed hardware next page.

Rust Proofed

Quality and Cost

This construction necessarily involves a higher manufacturing cost, although the cost installed is but slightly higher than that of ordinary steel partitions. Even at a slightly higher cost, you will find it worthwhile to specify "Veneer-Steel" for your clients' lasting satisfaction.

Specifications

For those architects who prefer not to specify a particular product to the exclusion of all others, the following short form specification can be used:

"Steel Partitions (or showers) to be of flush type, fully sound-deadened; all parts, except hardware, to be galvanized or sherardized and enameled with two coats hard, durable finish; hardware, solid brass chromium finish; in every way to equal Veneer-Steel, as manufactured by The Hart & Hutchinson Company."

A more detailed specification appears on the last page of this catalogue.

Details of construction are shown on the succeeding pages.

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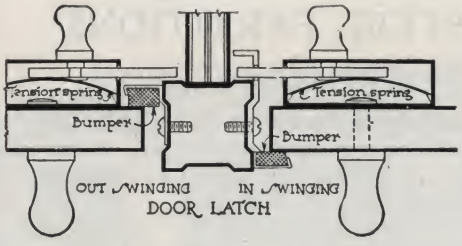
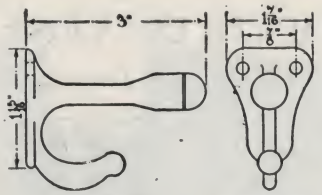
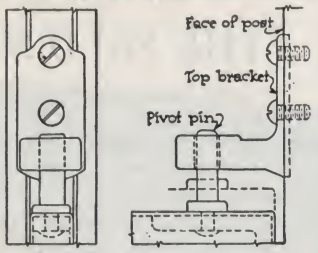


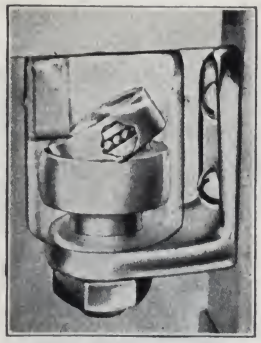
DOOR LATCH



SIDE VIEW FRONT VIEW
COAT HOOK



SIDE VIEW FRONT VIEW
DETAILS OF TOP PIVOT

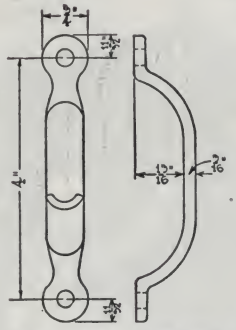

PHANTOM VIEW SHOWING BALL BEARING

HARDWARE

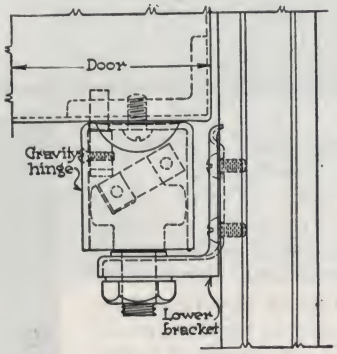
Hardware and connectors for Veneer-Steel Doors and Partitions are solid brass excepting those parts where durability and rigidity demand stronger material. In these cases extra-proof plating in addition to the chromium plating is used. Standard hardware includes 3 in. high foot casting, 5 in. door handle, ball bearing gravity hinge, pivot hinge pin of stainless steel, hinge brackets, 5 in. rubber insert door bumper, bumper type coat hook and inside door latch.

At all points where partitions abut to walls adjustable attachments are used which are made of steel thoroughly sherardized before being finished in the same color as partitions.

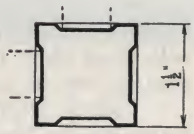
Pin Tumbler Locks can be supplied as required. Pay Locks can be used with Veneer-Steel doors, special reinforcing provided for their use.



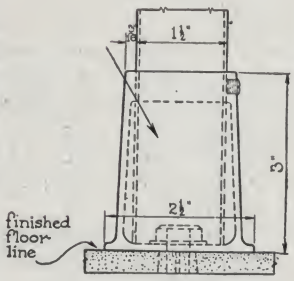
FRONT VIEW SIDE VIEW
DOOR HANDLE



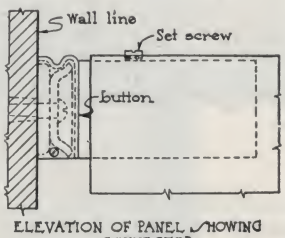
FRONT VIEW
DETAILS OF BALL BEARING HINGE



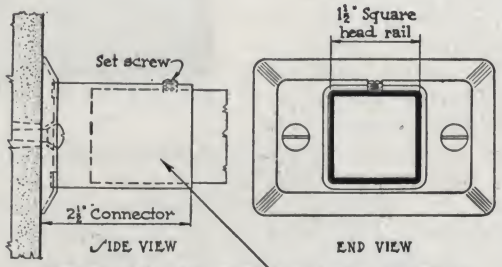
SECTION THRU POST



DETAIL OF FLOOR STANDARD



ELEVATION OF PANEL SHOWING CONNECTOR
DETAILS OF PANEL WALL CONNECTOR



SIDE VIEW END VIEW
DETAIL OF HEAD RAIL WALL CONNECTOR

VENEER-STEEL	DOOR HARDWARE	PLATE 1

Continued on next page

PARTITIONS AND DOORS OF VENEER-STEEL

Important points in addition to the flush type, sound deadened and galvanized features.

(1) All framing posts are fluted on four sides, affording a seat for edge of partitions where they attach. Where there are no partitions this serves to relieve too severe an appearance.

(2) Only *seamless* 1½ in. square tubing is used.

(3) All posts and headrail tubing are sherardized inside and out, as well as painted inside and out.

(4) Wherever Veneer-Steel attaches to walls or floor ample adjustment permits easy erection.

(5) An exclusive feature is the adjustable connection at rear edge of partition. These patented connections are designed to keep the edge of partitions away from walls about ¾ in. Experience has demonstrated the difficulty of a satisfactory fit at this point where full length attachments are used because of unevenness of walls, tile coping or a variation from tile to plastered walls. Veneer-Steel connections eliminate this difficulty without loss of privacy, making for better sanitation—permit easy cleaning or repainting of walls.

(6) A better design results from the use of rectangular shapes, slender posts, and flush panels and doors.

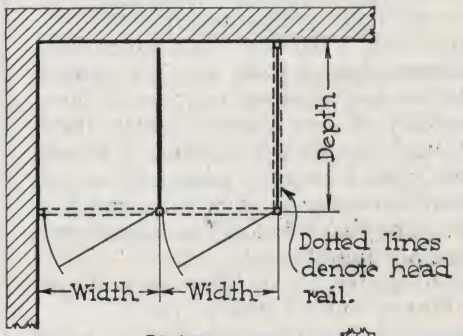
(7) Veneer-Steel is especially adapted for attachment to other equipment because its plain surfaces and fine grade hardware compare with best practices.

(8) Veneer-Steel doors, flush type, sound deadened, with special hardware for the purpose are best for use with marble, slate or other similar materials used in toilet or shower stalls.

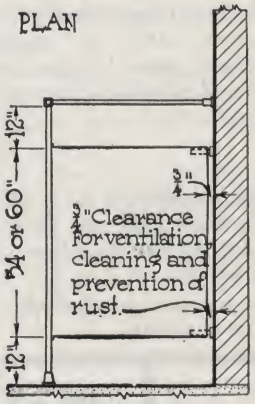
(9) Stainless steel is equally efficient in Veneer-Steel where the use of such material is needed.

(10) Because of interchangeability of parts, Veneer-Steel may be moved to new locations when necessary without any cutting or special fitting, or any new parts.

(11) Unstinted service by our own branches and especially instructed representatives and the guarantee of an old and well rated company establish Veneer-Steel as the safe material to use.



PLAN



ELEVATION

Partitions

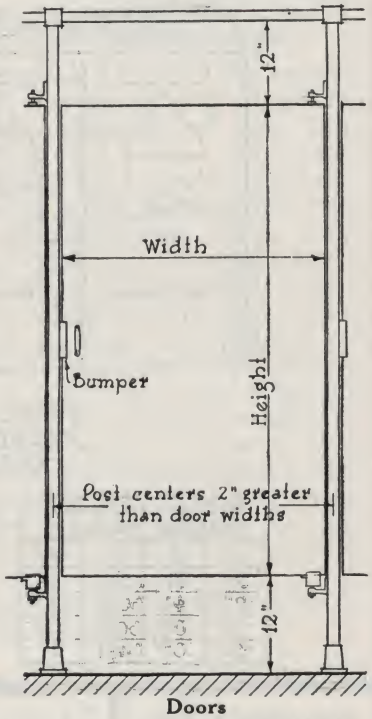
Stock Sizes of Partitions

STOCK SIZES			
Depth	Height	Depth	Height
48"	54"	48"	60"
54"	54"	54"	60"
60"	54"	60"	60"

NOTE:- Special sizes furnished with slight delay.

STOCK SIZES OF DOORS

Widths
18"
20"
22"
24"
26"
28"
30"
32"
34"
} In 2 Heights 54" and 60"



Doors

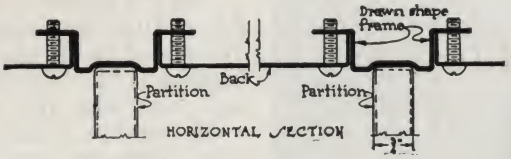
Continued on next page

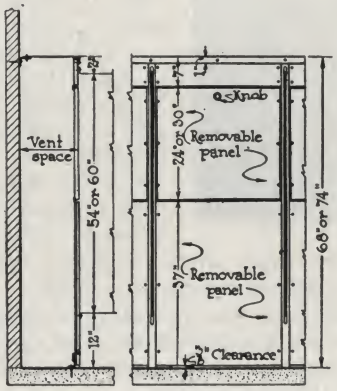
A SPACE-SAVING REMOVABLE PANEL BACK FOR VENT SPACES

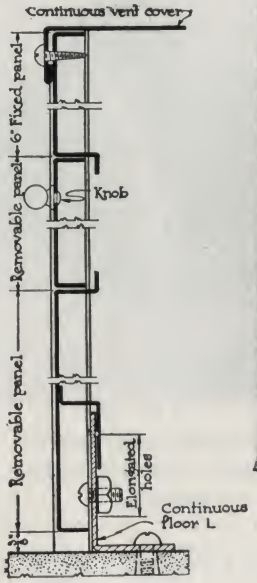
Instead of the one-piece back usually supplied, a drawn shape frame is used to which is screwed two easily removable panels. Access being had through these panels, the usual access door at end of chamber is omitted. The vent space need be only deep enough for the piping—usually 8 to 10 in.

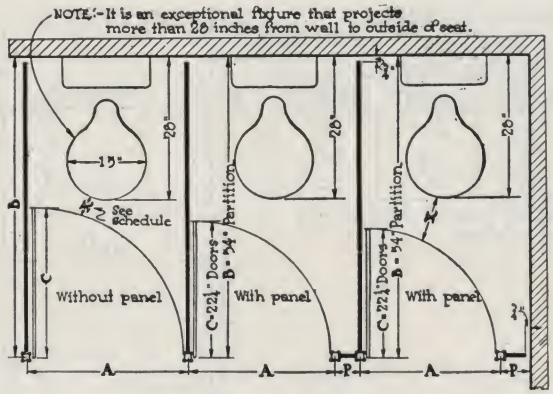
Also Greater Accessibility—In erecting, the frame is installed with partitions. When toilet bowl is set, lower panel is placed in position and pipe holes indicated. After pipe holes are cut, lower panel is then screwed in place and a very easy hook-up of piping made, the workman being directly over his work and within easy reach.

For Inspection or Later Repairs—No narrow space for the workman to crawl through. Good light and good air are available. Speedier and better work results.









TYPICAL PLANS SHOWING BOWL CLEARANCE

Wide door schedule without panel.			
A	B	C	X
30"	54"	28¼"	1½"
32"	54"	30¼"	1"
32"	60"	30¼"	5½"
36"	60"	34¼"	2"

Narrow door schedule with panel.				
A	B	C	P	X
24"	54"	22¼"	6"	7"
24"	54"	22¼"	8"	7½"
24"	54"	22¼"	10"	7½"
24"	54"	22¼"	12"	8½"

Veneer-Steel Flush Front Panels for Use with Narrow Doors

To effect a saving in floor space or where narrow aisles are necessary in front of toilet compartments, or if center-to-center dimensions of bowls are of more than usual size, a narrow front panel must be used, with a narrow door *opening in.* The "clearance schedule" tables and sketches on page 8 show these limits. Not only do front panels relieve these conditions but through the broader footing a lateral bracing gives more rigid framing. Also with an in-swing door, the stalls are always open for inspection when not in use. Banging of doors is eliminated. "Occupied" latches are unnecessary.

Another use of panels is as fillers to walls to meet special conditions such as offsets, etc.

The attachment of end panel to wall is made with adjustable connectors same as compartment dividing partitions allowing about ¾-in. clearance. A more sanitary device and simpler connection than with a fitted closing strip.

Stock Sizes

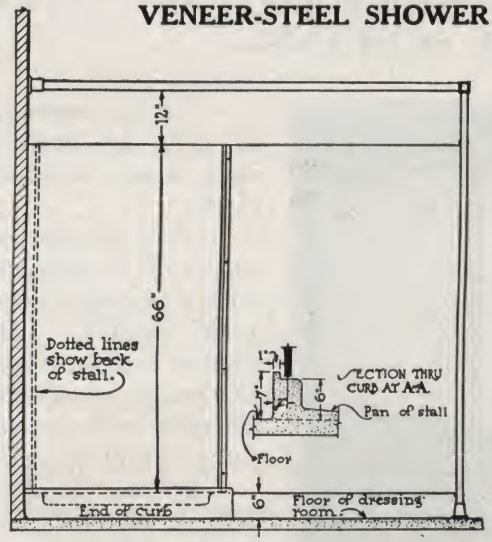
Stock sizes of front panels are 6, 8, 10 and 12 in., both 54, 60 in. heights, also 66 and 72 in. panels for showers. Special widths in odd inches and up to 60 in. widths will be supplied.

Note: *Widths of front panels are figured from center-to-center dimension of post upright.*

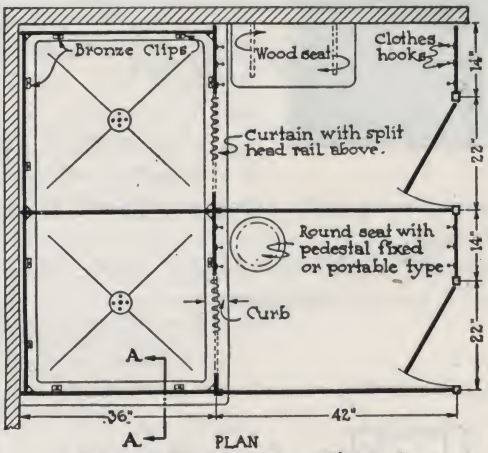
VENEER-STEEL **PANELS** **PLATE 2**

Continued on next page

VENEER-STEEL SHOWER STALLS AND DRESSING ROOM PARTITIONS



ELEVATION



PLAN

INDIVIDUAL SHOWER STALLS & DRESSING ROOMS

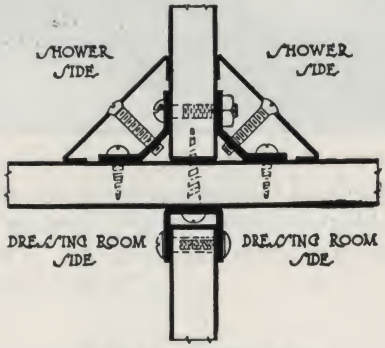
The principal requirement in steel partitions for shower work is resistance to rusting.

The second necessity is a tightness of joints to prevent leakage.

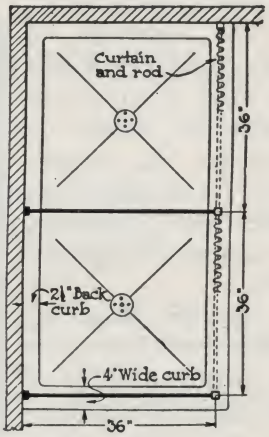
Thirdly, there should be an absence of ledges and mouldings—a sanitary design.

THE HART & HUTCHINSON COMPANY realizes its responsibility in stating that Veneer-Steel Partitions do fully cover these requirements.

Made of galvanized sheets throughout, with all edges solder sealed, Veneer-Steel gives the fullest protection obtainable in steel against rust.

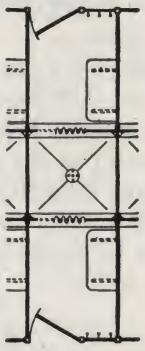


SECTION OF WATER SEAL JOINT FOR SHOWER



PLAN

SHOWER STALLS WITHOUT DRESSING ROOMS (USING FINISHED WALLS FOR BACKS)



PLAN OF ONE BAY OF RANGE OF SHOWER STALLS WITH TWO DRESSING ROOMS TO EACH SHOWER

A New Curtain Rod Improvement

The curtain rod sketch at the right shows an easy sliding runway, with curtain hook runners on the inside. This prevents scraping finish of outside of rod by hooks. Nothing to get out of order, and curtain rings cannot become dislodged. Square 1½-in. shape makes for stiffer support than smaller round rods.

Seats for Dressing Room Compartments

For seating in dressing room compartments, we recommend a 12-in. stool, with cast iron base fastened to floor, or a portable stool.

When desired, seats the full depth of compartments and supported by either wall or post brackets will be supplied. Wooden seats are usually found preferable, but galvanized enamel steel seats can be provided.

1½" Square Split Head Rail

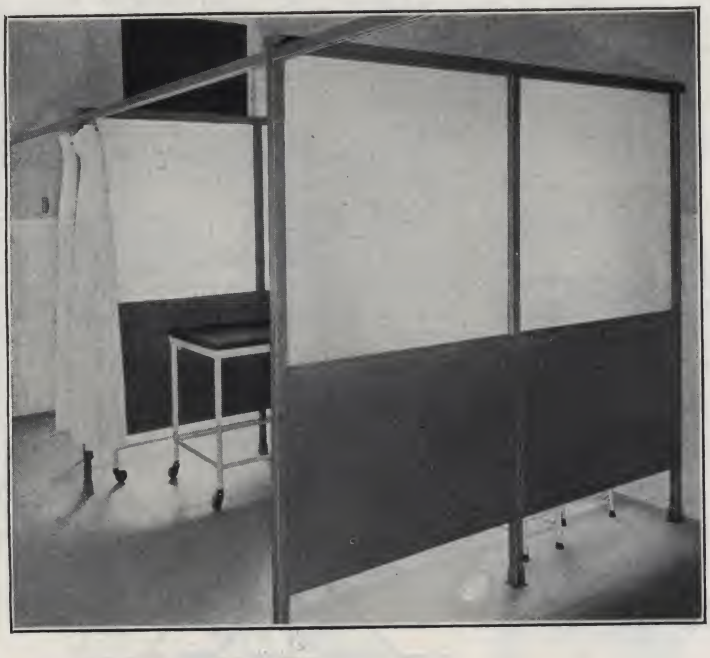
Building conditions do not usually warrant an easy handling of completed shower units, especially in sizes that prove satisfactory in use. Therefore, the need exists for a construction having watertight joints that will not only facilitate installation, but be a complete water-tight job when completed. The "Section of Water-Seal" shown above shows how this is done—one member drawing the edges of partitions together, the other wedging into the corner. Both pieces extend from top to bottom of shower. It is not necessary, usually, in a battery of showers, to cast a curb under each intermediate partition. The curb around the outside of the group should have a small lip cast on the outside (as per sketch) to prevent leakage.

Veneer-Steel is flush type and therefore completely sanitary.

VENEER-STEEL | SHOWER STALLS & DRESSING ROOMS | PLATE 3

Continued on next page

SOUND-DEADENED, FLUSH TYPE VENEER-STEEL HOSPITAL SCREENS



The advantage of semi-privacy, or the definite need of protection against the spread of contagion, has brought about a wide use of so-called ward partitions, or screens, in hospital work.

In no phase of Veneer-Steel Service do the unusual qualities of its construction find better application. Quiet being a requisite in hospital routine, the need of sound-deadened panels is obvious.

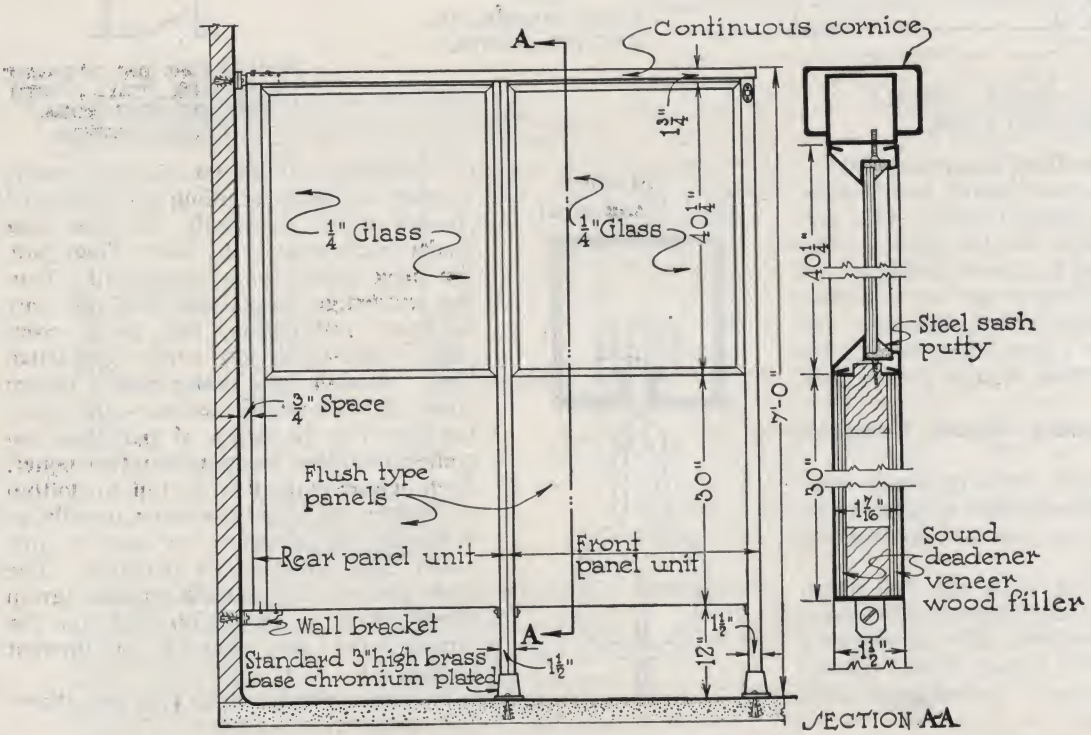
Sanitation is equally important. The absence of unnecessary mouldings insures this and makes Veneer-Steel especially easy to clean and keep clean. Adjustable rear connectors are employed to keep the back edge away from the wall. This also facilitates cleaning.

The foot castings, 3 in. high, are made of solid brass, chromium plated.

Ward Screens are usually 7 ft. high over all and as deep as conditions require. Large screens require head-rail bracing at the front. Curtains will be furnished where desired.

In the case of screens in children's wards a 5 ft. over all height is ordinarily sufficient, and because of a comparatively shallow depth, normally 3 ft., they are usually made free standing. A special 6-in. solid white brass foot casting is supplied for support in such cases.

These are not usually portable but can be made so by the use of a special floor insert.



STANDARD ELEVATION

Continued on next page

VENEER-STEEL SPECIFICATIONS

Standard Specifications for Toilet Enclosure

Partitions, doors and panels shall be ¾-in. thick, and shall be constructed by veneering a fibre core with sheets of galvanized stretcher-leveled steel of 22 gauge. All edges shall be reinforced and soldered.

Upright framing and headrails shall be of 1½-in. 18-gauge hollow drawn seamless tubing. The upright members shall be fluted to receive edges of partitions and panels and shall be sherardized inside and out after fluting.

Rear edge of partitions, where attached to abutting walls, shall be connected thereto by special adjustable (sherardized) connectors, designed to keep rear edge away from wall approximately ¾ inch.

Backs for stalls (where utility space is indicated on the drawing) shall be of the removable panel type and shall be made of single thickness 18 gauge galvanized steel. There shall be two removable panels. The lower shall be arranged for easy removal by the plumber for cutting through pipe opening.

Vent tops shall be of 18 gauge steel. Vent doors at end of utility space (where same are indicated) shall be of Veneer-Steel.

Specify narrow doors and front panels if they are to be used.

Finish—All parts shall be galvanized or sherardized. They shall be thoroughly scrubbed in benzine and given two heavy finish coats of (grey or green) lacquer. All tubular framing shall be enameled both inside and outside.

Hardware and Fittings—Foot casting shall be of solid brass, 3 in. high and be self-draining and adjustable.

4-in. door handle and inside latch knob and bolt shall be of solid brass. Coat hook shall be of solid brass, bumper type, with rubber insert. 5-in. rubber bumper shall be made of steel, sherardized and enameled, and shall be located at center of door.

All brass hardware shall be chromium plated.

Locks (where specified) shall be of the pin-tumbler type with nickel silver keys.

Paper holders are not ordinarily supplied but they can be furnished on special order.

Standard Specifications for Shower Stalls

For partitions, panels, upright framing and headrails use same specifications as given for toilet enclosures.

For backs for showers use same specifications as given for toilet enclosure partitions and panels.

Finish specifications same as for toilet enclosures.

Hardware, Fittings and Accessories—Foot castings shall be of solid brass so designed as to keep the bottom edge of partitions and backs off curb at least ⅛ in.

Note: Architect should make provision in the masonry of flooring specifications for the curb so that it will have a ledge one inch higher than lower edge of partitions around outer edge of shower group. (See detail of curb, page 10.)

Curtain shall be of 9-oz. white duck with rings and grommets and shall be, in the flat, 6 in. wider than opening.

IMPORTANT RECENT INSTALLATIONS OF VENEER-STEEL PARTITIONS

Building	Location	Architect
State Trade School	Hartford, Conn.	Malmfeldt & Prentice
International Silver Company	Meriden, Conn.	Owner's plans
Raleigh Fitkin Memorial	New Haven, Conn.	Henry C. Pelton
Yale Medical School	New Haven, Conn.	Henry C. Pelton
Newington Home for Crippled Children	Newington, Conn.	Ebbets & Frid
Engineering Building, University of Delaware	Newark, Del.	Chas. Z. Klauder
Chesapeake & Potomac Bell Telephone Building	Washington, D. C.	Voorhees, Gmelin & Walker
D. A. R. Constitutional Hall	Washington, D. C	John Russell Pope
Dade County Agricultural College	Miami, Fla.	H. Hastings Mundy
Lowndes County Courthouse	Valdosta, Ga.	Greer & Biggers
Saint Marie Hospital	Lewiston, Me.	Miller, Mayo & Beal
Industrial Trust Building	Boston, Mass.	S. Scott Joy
Y. W. C. A. Building	Boston, Mass.	Shepard & Stearns
Roberts School	Cambridge, Mass.	C. R. Greco
Eastern Junior High Schoo.	Lynn, Mass.	Fanborn & Weed
Open Air Ward Buildings	Mattapan, Mass.	James H. Ritchie and Associates
Somerville High School	Somerville, Mass.	Frank Irving Cooper Corp.
William Filene's Sons Co.	Worcester, Mass.	Owner's plans
High School of Commerce	Worcester, Mass.	George C. Halcott
Foshay Building	Minneapolis, Minn.	Magney & Tusler
Swedish Hospital	Minneapolis, Minn.	Magney & Tusler
Camden Vocational School	Camden, N. J.	Lackey & Hettel
McCall Field Club	Highland Park, N. J.	John T. Windrim
Y. W. C. A. Building	Jersey City, N. J.	John T. Rowland
Essex County Vocational School	Newark, N. J.	Guilbert & Betelle
Brooklyn College of Pharmacy	Brooklyn, N. J.	Tocker & Marsh
Buffalo Schools	Buffalo, N. J.	Board of Education
Christodora House	New York, N. Y.	Henry C. Pelton
Columbia Presbyterian Medical Center	New York, N. Y.	James Gamble Rogers
Gunther Building	New York, N. Y.	Andrew J. Thomas
Junior League Club House	New York, N. Y.	John Russell Pope
Miss Nightingale School	New York, N. Y.	Delano & Aldrich
National Broadcasting Co. Building	New York, N. Y.	Bethlehem Engineering Co
School of Education, New York University	New York, N. Y.	James Gamble Rogers
Frank G. Shattuck Co. Building	New York, N. Y.	Russell G. and Walter M. Cory
Central High School	Syracuse, N. Y.	A. L. Brockway
Ardmore Senior High School	Ardmore, Pa.	Ralph E. White
Pennsylvania Hospital for Crippled Children	Elizabethtown, Pa.	Thomas, Martin & Kirkpatrick
Lansdowne High School	Lansdowne, Pa.	Heacock & Hokenson
Media High School	Media, Pa.	MacKenzie & Wiley
Millersville State Normal School	Millersville, Pa.	C. Emlen Urban
Episcopal Hospital, Out-patients' Building	Philadelphia, Pa.	Stewardson & Page
Hahnemann Hospital and Medical College	Philadelphia, Pa.	Pettit & Ferris
Martin Maloney Memorial Clinic	Philadelphia, Pa.	Tilden, Register & Pepper
Strawbridge & Clothier Store	Philadelphia, Pa.	Simon & Simon
Pittsburgh Plate Glass Co.	Pittsburgh, Pa.	Owner's plans
Bell Telephone Company	Montreal, Que.	Barrot & Blackader
College St. Marie	Montreal, Que.	Alphonse Piche
Milam Building	San Antonio, Tex.	George Willis
Massmer High School	Milwaukee, Wis.	Herbst & Kuenzli
Saint Mary's College	Wauwatosa, Wis.	Herbst & Kuenzli

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ALLENTOWN, PA., Parent Metal Products Co., 338 Lawrence Street, Philadelphia, Pa.
ALTOONA, PA., F. Limbach, 1722 E. Ohio Street, Pittsburgh, Pa.
AMARILLO, TEX., Vernon-Williams, 203 W. Sixth Street
ATLANTA, GA., Geo. Dowman Co., 462 Highland Avenue
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CHARLOTTE, N. C., W. L. McDonald, 408 Builders Building
CHATTANOOGA, TENN., T. H. Payne Co.
CHEYENNE, WYO., Rocky Mountain Architects & Builders Service, California Building, Denver, Colo.
CHICAGO, ILL., Milwaukee Stamping Co., 230 West Superior Street
CINCINNATI, OHIO, Al. Levinson Co., 607 American Druggist Building
CLEVELAND, OHIO, J. B. Olmstead Co., 208 Union Building
COLUMBIA, S. C., C. W. Turner, 612 Columbia N. B. Building
COLUMBUS, OHIO, Hausman Steel Co., 799 W. Goodale Street
CUMBERLAND, MD., E. W. Kemp, 2133 Maryland Avenue
DALLAS, TEX., W. A. Sedwick Co., 401 Construction Building
DAVENPORT, IOWA, Moline Consumers Co., Moline, Ill.
DAYTON, OHIO, Dayton Builders Supply Co., 104 So. Wayne Avenue
DECATUR, ILL., Midwest Supply Co., 711 Myers Building, Springfield, Ill.
DENVER, COLO., Rocky Mountain Architects & Builders Service, California Building
DES MOINES, IOWA, L. H. Kurtz, 312 Walnut Street
DETROIT, MICH., Metallic Door & Specialty Co., 407 Murphy Building
DULUTH, MINN., H. D. Bullard, 410 Builders Building
EAST ST. LOUIS, ILL., F. A. Cammann Builders, 927 Century Building, St. Louis, Mo.
*EL PASO, TEX. Write nearest representative or factory
ERIE, PA., W. D. Shumway, M&T Trust Building, Buffalo, N. Y.
*EVANSVILLE, IND. Write nearest representative or factory
FLINT, MICH., Supply & Equipment Co., 316 So. Water Street
FORT WAYNE, IND., Rodgers-White Co., 1031 Rivermet Avenue
FORT WORTH, TEX., W. A. Sedwick Co., 401 Construction Building, Dallas, Tex.
GALESBURG, ILL., Illinois Building Specialty Co., Galesburg Bank Building
GALVESTON, TEX., R. Voightlander, 929 Electric Building, Houston, Tex.
GARY, IND., McLaughlin Mill Supply Co., 274 Michigan Avenue, Hammond, Ind.
GRAND RAPIDS, MICH., Lincoln Brick Co.
*GREAT FALLS, MONT. Write nearest representative or factory
GREENSBORO, N. C., W. L. McDonald, 408 Builders Building
GREENVILLE, S. C., C. W. Turner, 612 Columbia N. B. Building
HAMMOND, IND., McLaughlin Mill Supply Co., 274 Michigan Avenue
HARRISBURG, PA., O. L. Preble, Jr., 25 So. Third Street
HARTFORD, CONN., Milwaukee Stamping Co., 416 Broadway, New York, N. Y.
*HELENA, MONT. Write nearest representative or factory
HOUSTON, TEX., R. Voightlander, 929 Electric Building
INDIANAPOLIS, IND., Stackhouse Building Specialty Co., 1011 Hume Mansur Building
*JACKSON, MISS. Write nearest representative or factory
*JACKSONVILLE, FLA. Write nearest representative or factory
JEFFERSON CITY, KAN., A. T. Bailey, 347 Manufacturers Exchange
JOLIET, ILL., Rudy A-1 Sheet Metal Co., 408 McDonough Street
KANSAS CITY, MO., A. T. Barley, 347 Manufacturers Exchange
*KNOXVILLE, TENN. Write nearest representative or factory
LANSING, MICH., Metallic Door & Specialty Co., 407 Murphy Building, Detroit, Mich.
LEXINGTON, KY., Kentucky Iron Works, 521 So. Second Street, Louisville, Ky.
*LIMA, OHIO. Write nearest representative or factory
LINCOLN, NEB., Paul O. Wells Co., 1000 Ninth Street
*LITTLE ROCK, ARK. Write nearest representative or factory
LOS ANGELES, CAL., L. C. Brintnall, 1614 Maple Street
LOUISVILLE, KY., Kentucky Iron Works, 521 So. Second Street
LUBBOCK, TEX., Vernon-Williams Co., 514 Mayrick Bldg.
MACON, GA., Taylor Iron Works & Supply Co.
MADISON, WIS., Millies Building Specialty Co., 462 Jackson Street, Milwaukee, Wis.
*MEMPHIS, TENN. Write nearest representative or factory
*MIAMI, FLA. Write nearest representative or factory
MILWAUKEE, WIS., Millies Building Specialty Co., 462 Jackson Street, Milwaukee, Wis.
MINNEAPOLIS, MINN., R. E. Anderson, 307 Builders Exchange, St. Paul, Minn.
*MOBILE, ALA. Write nearest representative or factory
MOLINE, ILL., Moline Consumers Co.
*MONTGOMERY, ALA. Write nearest representative or factory
*NASHVILLE, TENN. Write nearest representative or factory
NEWARK, N. J., Milwaukee Stamping Co., 416 Broadway, New York, N. Y.
NEW CASTLE, PA., F. Limbach, 1722 E. Ohio Street, Pittsburgh, Pa.
NEW HAVEN, CONN., Milwaukee Stamping Co., 416 Broadway, New York, N. Y.
NEW ORLEANS, LA., F. J. Allen, 202 Balter Building
NEW YORK, N. Y., Milwaukee Stamping Co., 416 Broadway, New York, N. Y.
NORFOLK, VA., W. Morton Northen Co., 109 E. Grace Street, Richmond, Va.
NORTH CHICAGO, ILL., McKinney Steel & Sales Co., 1715 Sheridan Road
OGDEN, UTAH, J. G. Teuscher
OKLAHOMA CITY, OKLA., Midwest Steel Co., 1533 W. Grand Street
*OMAHA, NEB. Write nearest representative or factory
PADUCAH, KY., Kentucky Iron Works, 521 So. Second Street, Louisville, Ky.
PEORIA, ILL., Roland Oliver, 1206 Lehman Building
PHILADELPHIA, PA., Parent Metal Products Co., 338 Lawrence Street
*PHOENIX, ARIZ. Write nearest representative or factory
PITTSBURGH, PA., F. Limbach, 1722 E. Ohio Street
PORTLAND, ME., H. W. Mayers, 1000 Statler Building, Boston, Mass.
*PORTLAND, ORE. Write nearest representative or factory
PROVIDENCE, R. I., H. W. Mayers, 1000 Statler Building, Boston, Mass.
PUEBLO, COLO., Rocky Mountain Architects & Builders Service, California Building, Denver, Colo.
QUINCY, ILL., Midwest Supply Co., Leland Office Building
RALEIGH, N. C., W. L. McDonald, 408 Builders Building, Charlotte, N. C.
READING, PA., Parent Metal Products Co., 338 Lawrence Street, Philadelphia, Pa.
RICHMOND, VA., W. Morton Northen Co., 109 E. Grace Street
*ROANOKE, VA. Write nearest representative or factory
ROCHESTER, N. Y., American Clay & Cement Co., 1175 East Main Street, Rochester, N. Y.
ROCK ISLAND, ILL., Moline Consumers Co., Moline, Ill.
ROCKFORD, ILL., Capitol Ornamental Iron Works, 1012 Ninth Street
SACRAMENTO, CAL., D. A. Pancoast Co., 23 O'Farrell Street, San Francisco, Cal.
ST. JOSEPH, MO., A. T. Bailey, 347 Manufacturers Exchange, Kansas City, Mo.
ST. LOUIS, MO., F. A. Cammann Builders, 927 Century Building
ST. PAUL, MINN., R. E. Anderson, 307 Builders Exchange
SALT LAKE CITY, UTAH, Crager Wire & Iron Co.
*SAN ANTONIO, TEX., Write nearest representative or factory
SAN DIEGO, CAL., L. C. Brintnall, 1614 Maple Street, Los Angeles, Cal.
SAN FRANCISCO, CAL., D. A. Pancoast Co., 26 O'Farrell Street
SAVANNAH, GA., Taylor Iron Works & Supply Co., Macon, Ga.
SCHENECTADY, N. Y., Fred G. Schilling, Jr., 99 No. Allen Street, Albany, N. Y.
SCRANTON, PA., LaBar-Evans & Allen Co., 711 Linden Street
*SHREVEPORT, LA. Write nearest representative or factory
SIOUX CITY, IOWA, Otto Bridge, 504 Jackson Street
SPOKANE, WASH., S. W. R. Dally, 332 Pioneer Building, Seattle, Wash.
SPRINGFIELD, ILL., Midwest Supply Co., 711 Myers Building
SPRINGFIELD, MO., A. T. Bailey, 347 Manufacturers Exchange, Kansas City, Mo.
SOUTH BEND, IND., South Bend Building Specialties Co., 1011 Hume Mansur Building
SYRACUSE, N. Y., R. J. Geary, 250 Wieting Building
TAMPA, FLA., Anthony B. Zierleyn, 230 Allied Building
*TEXARKANA, TEX. Write nearest representative or factory
TOLEDO, OHIO, B. F. Hausman, 14 No. St. Clair Street
TOPEKA, KAN., A. T. Bailey, 347 Manufacturers Exchange, Kansas City, Mo.
TRENTON, N. J., Parent Metal Products Co., 388 Manufacturers Exchange, Philadelphia, Pa.
TROY, N. Y., Fred G. Schilling, Jr., 99 No. Allen Street, Albany, N. Y.
TULSA, OKLA., E. O. Decker, 909 Atlas Building
UTICA, N. Y., R. J. Geary, 250 Wieting Building, Syracuse, N. Y.
*WACO, TEX. Write nearest representative or factory
WASHINGTON, D. C., Robert McWhirter, 1615 Q Street, N. W.
WATERLOO, IOWA, Iowa Building Material Co., 300½ W. Fourth Street
WICHITA, KAN., A. T. Bailey, 347 Manufacturers Exchange, Kansas City, Mo.
WILKES-BARRE, PA., LaBar-Evans & Allen Co., 711 Linden Street, Scranton, Pa.
WILLIAMSPORT, PA., LaBar-Evans & Allen Co., 711 Linden Street, Scranton, Pa.
WILMINGTON, DEL., Parent Metal Products Co., 338 Lawrence Street, Philadelphia, Pa.
YORK, PA., O. L. Preble, Jr., 25 So. Third Street, Harrisburg, Pa.
YOUNGSTOWN, OHIO, F. Limbach, 1722 E. Ohio Street, Pittsburgh, Pa.

*Representative being selected.

For Milwaukee Stamping Company Pages on Spring Hinges, Shower Compartments and Garment Carriers, see Manufacturers' Index

Continued on next page

LITTERER-MILWAUKEE FLUSH DOORS AND PANEL DOORS

For Marble, Slate, Vitrolite, Glass, Metal or Other Partitions

Litterer-Milwaukee Flush type and Ferrometal Panel type steel doors with Lawson Lavatory Hardware allow an unlimited selection of pleasing color contrasts in decorative treatment when used in conjunction with marble, slate, vitrolite and glass partitions as well as metal.

FERRO METAL TRADE MARK

Registered in U. S. Pat. Off.

The flush type door with its slightly thinner panel has a trimness and rigidity which makes other type doors look cumbersome by comparison.

Its perfectly smooth surface and practically noiseless closing action, combined with its wearproof quality, are prominent among the features which make it the ideal door for use with all types of partitions.

The new Ferrometal Panel Door with its rigid construction and new light weight design is a strong steel door for general purposes.

The stile has a wood core, giving noiseless operation and permitting the use of any type hardware desired.

The Lawson Hardware which is standard equipment on all doors is nationally known. It has exclusive patented features which give long wear and quiet operation.

Doors are finished in a variety of colors and types such as crackle, crystalized and crinkle. Mahogany, oak and walnut grain can be furnished where desired.

Architect's Specifications

All Lavatory Doors shall be (flush or panel type) with Lawson Hardware as manufactured by MILWAUKEE STAMPING COMPANY, Milwaukee, Wis.

The Flush Doors shall be Litterer-Milwaukee Flush type $\frac{13}{16}$ in. thick with two layers of fibre board filler pressed together, glued, bound and hermetically sealed between two boxed sheets of lead coated stock with vertical inside wood stile for hardware connections.

The Panel Doors shall be Litterer-Milwaukee Doors $\frac{13}{16}$ in. thick with $3\frac{1}{2}$ in. stiles of lead coated copper bearing steel with over-lapping double thickness countersunk miters and kiln dried wood core $\frac{3}{4}$ in. thick. Inner edge of door stiles to be sanitary shape and interlocked 1 in. with panel of lead coated copper bearing steel.

Flush Type Door

Panel Type Door

Continued on next page

LITTERER-MILWAUKEE
FERROMETAL TOILET AND SHOWER PARTITIONS

Ferrometal Partitions and Doors

Ferrometal Standard Partitions and Doors have filled a definite requirement for many years by providing an economical and sanitary equipment for the modern toilet, shower and dressing room.

FERRO METAL TRADE MARK

Registered in U. S. Pat. Off.

Shower Partitions, Dressing Room Partitions and Unit Showers

Standard Ferrometal Partitions, Doors and Backs are used for showers and dressing rooms and in connection with unit showers. For complete description of unit showers, see our listing in Manufacturers' Index.

Cubicle Partitions and Special Enclosures

Standard Ferrometal Partitions and Doors are adaptable for cubicles and other special enclosures for hospitals and institutions.

Suggested Material Specifications

Manufacture—

All toilet stalls, showers and dressing room partitions noted in this specification shall be manufactured by the MILWAUKEE STAMPING COMPANY, Milwaukee, Wis.

Material—

Doors and partitions to be built of No. 16 gauge keystone (rust-resisting) copper bearing, full pickled, three pass, cold rolled patent leveled steel. Partitions to have solid steel panel construction with 1½ in. square No. 16 gauge hollow metal front and rear post with No. 16 gauge 2⅛x¾ in. hollow metal top and bottom sanitary shaped rail. Partition panel interlocked, welded and inserted full depth into the surrounding panel members, making sanitary and homogeneous joints throughout. Furnish necessary wall and top post fittings with heavy self-draining base fitting. These fittings shall be adjustable to take up any variation in walls and floors. Provide necessary head rail not less than No. 16 gauge to brace partitions.

Doors—

Doors where shown on plans are to have stiles 3½ in. wide and $\frac{13}{16}$ in. thick of lead coated plate with double thickness overlapping countersunk corners finished flush. Panels to be No. 16 gauge or heavier. Stiles to have ¾ in. thick kiln dry, wood core, pressed in with two 6-in. dowel pins at each corner.

Hardware—

Doors are to be provided with Lawson Universal Spring Hinge or Lawson Gravity Hinge, allowing adjustment to any desired position. The balance of the hardware shall be as follows:

Heavy nickel plated brass slide door bolt and heavy brass bumpers with rubber tips.

Brass nickel plated door pulls and coat hooks.

Finish—

All work shall be finished at the factory with a prime coat of (gray metal filler), (baked on enamel either olive green or French gray).

Shower Curtains and Hangers—

Shower curtains shall be of pre-shrunk duck. (Other material may be specified if preferred.) Shower curtain hangers shall be brass nickel plated to accommodate either square head rail or brass nickel plated rod.

Installation—

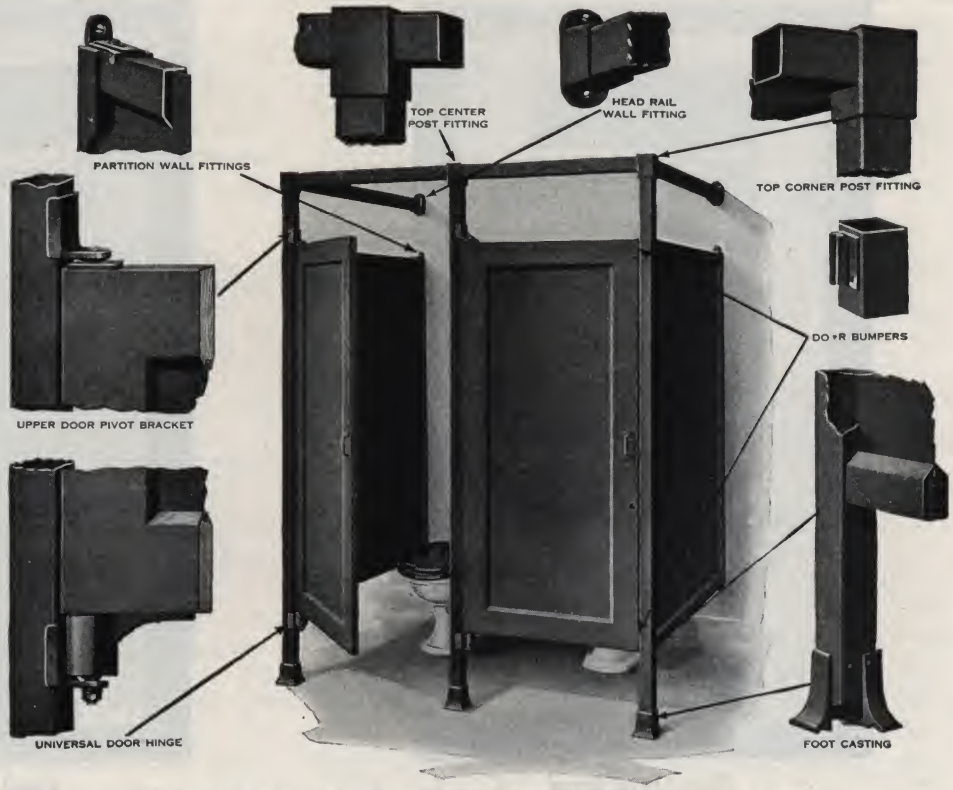
All work shall be set in place in accordance with the manufacturer's instructions and approved shop drawings. All material included in this specification shall be left in acceptable condition and complete.

Schedule—

The following compartments shall be included in this contract. (Give schedule of work to be included.)

CHECKING LIST FOR USE WITH SCHEDULED PARAGRAPH

Toilet Stalls	Janitor's Closets
Shower Stalls	Utility Corridors
Dressing Rooms	Toilet Room Screens
Storage Rooms	Toilet Room Screen Doors
Hospital Cubicles	Integral Shower Cabinets
Waiting Rooms	



Features of Construction of the Ferrometal Partition and Door

Patent applied for

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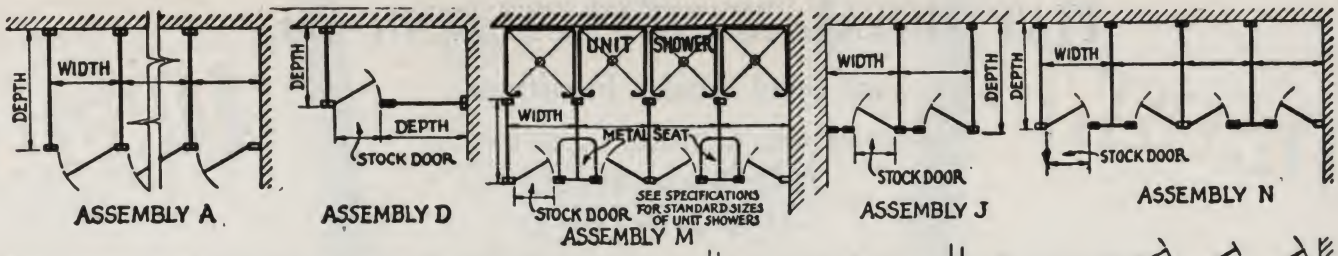
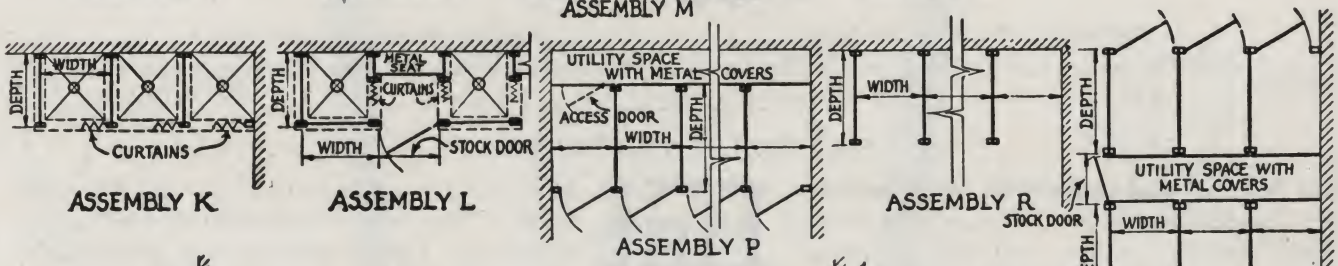
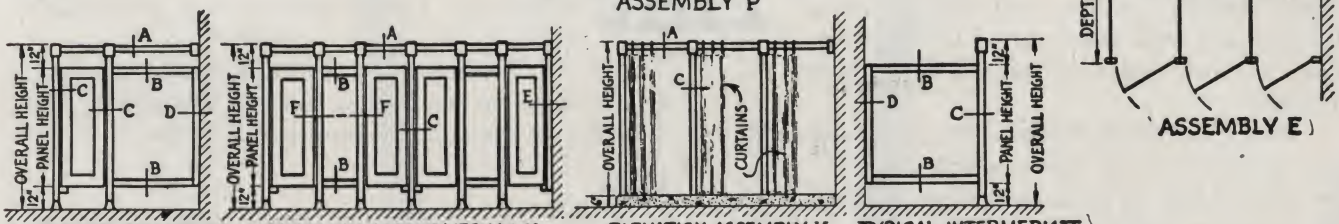
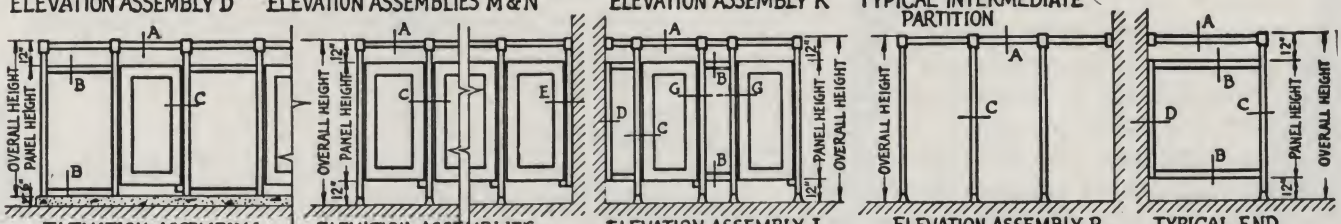
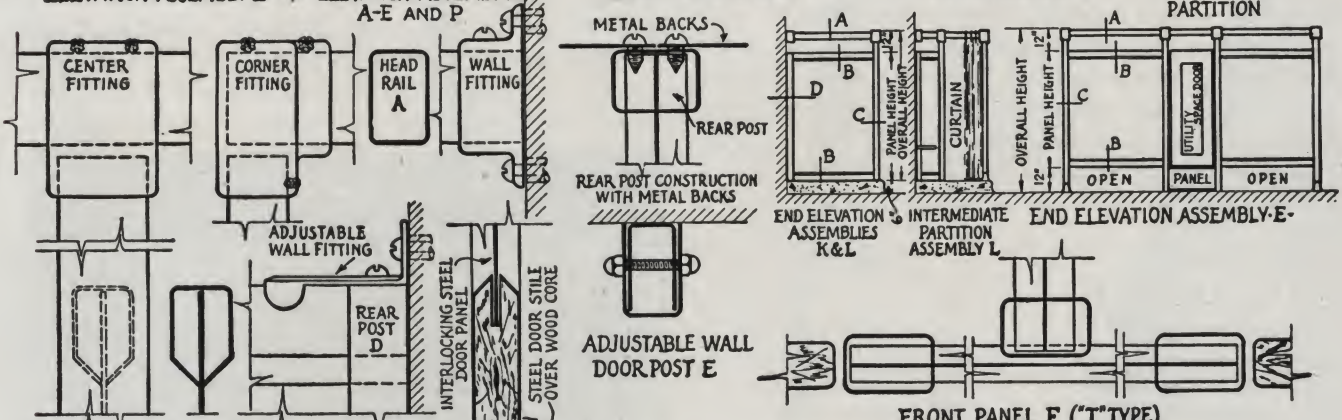










STANDARD SIZES

PARTITIONS				BACKS		DOORS	
Width	Depth	Height	Overall Height	Width	Height	Height	Net Door Widths
2′ 6″	3′ 0″	3′ 6″	6′ 6″	2′ 6″	4′ 6″	3′ 6″	23⅝″
2′ 8″	3′ 6″	4′ 0″	7′ 0″	2′ 8″	5′ 0″	4′ 0″	25⅝″
2′ 10″	4′ 0″	4′ 6″		2′ 10″	5′ 6″	4′ 6″	27¾″
3′ 0″	4′ 6″	5′ 0″		3′ 0″	6′ 0″	5′ 0″	29¾″
	5′ 0″	5′ 6″			6′ 6″	5′ 6″	31¾″
		6′ 0″			7′ 0″	6′ 0″	33¾″

Partition widths as listed and shown in typical layouts are center to center of compartments.

Partition depths are from back line of rear posts to face of front posts.

Partition heights indicate net panel heights only, to be raised above floor, or to set on floor as desired; overall heights are from floor to head rail.

Back widths as listed are from center to center of compartments.

Back heights indicate net height only to be set on floor or to be raised above floor.

Net door widths as listed are 2¼ inch less than center widths of compartments, except as for example, Assemblies D-L-M-N-J, net door widths are ⅜ inch less than openings between posts, and for end compartments where adjustable wall posts are used, net width is 3⅜ inches less than distance from center line of last partition to finish wall line.

FIAT METAL MANUFACTURING CO.

Fiat Steel Toilet Partitions

FACTORY AND GENERAL SALES OFFICE
1201 Roscoe Street
CHICAGO, ILL.

NEW YORK OFFICE, 101 Park Avenue
BOSTON OFFICE, 11 Beacon Street

For Fiat Shower Bath Compartments and Brass Chrome Plated Shower Doors, see Manufacturers' Index

FIAT TOILET PARTITIONS

Fiat All-steel and Galvanized Steel Partitions

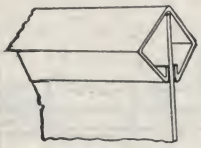
Fiat
TRADE-MARK

Panels—Are of No. 16 gauge open hearth, copper bearing, pickled, cold rolled, stretcher leveled sheet steel and inserted full depth into front and back posts and top and bottom panel binders.

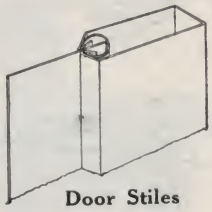
Front and Back Posts—Note the double reinforcing shoulders at the seam, which clamp the panel firmly in position at all times—an exclusive Fiat feature which doubles the strength of the posts, insuring the most rigid and noiseless construction possible. Posts are 1¾ in. square in section made from cold rolled strip steel.

Front and Back Posts

Panel Binders—Top and bottom—diamond shape with Fiat's exclusive feature of two reinforcing shoulders, same as front and back posts, which constantly press against panels, adding sturdiness and positive assurance of rigid and noiseless construction throughout. Binders are 1½-in. outside diameter, diamond shaped, made from cold rolled strip steel. Sanitary diamond shaped binders provide no natural lodging place for moisture or dirt.



Panel Binders



Door Stiles

Tubing Joints—Where panel binders meet front and back posts are fully welded.

Overhead Rail—Is of cold rolled steel tubing 1¾ in. square in section.

Door Panels—Are of No. 16 gauge sheet steel, same as partition panels.

Door Stiles—They are 3½ in. wide by 1⅛ in. thick hollow metal with special Fiat tubular lock construction which clamps the panel securely in place. Stiles and horizontal rails are welded to form one piece frame and ground flush.

Fiat Galvanized Steel Partitions

Galvanized steel partitions are recommended for economy and durability. They are of a smooth, special finish surface prepared to receive duco enamel finish. They are furnished at a small additional cost. Construction same as all-steel partitions.

Fittings—Are malleable cast iron, adjustable to allow for unevenness in floors and walls. Aluminimum or brass can be furnished if desired.

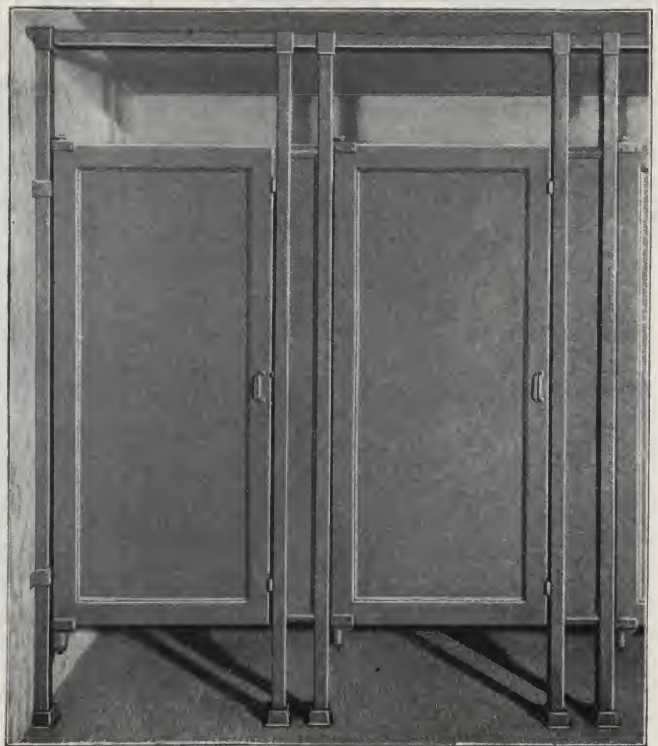
Finish

Either prime coat or duco enamel finish can be furnished. It is recommended, however, that all partitions be installed in prime coat and given final finish after installation.

Hardware

Consists of Lawson Gravity or Universal pivot spring hinge, rubber cover door strikes, chromium plated sliding bar, latch and keeper, chromium plated white metal two-prong coat hook, chromium plated door pull for doors which open out.

When doors open in no pull is furnished but doors are equipped with combination coat hook and bumper.



Fiat All-steel Partitions and Fiat Galvanized Steel Partitions

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METALUNIT
DOORS
and HARDWARE
for W. C. STALLS
OF MARBLE, ETC.
WEISTEEL
PANEL and FLUSH
TOILET AND
DRESSING ROOM
COMPARTMENTS
·
HOSPITAL
CUBICLES
WEISALLOY
ALUMINUM
ALLOY
SHOWER
COMPARTMENTS
HENRY WEIS MANUFACTURING CO., Inc.
Elkhart - Indiana

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Flush Weisteel

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SALES REPRESENTATIVES

ABILENE, TEXAS, WEST TEXAS BUILDERS SUPPLY COMPANY, 757 No. Second Street.
ALLENTOWN, PA., G. K. HALTEMAN & Co., Allen and St. Cloud Sts.
ALTOONA, PA., CONSTRUCTION SERVICE Co., 66 Altoona Trust Building
AMARILLO, TEX., PANHANDLE BUILDERS SUPPLY Co., 913 Oliver-Eakle Bldg.
ATLANTA, GA., INDUSTRIAL EQUIPMENT COMPANY, 92 Fairlie St.
AURORA, ILL., DAVIDSON-PEARSALL Co., 227 Main St.
BALTIMORE, MD., C. A. WEILLER, 617 Lexington Bldg.
BINGHAMTON, N. Y., BABCOCK, HINDS & UNDERWOOD
BIRMINGHAM, ALA., C. S. CALDWELL, 2018 No. Second Avenue
BOSTON, MASS., CONSTRUCTION SUPPLY Co., 8 Beacon St.
BUFFALO, N. Y., HERCULES WATERPROOF CEMENT Co., 519 Jackson Bldg.
CENTER, TEX., WEAVER BROTHERS
CHARLESTON, W. VA., STANDARD BRICK & SUPPLY Co., 813 Kanawha St.
CHARLOTTE, N. C., EDWIN C. BOYETTE, JR., P. O. Box 627
CHATTANOOGA, TENN., STEPHENS BUILDERS SUPPLY Co., Box 84, St. Elmo Station
CHICAGO, ILL., HENRY WEIS MFG. Co., INC., 228 No. LaSalle St.
CINCINNATI, OHIO, T. A. THAUWALD, INC., 901 American Bldg.
CLEVELAND, OHIO, J. W. ROMMEL, 924 Keith Theatre Bldg.
COLUMBIA, S. C., SHAND ENGINEERING & SALES Co., 705-13 Lady St.
COLUMBUS, OHIO, ALVAN TALLMADGE, 63 Parkwood Avenue
CUMBERLAND, MD., GRANT LUMBER & SUPPLY Co., 205 Williams St.
DALLAS, TEX., GILBERT MFG. Co., 510-11 Marvin Bldg.
DAVENPORT, IOWA, CEMENT PRODUCTS Co., 715 East River St.
DAYTON, OHIO, CALLAHAN-HARRIS, INC., 618 Harries Bldg.
DECATUR, ILL., GANDY & EARP, 440 So. Franklin St.
DENVER, COLO., GEO. W. SUMMERS & Co., 402 Jacobson Bldg.
DES MOINES, IOWA, HAWKEYE ENGINEERING Co., 301 Hubbell Bldg.
DETROIT, MICH., ACME WIRE & IRON WORKS, 12340 Cloverdale Avenue
DULUTH, MINN., DUNLOP-MOORE Co., 22 Third Ave., W.
EL PASO, TEX., C. C. GAINES, First National Bank Bldg.
ERIE, PA., GEO. H. KRAFT & SON, 405 Scott Bldg.
EVANSVILLE, IND., J. C. VAUGHT, 712 So. Norman Ave.
FORT WAYNE, IND., CARL H. PENNINGROTH, 1617 Curdes Ave.
GARY, IND., W. R. BAKER Co., 735 Washington St.
GRAND RAPIDS, MICH., S. A. MORMAN & COMPANY, Perkins Building
GREENSBORO, N. C., J. D. WILKINS, West Lee St. at Glenwood Ave.
GREENVILLE, S. C., J. MAC. RABB, News Bldg.
HARRISBURG, PA., C. FRANK CLASS, 18th and Mulberry Sts.
HARTFORD, CONN., C. D. CROCKER, P. O. Box 370
HELENA, MONT., RAYMOND C. GRANT
HOUSTON, TEX., WALCOTT, MAISEY & PAIGE, 328 West Building
INDIANAPOLIS, IND., HOOVER BROS., 529 Architects & Builders Bldg., S. E. Cor. Pennsylvania and Vermont Sts.
JACKSON, MISS., GENERAL BUILDERS SUPPLY Co., Bailey Avenue and Cohia Street
JACKSONVILLE, FLA., DAWKINS BUILDING SUPPLY Co., Box 2153
KANSAS CITY, MO., C. S. HAWLEY Co., 406 Orear-Leslie Bldg.
KNOXVILLE, TENN., CHAS. M. ALLEN Co., 712 So. Gay St.
LANSING, MICH., J. E. PAYNE, Box 293, 410 West Saginaw St.
LEXINGTON, KY., CLAY-INGELS Co., 347 Main St.
LITTLE ROCK, ARK., CLIPPARD BUILDERS SUPPLY Co., 104 W. Markham
LOS ANGELES, CAL., J. E. DWAN, INC., 616 So. Anderson St.
LOUISVILLE, KY., R. B. TYLER Co., 1448 Levering St.
MADISON, WIS., BUILDERS SPECIALTY COMPANY, 408 W. Gorham St.
MEMPHIS, TENN., MILLER-COCHRAN Co., 246 Court Ave.
MIAMI, FLA., FRANK B. ALLEN, c/o Dixie Novelty Works, Inc., N. W. 21st St., Miami Court
MILWAUKEE, WIS., FRANK F. JACKSON COMPANY, 1311 Majestic Bldg.
MINNEAPOLIS, MINN., INDUSTRIAL SUPPLY Co., 206 Builders Exchange
MOBILE, ALA., RELIANCE EQUIPMENT Co., 9-11 Water St.
NASHVILLE, TENN., GEO. W. RUTH & Co., 151 Fourth Ave., No.
NEW HAVEN, CONN., A. R. KIRSCHNER Co., 30 Whitney Ave.
NEW ORLEANS, LA., J. R. QUAID, 808 Perdido St.
NEW YORK, N. Y., PHILADELPHIA FIRE RETARDANT Co., INC., 110 West 34th Street
NORFOLK, VA., HALL-HODGES Co., 809 Citizens Bank Bldg.
OKLAHOMA CITY, OKLA., LUSCO BRICK AND STONE Co., 818 Commerce Exchange Bldg.
OMAHA, NEB., CONSOLIDATED BUILDERS SUPPLY Co., 1818 Harney St.
PADUCAH, KY., PADUCAH IRON COMPANY, 216 So. First St.
PHILADELPHIA, PA., PHILADELPHIA FIRE RETARDANT Co., INC., 1321 Arch St.
PHOENIX, ARIZ., WALTER DUBREE, P. O. Box 145
PITTSBURGH, PA., JAMES R. PITCAIRN, 1052 Century Bldg.
PORTLAND, MAINE, WADE-FARNUM COMPANY, INC., 2 Simonton St., So. Portland
PORTLAND, ORE., CRESS & Co., 283 Oak St.
PORTSMOUTH, OHIO, MILTON S. LEHMAN, 821 Fourth St.
QUINCY, ILL., E. BEST PLUMBING & HEATING SUPPLY Co., 628 Jersey St.
RALEIGH, N. C., W. H. BOND Co., INC., 318 So. Harrington St.
READING, PA., DANIEL F. YOST, 120 No. Fifth St.
RICHMOND, VA., VIRGINIA BUILDING MATERIAL Co., 312 Builders Exchange Bldg.
ROANOKE, VA., STONE TILE & SUPPLY Co., INC., Cleveland Ave. and 17th St.
ROCHESTER, N. Y., ROBERT C. TROUP, 49 East Ave.
ROCKFORD, ILL., CENTRAL IRON WORKS, 1143 Selden St.
SALT LAKE CITY, UTAH, HAWLEY-RICHARDSON-WILLIAMS Co., 204 Dooly Bldg.
SAN ANTONIO, TEX., JOHN A. WILLIAMSON Co., 804 Avenue A.
SAN DIEGO, CAL., H. D. TROUNCE Co., 920 Eighth St.
SAN FRANCISCO, CAL., DWAN & Co., 532-34 Sixth St.
SCHENECTADY, N. Y., FIREPROOF MATERIALS, INC., 207 State St.
SCRANTON, PA., NOR-EAST SALES Co., 415 Scranton Electric Bldg.
SEATTLE, WASH., TOURTELLOTTE-BRADLEY, INC., 314 Seneca St.
SHREVEPORT, LA., WELSH BUILDING SPECIALTIES, INC., 310 Ricou-Brewster Bldg.
SIOUX CITY, IOWA, H. C. MCNEIL & SON, 308 Jackson St.
SPOKANE, WASH., H. G. LANAHAN & Co., 324 No. Division St.
SPRINGFIELD, MO., LUSCO BRICK & STONE Co., 433 So. Jefferson St.
ST. JOSEPH, MO., MANNAN-SMITH SUPPLY Co., Station A
ST. LOUIS, MO., LASAR MFG. COMPANY, 1979 Railway Exchange Bldg.
SYRACUSE, N. Y., B. R. JOHNSON, 145 Harding Place
TAMPA, FLA., STOVALL & ARCHER, 1001 Peninsular Telephone Bldg.
TOLEDO, OHIO, WM. C. CLARK, 440 Victoria Place
TOPEKA, KAN., LUSCO BRICK AND STONE Co., New England Bldg.
TULSA, OKLA., MURRAY R. WOMBLE & Co., 417 Thompson Bldg.
UTICA, N. Y., AMERICAN HARD WALL PLASTER Co.
WASHINGTON, D. C., LALLY-ROHLADER Co., INC., 1756 M St., N. W.
WICHITA, KAN., LUSCO BRICK AND STONE Co., 201 W. Douglas St.
WILKES-BARRE, PA., ROBERT M. MILLER, 400 Coal Exchange Bldg.
WILLIAMSPORT, PA., W. T. EBUR Co., 155 W. Third St.

HENRY WEIS MANUFACTURING CO., INC.

1876 — 1931

AN ORGANIZATION WITH OVER HALF A CENTURY OF EXPERIENCE IN SERVING ARCHITECTS AND BUILDERS

The Company

The Henry Weis Manufacturing Co., Inc., was founded at Kansas City, Mo., in 1876 and has been in business continuously since that time. In 1915, the factory was moved from Kansas City to Atchison, Kansas, remaining there until 1926 when a new, modern factory and office building was occupied in Elkhart, Indiana.

This company originated metal Toilet, Shower and Dressing Room Compartments. It has continuously contributed to the industry outstanding improvements in design and construction. Its products have always been known for quality materials and workmanship.

Growth of the company, its rating in Dun's and its reputation and standing with the architectural profession and building trades are proof of its responsibility and dependability.

Manufacturing Facilities

More than sixty thousand square feet of expertly planned floor space are required for the production of Weis products. Special manufacturing equipment and production methods have been developed and are constantly improved to provide volume, quality production at economical cost.

Supervision of manufacturing is in charge of men of ability and with broad experience.

Sales and Service Organization

Weis products are sold and serviced in more than one hundred principal cities in the United States. (See list opposite page and map below.) The organization of each representative is experienced and favorably known in its building trade territory. The entire sales organization has had an average of more than six years' experience in the sale of Weis products.

Products

The products of the company are as follows:

WEISTEEL Toilet, Shower and Dressing Room Compartments and Hospital Cubicles. These are supplied in either panel or flush construction.

Weis METALUNIT (Panel or Flush Custom-Built Door, with hardware) for W. C. Stall Partitions of marble, slate, glass, Vitrolite, Alberene Stone, terrazzo, etc.

WEISALLOY (Aluminum Alloy) Toilet, Shower and Dressing Room Compartments. (Panel Shower Compartments, Panel or Flush Dressing Room and Toilet Compartments.)

A detailed description of the above products will be found in the following pages of this catalog.

Note: **WEISTEEL and WEISALLOY Leakproof Integral Shower Bath Cabinets. For complete data on these products see Sweet's Index, or ask for special catalog.**

A NATION-WIDE SERVICE

Engineering Service

Architects, engineers, builders and owners are invited to avail themselves of the company's facilities for detailed information on specific requirements. Weis engineers will offer suggestions for practical adaptation of Weis products without obligation.

Information Necessary for Estimates

Due to variations in types of layouts and dimensions, it is advisable to submit rough sketches of the requirements contemplated, showing location of the building walls, height and depth of dividing partitions and width of compartments. Floor construction for shower and dressing room layouts should be shown.

Continued on next page

WEISALLOY

ALUMINUM ALLOY COMPARTMENTS

Rust-Proof Compartments with All the Advantages of Weis Panel or Flush Construction

WEISALLOY (Aluminum Alloy) Partitions and Doors are now available. For shower stall enclosures Panel WEISALLOY only is recommended. For dressing rooms and toilet stalls either Panel or Flush WEISALLOY is satisfactory (see explanatory notes bottom opposite page).

The introduction of these products follows eight years' research and engineering effort, coupled with actual service tests in more than fifty buildings, such as schools, hospitals, clubs, natatoriums, public institutions, etc.

WEISALLOY panel and flush designs have been fully developed; the alloys, gauges, tempers and finishes of all raw materials have been selected by tests; production methods have been developed and perfected and, equally important, a corps of workers has been thoroughly trained in the fabrication of finished products from these raw materials, which have working characteristics totally different from steel.

Based on this practical experience and these time tests, Weis presents WEISALLOY products, particularly to those architects who have hesitated to enclose shower stalls with metal partitions.

Advantages of Weisalloy

Rust-proof—impervious to moisture or odors—pleasing appearance and sanitary construction—economical first cost and maintenance expense—minimum installation time—all parts and fittings made of aluminum alloy—Weis designs particularly adapted to Aluminum Alloy construction—not an experiment but a guaranteed product.

Continued on next page

WEISALLOY
ALUMINUM ALLOY COMPARTMENTS

ARCHITECTS' SPECIFICATIONS

Note: If desirable, standard panel or flush WEISTEEL *Dressing Rooms may be assembled with panel* WEISALLOY *Shower Stalls. (See pages 4 and 6 for panel and flush* WEISTEEL *specifications.)*

Panel Weisalloy

All Shower, Dressing Room and Toilet Compartments noted in this specification shall be Panel WEISALLOY, as manufactured by the Henry Weis Manufacturing Co., Inc., Elkhart, Indiana.

Partitions—Partitions, posts, headrail (backs, utility end plates and covers), to be built of not less than 14 B. & S. gauge aluminum alloy. All partition panels to have sanitary V-shaped moulding at top and bottom formed of the same sheet, which shall be interlocked and welded into the post. Furnish necessary aluminum alloy wall and top post fittings and smooth finish, Government Formula, nickel alloy foot castings, all to be adjustable to take up any variation in walls and floors.

Doors—Doors, where shown on plans, are to have 3 in. stiles and rails, with sanitary cove moulding, and panels of 16 B. & S. gauge aluminum alloy. The mitres of stiles and rails shall be reinforced and welded by the WEISALLOY process and finished flush.

Hardware—The hardware is to be panel WEISALLOY standard, consisting of a Universal Gravity Hinge, Heavy Slide Bar Latch, Pull and Coat Hook. All parts to be brass nickel plated.

Finish—All material shall be thoroughly cleaned and given a coat of grey metal primer.

1. Finish painting to be done after installation. (See painting specifications.)

2. All material to be finally finished at the factory with baked-on enamel, either Sage Green or Light Grey. Specifically state, in specifications, method No. 1 or No. 2 for final finish.

Flush Weisalloy

All Dressing Room and Toilet Compartments noted in this specification shall be Flush WEISALLOY, as manufactured by the Henry Weis Manufacturing Co., Inc., Elkhart, Indiana.

Partitions—All partition panels shall be 1 in. thick. Each panel shall be made up of two sheets of 18 B. & S. gauge aluminum alloy. Before assembly, the inner surfaces of these side members shall be given a bonding coat baked on at 350° F. They shall then be spaced and insulated with a laminated corrugated fiber-board filler, cemented to their inner surfaces. To assure uniform adhesion, all panels shall be subjected to a pressure of five hundred pounds per square foot for twenty-four hours. Edges of panels shall be bound and interlocked, under tension, with drawn aluminum alloy moulding, which shall be welded at corners. All supporting posts shall be 14 B. & S. gauge aluminum alloy and welded to panels to provide an integral, rigid partition unit.

Backs against walls or used as enclosures for utility corridors shall be of 14 B. & S. gauge single sheet, flush panel construction. Vent tops, end plates and utility doors shall be of 14 B. & S. gauge single sheet construction.

Furnish necessary aluminum alloy headrail and post fittings, also wall fittings, which shall be adjustable to take care of unevenness in walls. Include smooth finish, Government formula, nickel alloy foot castings, which are adjustable to take care of variations in floors.

Doors—Doors where shown on plans shall be 1 in. thick and of the same design and construction as specified above for partition panels. Doors shall be guaranteed to be rigid and free from wind.

Hardware—The hardware is to be flush WEISALLOY standard, consisting of a Universal Gravity Hinge, Heavy Slide Bar Latch, Pull and Coat Hook. All parts to be brass, nickel plated.

Finish—All material shall be thoroughly cleaned and given a coat of grey metal primer.

1. Finish painting to be done after installation. (See painting specifications.)

2. All material to be finally finished at the factory with baked-on enamel, either Sage Green or Light Grey. Specifically state, in specifications, method No. 1 or No. 2 for final finish.

IMPORTANT

Flush construction for shower enclosures not recommended.

Reasons: 1. Partition panels cannot be uniformly or *permanently* sealed against shower water.

2. Adaptable filler materials, while moisture resistant, are not water-proof.

3. Water temperature changes are conducive to condensation inside flush panels; hence, only panel WEISALLOY, single sheet construction, recommended for shower enclosures.

Flush compartments for Toilet Stalls and Dressing Rooms are not subject to the above service conditions to any appreciable degree.

Note: All alloys and tempers of alloys for various parts of the product are in accordance with manufacturers' adopted standards, as a result of experiments and tests which were checked with the Engineering Department of the Aluminum Company of America.

All WEISALLOY products are finished in prime coat or baked enamel at factory. (See finish specifications above.) Although these finishes are not required for the preservation of the aluminum alloy, they are recommended for appearance, as aluminum, with age and use, becomes unevenly darker in color.

For descriptions and illustrations of details of designs which are similar to Panel and Flush WEISTEEL, refer to pages 5 and 7. For layout suggestions refer to pages 9, 10, 11 and 12.

Continued on next page

Panel Weisteel Compartments

PANEL WEISTEEL

WEISTEEL Compartments satisfy a definite, necessary need for sanitary and economical equipment for the modern toilet, shower and dressing room. They represent a completely developed, original product for new or old buildings.

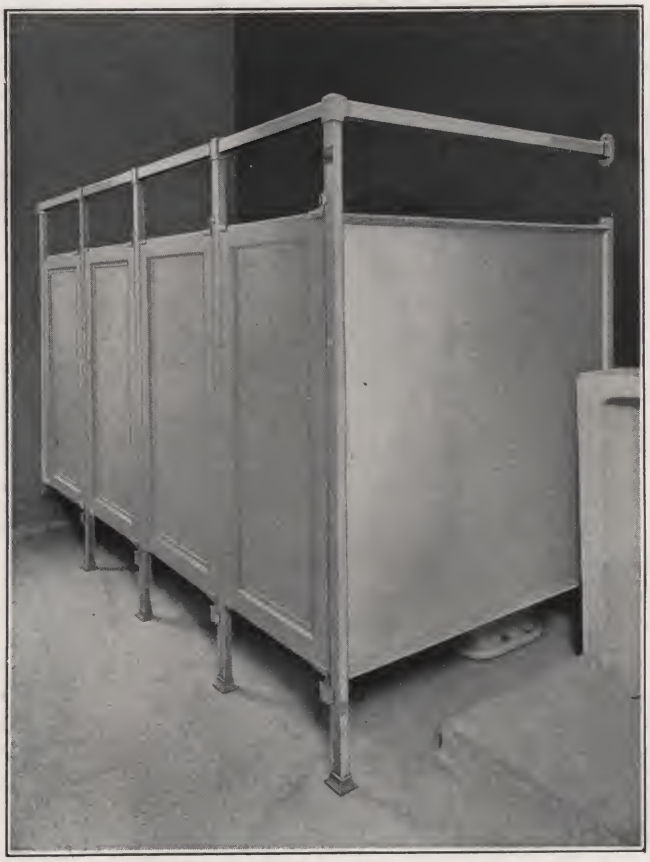
These compartments, of rigid steel construction, have proved their worth in all classes of buildings. For more than twenty years they have met all the requirements of discriminating architects and builders.

In appearance, quality of material and workmanship, they harmonize with any materials with which they may be assembled. Where sanitation, durability and economy are primary considerations, they have established a new standard of utility value.

Sanitary—All joints are closed. The design of the mouldings, floor fittings, enclosed hinge and latch and the absence of projecting screws or bolt heads prevent the accumulation of dust and dirt. The metal is non-absorbent and, when enameled or painted, is not easily defaced.

Substantially Constructed—Each partition, with its integral front and rear post, is a single, substantial unit. Panels and posts are interlocked and welded at top and bottom. The bottom of the front post is firmly held into the floor shoe; the top is rigidly anchored to the headrail. All door corners are reinforced and electrically welded into one solid unit. All joints are finished smooth.

High Quality—There are no unsightly edges or open seams. Joints between panels and rails, and between panels and posts, are closed and sealed—door corners are finished flush and smooth. All fittings are small and fit the sheet steel members snugly. Hardware parts are substantial, of good design and well finished. Paints and enamels used are baked in temperature controlled ovens.



All enamel work has the eggshell finish usually found on the best quality enameled steel products. All shower partitions are first coated with a special oxide primer baked on at 350°. This primer under tests shows wearing qualities ten times greater than metal primers usually applied.

Economical—The first cost of WEISTEEL Compartments is much less than either slate or marble and very little more than wood. There are no parts to wear out. With average care, these compartments should last as long as the building. They can be erected in less time and at much less expense than any other type of compartment.

Erection—The erection of WEISTEEL is simple and foolproof. Only average workmen are required and the cost is comparatively very low. Three bolts only are required to erect a partition; one in the floor and two in the wall fittings. All units are made accurately to dimensions, drilled to template and completely assembled. All holes for the application of hardware are drilled at the factory. No fitting, cutting or drilling is necessary at the job. All parts are plainly marked to correspond to detailed erection drawings. Confusion is thereby eliminated when distributing the material at the building. Complete directions for erection are sent with each shipment.

Architect's Specifications

All toilet stalls, shower and dressing room compartments, partitions, etc., noted in this specification shall be Panel "WEISTEEL," as manufactured by the Henry Weis Manufacturing Co., Inc., Elkhart, Indiana.

Partitions—Partitions, posts, headrail, (backs, utility end plates, and covers), shall be built of not less than 16-gauge, full pickled, cold rolled furniture steel. All partition panels to have sanitary "V" shaped moulding at top and bottom formed of the same sheet, which shall be interlocked and welded into the post. Furnish necessary wall and top post fittings and brass foot castings, which shall be adjustable to take up any variation in the walls and floors. Provide necessary rectangular headrail, not less than 16-gauge, to brace partitions.

Doors—Doors, where shown on plans, are to have 3 in. stiles and rails, with sanitary cove moulding and panels of 18-gauge, full pickled, cold rolled furniture steel. The mitres of stiles and rails shall be reinforced and electrically welded by the "WEISTEEL" process and finished flush.

Hardware—The hardware is to be Panel WEISTEEL standard, consisting of a Universal Gravity Hinge, Heavy Slide Bar Latch, Pull and Coat Hook. All parts to be brass, nickel plated.

Finish—All work is to be finished at the factory with prime coat of (1—red oxide primer) or (2—grey metal primer), (3—baked-on enamel, either Sage Green or Light Grey).

Note: State specifically by number which finish is desired.

Shower Curtains and Hangers—Shower curtains shall be of (nine) or (twelve) ounce duck canvas. (Other material may be specified if preferred.) Shower curtain hangers shall be "WEISTEEL" specially designed, roller bearing, and brass, nickel plated to accommodate rectangular headrail.

Assembly—All parts shall be accurately and substantially assembled with all joints and seams completely filled. Work shall be laid out and assembled to conform to the layout and details shown on plans.

Installation—All work shall be set in place in accordance with the manufacturers' instructions and approved shop drawings. All material included in this specification shall be left in an acceptable condition and complete.

Continued on next page

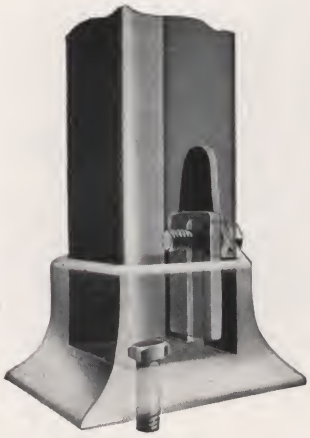
The Weisteel Door

The present WEISTEEL electrically welded (by an exclusive WEISTEEL process) door unit is the result of a long series of tried and discarded fabrication processes, including riveting, soldering, interlocking and soldering, gas welding, arc welding, etc. Each succeeding process possessed certain merits, but with them were found difficulties in fabrication or objectionable features of construction.

Six years ago, the present WEISTEEL exclusive process of electrically welding the four corner joints of the mitered stiles and rails was perfected. Each stage of the process is so mechanically controlled that every door is accurate to required dimensions, and square. The unique reinforcements, here illustrated, become, by this process, an integral part of each corner of the door. At the same time, the mitered ends of the hollow stiles and rails are fused together so that door joints are strongest sections of unit. These continuous, fused joints are then finished flush and smooth.

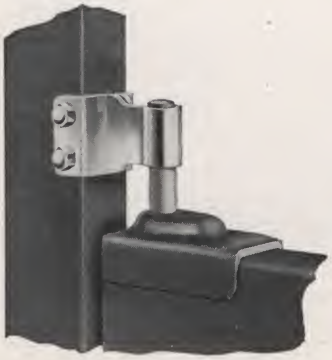
This process of joint construction, together with the method for assembly of the panel with the rails and stiles results in a door that is rigid, wholly free from "wind" or "weave," pleasing in appearance, practically incapable of being damaged or destroyed under the most severe abuse, and, equally important, its cost is approximately the same as that of a good wood door, when prepared for hardware and finished.

Phantom View
of Door Construction



Panel Weisteel Brass Foot Casting

(Phantom view), shows provision for adjustment to variations in floors. This self-draining shoe is bolted to the floor and the post is then inserted, concealing the bolt. This design of foot casting, in smooth finish Government formula nickel alloy, is also furnished for Flush WEISTEEL, described on pages 6 and 7.

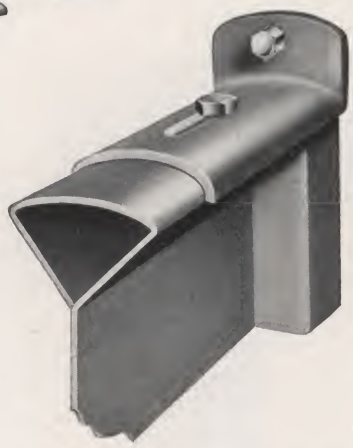


Panel Weisteel Upper Hinge Pivot

The wrought brass yoke of $\frac{5}{32}$" stock is designed for maximum strength and appearance. The special analysis steel pivot pin is assembled as a permanent part of the butt.

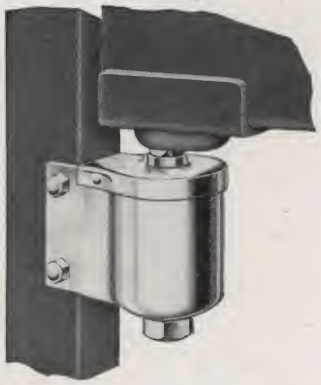
The Panel Weisteel Rear Post Fitting

(Top and bottom), made of $\frac{5}{32}$" wrought steel, is adjustable to allow for any variation in the wall. Partition can be set one inch away from wall if desired.



Panel Weisteel Partition Top and Bottom V-rails

Are formed as an integral part of the sixteen-gauge partition panels. Each V-rail has joint on one side only. Note how joint is locked and sealed at intersection with panel. This construction affords maximum rigidity, sanitation and pleasing appearance. Bottom V-rails of all shower enclosures are protected with asphaltum acid-proof paint.



Panel Weisteel Universal Gravity Hinge

Simple and trouble-proof. Exceptionally strong and durable. Used for either single or double acting doors. Will hold the door closed or open at any point selected within radius of swing. Can be mounted for right or left hand door opening in or out. Regular or reverse action immediately obtained without changing any part of hinge construction. For a complete explanation of the interior working parts, refer to page 16.

For adaptation of Panel WEISTEEL *to various layouts of toilet, shower and dressing rooms or tub bath compartments, refer to pages 9, 10, 11 and 12.*

Continued on next page

Flush Weisteel Compartments

FLUSH WEISTEEL

A few years ago a demand for flush type metal compartments became apparent. This demand resulted from two definite causes. First, two decades of use of high-grade metal compartments, such as Panel WEISTEEL, had demonstrated their advantages—sanitation, economy and durability. Second, the desire of architects and builders to have these benefits incorporated into a design which would also include those characteristics found in types of buildings where more expensive kinds of materials were generally used.

A design incorporating the materials and construction which would satisfy this demand presented many difficult problems. On their solution was concentrated the experience and facilities of the Weis organization. Flush WIESTEEL here illustrated and described is the result.

Architects and builders are invited to investigate the product and confirm its merit by comparison.

Important

Flush construction is not recommended for shower stall enclosures for the following reasons:

1—Observation and tests indicate that no suitable flush panel construction can be uniformly and *permanently* sealed against shower water.

2—Adaptable filler materials, while moisture-resistant, are not waterproof.

3—Water temperature changes are conducive to condensation inside the flush panels.

Only single sheet panel construction is recommended for shower enclosures (see description Panel WEISALLOY on pages 2 and 3, and Panel WEISTEEL on pages 4 and 5).

Flush compartments for toilet stalls or dressing rooms are not subject to the above service conditions to any appreciable degree.

Architect's Specifications

Toilet Stalls and Dressing Room Compartments, etc., noted in this specification shall be flush WEISTEEL as manufactured by the Henry Weis Manufacturing Co., Inc., Elkhart, Indiana.

Partitions

All partition panels shall be 1 in. thick. Each panel less than 54 in. in width shall be made up of two sheets of 22-gauge furniture steel; each panel 54 in. and wider shall be made up of two sheets of 20-gauge furniture steel. Before assembly, the inside surfaces of these side members shall be coated with an iron oxide primer baked on at 350° F. They shall then be spaced and insulated with a laminated corrugated fiber board filler, cemented to their inner surfaces. To assure uniform adhesion, all panels shall be subjected to a pressure of five hundred pounds per square foot, for twenty-four hours. Edges of panels shall be bound and interlocked, under tension, with drawn steel moulding, which shall be welded at corners. Supporting posts shall be interlocked and welded to panels to provide an integral, rigid partition unit.

All supporting posts and headrail bracing shall be 16-gauge rectangular steel tubing.

Backs against walls or used as enclosures for utility corridors shall be of 16-gauge single sheet panel construction. Vent tops, end plates and utility doors shall be of 16-gauge single sheet construction.

Furnish necessary headrail and post fittings, also wall fittings, which shall be adjustable to take care of unevenness in walls.

Include smooth finish, Government formula nickel alloy foot castings, which are adjustable to take care of variation in floors.

Doors

Doors, where shown on plans, shall be 1 in. thick, and of the same design and construction as specified above for partition panels. Doors shall be guaranteed to be rigid and free from wind.

Hardware—The hardware is to be flush WEISTEEL standard, consisting of a Universal Gravity Hinge, Heavy Slide Bar Latch, Pull and Coat Hook. All parts to be brass, nickel plated.

Finish

All material shall be thoroughly cleaned and given a heavy coat of grey metal primer.

1—Finish painting to be done after installation. (See painting specifications.)

2—All material to be finally finished at factory with baked on enamel, either Sage Green or Light Grey.

Specifically state, in specifications, method No. 1 or No. 2 for final finish.

Continued on next page

Flush Weisteel Construction Features

1—Flush WEISTEEL is a combination of pleasing rectangular designs.

2—Partitions and doors 1″ thick. This thickness combines desired mass appearance with essential rigidity.

3—Method of binding and interlocking, under tension, the panel side members with a rolled steel moulding is an exclusive Weis construction (see illustration).

Pat. Pending

4—The above method of assembly provides permanent, uniform rigidity and strength along the entire length of edges of all partitions and doors.

5—Each edge of a partition or door is reinforced by three thicknesses of metal (see illustration).

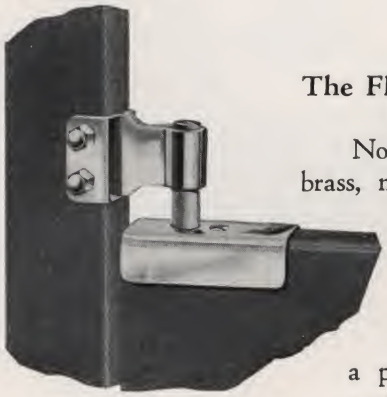
6—No exposed raw edges of metal.

7—No open seams.

8—All cross sections are true and uniform in profile.

Flush Weisteel Partition Wall Fitting

(Top and bottom) made of 5/32″ wrought steel, adjustable to allow for any variation in the wall. Partition can be set 1″ away from wall if desired.



The Flush Weisteel Upper Pivot Butt

Note heavy 5/32″ wrought brass, nickel plated yokes on post and door. The special analysis steel pins for engaging the upper door fitting is assembled as a permanent part of the post yoke.

The Flush Weisteel Front Post Heavy Pressed Steel Fitting

The rectangular headrail is held rigidly by a safety head set screw. Both headrail and post are rigid and stay in alignment.

The Flush Weisteel Special Design Universal Hinge

Simple and trouble-proof. Exceptionally strong and durable. Used for either single or double acting doors. Will hold the door closed or open at any point selected within radius of swing. Can be mounted for right or left hand door opening in or out. Regular or reverse action immediately obtained without changing any part of hinge construction.

For adaptation of flush WEISTEEL *to various layouts of toilet stalls, dressing rooms or tub bath compartments, refer to pages 9, 10, 11, and 12.*

Continued on next page

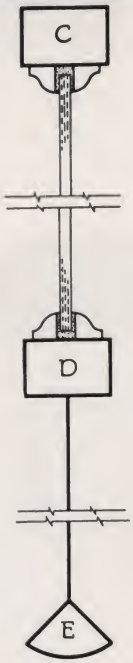
Hospital Cubicles for Wards and Waiting Rooms

WEISTEEL Ward and Waiting Room Cubicles are the result of extended studies of hospital problems and consultations with numerous hospital architects, hospital consultants and executives. The proven advantages of cubicle equipment for the hospital, the staff and patients are quite thoroughly covered in a booklet (not a catalogue) prepared by the WEISTEEL Professional Service Department, under the title "Good Will and Income from Between Type Patients."

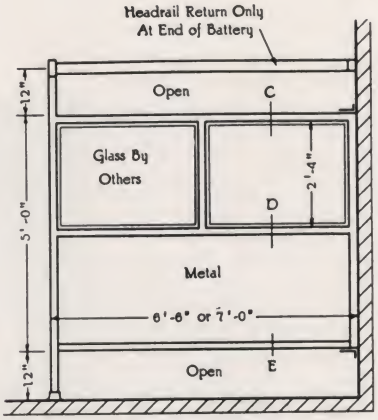
A copy of this booklet will be forwarded free, upon responsible request from architects or hospital executives.

WEISTEEL Cubicles are adaptable for use in maternity wards, children's wards, general wards, surgical and examination wards, and as waiting booths in hospital waiting rooms for out-patient departments and children's clinics. They can be installed in old buildings as readily as they can be included in new building plans. The simplicity of erection insures a satisfactory installation with a minimum amount of interruption or confusion to surrounding hospital activity.

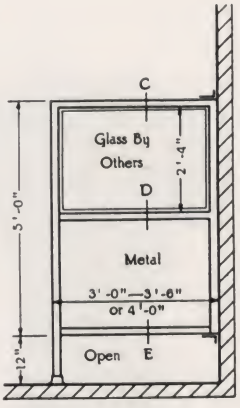
A corps of experienced engineers is available for the convenience of hospital architects and executives contemplating cubicle installations.



Typical Section of Panel Cubicles
Scale 3"=1'-0"

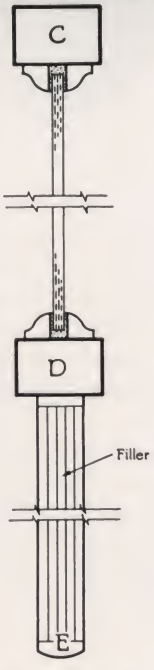


Ward Cubicles



Infant & Waiting Booth Cubicles

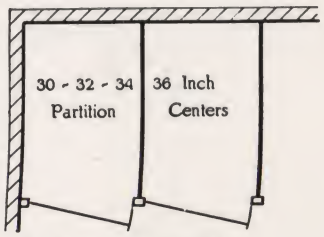
Detail of Snap On Moulding and Clip



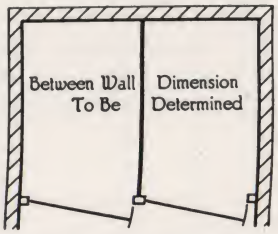
Typical Section of Flush Cubicles
Scale 3"=1'-0"

Panel and Flush Weisteel Hospital Cubicles

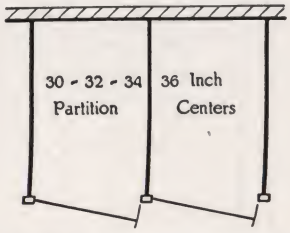
Continued on next page



Series 1 - Illustrated
Series 2 - Opposite

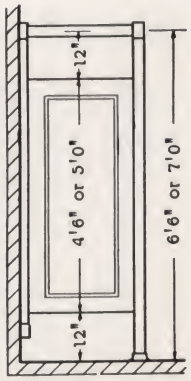


Series 3 - Between Walls

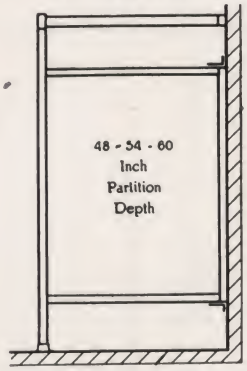


Series 4 - No Walls At Sides

Series 1-2-3 and 4 Furnished in Batteries of Any Number Stalls Required.
Door Sizes Approximately 2" Less Than Partition Centers.

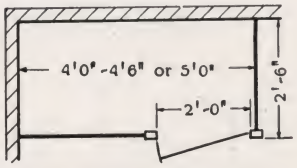


Typical Front Elevation

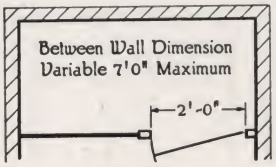


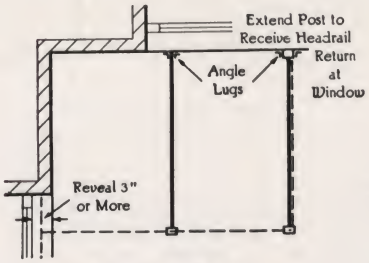
Typical Side Elevation

Series 5 - Illustrated
Series 6 - Opposite

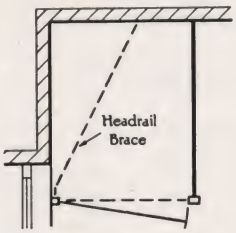


Series 7 - Illustrated
Series 8 - Opposite

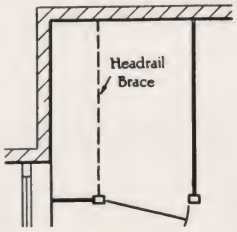




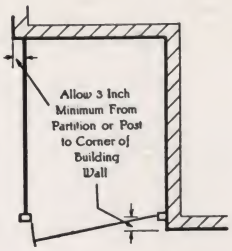
Headrail Across Window
If Not Over 5' Wide--If More Than
This Width Architect to
Detail Bracing



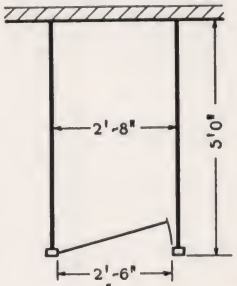
Wall Post Bracing
At Window



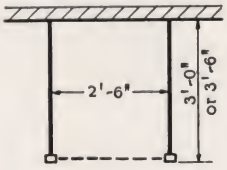
Partition Bracing
At Window



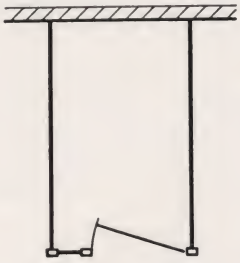
Space Required for
Corner Attachment



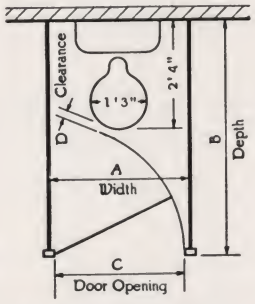
Recommended Standard Size Metal
Toilet Stall With Inswinging
Door. If Door Swings Out Depth of
Stall May be Reduced to 54"
or 48". An Economical Size Stall
Sufficiently Large for all
Types of Buildings.



Recommended Size for
Stalls Without Doors. Doors
are Not Recommended
for Stalls Under 48" Deep.



Front Partition Required With Door When
Depth of Stall Will Not Permit
Inswinging Full Width Door, See Door
Clearance Schedule at Right Front
Partition and Door Assembly as Shown is
Recommended to Provide Maximum
Room for Occupant Entering

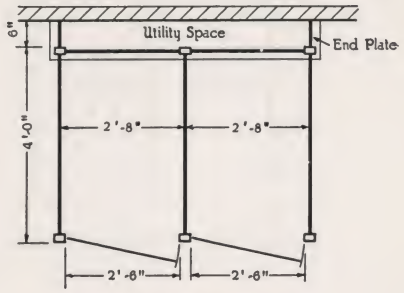


A	B	C	D
30"	54"	28"	1⅛"
32"	54"	30"	•
32"	60"	30"	5⅛"
36"	60"	34"	1¾"

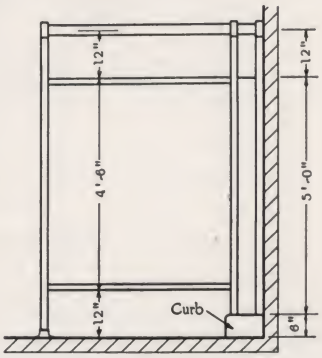
•Short of Clearance

Details of Panel or Flush WEISTEEL Toilet Stalls

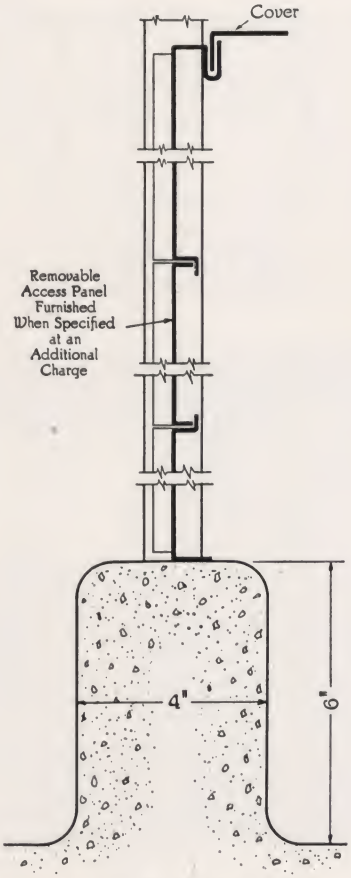
Continued on next page



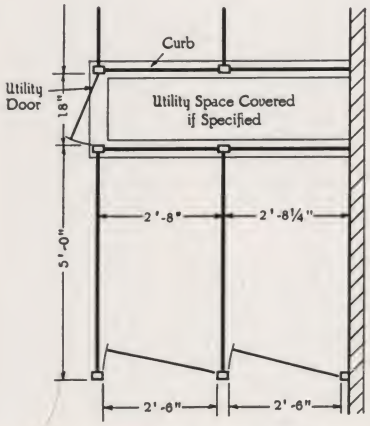
Standard Stall Units Combined With Backs and End Plates to Enclose Utility Space



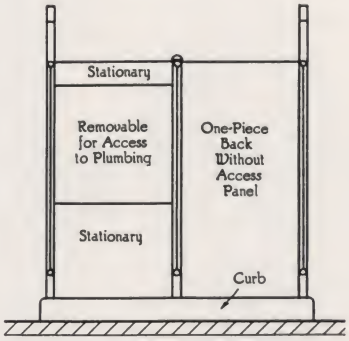
Side Elevation



Section Thru Curb Under Backs

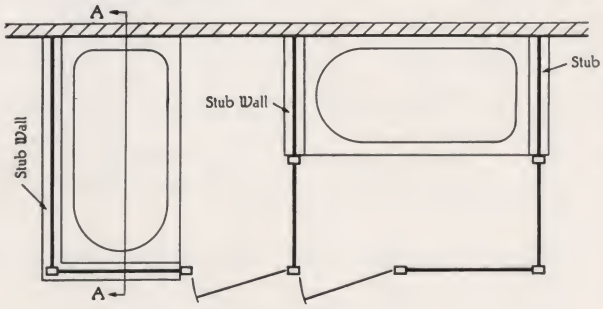


Detail of Utility Space With Stalls on Each Side



Elevation of Backs

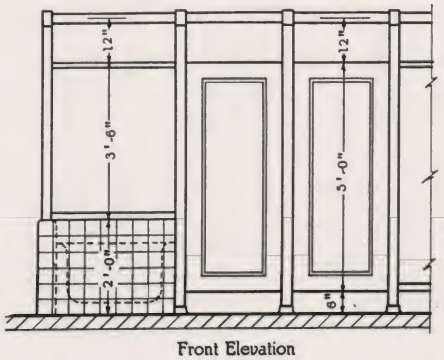
For Sanitation and Economical Maintenance Curb Recommended Under All Backs



Tub Compartment Layout

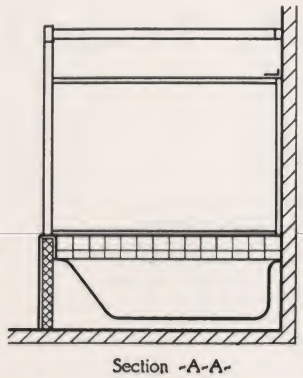
Steel partitions and doors are frequently specified as enclosures for tub bathrooms, or compartments, especially where more than one private bath is desired in a group bathroom. Steel enclosures for free-standing tubs present no special problems. The built-in-type of tub, however, does require special treatment to assure uniformly satisfactory results. The wall side and end, or ends, of a built-in tub are designed to permit an integral combination with adjoining walls. Hence, square and accurately ground tub edges are unnecessary. Full height steel partitions are, therefore, not readily adaptable to the built-in-type of tub.

A combination of tile or other kinds of walls and steel partitions, as detailed, assures not only good construction but also one that is economical in first cost and upkeep, as well as pleasing in appearance.



Front Elevation

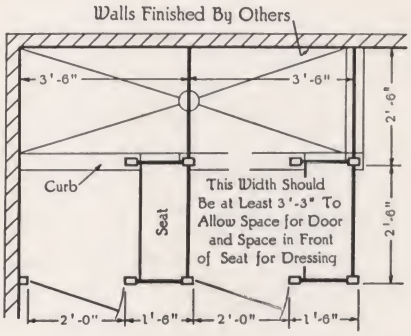
Side Elevation



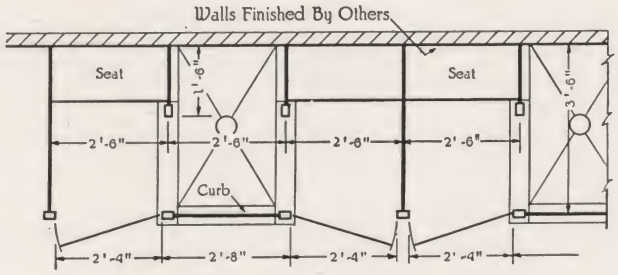
Section -A-A-

Details of Panel or Flush WEISTEEL Toilet Stalls and Tub Compartments

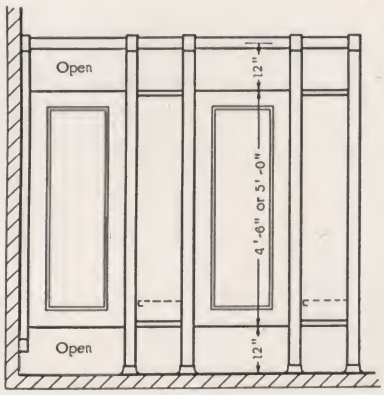
Continued on next page



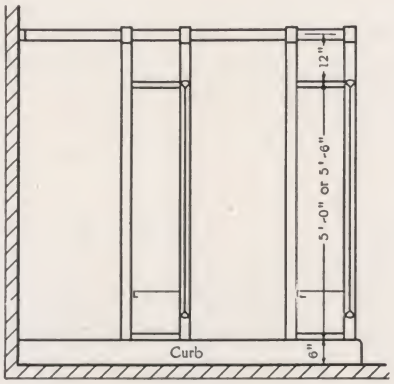
Individual Shower and Dressing Room



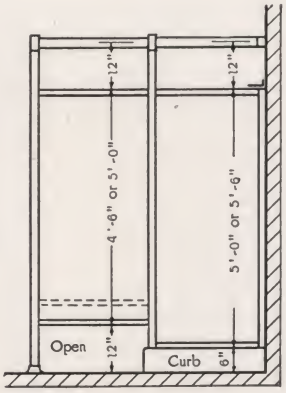
Shower With Two Dressing Rooms



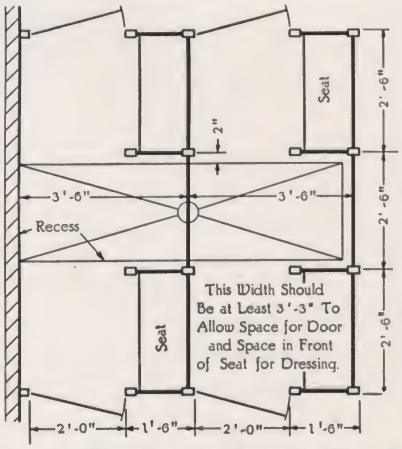
Front Elevation

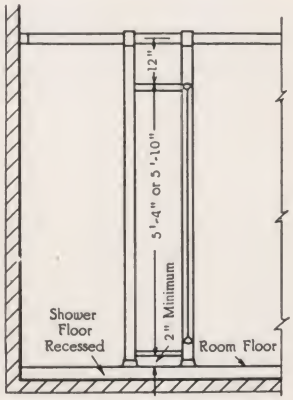


Section Thru Dressing Room

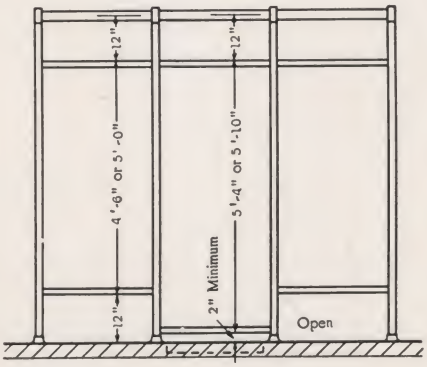


Side Elevation





Section Thru Shower



Side Elevation

Shower With Dressing Room on Each Side

These notes apply to shower and dressing room layouts on this and the following page.

Suggested shower and dressing room layouts detailed are to be used with tile, terrazzo or concrete recessed receptors or built up curbs.

When making layouts, determine first if one, two, three or four dressing rooms for each shower is desired. For high school girls three dressing rooms are generally suitable. One drain for one to four showers is usually sufficient.

The use of metal sides and backs against masonry walls is not recommended.

Allow sufficient space for stool or seat in dressing room. Allow minimum of 28" in front of seat for door swing and space for dressing.

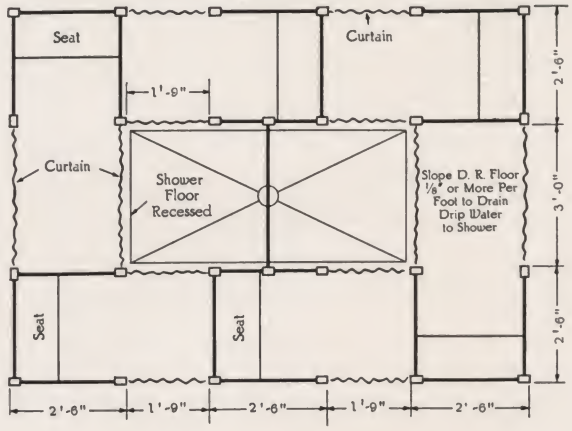
Either doors or curtains may be used for entrance to dressing rooms.

A more sanitary installation is assured by not extending shower partitions to the floor. Doors must be at least 6" above floor to enable use of Weisteel gravity hinge. If doors are less than 6" above floor, special hinges of either spring type or half surface butts must be used.

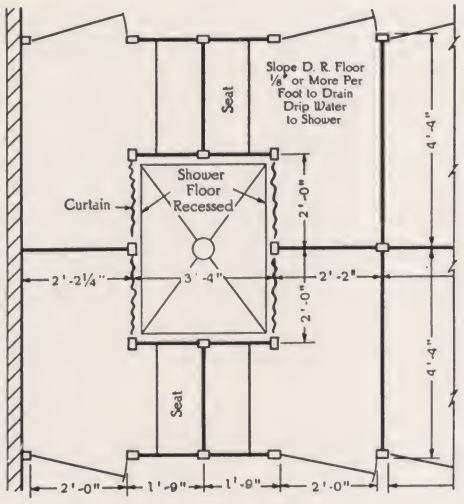
Recessed floor construction for showers is recommended as most satisfactory. Floor of dressing room should be sloped so that drip water from bather will drain from dressing room into shower.

Depth of recess should be 2" or more and partitions should be set on the dressing room level at least 2" away from edge of recess. *(Continued on next page)*

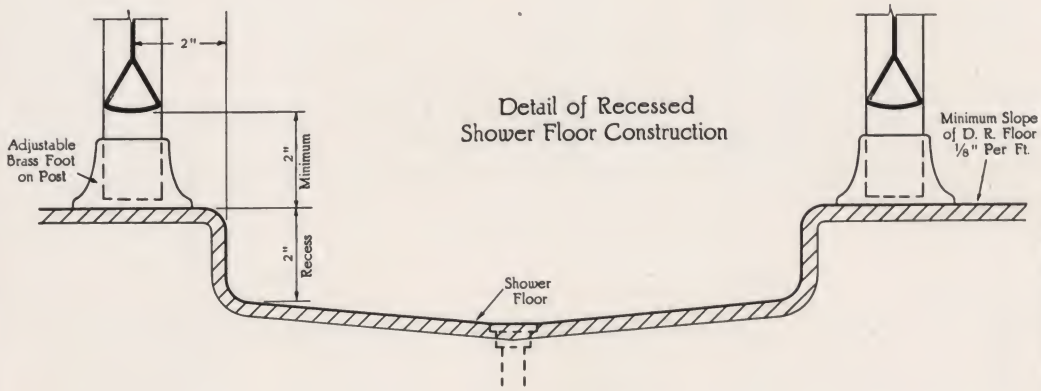
Details of Panel WEISTEEL Shower Compartments Combined With Panel or Flush Dressing Rooms



Combination Layout of Two Adjoining Showers and Six Dressing Rooms

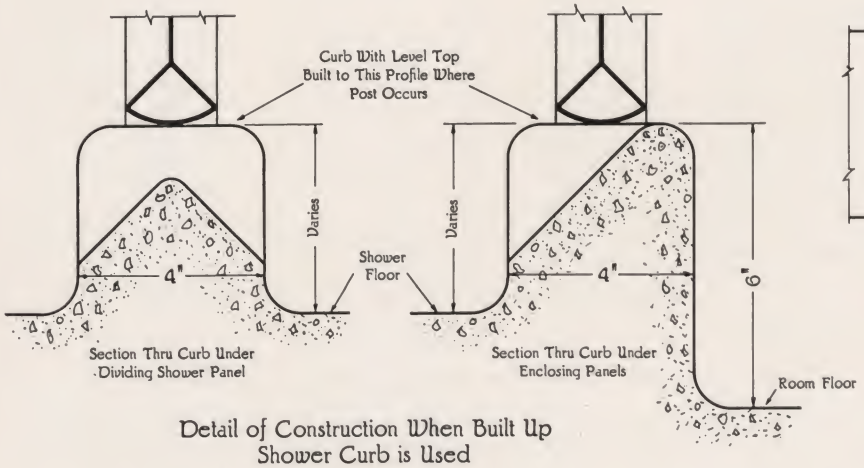


Layout of Single Shower With Four Dressing Rooms

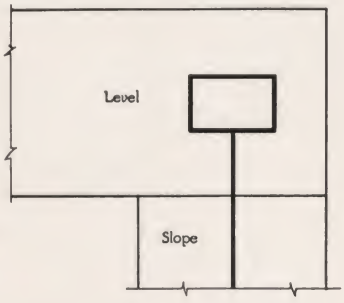


Detail of Recessed Shower Floor Construction

The Weisteel roller bearing curtain hanger is specially designed for use with standard Weisteel headrail and eliminates necessity of a special curtain rod. Shower curtains and hangers when specified are furnished as a part of standard Weisteel equipment at an extra charge.



Detail of Construction When Built Up Shower Curb is Used



PLAN OF CURB

Built-up curbs should be at least 4" wide and 4" to 6" high. Curbs under partitions should slope at an angle as shown in section. Under posts and at entrances to shower, curbs should be level on top. Under dividing shower panels each side of curb should be built at an angle as shown in section.

If unit temperature control is not used, locate valves so temperature of shower can be regulated before entering and shower spray directed toward rear. Place shower head for girls and women not over 5'0" to 5'6" above floor. For men's gang showers, head may be placed 7'0" above floor.

Details of Panel WEISTEEL Shower Compartments Combined With Panel or Flush Dressing Rooms

Continued on next page

An Important Foreword

The Weis METALUNIT (stall door and hardware) signifies a product for use primarily in the finest of buildings.

WEISTEEL standard metal doors (panel or flush type) and hardware for use on stiles of marble, slate, etc., have long been recognized as quality products for those buildings other than Class A structures. Combinations of similar products of other well known manufacturers have also been used for such buildings. Neither these other products nor WEISTEEL standard doors and hardware should be confused with the Weis METALUNIT, described on the four following pages.

Just as fine cloth and expert hand tailoring produce the best custom-made garments for discriminating individuals, METALUNIT features described below provide custom-built doors and hardware which command the enthusiastic approval of the most exacting critics.

WEIS METALUNIT STALL DOOR AND HARDWARE

Definition

A METALUNIT is a combination of a custom-built flush or panel type door and the exclusive Weis Lavatory Door Hardware Set.

Metalunit Features

1 Design

The designs of METALUNIT doors and hardware have been developed to provide the architect with a means of creating a new treatment of line, color and quality in such toilet room equipment.

2 Metals Used

Steel, aluminum alloy, Allegheny or Monel Metal and bronze. Rigid specifications for quality are applied in selecting each of these raw materials. For instance, only select, prime furniture steel sheets are used for METALUNIT Steel Doors.

3 Workmanship

Only a select group of skilled artisans fabricate Weis METALUNITS. Every part entering a METALUNIT is identified as such through its process of manufacture and reflects the skill of these workers.

4 Weight of Evidence

Weis METALUNITS have been investigated, their superior quality recognized and adopted by a great number of architects known for their discrimination in the selection and use of materials.

5 Thorough investigation is invited.

6 Weis METALUNITS are sold under established, uniform prices.

Continued on next page

Patent Applied For

The *flush* METALUNIT (flush metal door with hardware), by Weis, is a new creation in metal-craft. The doors for these units are available in steel, aluminum alloy, Monel or Allegheny Metal, or bronze and in a range of colors and finishes to harmonize with individual decorative treatment. This type of METALUNIT provides a stall door and hardware which is in keeping with the expression of design and quality identifying the better class of buildings.

The appearance appeal of these units is found in exclusive features of design and construction (see illustrations or request sample*), which also lend themselves to economical production. The relative cost is, therefore, surprisingly low.

Architects' Specifications

All W. C. stall doors, of sizes shown on plans, with hardware shall be *flush* METALUNITS, as manufactured by the Henry Weis Mfg. Co., Inc., Elkhart, Indiana. Doors shall be 1″ thick and made of *(state specifically kind of metal)*, (steel, aluminum alloy, Monel or Allegheny Metal or Bronze). METALUNITS shall be according to manufacturer's standard construction.

Finish and color shall be Class....., color..... (For finish and color selection see chart on page 17.)

All hardware to be chromium plated. For description and illustration of hardware set, see second page following.

Standard Sizes of Flush Metalunits

DOORS		HARDWARE	DOORS		HARDWARE
Width	*Height*		*Width*	*Height*	
24″	54″	For stiles	24″	60″	For stiles
26″	54″	of any	26″	60″	of any
28″	54″	thickness	28″	60″	thickness
30″	54″	7/8″ to	30″	60″	7/8″ to
32″	54″	2½″	32″	60″	2½″

Special Note: State specifically the thickness of partition stiles on which METALUNITS are to be mounted.

WEIS METALUNIT STALL DOOR AND HARDWARE

*Upon request, nearest representative will furnish sample.

Continued on next page

Patented June 29, 1926

The *panel* METALUNIT (panel metal door with hardware) by Weis, offers a door pleasing in appearance and superior in construction, at a price made possible only by volume production.

Through an exclusive process of electric welding the unique reinforcements here illustrated (sample on request*) become an integral part of each corner. This process of joint construction, together with the method for assembly of panel with rails and stiles, results in a door capable of withstanding the most severe service.

Architects' Specifications

All W. C. stall doors, of sizes shown on plans, with hardware shall be *panel* METALUNITS, as manufactured by the Henry Weis Mfg. Co., Inc., Elkhart, Ind. Doors shall be made of *(state specifically kind of metal)* (steel, aluminum alloy, Monel or Allegheny Metal or bronze). Door stiles and rails to be 3″ with sanitary cove moulding. The mitres of stiles and rails shall be reinforced and electrically welded by the Weis process and finished flush. METALUNITS shall be according to manufacturer's standard construction. Finish and color shall be Class....., color..... (For finish and color selection see chart on page 17.)

All hardware to be nickel plated. For description and illustration of hardware set, see following page.

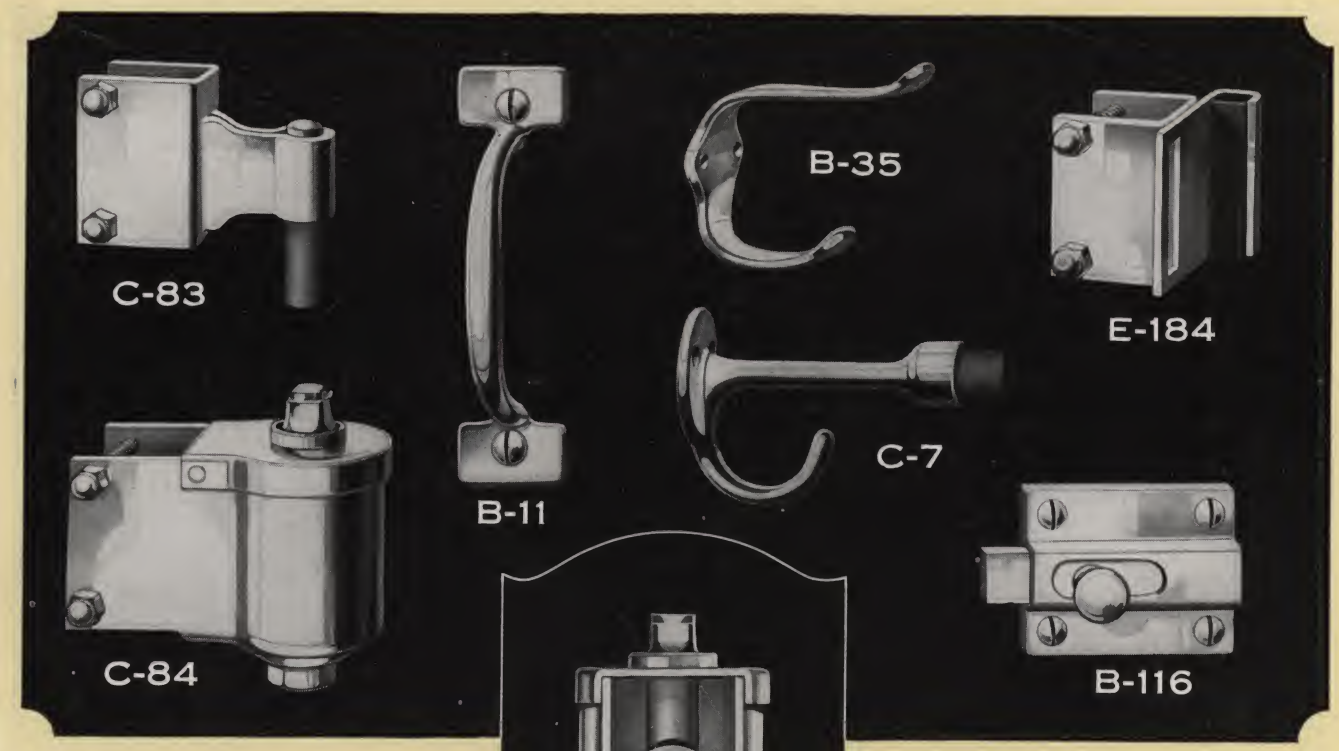
*Upon request nearest representative will furnish sample.

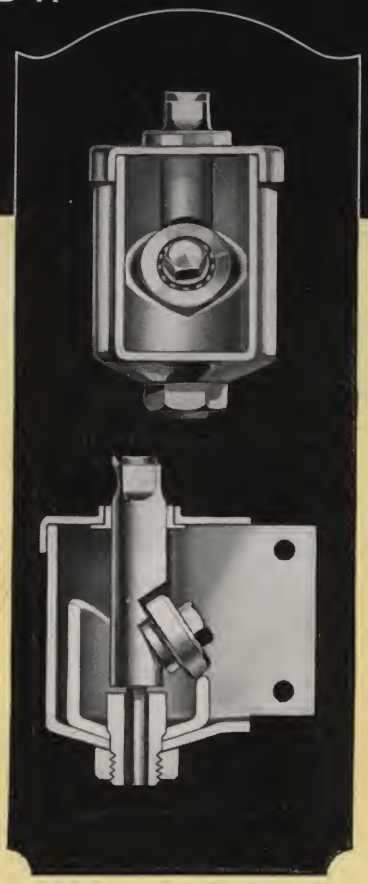
Standard Sizes of Panel Metalunits

DOORS		HARDWARE	DOORS		HARDWARE
Width	*Height*		*Width*	*Height*	
24″	54″	For stiles	24″	60″	For stiles
26″	54″	of any	26″	60″	of any
28″	54″	thickness	28″	60″	thickness
30″	54″	7/8″ to	30″	60″	7/8″ to
32″	54″	2½″	32″	60″	2½″

Special Note: State specifically the thickness of partition stiles on which METALUNITS are to be mounted.

Continued on next page





The Weis W. C. stall door hardware set, illustrated above, embodies new principles of design and construction. This new conception of W. C. stall door hardware combines beauty of line and harmony of parts with practical strength.

Outstanding among the features of this hardware set is the Weis Universal Gravity Hinge, here illustrated. The ball bearing roller is so mounted on the pintle that in operation geometrical continuity of contact is maintained between the roller and its race (see illustration); thus, side thrusts and wear are eliminated. This new principle of construction definitely removes the cause of trouble which frequently develops in gravity hinges. Ball bearing roller and roller race are of case hardened steel. These with the pintle are cadmium plated. Exposed parts are brass, nickel or chromium plated. This hardware set is standard equipment on *flush* or *panel* METALUNITS.

It is also available as a separate hardware set for wood doors or metal doors of other manufacture, where weight of door does not exceed eighty pounds. Standard sets of Weis W. C. stall door hardware are furnished to fit any thickness of stiles, up to and including 2½", of marble, vitrolite slate, terrazzo, etcetera. Hinge assemblies are also furnished for fly doors or swing gates.

Architects' Specifications

(Weis W. C. stall door hardware set for wood doors or metal doors of other manufacture.)

NOTE—When METALUNITS are specified, this hardware set is included.

All W. C. stall door hardware for attaching doors to (state kind of) partitions (state thickness) inches thick shall be Weis W. C. stall door hardware manufactured by Henry Weis Mfg. Co., Inc., Elkhart, Indiana.

All hardware parts to be (nickel) or (chromium) plated (state which).

Hardware set shall consist of Weis Universal Gravity Hinge assembly, latch, combination keeper and bumper and combination coat hook and bumper. (Two prong coat hook and pull are substituted for combination coat hook and bumper, if doors swing out.)

Important Notes

Marble, slate, etc., must project a minimum of four inches above and below door for attaching Weis hinge assembly.

When specified, a throw or pendulum type latch will be substituted for standard slide bar latch, as illustrated.

WEIS METALUNIT STALL DOOR AND HARDWARE

Continued on next page

METALUNITS are furnished in any of the colors here shown or in special colors as may be specified. The above chart is suggestive of the effective use of METALUNITS in color when combined with various colors and shades of marble or other distinctive partition materials.

The following table lists standard finishes and groups them according to class:

CLASS I	CLASS II
No. 300 Red Primer	No. 401 Sage Green
400 Green Primer	701 Cadet Grey
600 Grey Primer	

CLASS III	CLASS IV
No. 402 Lawn Green	No. 101 Florentine Red
501 Slate Blue	104 White
502 Potomac Blue	601 Morocco Brown
	801 Light Ivory

Colors listed under Classes 2, 3 and 4, are regularly furnished in the highest grade baking enamels, rubbed to a piano finish. A specially developed enamel is used, combining the hardness of lacquer and the toughness of long oil enamels, without the usual brittleness of the former or softness of the latter.

Continued on next page

WEIS METALUNIT STALL DOOR AND HARDWARE

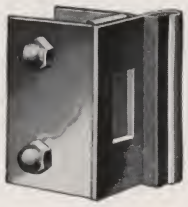
MISCELLANEOUS AND SPECIAL HARDWARE PARTS

Special strikes and keepers are substituted at no extra charge for Weis standard No. E-184 when necessary to meet installation conditions. These special strikes and keepers are illustrated below. All strikes and keepers are wrought brass, for right or left hand single acting doors. They are furnished for partition stiles up to and including 2 in. in thickness. Special fittings furnished for terrazzo partitions 2 in. thick. Stile and door thicknesses must be stated when ordering.

Other special hardware parts, as illustrated below, may be substituted at an extra charge for similar parts regularly included in the Weis W. C. Stall Door Hardware Set. (See page 16 for illustration and description of this hardware set.)

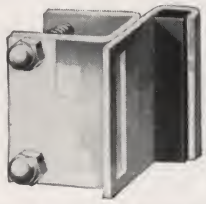
All hardware parts shown below are furnished in nickel or chromium plated finish. Chromium plate finish is supplied at an extra charge.

No. E-188—No bolt hole strike for doors opening in or out and used for single acting screen doors without latch



No. E-207—For mortise bolt for doors opening in or out and used with latch E-157

No. E-208—For throw latch doors opening in

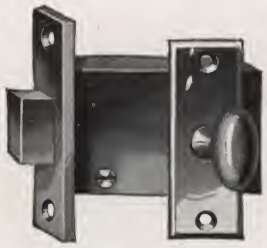


No. E-184—For slide bolt latches doors opening in

No. E-209—For throw latch doors opening out

No. E-185—For slide bolt latches doors opening out

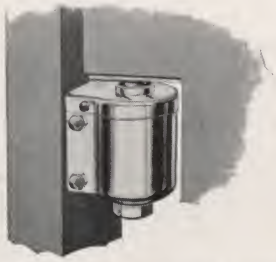
No. E-210—Face plate for mortise bolt on flush METALUNITS. Used with lock E-157



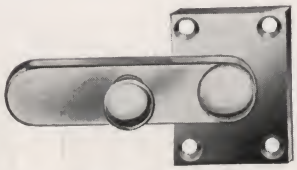
No. E-157—Mortise bolt—cast metal

C-136 Top Fitting—Flat jamb upper hinge bracket for jamb face with a minimum width of 1¾ inches, and flat plate supplied for attachment to wood doors furnished by others.

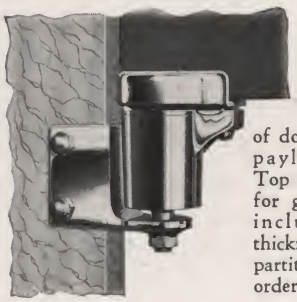
C-136 Bottom—Flat jamb lower hinge bracket for jamb face with a minimum width of 1¾ inches, and flat plate furnished for attachment to wood doors



The illustration above shows C-136 flat jamb lower hinge bracket used with cut-out wood swing gate or door



No. B-23—Throw latch. Wrought brass. Bar ¼ x ¾ in. Note: When door not latched, latch bar hangs vertically



No. C-111—Spring hinge assembly at bottom of door furnished for paylock installation. Top fitting, (same as for gravity hinge), included. Specify thickness of door and partition stile when ordering

Pay Locks

The HENRY WEIS MFG. CO., INC., does not sell, install or service paylocks. These locks may be obtained from manufacturers who sell or lease, install and service them, according to their respective policies. A list of representative paylock manufacturers will be furnished upon request. We will reinforce and drill METALUNIT doors for receiving paylocks at no extra charge, provided no alteration to our standard construction of doors is necessary. Complete information for drilling and reinforcing must be furnished by paylock manufacturer.

No. E-211—Pull plate

No. E-68—Push plate

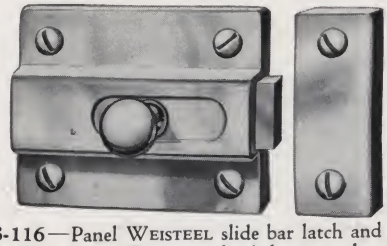
Continued on next page

WEISTEEL

STANDARD AND MISCELLANEOUS HARDWARE PARTS FOR PANEL AND FLUSH COMPARTMENTS

No. B-11—Brass pull—nickel plated.

No. C-7—Combination coat hook and rubber tipped bumper; brass, nickel plated. Furnished when doors swing into compartment.

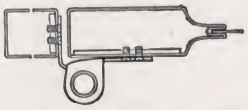


No. B-116—Panel WEISTEEL slide bar latch and keeper.
No. B-60 —Panel WEISTEEL latch keeper only.
No. B-119—Flush WEISTEEL slide bar latch used with keepers B-126 or B-127.

No. B-126—Keeper for flush WEISTEEL inswinging doors.

No. B-127—Keeper for flush WEISTEEL outswinging doors.

No. B-128—Strike for flush WEISTEEL doors without latches.



No. E-147—4 in. half surface spring hinge used when special construction will not permit use of standard WEISTEEL hinge account door being too close to floor. Hinge painted same as door.

No. B-35—Two prong coat hook; brass nickel plated. Furnished in dressing rooms and compartments when doors swing out.

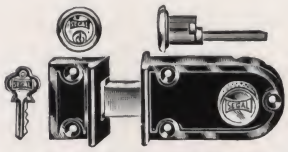
No. E-171—Brass N. P. soap dish.

No. E-150—National no-waste cabinet type paper holder, nickel plated only.

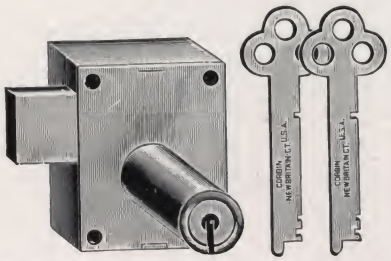
No. E-88—Brass, nickel plated roll paper holder.

No. E-148—A. P. W. Onliwon cabinet type paper holder, painted same as partitions or furnished in chrome plate.

No. C-36—3 in. half surface hinge used for utility doors and special compartments where spring hinges are not wanted. Hinge painted same as door.



No. B-47—Lock with B-48 keeper. Pin-tumbler cylinder deadlock. Bolt throw ¾ in. Can be master-keyed. Keeper illustrated used for Panel WEISTEEL. For Flush WEISTEEL a keeper similar to B-126 and B-127 furnished.



No. C-43—Secure lever lock. Five secure levers. Heavy brass bolt projecting ¾ in. for either right or left hand door. Two polished, nickel plated flat, steel keys to each lock. These locks can be master-keyed. This lock operates from outside of door only and a keeper is furnished with it. When this lock is used, it is necessary to use B-116 latch.

WEISTEEL
METALUNIT
WEISALLOY

ESTABLISHED 1910

THE GENERAL SERVICE COMPANY

Pay Toilet Service

419 St. Paul Place
BALTIMORE, MD.

NEW YORK OFFICE, 137 East 87th Street
FACTORY: 4664 Gangwisch Street, PITTSBURGH, PA.

Product

PAY TOILET EQUIPMENT for public toilets in hotels, department stores, railway station, bus terminals, restaurants, etc.

Equipment consists of Locks, Signs, Bumpers, Keepers, Screws, etc., complete for installation by our Service Department.

Description of General Service

THE GENERAL SERVICE COMPANY not only manufactures its own pay toilet equipment but also installs and maintains it in operation upon a most liberal percentage basis with the location. THE GENERAL SERVICE COMPANY maintains a highly organized service department of trained and experienced mechanics and inspectors. Representatives of this department are scattered throughout the entire country and are in a position to render prompt and efficient mechanical attention at all times to any or all locations.

All General Service equipment is installed and operated upon a positive guarantee of satisfaction.

Description of General Lock

Durable in material, simple in construction, efficient in operation, attractive in appearance.

Case is made of brass, chromium plated. Operating parts made of cadmium rust-proof; individual pass keys as well as individual bank keys. Designates when toilet is occupied or vacant. Veeder register to check receipts. Coin slot automatically closes when toilet is occupied, insuring privacy. Guard over ward prevents lock being picked and opened except with proper coin.

Some "General Service" Installations

Hotels

Deshler-Wallick, Columbus, Ohio
Astor, New York, N. Y.
Benjamin Franklin, Philadelphia, Pa.
Lord Baltimore, Baltimore, Md.
Onondaga, Syracuse, N. Y.
President, Kansas City, Mo.
Marion, Little Rock, Ark.
Curtis, Minneapolis, Minn.
Huckins, Oklahoma City, Okla.
Ansley, Atlanta, Ga.
Franklin, Des Moines, Iowa
Kansan, Topeka, Kan.
St. Charles, New Orleans, La.
St. Francis, San Francisco, Cal.
Olympia, Seattle, Wash.
The Baker Hotels, Tex.
The Robert Meyer Hotels
The American Hotels
The United Hotels

Department Stores

Saks Fifth Avenue, New York, N. Y.
Stern Bros., New York, N. Y.
Adam & Co., Buffalo, N. Y.
May Co., Los Angeles, Cal.
W. T. Grant & Co., Baltimore, Md.
Rosenbaum's, Pittsburgh, Pa.
Bullocks, Los Angeles

Transportation Companies

Southern Pacific Railroad
Louisville & Nashville Railroad
Texas & Pacific Railroad
Baltimore & Ohio Railroad
W. B. & A. Railroad
Nevins Bus Lines
Colonial Stages
Pickwick Stages
West Penn Railroad Co.
Pittsburgh & Lake Erie Railroad

GARDNER-VAIL, INC.

Manufacturers of Builders Hardware

566 Washington Boulevard, CHICAGO, ILL.

GARDNER-VAIL IMPROVED TOILET STALL DOOR HARDWARE

Over thirty years' experience in the manufacture of metal fittings for marble, slate, art marble and glass, qualifies GARDNER-VAIL, INC. to standardize and recommend the following assembly for toilet stall doors. This assembly embodies all the qualities requisite for installation in various types of buildings.

The items illustrated have been selected because of their simplicity of design and sound construction. Special attention is called to the cone tips and the streamline design which simplifies cleaning and makes the installation more sanitary.

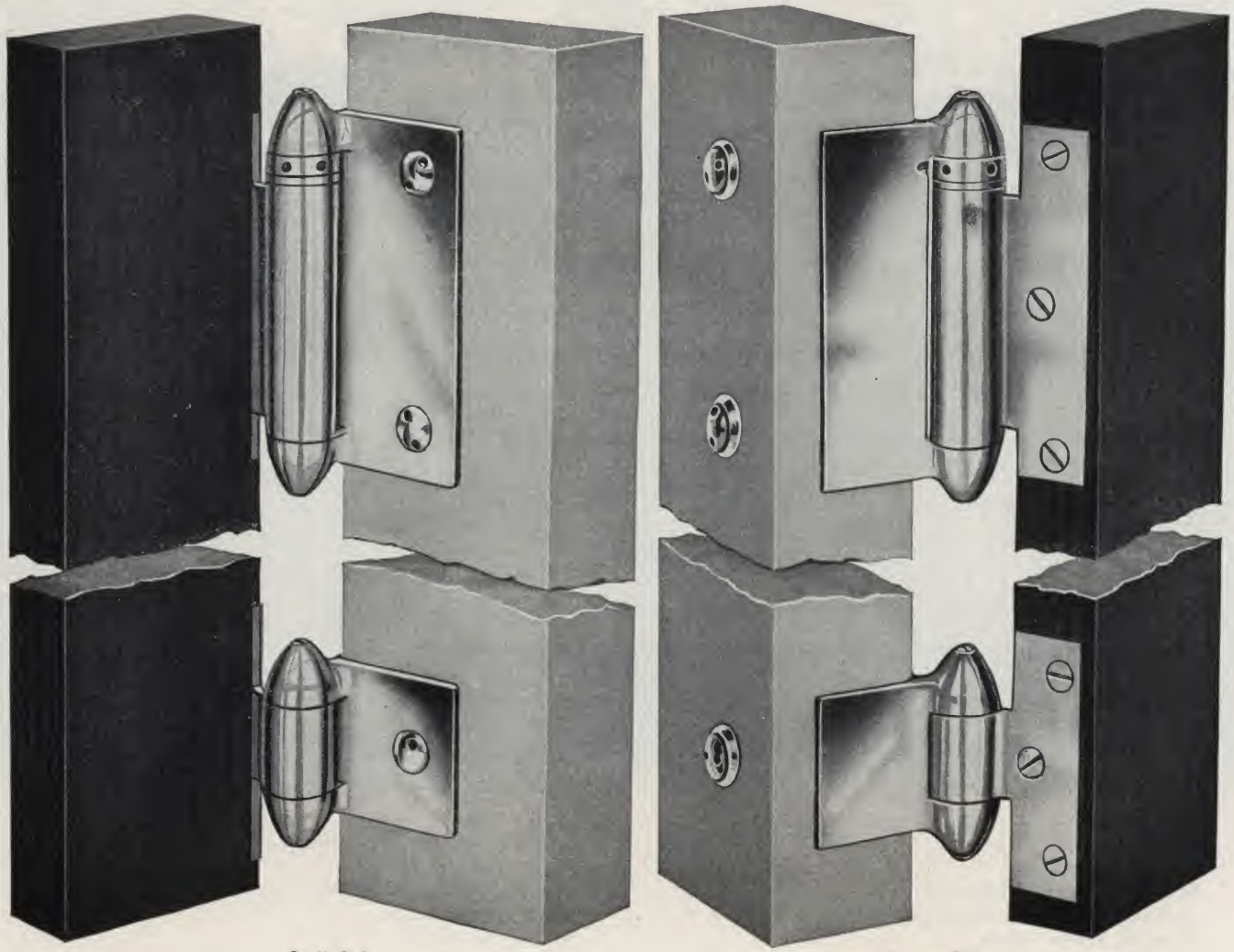
The specially designed round head flush nuts improve the appearance and make the attachment more secure and foolproof. They are installed and removed only with special wrench.

The method of attachment eliminates the necessity of a metal flange on room side of mullion, thus improving the appearance and reducing the hazard of error of installation.

All items are cast white bronze, finish U. S. No. 25 polished or chromium plated.

Chromium plating is recommended because of its brilliant finish, cleanliness and adaptability to the trend in modern design.

The term white bronze has been recommended and accepted by the U. S. Bureau of Standards to identify the nickle brass alloy, or other alloys of quite similar characteristics bearing such names as white metal, nickle silver, silver bronze, etc.

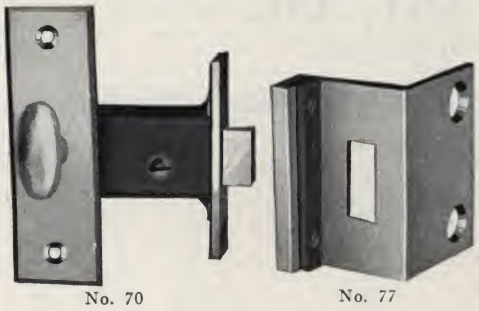


Stall Side **Room Side**

Typical Hinge Assembly—One-half Actual Size

Special Features—Cone tips; round head flush nuts; omission of flange on mullion; streamlining

Continued on next page

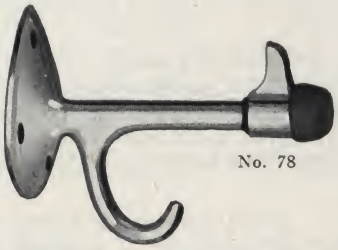


No. 70 No. 77

Mortise Bolt No. 70
Escutcheon 3½x1⅛ in.
Case 1¼x2¾x½ in.

Strike No. 77
For use with No. 65 Hinge and No. 70 Bolt. For inswung or outswung doors. Length of flange 2⅝ in.

Combination Coat Hook and Bumper No. 78
Rubber tipped for inswung doors. Length over all 4 in.

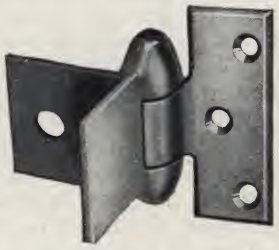


No. 78

Right:
No. 65 Spring Hinge
Length of marble flange 4 in.
Door flange 4 in.

Extra heavy construction reinforced with steel bushings. For all thicknesses of material 1¼ in. and over (thickness should be specified in order that proper length of bolts may be furnished). Packed with No. 128 flush nuts, brass threaded rods and brass nickel plated wood screws. Also with hexagonal nuts when specified.

Right:
No. 065 Blank Hinge
Length of marble flange 1⅝ in.
Door flange 3 in.



Specification (Include in Marble Setter's Work)

This contractor shall furnish and install for each toilet stall door the following hardware. One spring hinge No. 65, one blank hinge No. 065, one mortise bolt No. 70, one strike No. 77 and one rubber tipped combination coat hook and bumper No. 78 (specify U. S. No. 25 or chromium plate finish), as manufactured by GARDNER-VAIL, INC., Chicago, Ill.

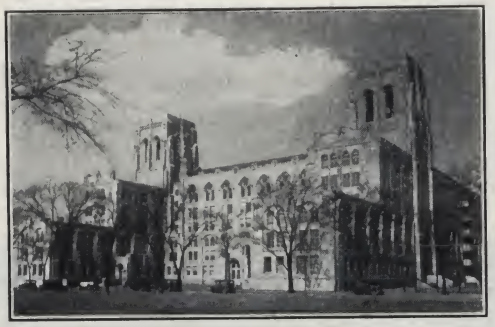
Other Products

In addition to the items shown, we manufacture a complete line of lavatory and shower room hardware including such items as stall fittings, shower room fittings, seat supports, shower curtains, top standard and leg parts, angle plates, brackets, accessories, etc.

Fittings for Government work manufactured in accordance with Master Specification for Plumbing Fixtures (for Land Use) No. 448. Send plans or working drawings for estimates.

We also manufacture the Gardner-Vail line of hand wrought ornamental builders hardware.

Catalogues sent on request.



Above:
Medical Group, Chicago University
COOLIDGE & HODGDON, Architects

Left:
Palmolive Building
HOLABIRD & ROOT, Architects

Right:
Builders Building
GRAHAM, ANDERSON, PROBST & WHITE, Architects

ESTABLISHED 1886 INCORPORATED 1905

ACME PARTITION COMPANY, INC.

FORMERLY UNION BLIND & LADDER COMPANY, INC.

Rolling Wood Partitions and Rolling Steel Doors

OAKLAND, CALIFORNIA

SALES REPRESENTATIVES IN ALL PRINCIPAL CITIES

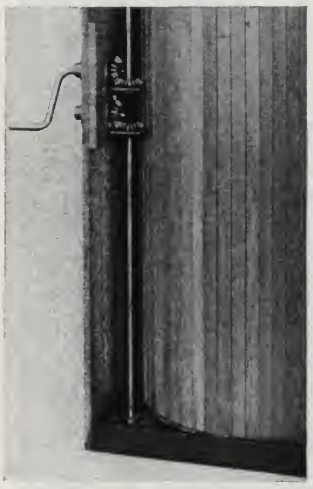
Products

VERTICAL WOOD ROLLING PARTITIONS.
HORIZONTAL WOOD ROLLING PARTITIONS.
VERTICAL and HORIZONTAL STEEL ROLLING DOORS.
Also Horizontal Wood Rolling Doors (Exterior) and Wardrobe Fronts.

Acme Vertical Wood Rolling Partitions (Side Coiling) for Interior or Exterior Use

Construction—Acme Vertical Partitions embrace, we believe, the only successful mechanism which has been designed exclusively for side coiling action. All Acme Vertical Partitions are carried on an overhead tubular track across the opening. A section of this track, showing the type of hanger used is illustrated on the following page. Leaving the track the partition comes to rest on a rotating disc inside the coil box. The weight of the disc assembly, including the partition when coiled, is carried on an angular contact ball bearing of ample size to carry the weight involved. These partitions are fabricated of vertical grained Oregon pine slats $\frac{13}{16}$ in. thick. Other woods can be used where the height does not exceed 16 ft.

Type "J"—Type "J" Acme Vertical Partitions are intended for use where the single unit contains at least 600 sq. ft. of area. Operation of Type "J" partitions, both into and out of the coil box, is by hand crank through steel cut miter and spur gears. Crank may be located either upon the side or front of the coil box, the latter when flush treatment is desired.



Right:
Acme Type "J" Vertical Partition Used in the Gymnasium of the East Side High School, Madison, Wis.

90 ft. wide, 22 ft. high. Moving section of each partition weighs 1½ tons, but they are capable of being operated with ease by any child of high school age. This installation has given continuous satisfaction since being installed in 1925. In March, 1930, an exact duplicate of this installation was furnished to divide the gymnasium of the West High School at Madison

Modified Type "J"—Where the area of the single unit contains between 400 and 600 sq. ft. Modified Type "J" partitions are used, the only difference being that the partition is pulled out of the coil box by hand and returned to the coil box by hand crank.

Type "K"—This type of partition is used where the single unit has an area of less than 400 sq. ft. Construction is similar to the Type "J" partition in all respects save that the partition is manually operated in both directions, the partition being coiled within the box by the action of specially processed and treated springs which are threaded transversely through the slats. This construction insures positive coiling action as each foot of the partition has its own inherent coiling action.

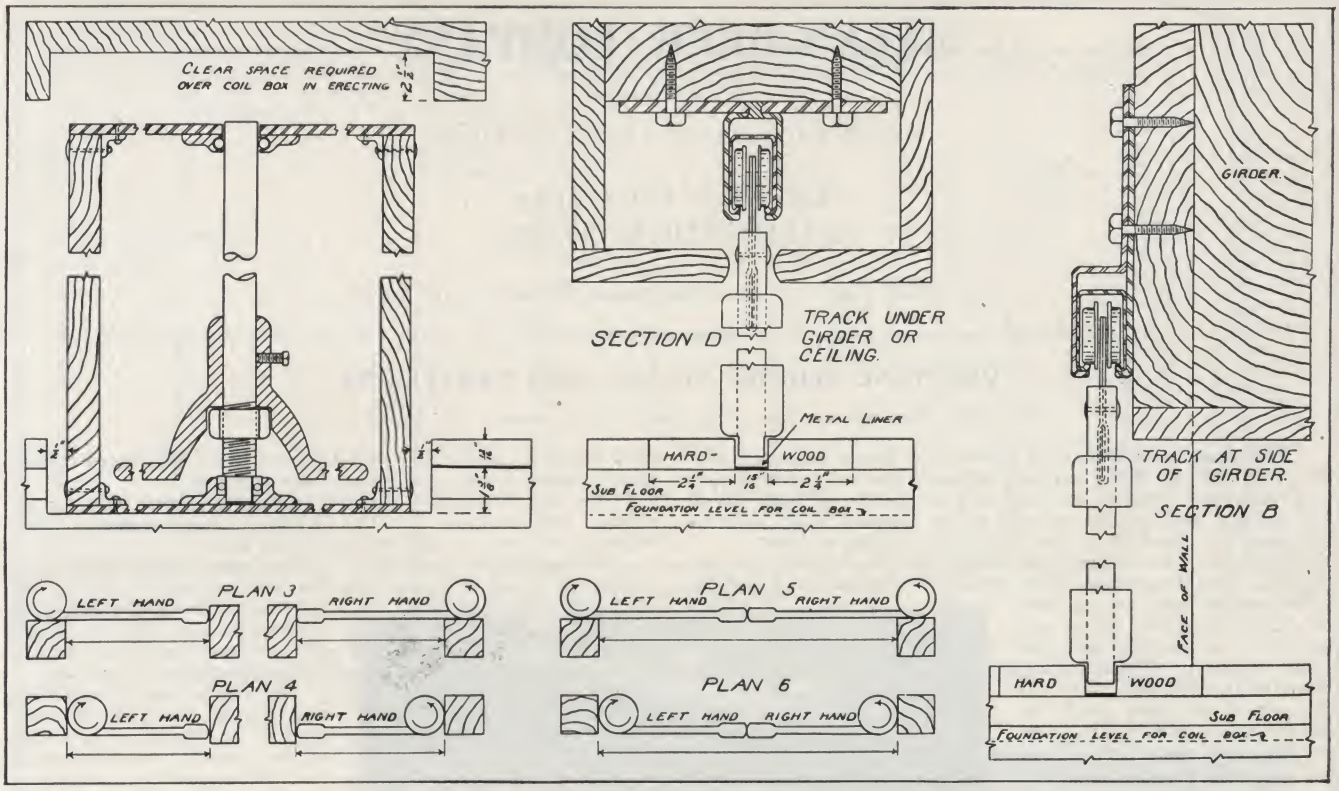
Completely Assembled—Each Acme Vertical Partition and its operating mechanism is completely assembled and installed in its coil box at the factory where it is tested in actual operation prior to shipment. The result is an installation on the job that works perfectly.

Uses—Type "J" Partitions will be found to be an ideal form of closure for *openings of unusual size* such as the division of large banquet rooms, large halls, gymnasiums and as a closure across the proscenium of a wide stage. We do not place any maximum limitation upon the size of the Type "J" partitions, except to say that where a single partition of this type contains more than 1300 sq. ft. it is advisable to consider operation by motor. Type "K" partitions will be found a convenient form of closure for dividing classrooms and, in some instances, for forming the division between classrooms. All types of Acme Vertical Partitions may be used in exterior openings when desired.

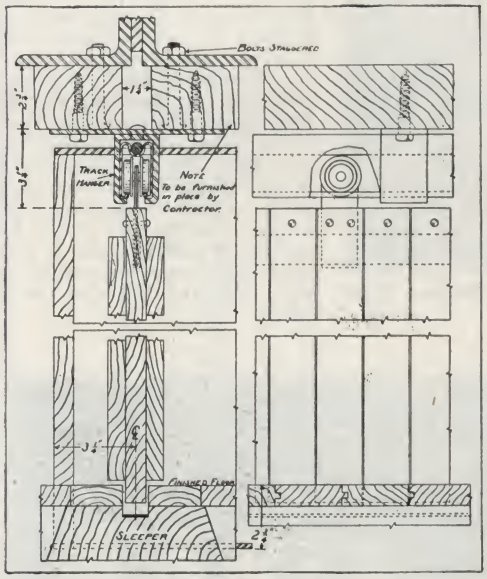
Section of Overhead Track, Showing Type of Hanger Used

Specifications—Provide and install complete with all necessary floor track, hardwood floor guide strips, overhead steel track, and hardware Acme Wood Rolling Partitions Type "J" ["K"] as manufactured by the ACME PARTITION COMPANY, INC., Oakland, California, of the dimensions indicated on the drawings.

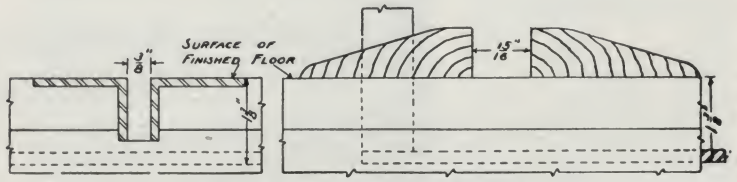
Continued on next page



Details Acme Vertical Partitions Type "K"



Details Type "J"



Alternate Floor Guides Available

COIL BOX DIMENSIONS

Width of single partition including coil box, ft.	Size of coil box, inches square	
	Type "J" and Mod. Type "J"	Type "K"
8 to 9	21	18
10 11 12	22	19
13 14 15	23	20
16 to 17	24	21
18 19 20	25	22
21 22 23	26	23
24 25 26	27	24
27 28 29	28	25
30 31 32	28	26
35	29	
40	30	
45	31	
50	32	

Note: The overhead construction shown above in Section "B" is also available in Type "J" construction.

Acme Horizontal Wood Rolling Partitions (Coiling Overhead) for Interior Use

Slats of Oregon pine, white pine, white cedar, birch, or oak. The standard slat thickness is ½ in. but a slat thickness of ⅝ in. is available as for use in wide openings. Our patented expansion joint is part of all Acme construction and is used on every Acme Partition. Movable posts may be used between two or more sections. Partitions are carefully counterbalanced by springs operating in spring ball bearing drums upon the shaft. In openings over 12 ft. wide a trussed shaft is used, the springs being assembled in spring cages at the ends of the shaft. This type is also ball bearing.

Acme Rolling Doors for Industrial Uses—Wood or Steel Construction

Wood Doors—The slats of the wood doors are from ¾ to 1⅛ in. thick, and from 1½ to 2¼ in. wide, of vertical grained Oregon pine threaded on phosphor bronze tapes.

Steel Doors—The interlocking slats of the steel doors are of open hearth copper-bearing steel, electro-galvanized, and in gauge thickness from 16 to 22. Malleable end locks are used.

Testing—Every Acme door is tested in actual operation prior to shipping, and all necessary adjustments are made. This insures a smooth and easy operation of the door, and lessens the installing cost.

ALLEN-DREW COMPANY

DIVISION OF
BABCOCK-DAVIS CORPORATION

43-45 Brookford Street
CAMBRIDGE, MASS.

For Other Pages on Our Products, see Manufacturers' Index

VERTICAL SLIDING WALLS AND PARTITIONS

For All Services—Stage Curtains, Gymnasium Divisions, etc.

The great possibilities of the use of motor operated vertical lift walls are being realized and made use of more and more by architects. Some of the uses in gymnasiums of high school and college auditoriums as well as in immense halls such as are used for conventions are illustrated in this catalogue.

Walls of this nature can be finished in almost any way desired. The illustration below shows an immense wall finished to represent stone on one side to give architectural effect and on the other side to take the rough usage of a gymnasium. Some of the methods of finishing which we have used are plastering, vitrified cellular asbestos, wood and cork. These all have their own particular advantages under certain conditions.

General Construction

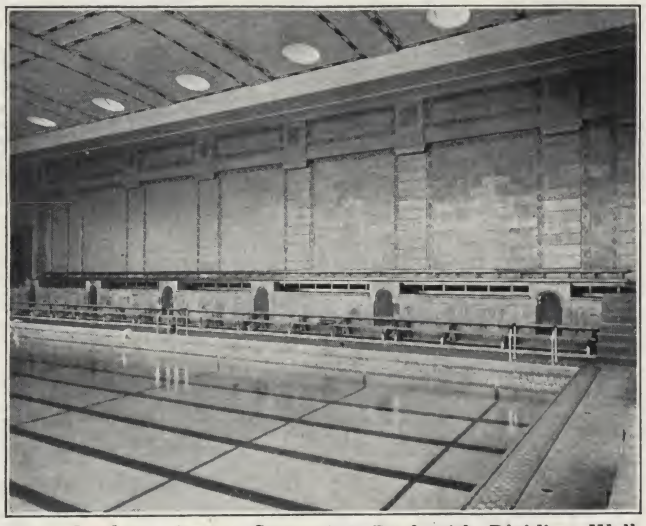
Vertical lift walls may be constructed in a variety of ways. The best construction to secure the maximum soundproofing and fireproofing qualities are described as follows:

Framing should be of rigid steel construction of the proper size to carry the span between the lifting cables and the weight of the covering which is to be applied to the framing. The covering should consist of not less than 20 gauge sheet steel securely fastened to the framing, with the interior filled with soundproofing and fireproofing material.

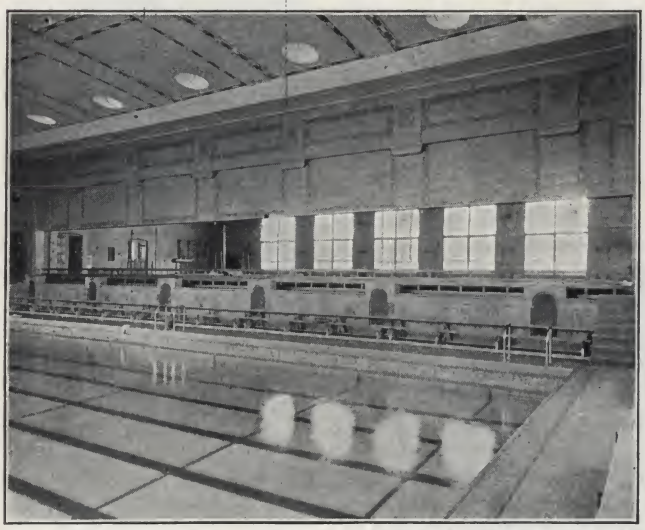
The bottom of all walls and curtains is faced with felt or rubber sealing strips for the closing of any opening which might occur, due to unevenness of the floor.

The partition should be so framed that where the pull-up chains or cables are attached, the steel members are to run continuous the entire height of the partition in order to transmit the load to all parts of the wall or partition.

At the bottom of both walls and curtains cast dowel pins are placed. These pins to be placed at not over 15 ft. on centers and in conjunction, automatic opening and closing floor pockets are placed in the stage floor at the point where each of these dowels occur. These dowels and pockets are of sufficient size and strength to hold the walls and curtains rigidly to the floor and prevent buckling of the walls and curtains should they receive heavy thrusts near the floor line. The face of the floor pocket should be set flush with the floor and be of bronze. The covers of these are closed by springs of sufficient size to prevent this depression except by the walls and curtains themselves.



View Looking Across Swimming Pool with Dividing Wall Lowered

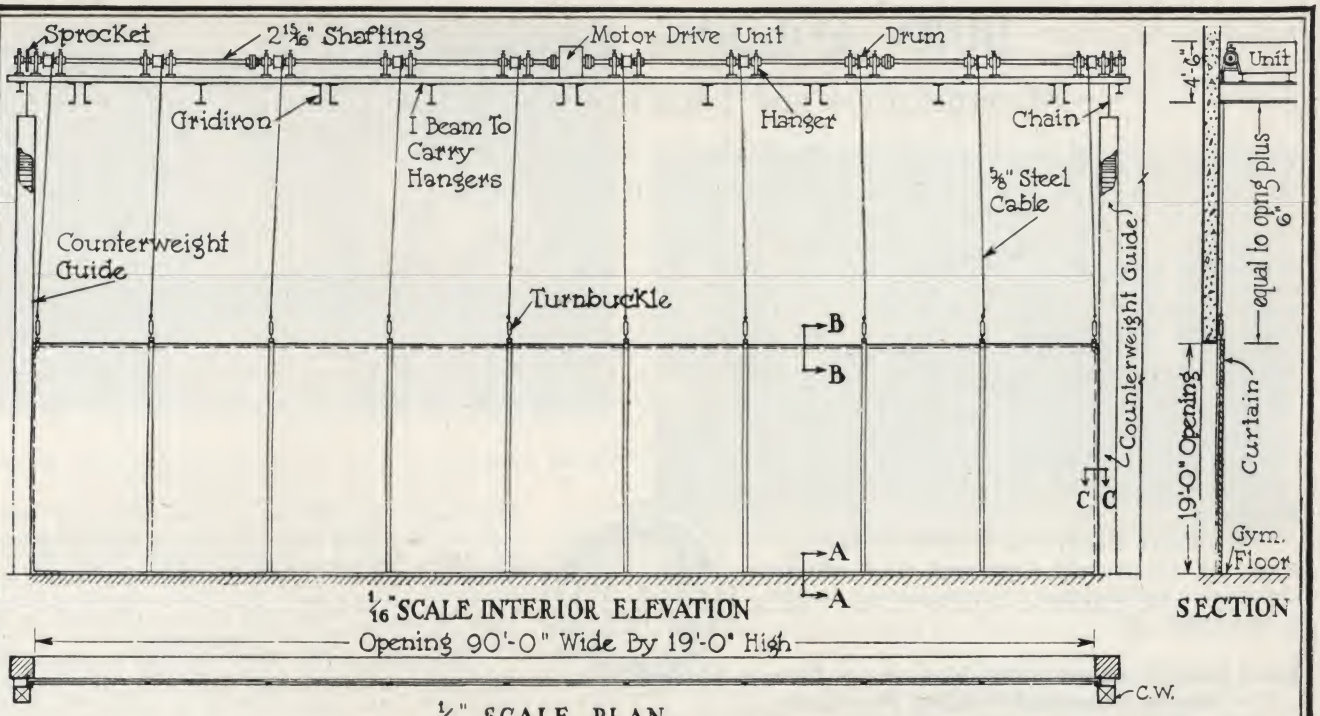


View Showing Dividing Wall Partly Raised with Gymnasium Beyond

View Showing the Wall Raised Into the Ceiling and the Combined Gymnasium and Pool

The Installation Shown Above is Located in the Intra-mural Sports Building, University of Michigan

Continued on next page

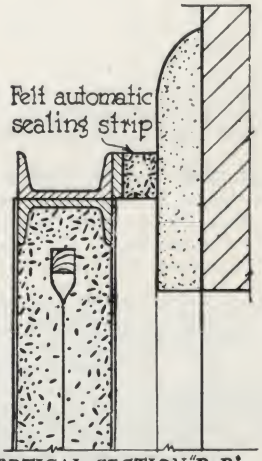


1/16" SCALE INTERIOR ELEVATION

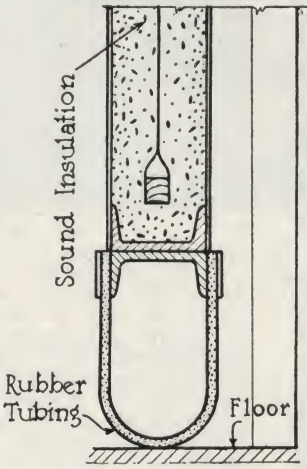
SECTION

1/16" SCALE PLAN

VIEW TAKEN ABOVE THE GRILLAGE SHOWING THE OPERATING MECHANISM FOR CURTAIN OF HIGH SCHOOL IN LITTLE ROCK, ARK.

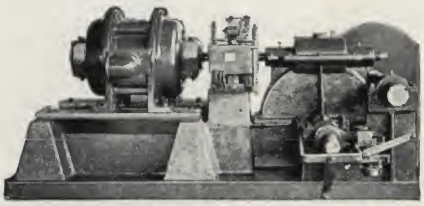


VERTICAL SECTION "B-B"



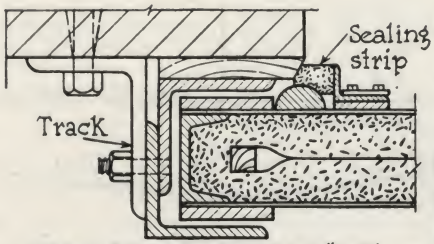
VERTICAL SECTION "A-A"

Scale, 1" = 1'-0"

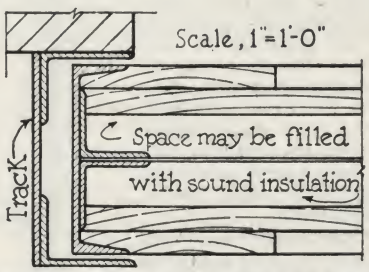


PHOTOGRAPH OF MOTOR DRIVE UNIT Nº 600

Scale, 3/8" = 1'-0"



HORIZONTAL SECTION "C-C"



DETAIL FOR USE WHEN PLASTER CORK OR OTHER MATERIAL IS USED AS A FACING

DETAILS SHOWING GENERAL CONSTRUCTION OF CURTAIN BETWEEN AUDITORIUM & GYMNASIUM, LITTLE ROCK, ARK.

HORN FOLDING PARTITION CO.

Manufacturers and Installers of Folding Partitions

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FORT DODGE, IOWA

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(Complete addresses will be furnished on request to main office)

Products

ACOUSTIC FOLDING PARTITIONS, Mechanically or Electrically Operated, for schools, churches, auditoriums, gymnasiums, hotels, natatoriums, etc.

Horn Selfold, Acoustic, Mechanically or Electrically Operated Folding Partitions

Acoustics (Sound Absorption)—Horn Selfold Partitions are acoustically constructed. They have thick sheets of Celotex and Flaxlinum inside to absorb sound and prevent the transmission and deflection of noises. They are especially satisfactory for soundproofing between auditorium stages and gymnasiums, classrooms, dining rooms, etc. The acoustic insulation is so complete that rooms on each side of a Selfold Partition can be most satisfactorily used at the same time. Faulty acoustics in any large room will be materially improved by the installation of one of these partitions.

Construction—The Horn Selfold Partition is carried by an overhead track. No unsightly, bothersome, filth and rubbish catching floor track or groove is required. This detail makes possible the construction and maintenance of beautiful, unmarred floors. Notice the floors in the illustrations on the following page. Horn specially designed hangers, equipped with roller bearings, make for easy operation of the partition. Rubber floor stops automatically seal the space between the bottom of the partition and the floor. One flush bolt at the bottom of each section holds the partition firmly in place. Corkboards, continuous or paneled blackboards with chalk rails, etc., can be furnished as needed. A pass door, opening through the partition, can be installed in any section. Recesses may be used, into which the entire Horn Partition will fold. Horn recess doors, made to match the partition, will close the recess when the partition is either folded or unfolded.

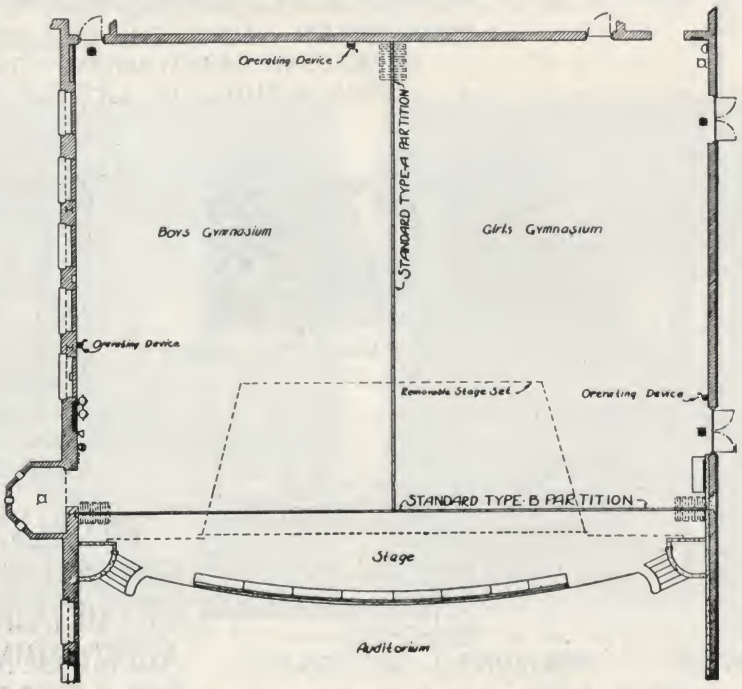
Operation—The Horn Selfold Partition is always operated by the Horn Operating Device, a simple but high grade and positive mechanical arrangement which folds or unfolds the entire partition by the simple turning of a hand crank, or the pressing of a button which controls an electric motor drive. The hand operating device works so perfectly that a child can easily operate the largest partition. The electric operating device is used mainly on the larger installations. Either operating device can be located so that the operator will remain out of sight. This is a splendid feature where the partition is used to cut off a stage, altar room, etc., from an auditorium. The hand operating device may be seen on the wall at the right end of the partition in the Type A illustration.

Guarantee—The HORN FOLDING PARTITION CO. manufactures its own partitions in its own fine factory, and installs them with its own expert workmen. The purchaser has no freight to pay, no labor to hire, and no other details to bother about.

The HORN FOLDING PARTITION CO. builds the partitions, installs them, guarantees them, and services them for five years.

Cost—The cost of a fine Horn Selfold Partition is commensurately low. Prices will be quoted on request.

Free Service to Architects, etc.—The Horn designing department offers a free service without obligation. The HORN FOLDING PARTITION CO. welcomes all inquiries and serves them in the best manner possible from the main office at Fort Dodge, Iowa, or from one of its many branch offices listed above.



One of Many Practical Arrangements Made Possible by the Use of Horn Selfold Partitions

Description of Standard and Heavy Types A

The Standard Type A Horn Selfold Partition, furnished regularly for heights less than 20 ft., and the Heavy Flush Type A, furnished regularly for heights of 20 ft. and over, are the best general purpose types and are the lowest in price. Their simplicity, strength, acoustic design and unlimited possibilities for decorative harmonies to match other walls make their use for dividing gymnasiums, church auditoriums, class rooms, dining rooms, etc., most advisable.

Their smooth, unpaneled surfaces are covered with heavy No. 10 roll duck which will withstand the roughest usage, yet which, from a decorative point of view, holds all the possibilities of an artist's canvas. Acoustically constructed pass doors, continuous or paneled blackboards, etc., may be built in as a unit with these types of partitions.

The illustration of Type AE suggests the wonderful way in which an A type partition may be decorated. It can be painted to match the plainest walls, or artistically decorated in panels, textured tiffany, antique or modernistic designs of paint or papers, or in almost any other manner to harmonize with any interior.

Continued on next page

Type A

This Type A partition, 70x24 ft., divides the gymnasium in the Garfield Heights High School at Cleveland, Ohio
FULTON & TAYLOR, Cleveland, Architects

Description of Types B and BB

The Type B Horn Selfold Partition has been scientifically developed for the express purpose of separating gymnasiums from auditoriums. It has created an unlimited opportunity to work out room arrangements like that shown below and in the floor plan on the preceding page. The acoustic properties are so effective that they make it possible and satisfactory to use the gymnasium and auditorium at the same time. The framework of this partition is made only of strictly clear, unveneered, kiln dried fir, which may be stained or painted to most effectively enhance the beauty of any stage arrangement. The partition is paneled on the auditorium side, the panels being covered with ornamental art cloth which needs no painting. The partition on the gymnasium side looks like the Type A. It is smooth and is covered with heavy No. 10 roll duck which will resist rough usage and which may be painted in panels, in flat colors or otherwise to match the gymnasium walls. Pass doors are acoustically constructed like the main partition and can be placed wherever desired.

The Type BB Horn Selfold Partition is paneled on both sides. It is acoustically designed and built. The framework is constructed of the finest, strictly clear, unveneered, kiln dried fir. All panels are covered with ornamental art cloth. The character and beauty of this partition make its use appropriate in churches, schools, club rooms, tea rooms, etc. Architects and owners find herein their opportunity for procuring a paneled partition at a most reasonable cost.

Type B

This Type B partition, 78x18 ft., separates the auditorium and gymnasium in the Robert E. Lee High School at Goose Creek, Tex.
HARRY D. PAYNE, Houston, Architect

Description of Type C

The Type C Horn Selfold Partition is an acoustic partition, designed to be used where only a wood veneered partition can serve in correspondence with the design or ornamental features of a wood finished interior. This partition is paneled on both sides. The framework is veneered, the veneer being any kind of wood necessary to match the finish of the room. The panels are built with thick, acoustic Flaxlinum, faced on each side with three-ply wood panel designed to match the framework. Pass doors, continuous or paneled blackboards, etc., will be provided as unit construction whenever required. All materials and workmanship are in keeping with the highest class of cabinet work.

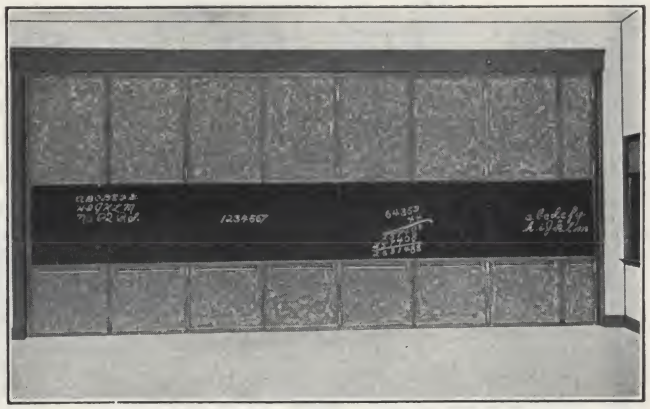
The height of the Type C partition, including track enclosure, *is limited* to 12 ft. because no satisfactory veneered work can be made in excess of that.

Type C

This Type C partition, 63x9 ft., separates a parlor and auditorium in the Home Economics Building at Iowa State College, Ames, Iowa
PROUDFOOT, RAWSON, SOUERS AND THOMAS, Des Moines, Architects

Description of Types AE, AEE, etc.

The Type AE Horn Selfold Partition is a regular acoustic Type A partition equipped in the factory with a blackboard and chalk rail on *one* side. Type AEE is the same, except that a blackboard and chalk rail are placed on *each* side. Any other types of Selfold Partitions can be similarly equipped. E indicates blackboards consisting of continuous natural slate unless paneled or composition blackboards are desired. Corkboards or other special construction may be arranged in connection with any type of Horn Partition.



Type AE

This Type AE partition, 24x11 ft., divides two class rooms in the Carlisle Grade School at Elyria, Ohio
J. W. BAGLEY, Cleveland, Architect

Specifications

(Note: It is advisable to keep the folding partition specifications separate from those for millwork.)

The folding partitions, as shown on the plans, shall be Horn Selfold Partitions, manufactured, completely installed, and guaranteed by the HORN FOLDING PARTITION CO., Fort Dodge, Iowa.

The partitions shall be Type .... (B for example), constructed as shown on the Horn standard detail sheets. All casings and track enclosures shall be back painted. (Where Types A or B are specified, add, "All duck covered surfaces shall receive one coat of filler at the factory.") No other painting nor finishing shall be required in the partition contract.

Complete installation shall consist of the following: all partition units, track enclosures, wall jambs, and the necessary finish trim; all partition hardware, including overhead tracks, hangers, steel cables, and Horn mechanical operating devices; all freight and drayage charges; and all labor for installing the partitions. (If electrically operated, add, "The motor drive for the partitions shall include the necessary motors, switches and wiring leading from 110-volt outlets conveniently placed for connection with the motors.")

The HORN FOLDING PARTITION CO. shall guarantee the materials, workmanship and operation of these partitions for five years from the date installation is completed. The guarantee shall include free servicing of the partitions and free replacement of faulty parts, should either become necessary.

Note: To avoid misunderstandings, all plans must show plainly the widths and heights of the folding partitions as follows: *Widths* extend from outside to outside of wall posts and therefore include the depths of recesses. *Heights* extend from finished floor to top of track plank.

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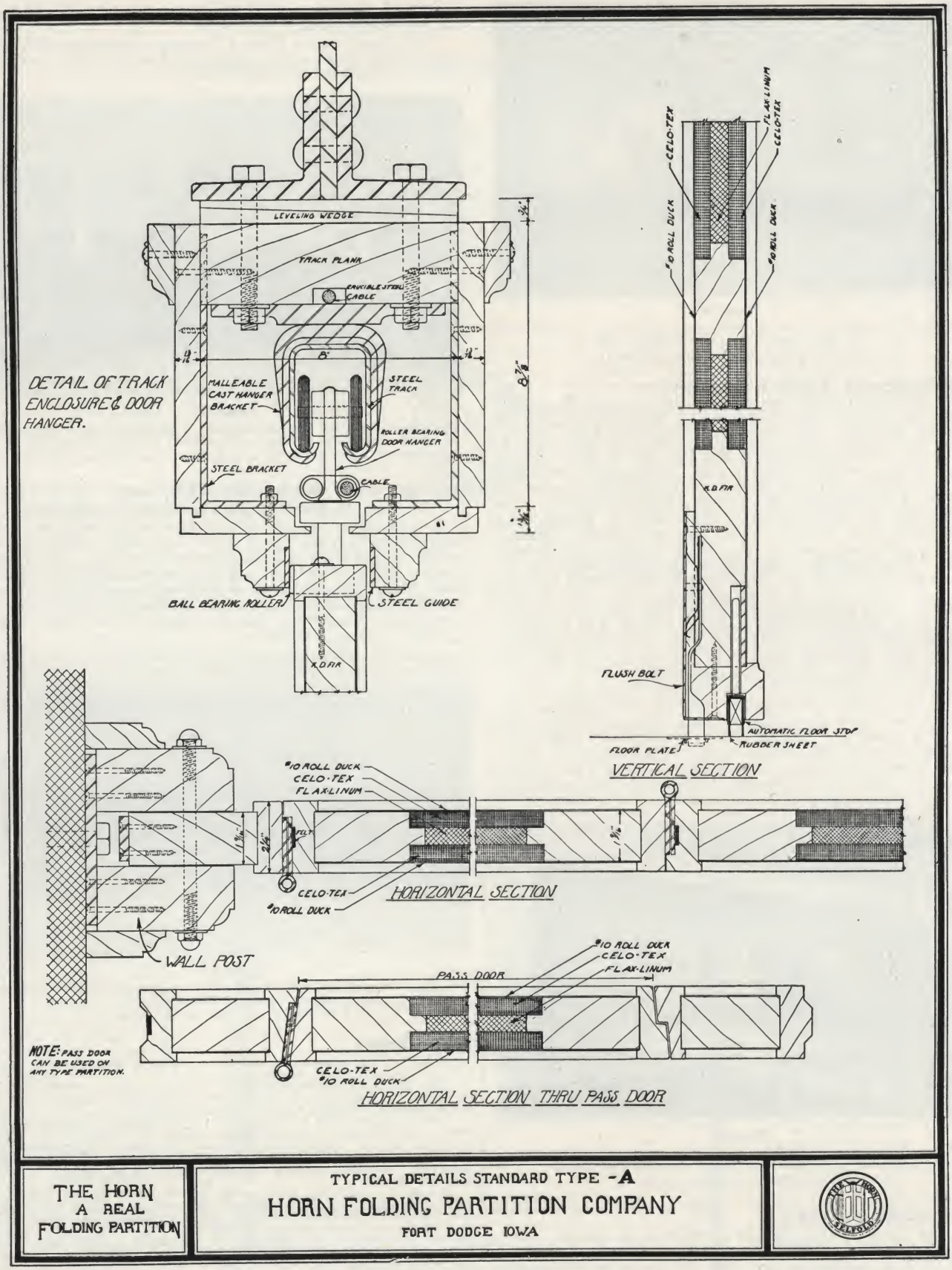

THE HORN
A REAL
FOLDING PARTITION

TYPICAL DETAILS STANDARD TYPE -A

HORN FOLDING PARTITION COMPANY

FORT DODGE IOWA

Standard Type A is furnished regularly for partitions less than 20 ft. high.

Note:

Standard Type A Both sides smooth, unpaneled surfaces, covered with roll duck. Projected astragals.
Standard Type AE Same as type A with continuous blackboard on one side.
Standard Type AEE Same as type A with continuous blackboard on two sides.

See third following page for details of blackboard construction.

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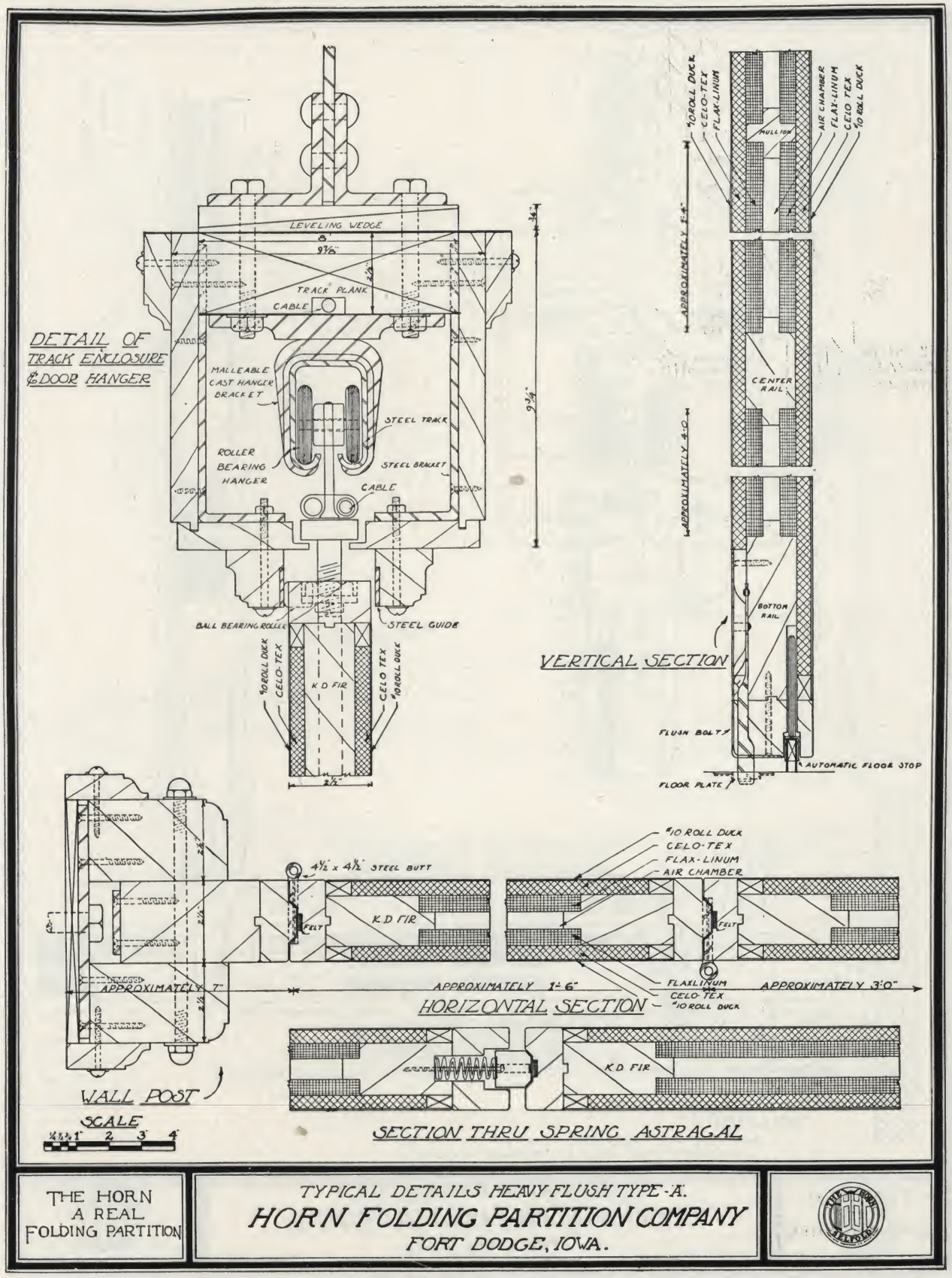

Heavy Flush Type A is furnished regularly for partitions 20 ft. or more in height, or as a special for lower heights.

Note:

Heavy Flush Type A	Both sides smooth, unpaneled surfaces, covered with roll duck. Flush astragals.
Heavy Flush Type AE	Same as type A with continuous blackboard on one side.
Heavy Flush Type AEE	Same as type A with continuous blackboard on two sides.

See second following page for details of blackboard construction.

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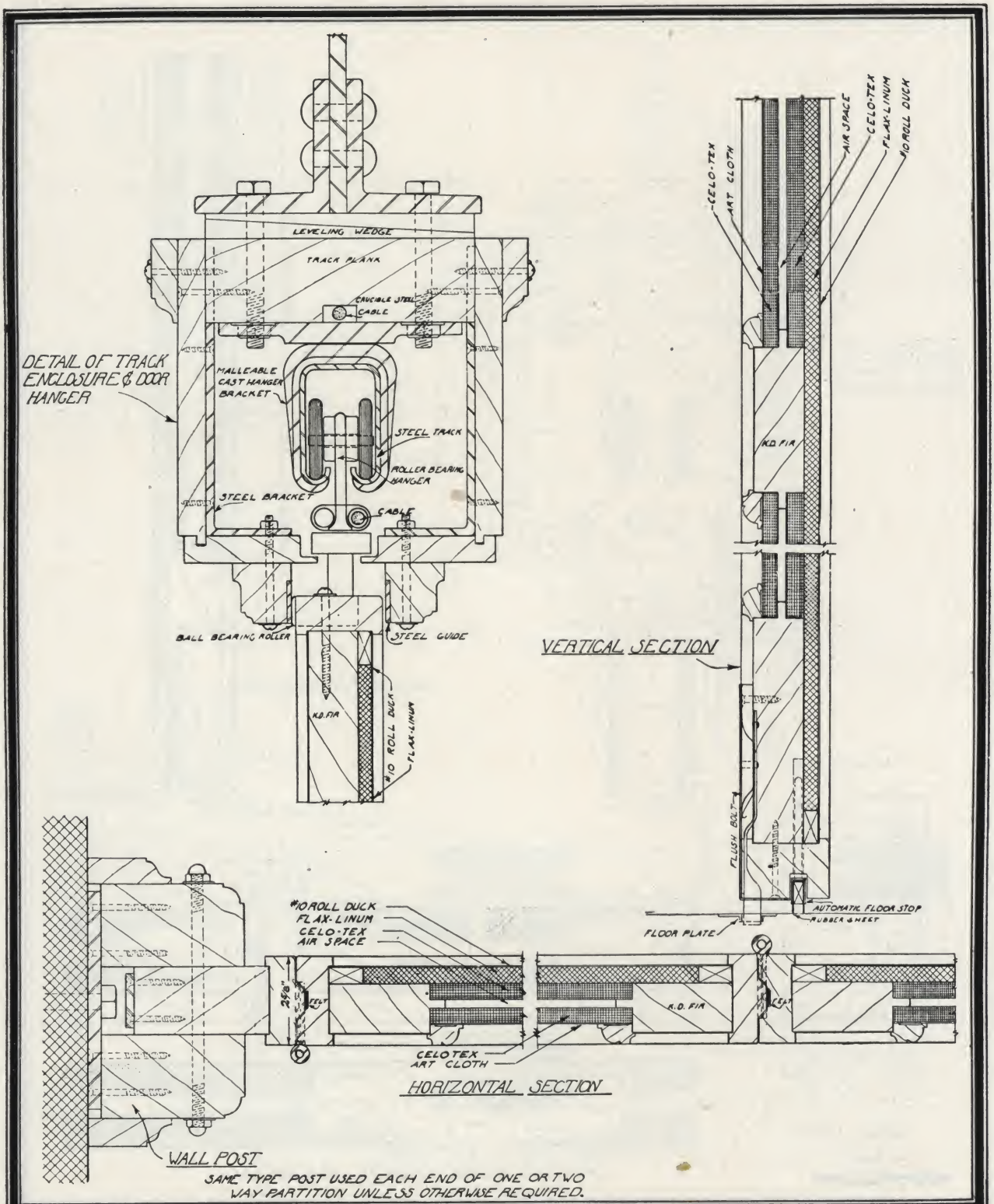

THE HORN
A REAL
FOLDING PARTITION

TYPICAL DETAILS STANDARD TYPE -B

HORN FOLDING PARTITION COMPANY

FORT DODGE IOWA

Note:

Type B	One side paneled, unveneered fir stiles and rails, panels covered with art cloth. Other side smooth, unpaneled surface covered with roll duck.
Type BE	Same as Type B with continuous blackboard on one side.
Type BEE	Same as Type B with continuous blackboard on two sides.
Type BB	Both sides paneled, unveneered fir stiles and rails, all panels covered with art cloth.
Type BBE	Same as Type BB with continuous blackboard on one side.
Type BBEE	Same as Type BB with continuous blackboard on two sides.

See next page for details of blackboard construction.

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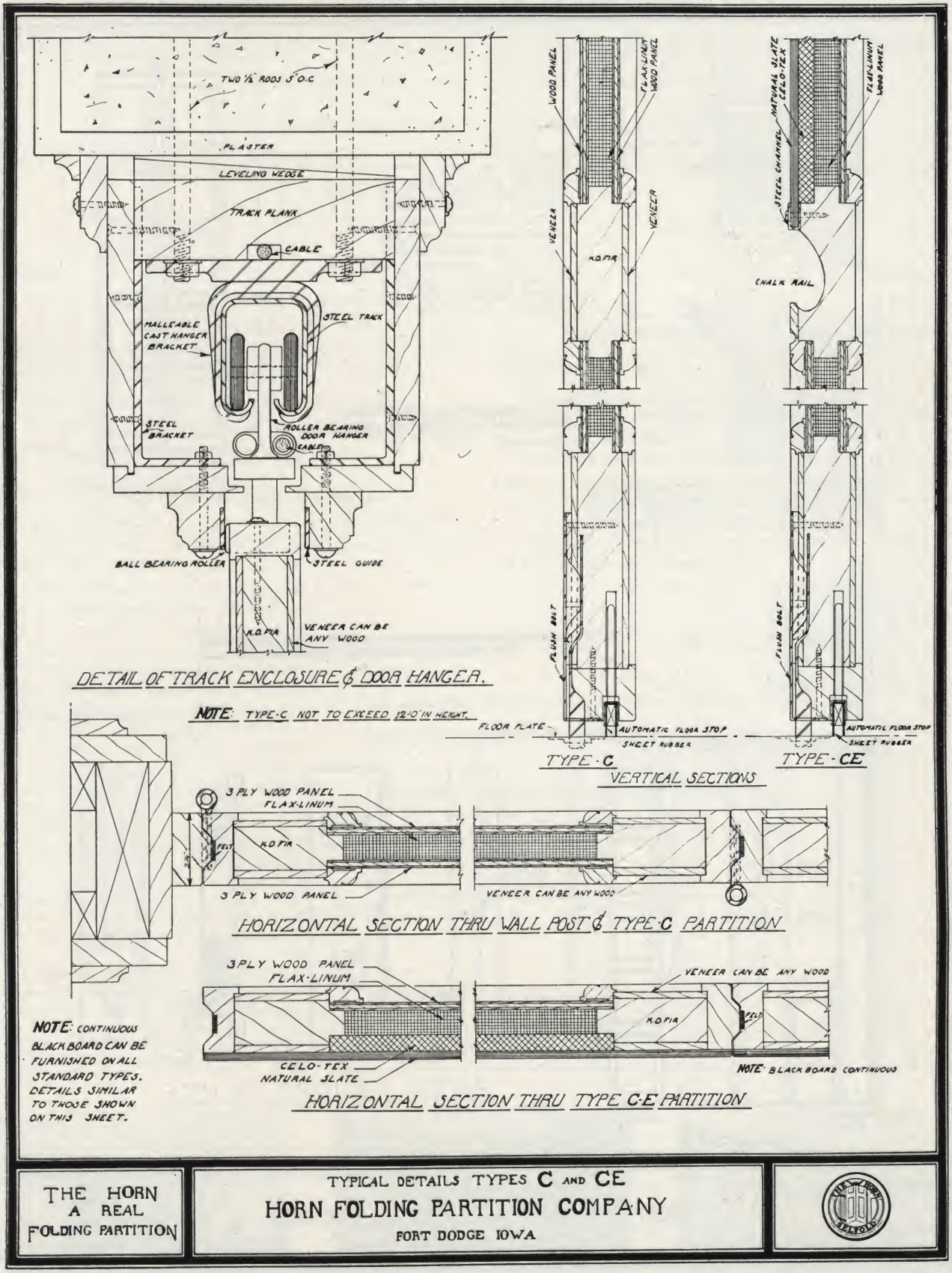

Note:
Type C Both sides paneled, veneered stiles and rails, all panels faced with three-ply wood veneer.
Type CE Same as Type C with continuous blackboard on one side.
Type CEE Same as Type C with continuous blackboard on two sides.
The blackboard details will fit any other type of Horn Partition.

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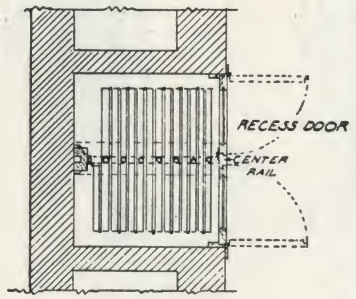
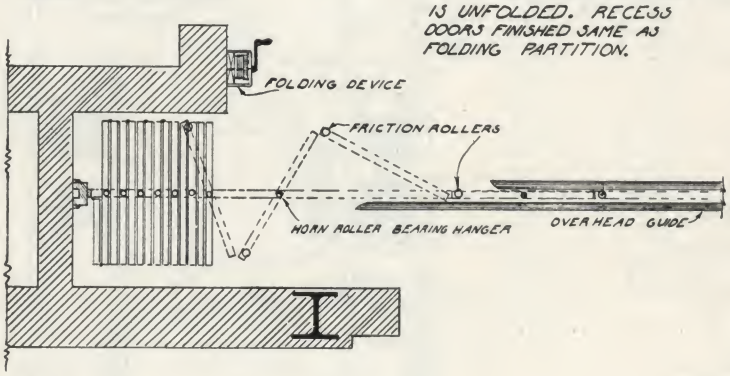
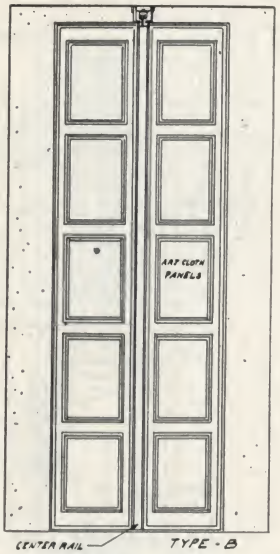
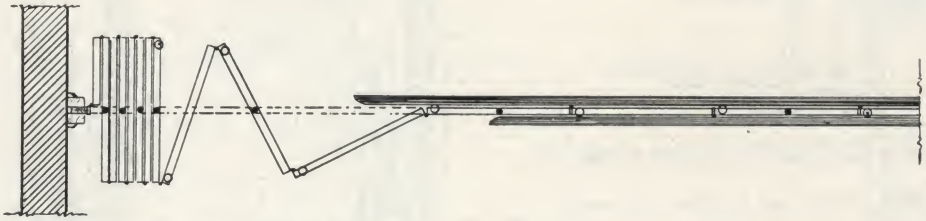


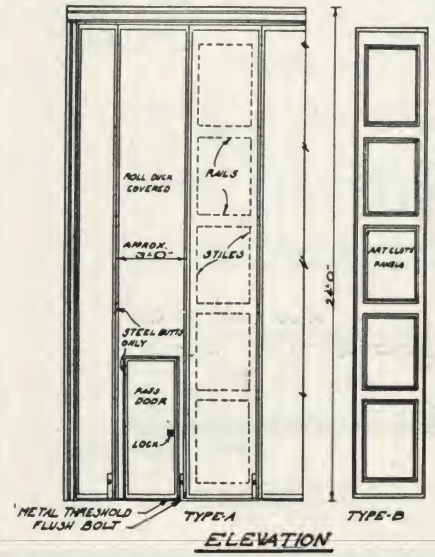
NOTE: CENTER RAIL IS HINGED TO COMPLETELY CLOSE OPENING WHEN PARTITION IS FOLDED AND TO ALLOW RECESS DOORS TO CLOSE WHEN PARTITION IS UNFOLDED. RECESS DOORS FINISHED SAME AS FOLDING PARTITION.



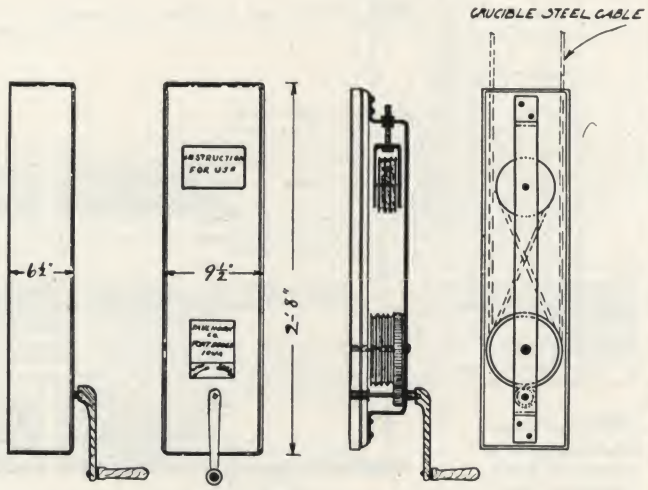


ELEVATION RECESS DOORS





ELEVATION



HORN FOLDING DEVICE

THE HORN A REAL FOLDING PARTITION

MISCELLANEOUS DETAILS

HORN FOLDING PARTITION COMPANY

FORT DODGE, IOWA.

Note:
The Horn Motor Driven Operating Device is controlled by an electric switch, and is as simple, sure and easy to operate as an ordinary electric light in a home. Details furnished on request.

CIRCLE A PRODUCTS CORPORATION

Manufacturers of Circle A Sectional Partitions, Bank Screens, Wardrobes, Folding Partitions, Rolling Partitions

654 South 25th Street, NEWCASTLE, IND.

NEW YORK, N. Y., Farmers' Loan and Trust Building, 475 Fifth Avenue

BRANCH OFFICES IN PRINCIPAL CITIES

Products

CIRCLE A SECTIONAL and MOVABLE PARTITIONS.

CIRCLE A FOLDING PARTITIONS, made in three standard types: Quietfold, Standardfold, and Pairfold.

CIRCLE A ROLLING PARTITIONS.

Also Cabinets, Bank Screens, and Counters.

For Circle A Kitchen Units, and Circle A School Wardrobes, see Manufacturers' Index.

Circle A Sectional and Movable Partitions

Built in units for construction of paneled dividing walls and railings—suitable for subdivision of general office space, financial offices, industrial plants, etc.

Designs—The new Cabinet Imperial Partition offers outstanding cabinet artistry in the finest of American walnut, mahogany, and other woods. This new and more beautiful office wall is suitable for the most sumptuous board room or executive office—yet its reasonable cost enables it to be used throughout the general offices as well. Cabinet Imperial offers new erection ease and simplicity. It provides improved, concealed wiring and a new type of base. It offers new dignity for the office.

In addition, the extensive line of Circle A Partitions in a wide choice of woods, and in a number of handsome designs, offers partitions, railings, and counters to meet every subdividing need, from the private office to the industrial plant.

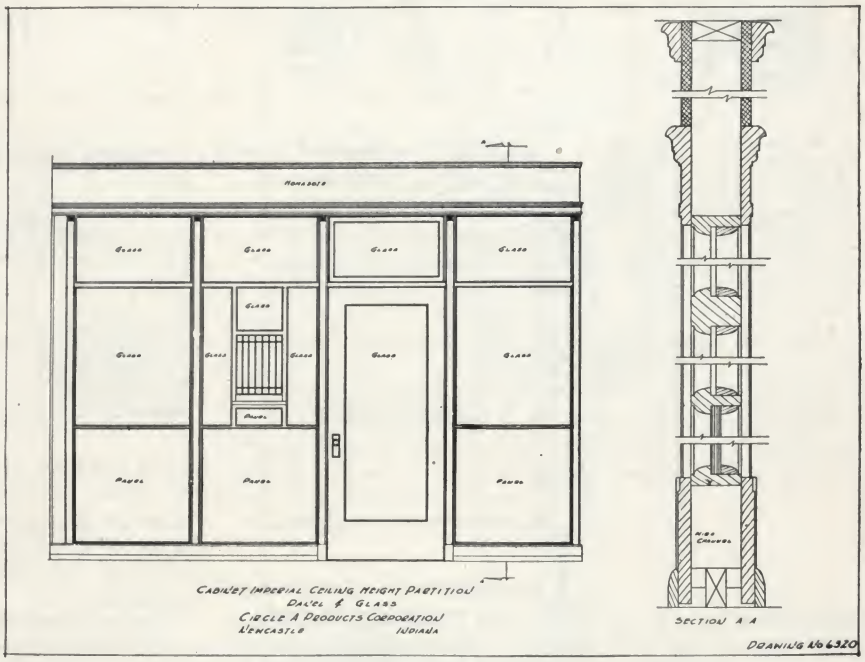
Erected Overnight—Completely Rigid—All units of Circle A Partitions are assembled before shipment. Erection time is cut to the minimum and can be handled by the ordinary handy man. Tongue and groove construction gives great rigidity. New office layouts can be provided overnight.

Fit Any Space—Units are carried in stock in varying widths, and can provide a perfect fit for any space. All unevenness of floor or mouldings can be completely concealed.

Seven-foot or Ceiling Heights—Standard units of Circle A Partitions include railing, partitions (7-ft. or to the ceiling), counter with drawers, cabinets, bank screens, etc.

Easily Moved and Re-erected—Circle A Partitions can be easily and quickly taken down, carried to another office, or even to another building, and re-erected without damage to partition or flooring.

Catalogue—Send for file-size catalogue, P-30, giving complete description and illustrations.



Office of a Large New York Concern—Cabinet Imperial Design

Interior of Mercantile House—Cabinet Imperial Design in American Walnut

Office of a Prominent Financial Company—Cabinet Design

Continued on next page

Extended—Surface S-12

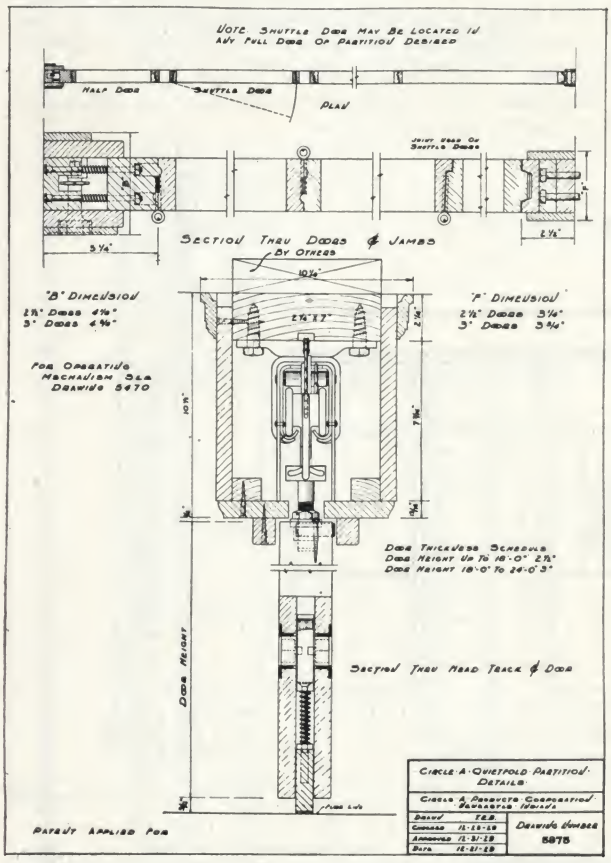
Folded—Surface S-12

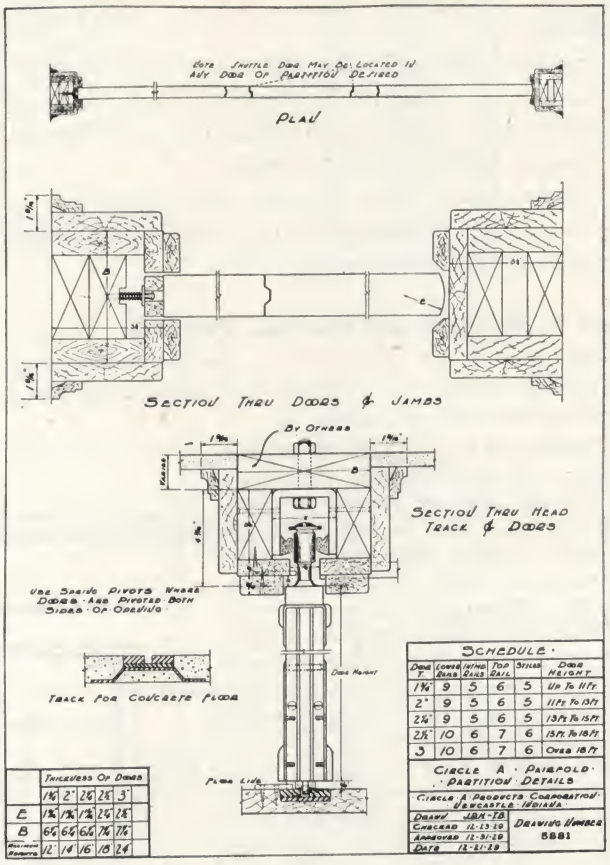
Extended—Surface S-3

Circle A Folding Partitions

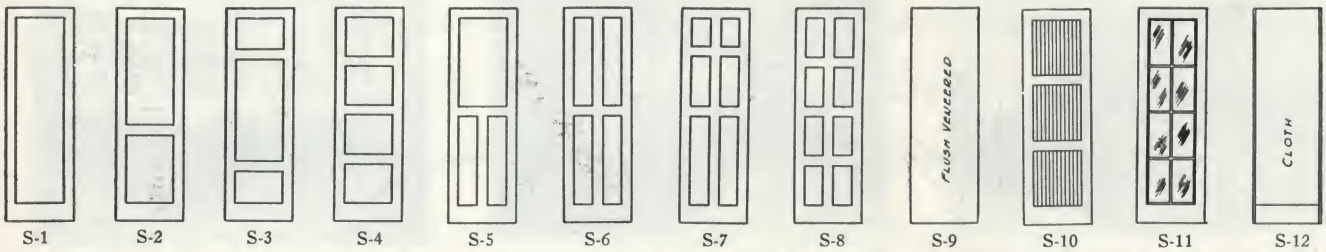
Made in three standard types: Quietfold, Standardfold, and Pairfold. They are unsurpassed for efficiency of operation and good looks.

Quietfold Partition—Circle A Quietfold Partition is an effective sound-insulated wall. Quietfold is carried on an overhead track with the finest type of swivel ballbearing carriers, and is mechanically operated by means of an improved, frictionless roller chain. This cannot slip or stretch as a rope drive may. Appearance is unusually attractive, as all driving mechanism is concealed in cornice and jambs. Electric operation with push button control is optional for large installations. One of the outstanding advantages of Circle A Quietfold doors is the absence of any floor track or foot bolts. This permits an unobstructed, clean and beautiful floor, and a smoother-working installation.





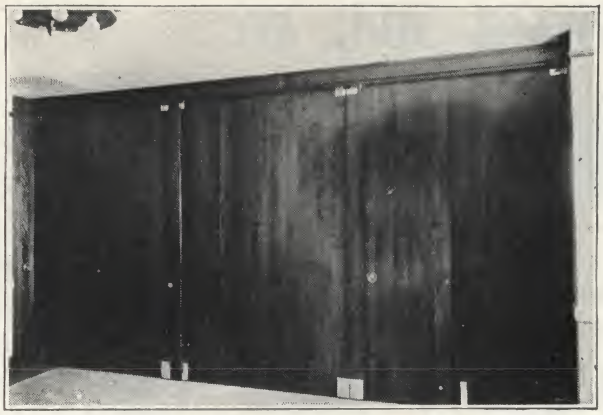
Standardfold Partition—Circle A Standardfold Partition is similar to Quietfold, but is slightly lighter in construction. There is no floor track, although foot bolts are used. Built with or without sound-insulation.



S-1 S-2 S-3 S-4 S-5 S-6 S-7 S-8 S-9 S-10 S-11 S-12

Showing Wide Choice of Surfaces for Various Types of Circle A Folding Doors

Continued on next page



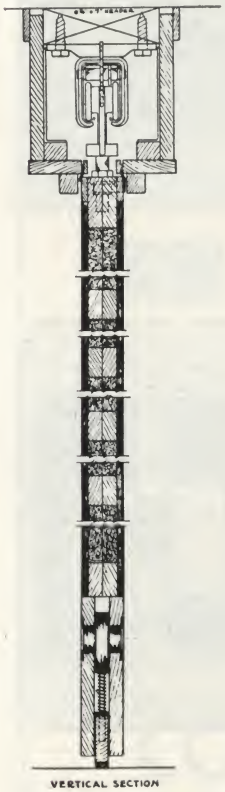
Doors Extended—Surface 9

Pocket Containing Folded Doors—Surface 9

Pairfold Partition—Circle A Pairfold Partition is a manually operated partition running on a floor track and overhead guide. Doors are hung in pairs, carried on rugged ball bearing rollers, and provided with ball bearing top guide. Built with or without sound-insulation.

Non-insulated Construction—Doors are made by skilled workmen in accordance with the best woodworking practices. Only the finest materials are used. Non-insulated doors are made with built-up cores, and veneered stiles and rails or surfaces.

Sound-insulated Construction—Sound-insulated doors are especially constructed to give maximum insulation strength. Inner layers are built of rigid frames, laminated and cross banded with all openings filled with sound-deadening Balsam Wool. Exterior layers are built as desired.



VERTICAL SECTION

Surface Treatment—All partitions are furnished in any of the following types of surface treatment:

Celotex covered with roll duck or art cloth.

Wood panels in any design.

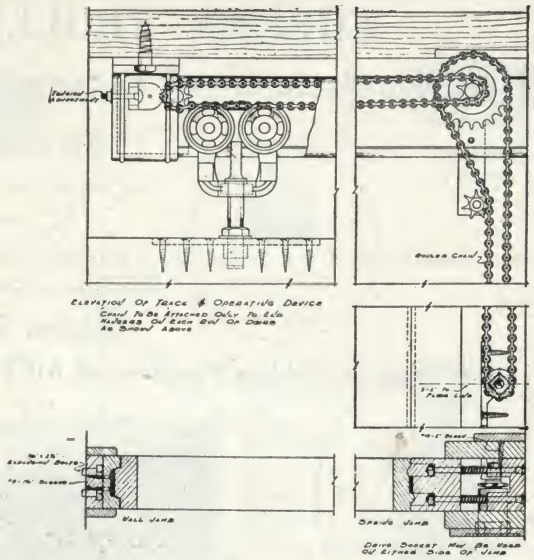
Flush paneled.

Built with wood paneling for the portion next the floor and with glass panels wherever desired.

Note: Blackboard or corkboard surfaces on any styles where desired.

Sound-insulation—To provide insulation against the passage of sound between doors, the edges are lined with felt strips that press together when doors are closed. Insulation at both ends of partition is provided by a spring-supported jamb that gives a snug fit. "Sealing" at floor line is accomplished in Standardfold by the usual rubber-felt strip, but in Quietfold by a movable bottom rail with a felt pad that presses against the floor when doors are closed—and is raised when doors are folded. This method is unsurpassed for efficiency.

Circle A doors can be locked in any position. A guide roller prevents striking or marring of the upper edge of doors, and provides smoother operation. Safety devices permit movement of the door only when in correct position to prevent jamming.



Positive Frictionless Roller Chain Drive Entirely Concealed in Cornice and Jambs

Installation and Guarantee—All Circle A Folding doors are installed by Circle A engineers and guaranteed against faulty operation.

Catalogue—Write for complete data in file-size folder, giving plans and specifications, showing pocket construction and all necessary details.

Circle A Rolling Partitions

For dividing smaller rooms, where complete sound-insulation is not required, Circle A Rolling Partitions provide an effective means at lower cost.

Construction—Circle A Rolling Partitions are built of the finest materials for the purpose. Design is highly efficient.

Coiling devices are ball bearing mounted for smooth operation.

Wood slats are half inch thick and scientifically treated to prevent warping. They are threaded on tempered steel ribbons. Spring take-ups in bottom rail maintain the proper tension at all times. Made in sizes to fit all openings. Coil box of special design can be provided.

Catalogue—Write for complete file data.

Representative Installations

Many of the finest office buildings in the country are equipped with handsome and practical Circle A Partitions. Following is a list of a few representative installations:

Brooklyn Theater Building, Brooklyn, N. Y.
Equitable Trust Building, New York, N. Y.
New York State National Bank, Albany, N. Y.
Buhl Building, Detroit, Mich.
American Furniture Mart, Chicago, Ill.
Ambassador Building, St. Louis, Mo.
Houston Post-Dispatch Building, Houston, Tex.
Chamber of Commerce Building, Cincinnati, Ohio
Huntington Building, Miami, Fla.
New Orleans Public Service Building, New Orleans, La.
State Tower Building, Syracuse, N. Y.
Gimbel Brothers Store, Philadelphia, Pa.
National Industrial Bankers, Principal Cities
Goldman Sacks Building, New York, N. Y.

COBURN TROLLEY TRACK MFG. CO.

Manufacturers of Coburn Folding Partitions and Hardware

HOLYOKE, MASS.

BRANCHES IN ALL PRINCIPAL CITIES

For Coburn Garage and Heavy Sliding Door Hardware, Metal Covered Doors, Windows and Finish, see Manufacturers' Index

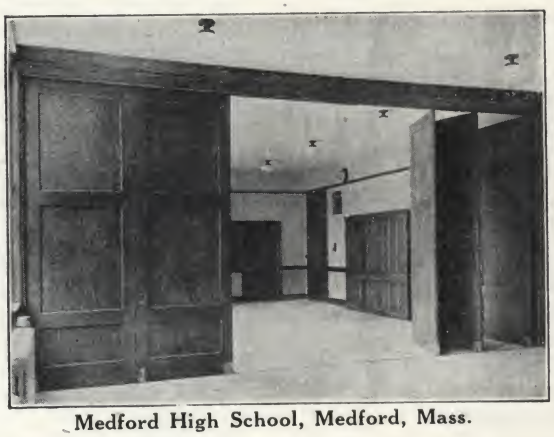
Coburn Folding Partitions

Non-Sagging, Folding Partitions of All Types and for All Services Supported on the Floor

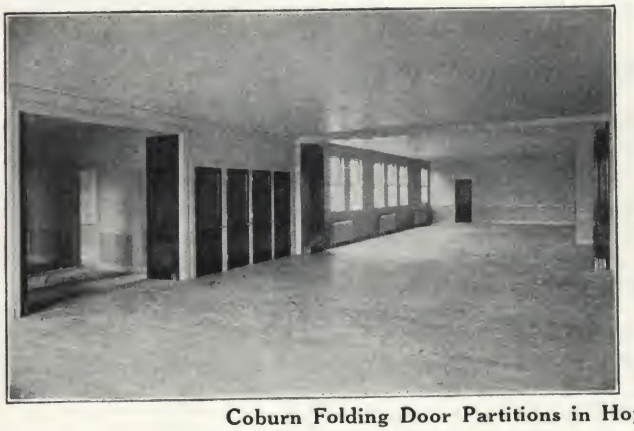
Coburn Folding Partition Doors are made in a wide variety of types both wood veneered and metal covered. The latter are furnished with a covering of kalamein iron, furniture steel, bronze or copper; and are superior to wood doors for this work, especially where moisture condition is encountered.

For the finer class of work, Coburn Aluminum Folding Partitions are without a superior. Made of non-rusting, non-corrosive metal throughout, they are proof against warping and make a clean-cut and handsome appearance. Can be furnished in any finish desired with plain or etched panels.

Coburn Folding Partition Hardware as shown on following page, is furnished with or without doors, jambs and trim; although complete installation of Coburn Doors and Hardware is recommended.

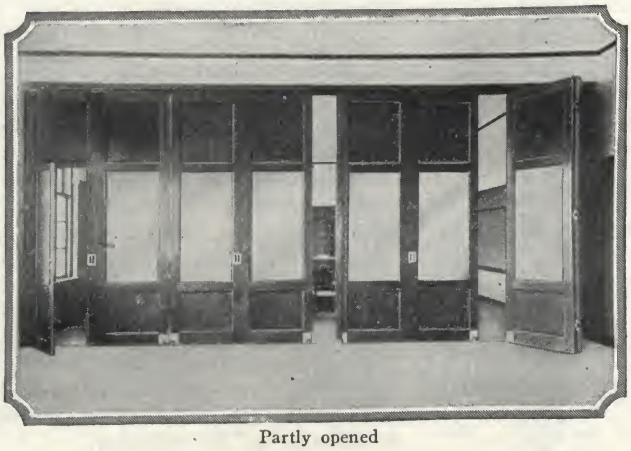


Medford High School, Medford, Mass.



Coburn Folding Door Partitions in Hope Church Parish House, Springfield, Mass.

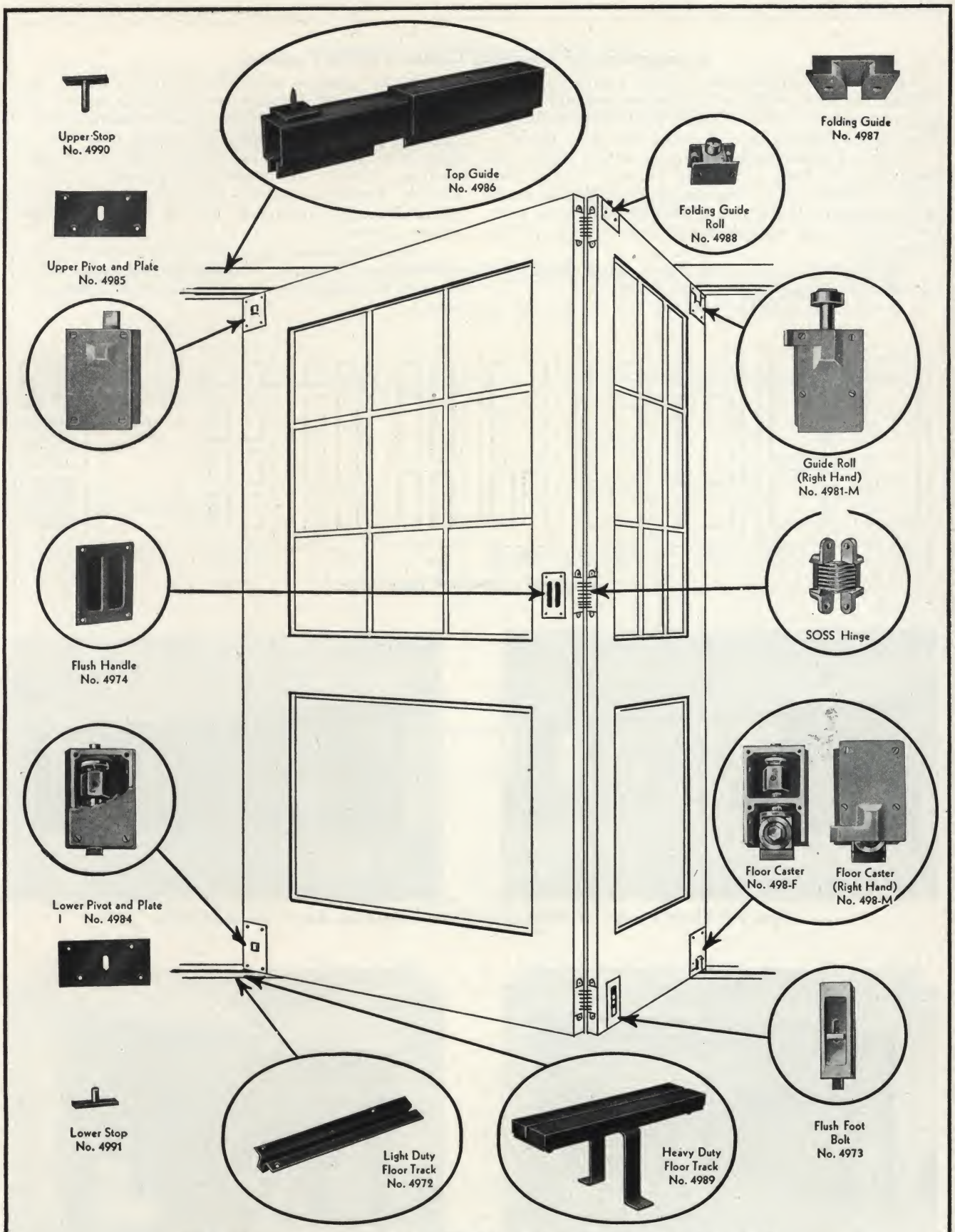
Fully open



Partly opened

Coburn Folding Door Partitions in Leominster High School, Leominster, Mass.

Continued on next page



DETAILS AND LOCATION OF HARDWARE FOR

COBURN FOLDING PARTITIONS

Continued on next page

A Suggestion for Specifying Coburn Folding Partitions

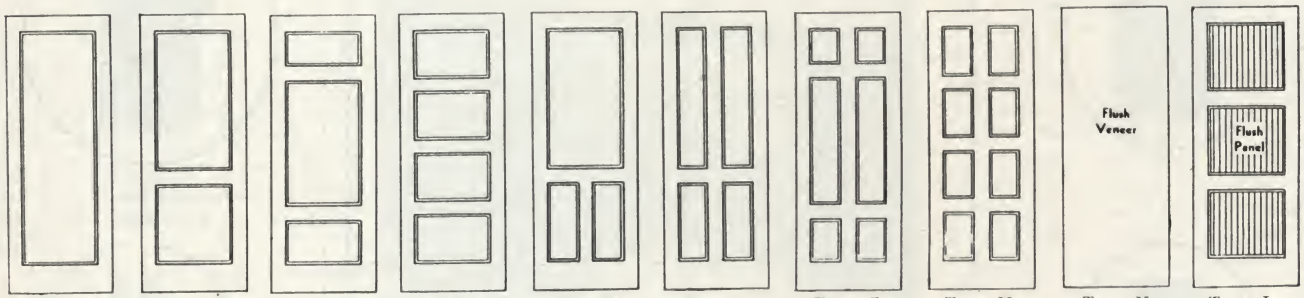
Furnish and install, where shown on plans, Coburn Folding Partitions with Soss invisible (or butt) hinges, and mounted on Coburn Double Ball Bearing Adjustable Casters running on cold rolled steel floor track.

Tops of doors to be equipped with Coburn Ball Bearing Guide Rolls running in Coburn Pressed Steel Guide. Coburn Safety Folding Guide Rolls and Guide to be provided. If one pair of doors is pivoted at jamb, lower pivot to be equipped with ball bearing vertical adjustment.

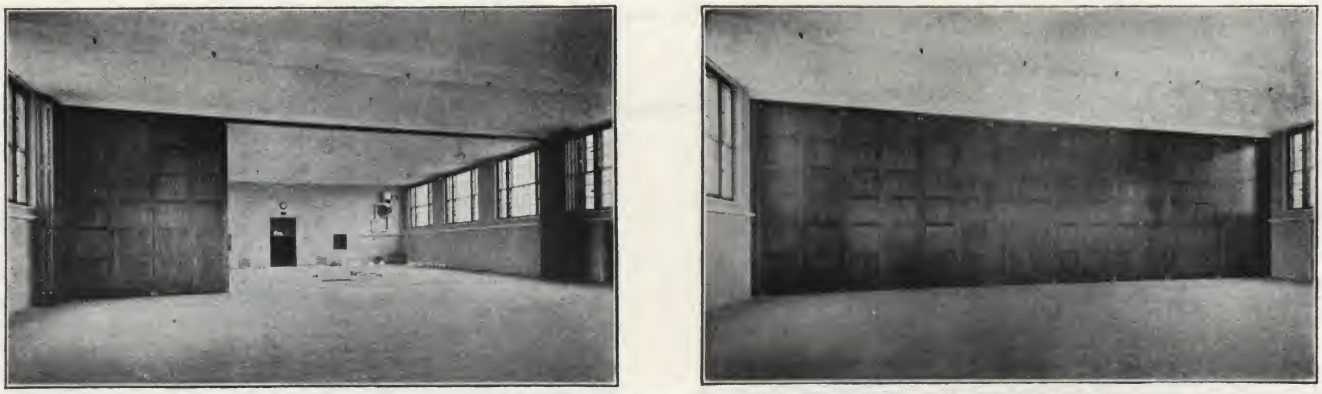
All hardware to be iron, brass plated satin finish (or solid brass polished) (or aluminum).

Doors to be Coburn Standard Type (Letter) ( ) in. thick of (kind of wood veneered) or (kind of metal covered) on built up cores or aluminum hollow metal construction. Panel moulds to be standard bead and cove design. Coburn standard jambs, moulding, and trim to be included. Where doors fold to one side of opening, Coburn Automatic Spring Jamb to be furnished. Finish of doors to be as described in Painting Specification, or a suitable priming coat to be applied before shipment.

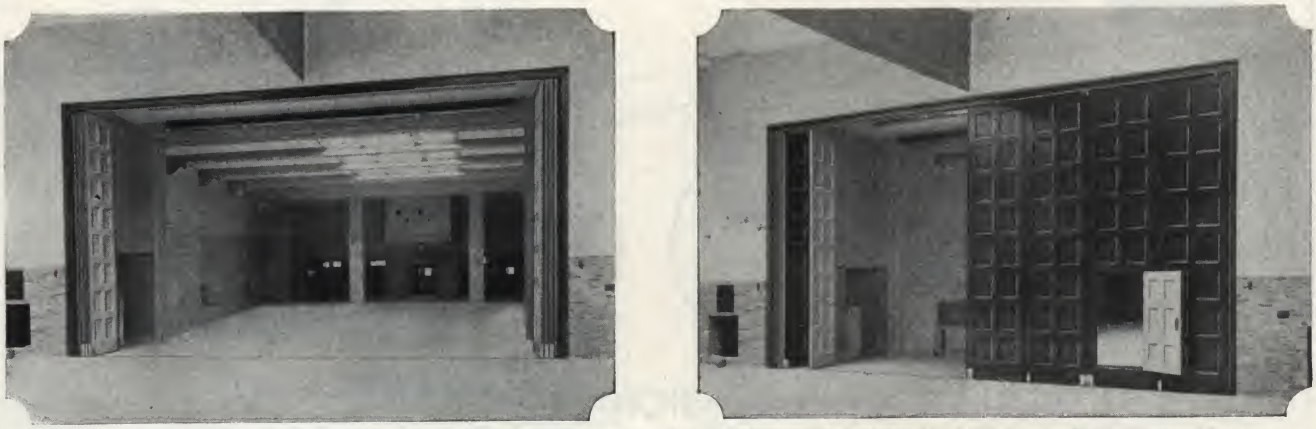
Slate backboards and cork bulletin boards to be inserted where indicated. Rough bucks at head floor and jamb to be furnished and set by General Contractor or others.



Elevations of Standard Type Doors



Open and Closed Position of Folding Partitions, Senior High School, Needham, Mass.



Open and Closed Position of Metal Covered Doors to Gymnasium, Technical High School, Fall River, Mass.

Continued on next page

Installation of Folding Partition Doors

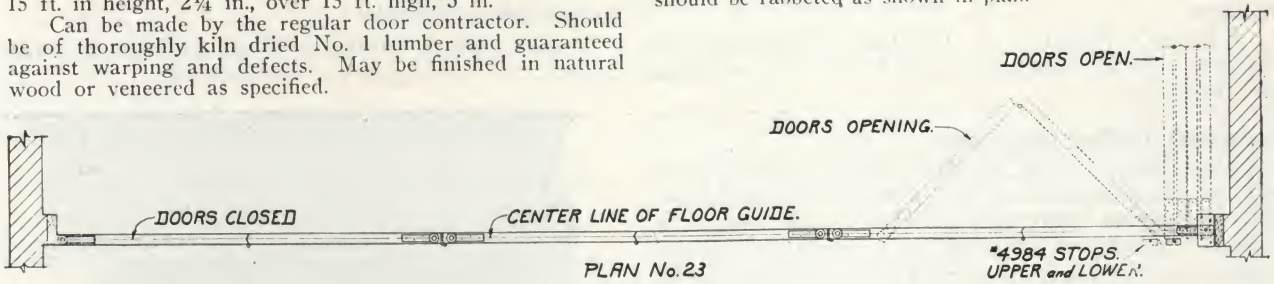
General Notes on Doors—

Width should not exceed 4 ft. each.

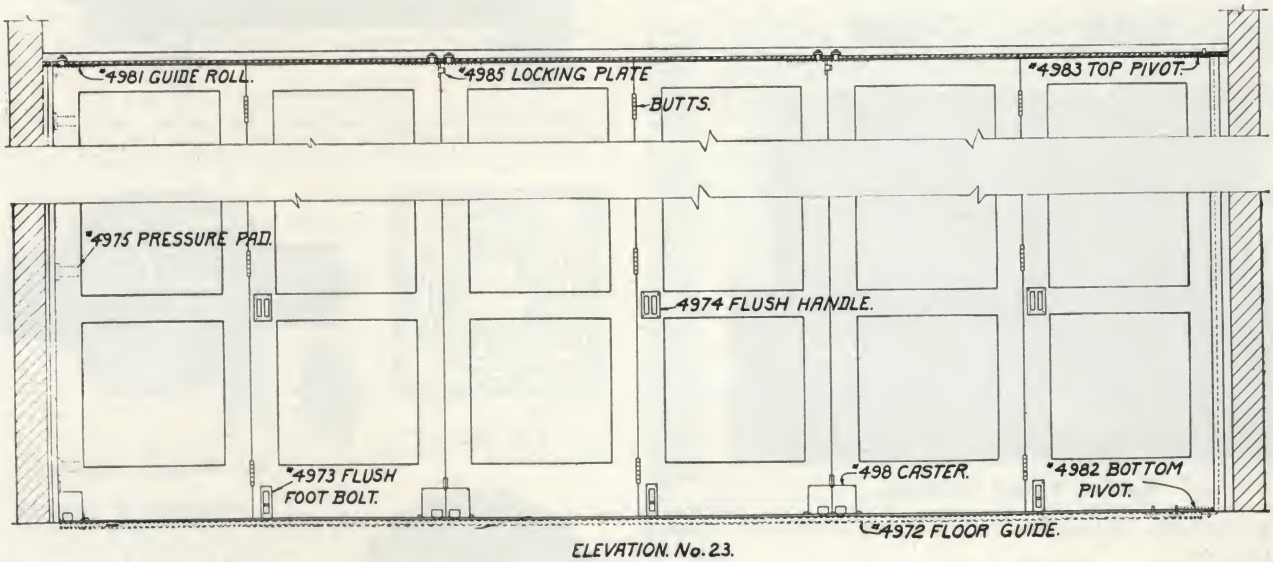
Thickness of doors up to 12 ft. in height, 1¾ in., 12 to 15 ft. in height, 2¼ in., over 15 ft. high, 3 in.

Can be made by the regular door contractor. Should be of thoroughly kiln dried No. 1 lumber and guaranteed against warping and defects. May be finished in natural wood or veneered as specified.

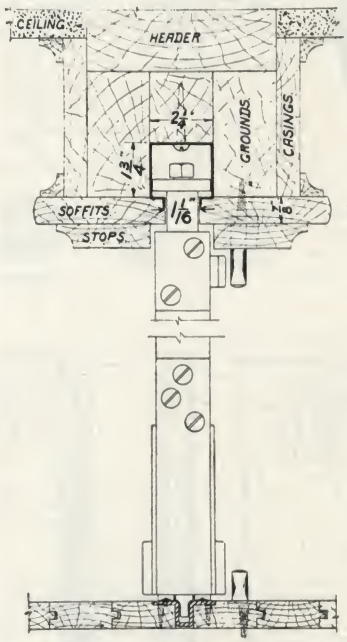
Door next to hinge jamb should have one round and one rabbeted edge. Door farthest from hinge jamb should have one square and one rabbeted edge. Balance of doors should be rabbeted as shown in plan.



PLAN No. 23

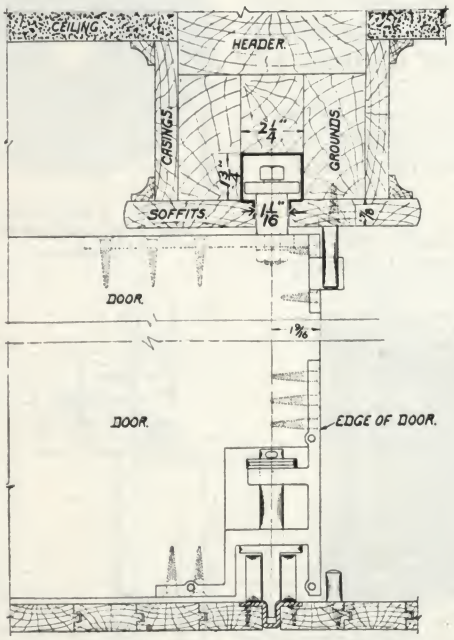


ELEVATION. No. 23.



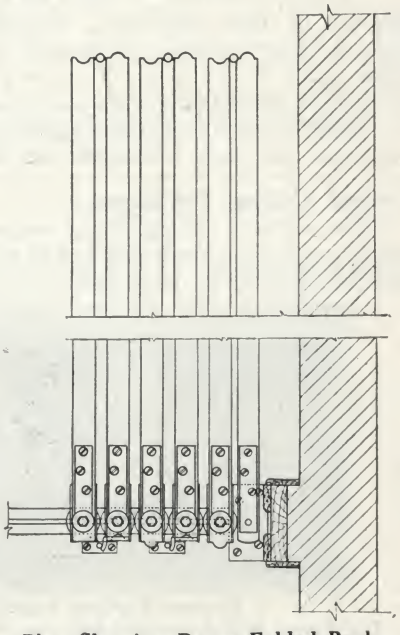
Section Showing Doors in Closed Position

Note position of locking plates and stop pins



Section Showing Doors in Open Position

Cover plates and casters removed. Note how locking plate engages stop pin



Plan Showing Doors Folded Back

Note how pivots, stop pins and locking plates engage when in open position

COBURN TROLLEY TRACK MFG. CO.	COBURN FOLDING PARTITION HARDWARE	PLATE P-1

KOCHER ROLLING PARTITION CO.

Manufacturers of Rolling Partitions

LIMA, OHIO

Products

KOCHER'S ROLLING or COILING PARTITIONS for churches, schools, residences and fronts of bookcases and wardrobes.

Horizontal Rolling Partitions

They are practical, durable, easily operated, look well and the prices are right. They contain ball bearings instead of frictional bearings, and adjustable springs. Friction is reduced to a minimum because weight is carried on ⅜-in. steel balls (see Ball Bearing Fixture). Also note the eight different points for attaching curtains, making a complete and perfect adjustment.

Kocher Rolling Partitions

Detail of Coiling Partition

Openings of any width can be closed with one or more partitions. By the use of removable posts, a clear opening is secured when partitions are rolled up.

Single partitions should not be over 12 ft. wide.

Illustrations show construction of rolling or coiling partitions; also, how measurements should be taken.

Vertical Coiling Partitions

The vertical coiling doors are suitable wherever a rolling partition is desirable and is adapted to any opening from 6 to 50 ft. wide and 7 to 15 ft. high.

Kocher Vertical Partitions

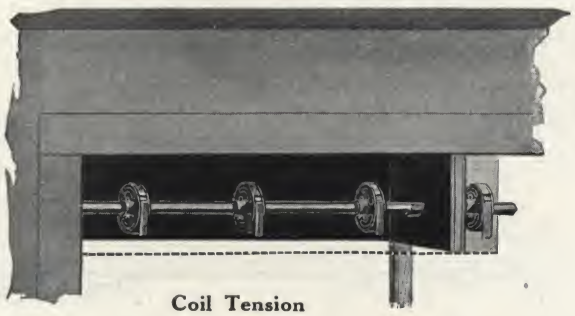
This Kocher vertical partition divides a Sunday School room from main auditorium; with it two smaller rooms are provided, yet a single large room is instantly available

Material Guarantee

Only the best materials enter into the construction of Kocher products, which are guaranteed to give perfect satisfaction if installed in accordance with instructions accompanying every shipment.

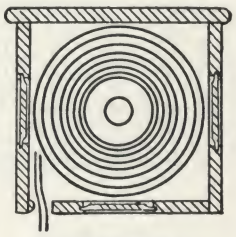
Co-operative Service

Will furnish estimates, details and full information on request. Send plans at our expense.

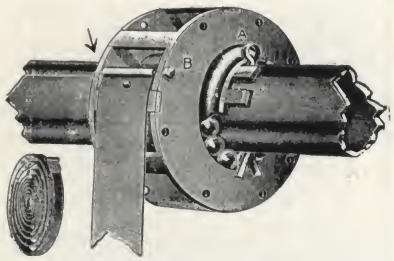


Coil Tension

The coil tension is easy to adjust and regulate. Side panel of coil box can be removed and each coil adjusted individually, reducing friction to a minimum. An important feature of Kocher partitions



Coil Box

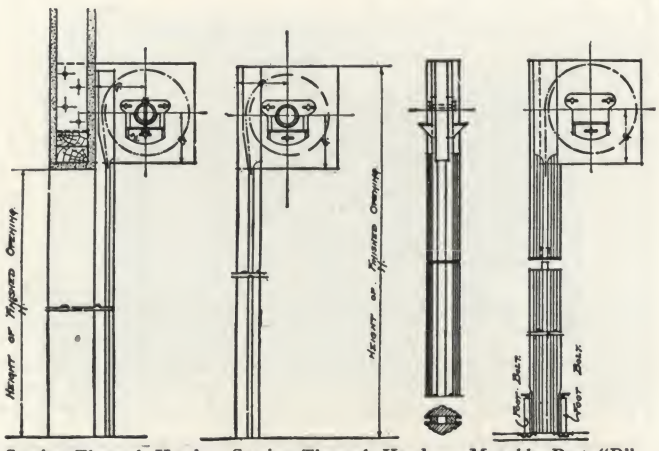


Ball Bearing Fixture

Partition Coiled on Ball Bearing Antifriction Roller

DIMENSIONS, COILING PARTITIONS

Height of partition including coil, ft.	Square coil box inside, in.
6	12
8	12½
10	13
12	14
14	14½
16	15
18	15½
20	16



Section Through Head "Plan No. 1"

Section Through Head "Plan No. 2"

Movable Post "D" Furnished complete by manufacturer

Vertical and Horizontal Sections, Also, Movable Post "D" and Triple Post "T"

FAIRHURST FOLDING PARTITIONS

MANUFACTURED BY

PARK, WINTON & TRUE COMPANY

101 Park Avenue, NEW YORK, N. Y.

FACTORY: ADDISON, N. Y.

Products

FAIRHURST "UNIT FOLD" PARTITIONS.
FAIRHURST "DUO FOLD" PARTITIONS.
For Fairhurst School Wardrobes, see Manufacturers' Index.

Fairhurst "Unit Fold" Partition

This partition is a perfected development of over thirty years' work by John T. Fairhurst specializing in this line. It is manufactured by PARK, WINTON & TRUE COMPANY, established in millwork since 1855. This partition can be moved quickly and easily into and out of position for the conversion of one room into two or more, or two or more rooms into one room.

"Unit Fold" Partition is made in standard size and design for school classrooms. With or without continuous slate blackboard. Width of opening from plaster to plaster, 21 ft.; height from finish floor to underside of buck, 10 ft. 3½ in.
Three-panel design, North Carolina pine or plain red oak.

Advantages—No visible hardware, *no hinges or bolts;* entire partition may be locked by one lock conveniently located at one end of the opening. Spring jamb keeps all joints tight between door units when partition is in place. May have either odd or even number of doors. Wide doors may be used.

The units are not suspended, but roll on a narrow track flush with the floor. The weight of each door is carried on two large diameter ball bearing wheels. Even an excessive settling of the building does not hinder the smooth operation of a Fairhurst Folding Partition because each door is secured to the overhead operating hardware in such a way that any variance from the original vertical dimensions is automatically taken care of.

Fairhurst "Duo Fold" Partition

This partition is similar to the "Unit Fold" as to millwork, strength and efficiency of hardware and ease of operation, the only difference being that the doors are linked up in pairs. The advantage of the Fairhurst Partition is in the greatly improved hardware and in the automatic adjustments, compensating for settling of buildings and variations in floors and ceiling levels.

Construction Details—The doors move on special casters, each consists of a steel ball race mounted on a drop-forged stem carried in a cast iron block, thus eliminating most of the noise and friction of operation. Although the track is narrower than is usual with folding partitions and flush with the floor, spring action prevents track jumping. The overhead action consists of a slide running in a metal groove without wheels. It is efficient and rugged and can stand up under much rougher usage than it will ever be subjected to.

The number of moving parts has been reduced to a minimum and the mechanical operation is so simplified that there is practically no danger of the partition getting out of order. The doors can not be folded except when in proper position. A locking device at top and bottom prevents movement except when doors are correctly placed.

Design—This partition is *not suspended.* All weight is carried on the floor.

Units of one door each make it possible to have an odd or even number of doors in any partition. These doors may slide from either end, or if the opening is unusually wide—from the center to both ends.

Units of two doors each make it necessary to have an even number of doors in the partition.

In schools, partitions are installed with smooth unbroken slate blackboard surfaces, when desired, having no V-joints or other breaks between doors.

Veneered doors, built on cores of the best materials, will be used.

When required, this partition will be designed so that when closed it can hardly be distinguished from a paneled wall. Complete partition installations can be designed to become a part of the interior architecture of the building.

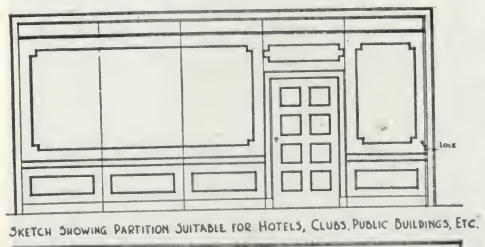
A shuttle or wicket door can be provided in any section for communicating purposes.

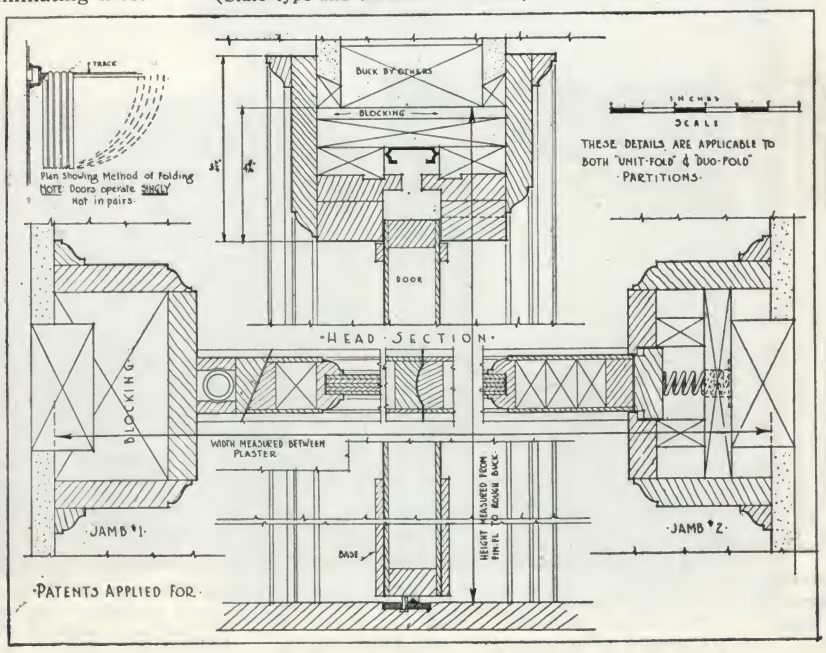
Specification for "Unit Fold" Partition

Provide where indicated on plans, the Fairhurst "Unit Fold" Partitions, divided into (number of) doors, no hardware to be visible except operating handle on end door, doors to be mounted on single heavy ball bearing wheels, two casters to each door. Top and bottom to be provided with automatic instantaneous locking device and master-door at folding end, with mortise lock and latch. No bolts or hinges to be applied. All to be furnished complete, by the manufacturers, PARK, WINTON & TRUE COMPANY, 101 Park Avenue, New York, N. Y.

Specification for "Duo Fold" Partition

Provide where indicated on plans, Fairhurst "Duo Fold" Partitions, divided into (number of) doors. Sections to be hinged in pairs of two doors each, with invisible hinges. Partition to roll on single heavy ball bearing adjustable casters, on small track flush with floor. Top guides to be ball bearing guides (not wheels) sliding in a steel groove, top and bottom guides to have instantaneous locks without springs, and top guide to have automatic, vertical adjustment, each movable pair to have spring control latch (without cutting slot in head) to prevent doors being folded except when in proper position for so doing.
(State type and thickness of doors.)





ESTABLISHED 1856

SWEDISH VENETIAN BLIND COMPANY

Rolling Wood Partitions and Steel Rolling Doors and Shutters

1265 Broadway, NEW YORK, N. Y.

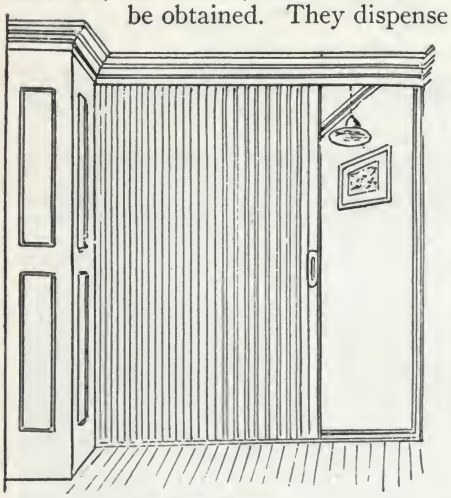
Products

ROLLING WOOD PARTITIONS; ROLLING STEEL DOORS and SHUTTERS; SWEDISH SECTIONFOLD PARTITIONS.

For our pages on Swedish Venetian Blinds, see Manufacturers' Index.

Horizontal and Vertical Rolling Wood Partitions

For all purposes where room division is necessary; schools, churches, clubrooms, factories, residencs, etc. By their use, convenient, economical floor arrangement can be obtained. They dispense with folding and accordion doors.



Vertical Partition

Made of the best wood obtainable. Slats are 1¾ in. by ½ in. and have non-friction joints connected by metal straps.

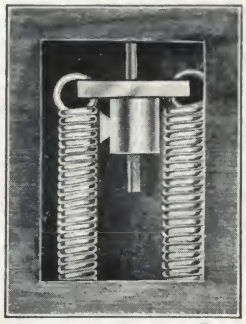
DIMENSIONS OF ROLLING WOOD PARTITIONS

Height, including coil, ft.	Inside of coil box, in. square
6	12
8	12½
10	13
12	14
14	14½
16	15
18	15½
20	16

Improved ball bearing coiling device insures ease of operation and noiselessness. Furnished in any finish desired.

Openings of any width can be closed with one or more partitions. Single partitions should not be over 12 ft. wide.

Detail drawings furnished on request.



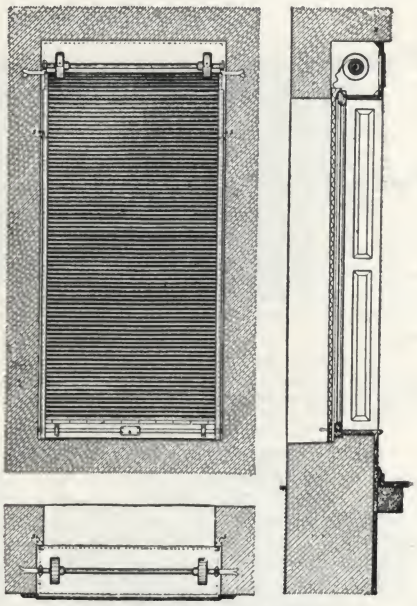
Spring in Bottom Bar

Steel Rolling Doors and Shutters

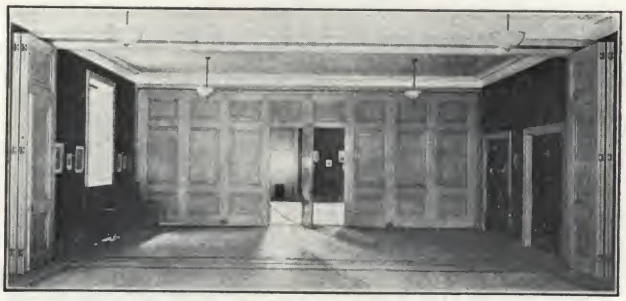
Made of the best grade of English continuous corrugated steel sheets. Different operating mechanisms furnished to suit varying conditions. Used for all kinds of openings where strength, durability, ease of operation, efficiency and economy of space are required.

Any good mechanic can easily erect our products from details furnished by us.

We have had many years' experience in this line and guarantee a perfect product.



Corrugated Steel Shutter
Hood removed to show operation



Swedish Sectionfold Partitions

Provide convenient and economical subdivision of rooms for dining rooms, offices, gymnasiums, auditoriums, classrooms, etc. Swedish Sectionfold Partitions, furnished and installed by this company, make it possible to transform one room into many, or many into one, quickly and conveniently

Section Through Slats

Typical Installations of Horizontal Rolling Wood Partitions

At the left are illustrated several sections of rolling wood partitions. For openings wider than 12 ft., movable posts are used as guides between partitions. These posts can be easily detached after partition is coiled away and the two rooms converted into one large space. The spring roller which operates the partitions is also shown. At the right is illustrated the rolling wood partition installed in an assembly room

ESTABLISHED 1876

THE J. G. WILSON CORPORATION

CABLE "WILCORP," NEW YORK

GENERAL OFFICES

11 East 38th Street
NEW YORK, N. Y.

P. O. Box 1194
NORFOLK, VA.

BRANCH OFFICES

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For Rolling Steel Doors, Roll-Over Doors, and Wilson Venetian Blinds, see Manufacturers' Index

WILSON "SECTIONFOLD" PARTITIONS

For the Division of Rooms of Any Size Into Smaller Units

Wilson "Sectionfold" Partitions are the most substantial, convenient and economical means of converting large rooms into smaller ones, or dividing inclosed areas. They are made entirely within the confines of one plant, of first quality materials throughout, by skilled craftsmen. They operate easily and noiselessly.

"Sectionfolds" do not require special overhead trusses or supporting members, since they are carried on the floor and not overhead. The head guide or track is employed only to keep the partition in alignment, preventing lateral movement when it is in a closed position and to provide means of securing the unique locking feature characteristic of "Sectionfolds." The doors operate in pairs, rather than in one large unwieldy unit.

Standard Doors

Doors for "Sectionfolds" are made in various panel designs, with stuck moulds. Loose and raised moulds and special panel treatment, to conform to special design, can always be furnished.

The cores are laminated, of sound kiln dried white pine or redwood, built up with waterproof glue. All stiles and rails are blind mortised and tenoned and glued with waterproof glue. Veneers for stiles and rails of standard ⅛-in. thickness are of first quality straight sawn selected stock, milled in our own plant.

Gymnasium Doors

The Wilson Type L door is designed and adapted particularly for use in gymnasiums. It is of particularly rigid construction, capable of withstanding the severe impacts and abuses a gymnasium door receives. There are no protruding mouldings or hardware to cause injury to players or deflect balls in playing.

The Type L door is constructed with the usual stiles and rails, with intermediate rails, blind or visible, depending on the effect desired. Panel space is finished flush with stiles and rails, with $\frac{7}{16}$x1⅞ in. V-joint strips. Gymnasium doors are recommended not less than 3 in. in thickness.

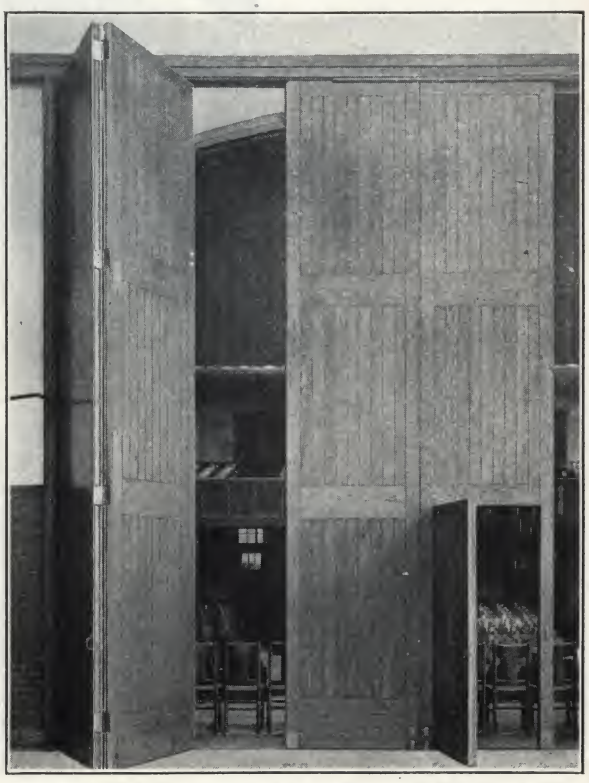
Auditorium-Gymnasium Doors

The division of an auditorium and gymnasium calls for a partition possessing solidity, and yet designed to harmonize with the auditorium treatment. This is readily obtained by using the Wilson Type L construction, as explained above, for the gymnasium side of the partition, treating the auditorium side with paneling as desired.

Shuttle or pass doors may be provided in any leaf of a "Sectionfold" Partition.

See detail page following for recommended thickness of doors for various heights and weight per square foot of partition.

"Sectionfold" Partition Dividing Gymnasium, McKinley Technical High School, Washington, D. C. The Doors Are 23 Ft. High



Detail Showing the Large Size of the Doors

Continued on next page

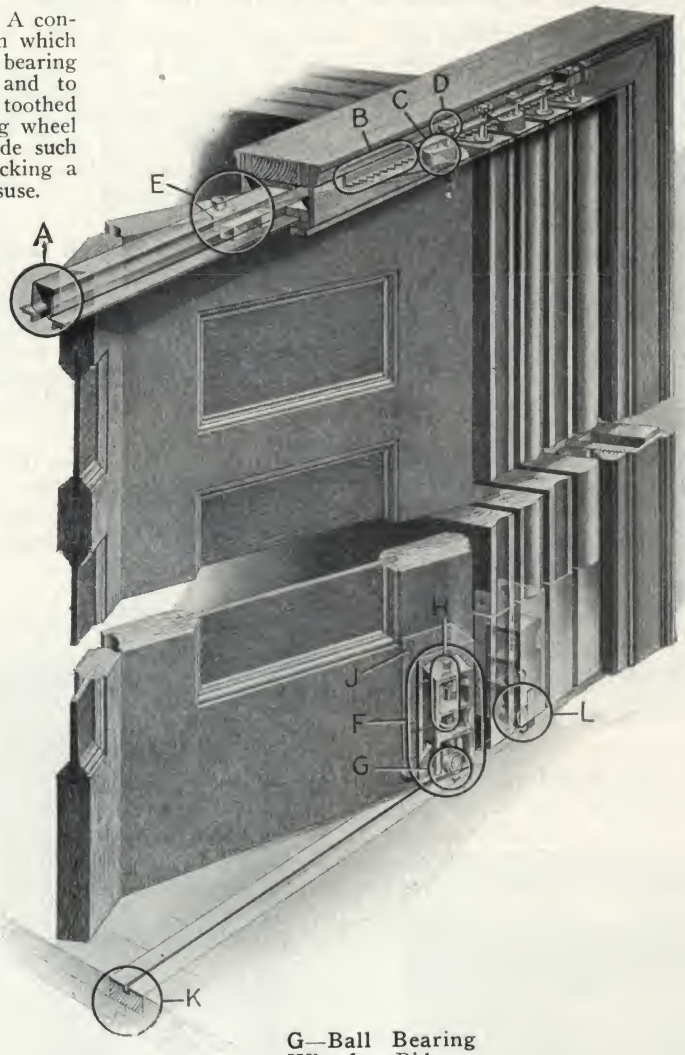
SOME PATENTED FEATURES OF "SECTIONFOLD" PARTITIONS

E—Safety Folding Wheel. Fitted to each pair of doors at the proper point to prevent the doors from being operated at any but the specific point at which the rack and pawl above explained will function and automatically check further lineal movement of the pair. This also insures complete safety, as well as accurate folding, so that each pair will rest snugly against the other.

B—Toothed Rack. An integral part of the overhead guide, forming part of the locking device.

C—Pawl. This is fitted to the lead door of each pair, and is an integral part of the swivel (D). Its function is to engage the toothed rack (B) immediately the pair is broken out, automatically locking the lead door in a definite position. This pawl cannot possibly become disengaged from the toothed rack until the pair of doors is again exactly parallel with the head track.

A—Overhead Guide. A continuous steel member in which the horizontal ball bearing swivels (D) operate and to which is secured the toothed rack and safety folding wheel shoe (E), which provide such effective means for locking a Sectionfold against misuse.



L—Folding Finger Lock and Lug. The folding finger lock (L), a part of the castor assembly, functions at exactly the same time as the rack and pawl at the head, thereby locking the lead door of each pair against improper movement.

J—Bronze Cover Plate. Removable, providing free access to caster mechanism for any necessary adjustments.

H—Vertical Adjusting Screw. Provides ample means of raising and lowering the door to meet any unevenness of the floor and to obtain proper alignment.

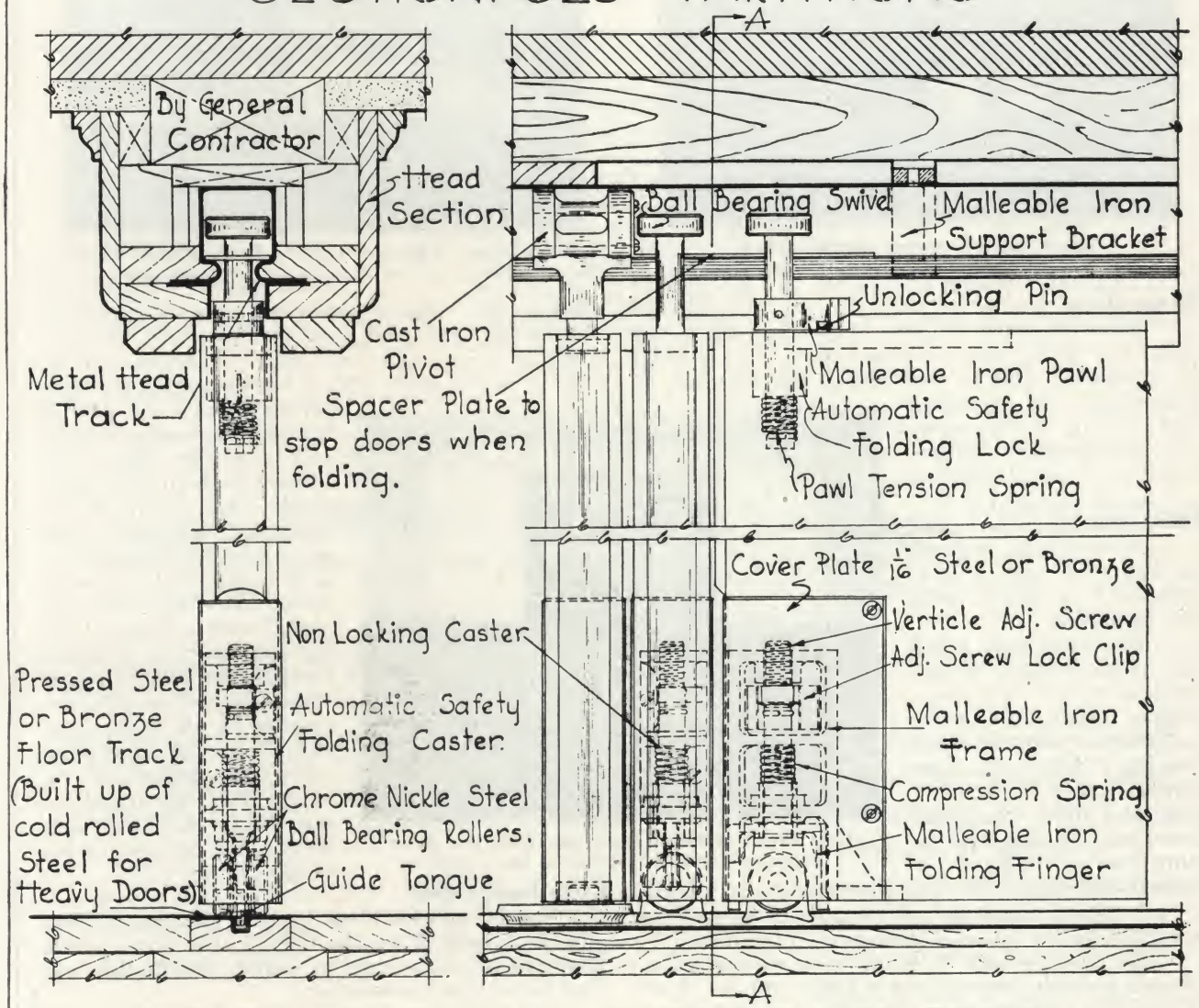
K—Floor Track. The slot in the floor, stage, dance floor, dining hall, ¼ in. deep, which presents no obstacle whatsoever in the gymnasium floor, stage, dance floor, dining hall, etc.

G—Ball Bearing Wheels. Ride on the flat surface of the track (K) on the floor level, and not in the groove. Ball bearing wheels used in Sectionfolds are capable of withstanding weights considerably in excess of the weight of the doors on which they are used.

F—Caster. Consisting of a caster stem and plow, with two ball bearing rollers of case hardened steel, carries the entire weight of the door. The plow is fixed and extends into the slot of the floor track (K). As it does not revolve, it is physically impossible for the plow to disengage itself from its proper position. The plow also serves to clear any accumulated dirt from the track.

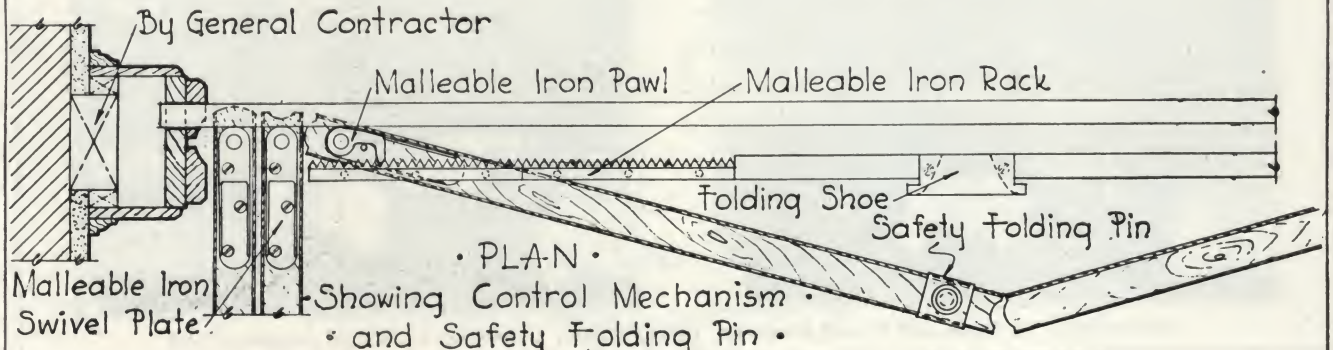
Continued on next page

DETAILS OF HARDWARE APPLICATION FOR SECTIONFOLD PARTITIONS



• SECTION A-A •
SCALE: 3"-1'-0"

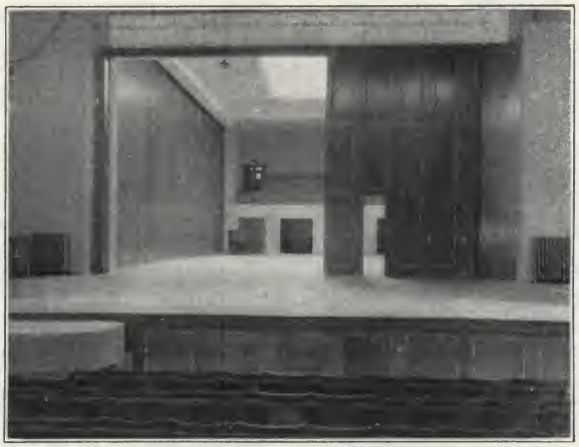
• ELEVATION OF DOORS •
• Showing Details of Head & Floor Track (Near side of Head & Floor Track removed.)
SCALE: 3"-1'-0"



• PLAN •
Showing Control Mechanism • and Safety Folding Pin •
SCALE: 1½"-1'-0"

Continued on next page

Detroit Trust Company, Detroit, Mich.
View of "Sectionfold" Partition dividing directors' room



High School Auditorium, Hyde Park, Boston, Mass.
Showing division of auditorium and gymnasium

Spring Jams

When six doors, or more, fold to one side of an opening a spring jam, as shown on following page, is employed. This is constructed and adjusted to compensate for shrinking and swelling of doors due to atmospheric changes. It keeps all joints tight.

Gold Room of Hotel President, Waterloo, Iowa
Showing division for ballroom or banquet hall

Hardware

All standard exposed hardware is solid bronze, polished to a bright finish and lacquered.

The caster, upon which the entire weight of the door is carried, is of thoroughly tested and guaranteed materials. The ball bearing wheels are case hardened both in the outer rim and inner race, and guaranteed to sustain a running load of 1000 lb. per wheel at 100 r.p.m. There are two wheels to each caster.

A vertical adjustment on the caster stem provides means of taking up small uneveness in the floor.

The caster wheels travel on top of the track. The plough extends between the wheels into the floor. The plough is fixed—does not revolve, and positively prevents any lateral movement of the partition.

To the head track in the folding end, or ends, is rigidly secured the tooth rack. The leading door of each pair is fitted with a pawl engaging the rack immediately the pair is broken out, automatically and positively locking the leading doors in a fixed position. This pawl will not disengage the tooth rack until the disc is again exactly parallel with the head track. The doors are connected with a safety folding pin, insuring each pair being folded and locked in its proper position. It is impossible for the doors to be broken out at any point other than the proper end of the track, thus eliminating the hazard attending doors that can be folded at any point.

Extra Equipment

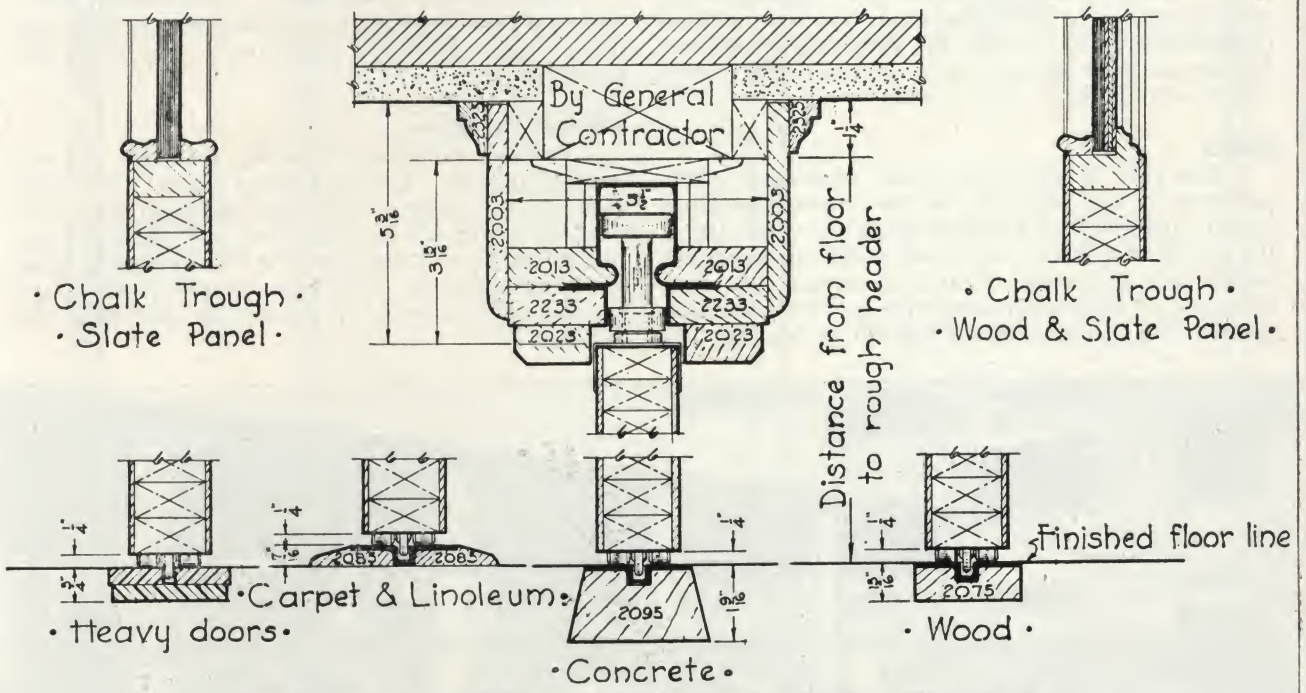
Natural slate blackboard may be introduced either into the panels or on the face of the doors, where partitions are to be used in schools or churches and blackboard space is necessary.

Any panel may be provided to receive glass.

"Sectionfolds" in Open and Closed Positions, Dining Room, University Club, Los Angeles, Calif.

Continued on next page

DETAILS OF MILLWORK AND DIMENSIONS FOR SECTIONFOLD PARTITIONS

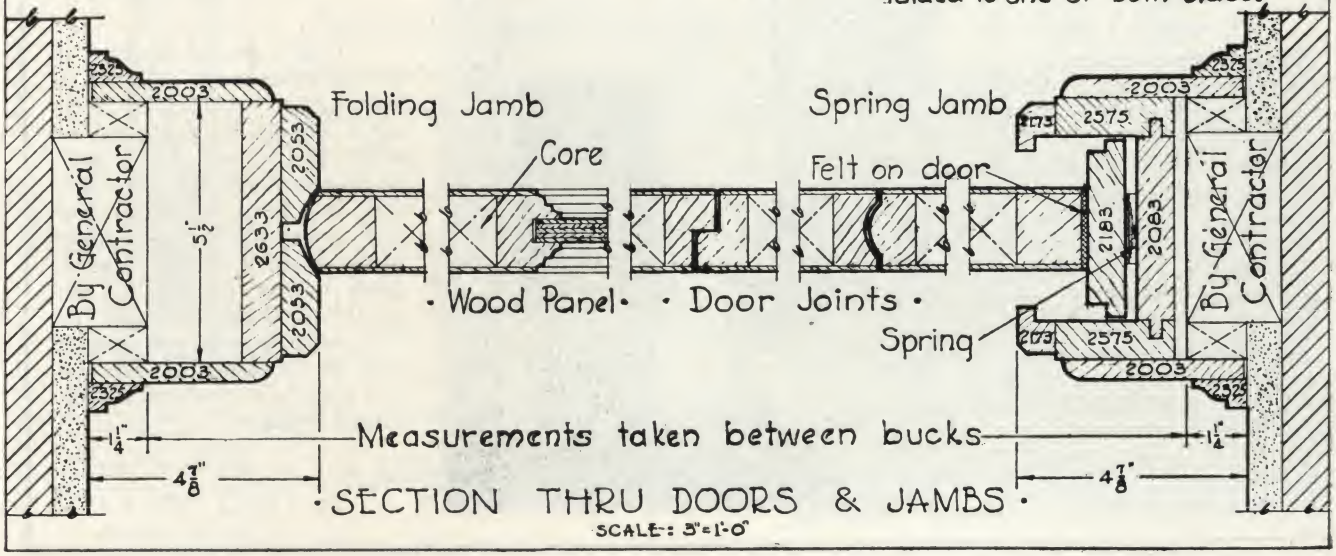


• SECTION THRU HEAD & FLOOR TRACKS •

• SCHEDULE OF DOOR THICKNESS & WEIGHT •

• HEIGHTS •	• THICKNESS •	• WT. PER SQ.FT. •
Up to 11'-0"	1¾"	3 to 4½ lbs.
11'-0" to 13'-0"	2"	3½ • 5¼ "
13'-0" to 15'-0"	2¼"	3¾ • 6 •
15'-0" to 18'-0"	2½"	4 • 6½ •
All over 18'-0"	3"	4¾ • 8 •

Proper support must be provided directly under and parallel to track. Use Schedule of weights to arrive at uniform load (when doors are drawn out.) and concentrated load (when folded to one or both sides.



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ROLLING PARTITIONS AND SHUTTERS

Curtains

The outstanding success of Wilson Rolling Partitions is due to the method of assembling the slats making up the curtain. Continuous steel bands, passing through the slats and anchored in the bottom bar to special spiral anchors, allow for expansion and contraction due to atmospheric conditions, as well as elongation created through the revolving movement. Tension on these springs can be adjusted so that slats will at all times be in close contact.

Shafts

The ease of operation of the horizontal rolling partition is due entirely to the counterbalancing means provided by oil-tempered springs concealed in the shafts, and made for the particular curtains with which they are used. Shafts of commercial black iron pipe, of sufficient diameter to prevent undue deflection, are fitted with self-lubricating bearings revolving on machined journals attached to supporting brackets. No lubrication, other than originally provided, is ever necessary.

On smaller partitions or fronts, flat spiral springs, enclosed in drums or barrels, are employed.

This form of partition is suitable for check rooms, separation of Sunday school rooms, or in any type of building where a large area is to be subdivided economically.

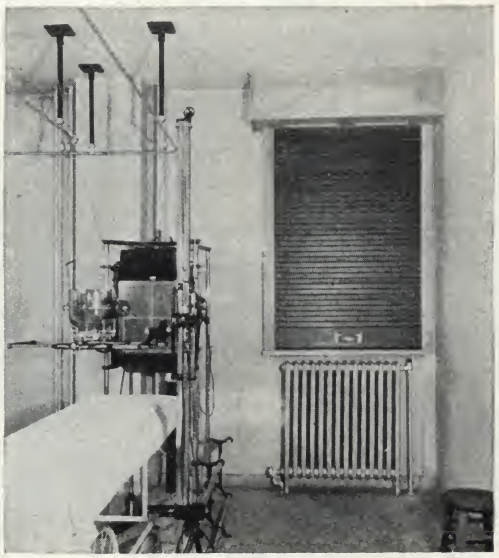
Vertical Partitions

Vertical partitions revolving vertically are not counterbalanced. They coil about a shaft fitted with antifriction bearings. The steel bands on which the slats are strung are of spring steel with sufficient tension to coil the curtain about the shaft properly when it is being coiled up. This tension is not great enough to offer objectionable resistance in uncoiling the partition.

Rolling Partitions, Continuation School, Milwaukee, Wis.

LIGHT RETARDING SHUTTERS

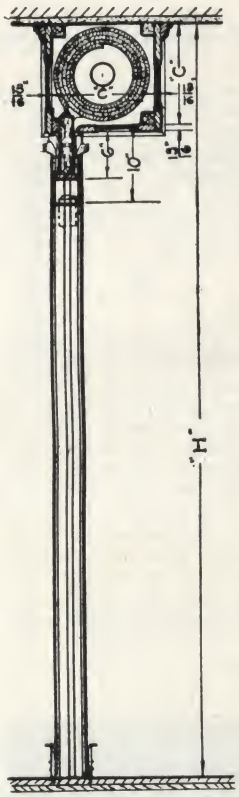
The Wilson Light Retarding Shutter, an adaptation of the horizontal rolling partition, is used extensively on the windows of X-ray and photographic laboratories, auditoriums, lecture halls, etc. Laboratories, especially, are often constructed without windows or other means of ventilating the rooms. With light retarding shutters windows can be provided where desired, and light excluded effectively during such intervals when total darkness is necessary.

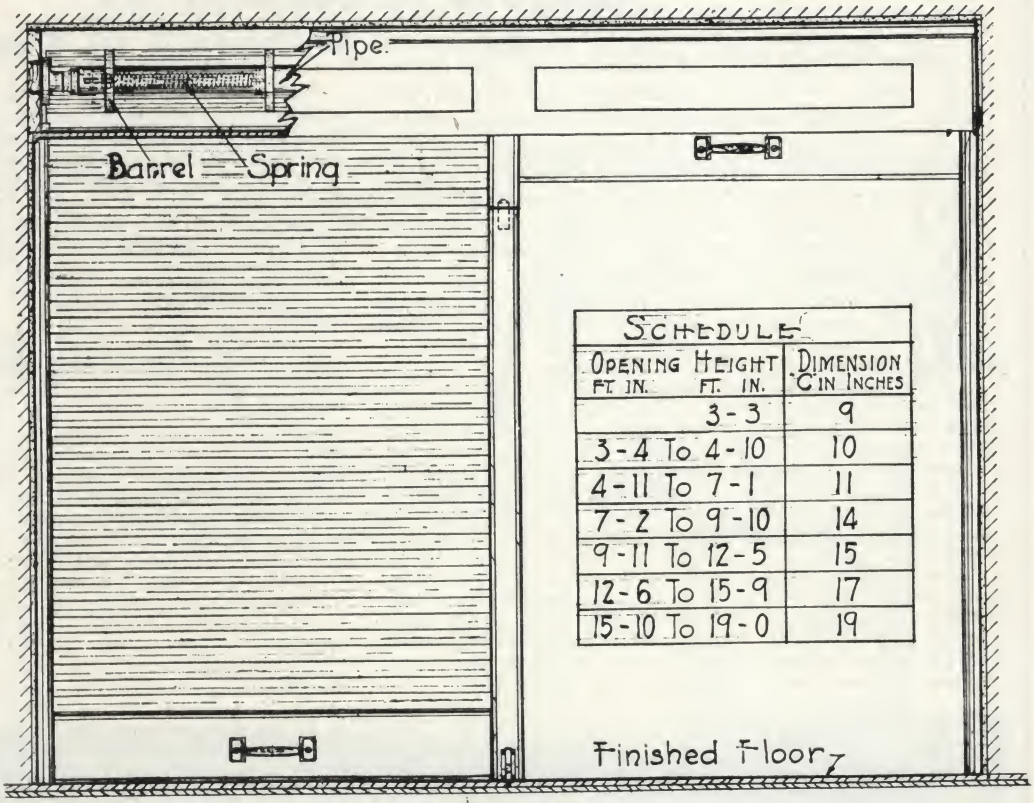


This type of shutter is very conveniently adapted to auditoriums where all windows are to be darkened to assist in the use of any type of picture machine. All shutters may be so arranged that they may operate simultaneously from a single station push button control at the speakers' desk. Details of this construction and design will be furnished if data on any particular problem is presented to us.

Continued on next page

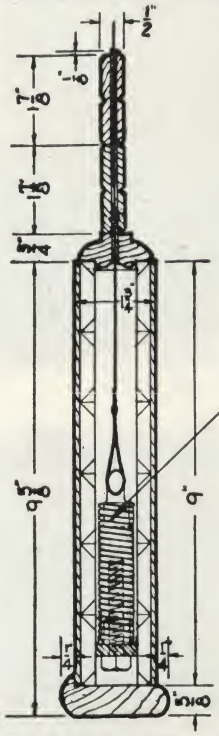
DETAILS OF HORIZONTAL ROLLING PARTITIONS



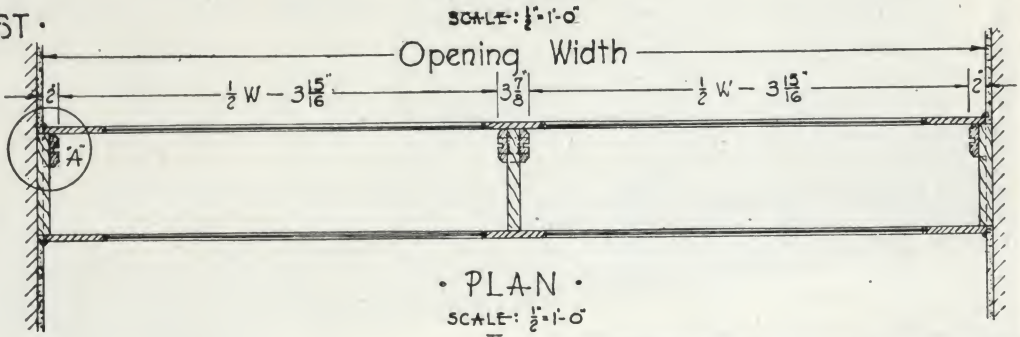


SCHEDULE	
OPENING HEIGHT FT. IN.	DIMENSION C IN INCHES
3-3	9
3-4 To 4-10	10
4-11 To 7-1	11
7-2 To 9-10	14
9-11 To 12-5	15
12-6 To 15-9	17
15-10 To 19-0	19

· SECTION AT · REMOVABLE POST ·

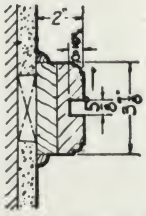


· ELEVATION ·
SCALE: 1½"-1'-0"



· PLAN ·
SCALE: 1½"-1'-0"

Bronze Anchor Springs that provide automatic adjustment for shrinkage or swelling of slats due to atmospheric changes.



· DETAIL AT A ·
SCALE 1½"-1'-0"

· SECTION THRU · · SLATS AND · · BOTTOM BAR ·
SCALE: 3"-1'-0"

Continued on next page

WILSON WARDROBES

Rolling Front and Disappearing Door

The Disappearing Door Wardrobe, pioneered by us, has established itself as a universal fixture in the construction of school buildings throughout the nation. Its space conservation feature, greatly reducing the total cost of school buildings generally; its ventilating feature, insuring dry wraps and clothing at all times; and its general pleasing appearance, substantial workmanship, ease of operation and perfection in construction and design, are appealing to an increasing number of architects daily.

Wilson Type "F" Wardrobes, with mullions and skeleton or solid divisions; with or without blackboard, or Wilson Type "G" design for continuous blackboard surface, have, and are being used with complete satisfaction.

School authorities quite generally condemn the continuous blackboard feature, since a 4-ft. space available with the Type "F" wardrobe covers the reach of a teacher standing in one position, and because ordinary continuous blackboard surfaces are not protected from being smudged by pupils passing in and out. The Wilson Type "F," with which a continuous slate surface, approximately 4 ft. wide can be obtained, is the most desirable, general all-round equipment.

Built-in units of 2 or 4 ft., the latter accommodating fourteen pupils with ease, occupy a space in the average classroom of but 12 ft. wide, 2 ft. 2 in. deep, with no part thereof encroaching on the aisle space when in a fully open or fully closed position. Doors operate easily in single units on simple but substantial ball bearing hangers, free from complicated mechanism requiring minute adjustments.

Specifications of the Wilson Disappearing Door Wardrobes

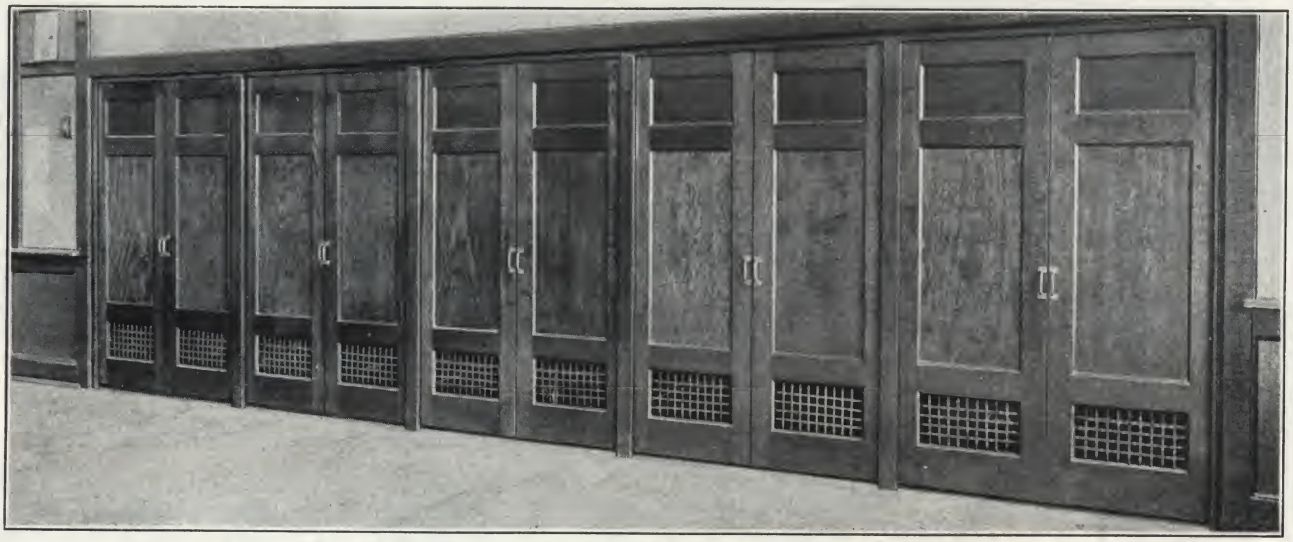
Doors are of 5-panel or flush type, or as detailed by architect, of (pine, oak, ash, birch, as otherwise used) in the white (unfinished) 1⅜ in. thick, veneered on built-up cores with ¼ in., 3-ply veneered panels. Doors are hung on Wilson Type "F" hardware, consisting of cast malleable curved tracks, with double ball bearing sheaves on adjustable hangers, provided with means or vertical adjustment; ball bearing floor pivot arm, attached to the door with means of vertical and horizontal adjustments and the Wilson invisible stabilizer hinges and rods.

Hardware finish throughout is dull black (polished bronze plated or as otherwise specified).

Each 4-ft. section is provided with one shelf, not less than 13 in. wide and one shelf not less than 8 in. wide, with one hook strip and fourteen three-way coat and hat hooks. (Malleable iron umbrella racks and galvanized iron drip pans will be furnished when specified.) (Solid metal tops with connection with fresh air ducts will be furnished when so specified.) Teachers' sections will be furnished with a cupboard of drawers or shelves with coat hooks as required and with divisions and locks. Kind and thickness of slate is optional, but we recommend ¼-in. slate blackboard, with chalk rails as detailed. Blackboard, whether natural or composition, is secured to doors by means of solid bronze Z-bars, top and bottom.

Note: Any wardrobe may be equipped with rolling fronts.

For continuous blackboard, specify Wilson Type "G" Wardrobes as above.

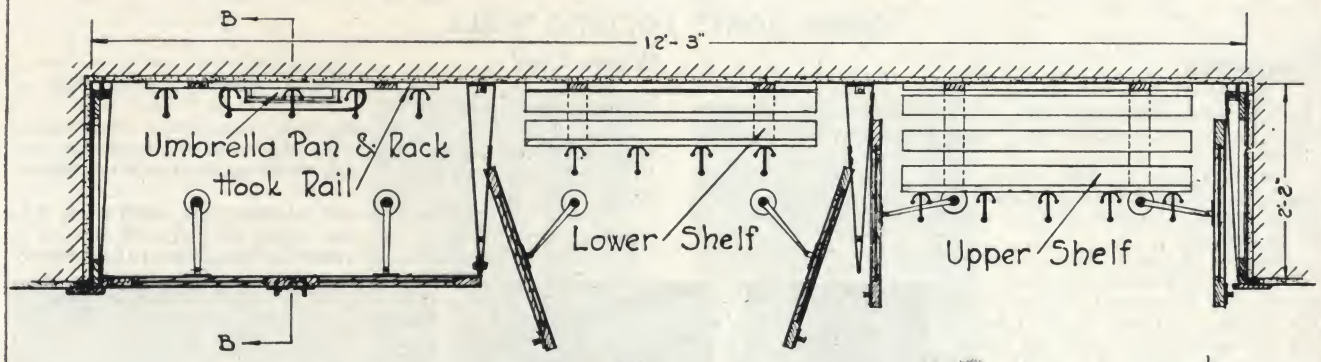


Type "F" Wardrobe, Cheviot Public School, Cincinnati, Ohio

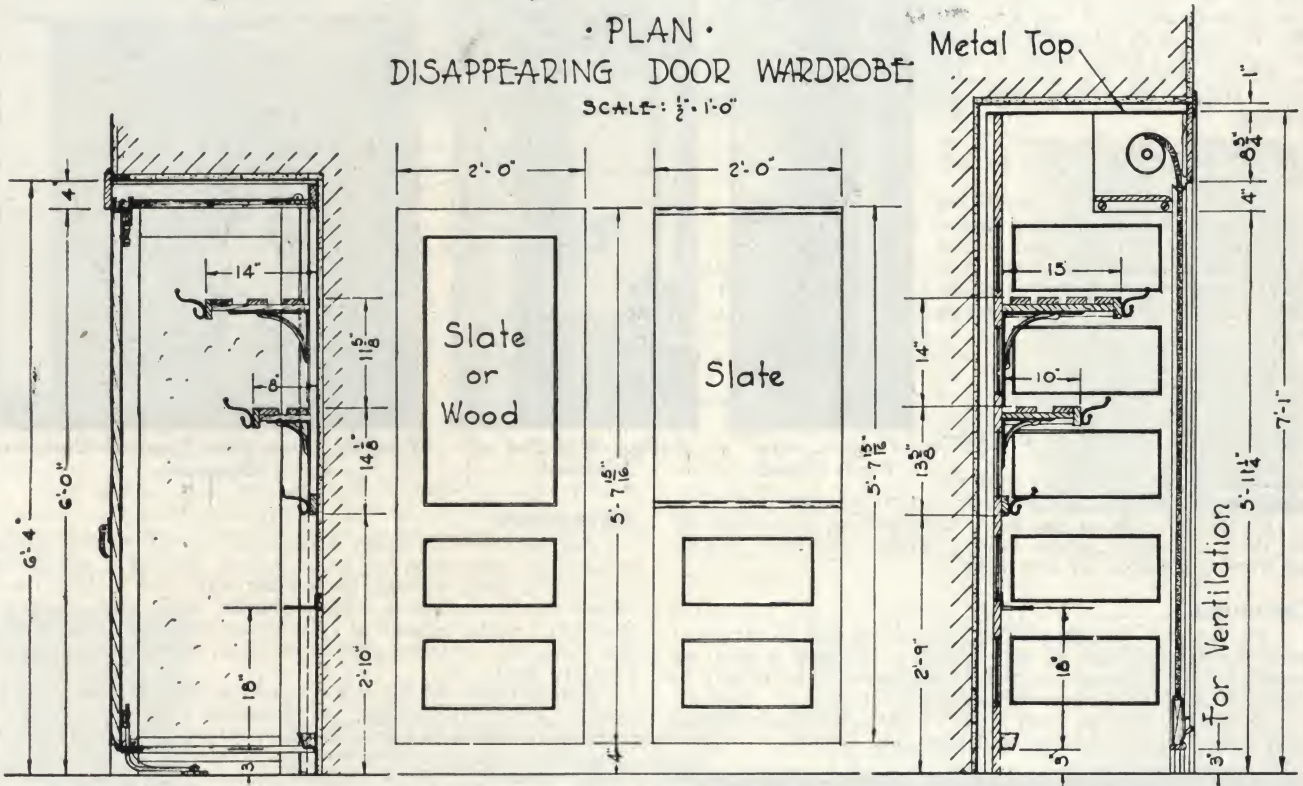
Type "G" Wardrobe with Continuous Slate Blackboard, High School, Far Rockaway, N. Y.

Continued on next page

WARDROBES
ROLLING FRONT AND DISAPPEARING DOOR



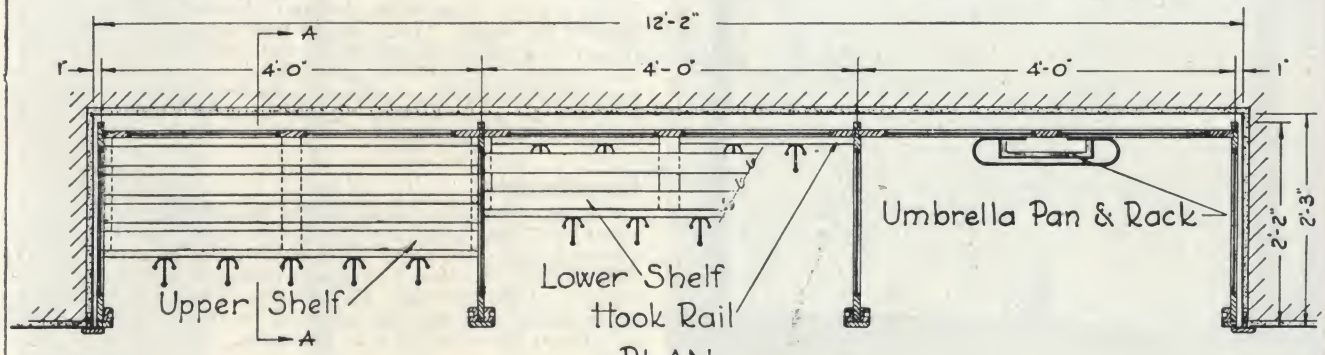
• PLAN •
DISAPPEARING DOOR WARDROBE
SCALE: ½" = 1'-0"



• SECTION B-B •
SCALE: ½" = 1'-0"

• ELEVATION OF DOORS •
SCALE: ½" = 1'-0"

• SECTION A-A •
SCALE: ½" = 1'-0"



• PLAN •
• ROLLING FRONT WARDROBE •
SCALE: ½" = 1'-0"

THE FOLDING WALL COMPANY

TELEPHONE
HENDERSON 2380

5716 Euclid Avenue
CLEVELAND, OHIO

"QUIET ZONE" FOLDING WALL

Construction

Consists of a series of wood frame sections, each from 4 to 6 ft. long. The upper and lower members of each section fold inwardly by a mechanism which keeps the side members vertical.

On each side of the frame is an outer face of tautly stretched, well nigh indestructible, special herringbone, closely woven acoustical fabric, with a sound absorbing air space of 3½ in. between.

Models "A" and "B" have only the outer fabrics. Model "C" has, in addition, one layer of felt and one of enamel drill on each side, making a total of six fabrics, four air cushions and one air space. The opposite faces of the wall are held in control at intermediate folding positions until each section is folded within its own width into cabinets protruding 12% of opening.

Cabinets may be provided as part of the building or will be furnished.

Bolted connections *only* are used; and with malleable iron hinges, steel cantilever angles, and heavy sash chains operating over steel pulleys, they form a foolproof mechanism which survives very rough usage.

Models "A" and "C" are suspended at each vertical member on roller bearing trolleys running in a steel ceiling track which is either built into the ceiling or concealed with moulding.

Floor bolts, operating automatically, hold the wall rigid at each vertical member.

Model "B" rolls on the floor. Disappearing stay chains on top furnish the only lateral support needed. No floor or ceiling track is required for this model.

Where Used

Model "A" is used to isolate ordinary noises such as talking, typewriting, etc.

Model "B," the floor roller type, is used as above when high or sloping ceilings or ceiling obstructions prevent the use of ceiling track. Because of high sound absorption it is effective despite open top.

Model "C," the special sound subduing type, with triple fabric faces, outside fabric, felt, and inside smooth drill, is used in large openings or when loud or musical sounds are to be subdued.

Cabinet with Doors Closed

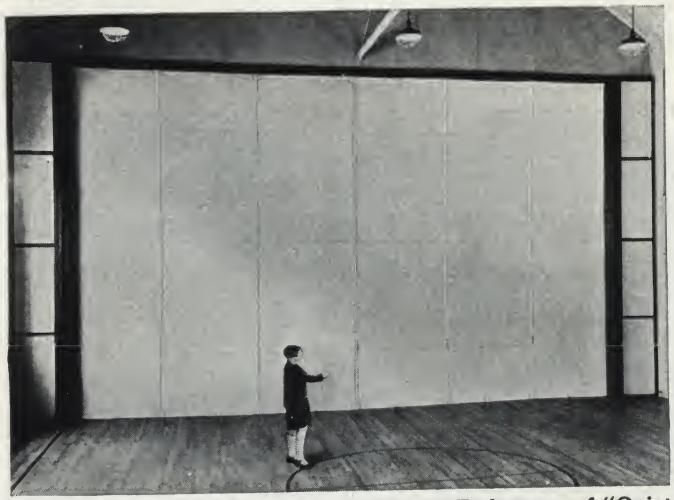
Pulling Wall Out of Cabinet

Pressing Down Foot Tread to Complete Operation

Operation

To Extend—Simply pull out of cabinet and if necessary press down foot tread of each section. The end section can easily be folded enough to make a passageway, or it may be hinged to provide a regular swinging door.

To Fold—Lift up food tread of each section, beginning with section nearest cabinet, and push into cabinet.



Typical Gymnasium Installation Indicating Endurance of "Quiet Zone" Walls in Perth Amboy (N. J.) High School
Wall is 80x23 ft.

Advantages

Acoustical—Cut down volume of sound at any given moment by absorption of sound waves, leaving a minimium of sound to pass through the folding wall, thus making quiet rooms that are easy to teach, preach, study and work in. Model "C" walls, because of relative arrangement of absorbing and reflecting surfaces, subdue as much sound as a studded plastered wall.

Mechanical—Easily, quickly and quietly operated regardless of size. No binding or shrinking. Only 4-in. width required in which to fold. No floor track or guide required, permitting rugs to run under. No temporary posts or ceiling boxes needed. Price per square foot does not increase with height and length. Stands rough usage of basket ball and indoor base ball in gymnasiums, and endures indefinitely.

Decorative—When not in use "Quiet Zone" Folding Walls are out of sight in shallow cabinets which match the trim of the room. When in use they present a smooth surface, fitting snugly to the floor, wall and ceiling—to all appearances a 4-in. solid wall—and harmonize with the decorative treatment of the permanent walls around them. Obtained in color to your sample. Easily cleaned with wall paper cleaner, or soap and water.

Specifications

Erect completely where shown on plans the models indicated of "Quiet Zone" Folding Walls and Cabinets as manufactured and guaranteed by THE FOLDING WALL COMPANY, 5716 Euclid Avenue, Cleveland, Ohio, all as described in SWEET'S ARCHITECTURAL CATALOGUES, Twenty-fifth Edition, using fabric and color as approved by the architect. Wood in cabinets to match trim in the room.

Prices

For prices, send height, length and model desired or tell how rooms are to be used. Prices vary with the model, size of wall and number of cabinets and swinging doors required.

Continued on next page

"SILENT ZONE" FOLDING WALL AND FOLDING WARDROBE

Construction

Consists of a series of wood frame sections similar to "Quiet Zone," substituting for the flexible covering on each side of each frame, a pair of doors, operating simultaneously with it, and having a similar air space between. This space becomes a wardrobe when the pins or hinges between the doors are removed. Then each door acts as one of a pair of double doors to the wardrobe.

Illustrations at right show near side doors removed in end frames to show frame mechanism.

The stiles of the doors are made of double ⅞ in. kiln dried fir frames glued and bolted back to back, to and through highly compressed wallboard, which is glued flush on entire side to assure composite stiffness. Fabricoid, Muralart, or Flexwood, of color and design selected, glued solidly to face of stiles, excludes moisture and permits all manner of "new art" treatment. Flush doors may have plastered or any wood face.

Opened Partial Height Near Side for Use as Wardrobe

Silencing Mechanism

The above inside wallboard reflects sound waves, which are not entirely absorbed by the absorbing material in the panels, back for further absorption; in a manner similar to Model "C" "Quiet Zone." The absorbing board "T" takes the place of the outer herringbone fabric; the wool "U" the place of the felt; and the hard board (which is polished inside) the place of the enameled drill. Sound wave energy, not absorbed by this construction, exhausts itself, reflecting from one polished board surface to the other within the liberal air space between the doors. The greater the air space, the more effective the silencing. Note diagram on detail drawing below.

Acoustical Experience

Seven years ago "Quiet Zone" was the only folding partition to correct room acoustics to minimize transmissible sound.

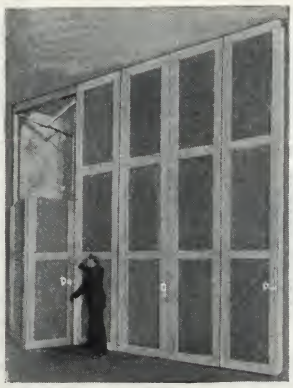
Then it alone used combinations of absorbing and reflecting surfaces to multiply absorption; and later, reflecting surfaces facing each other, with liberal air space between to improve sound stoppage.

Now, "Silent Zone" adds to these, bulk, and obtains near-perfection in *silence*. Not merely double others, because of double doors—but treble and more because of silencing mechanism.

Operation

So easy is the operation of "Silent Zone" that no mechanical device is needed. One will be furnished if desired. Section by section operation and other mechanical advantages, are shown on the detail drawing. The frame support, balanced by the doors on each side and the roller-bearing trolleys bolted rigidly to the frame, make for the easiest possible operation and eliminate twisting action and strain in the doors. Thus extra heavy doors are not necessary for extra high walls.

Floor guides may be omitted, and automatically operating floor bolts used on each frame to obtain the rigidity of a permanent wall. The pull of the rope "D" down, at once collapses the frame, releases the top and bottom catches, and pushes the doors out to start folding. Closing is as automatic and simple. Every part of the design makes for tight and complete closure with liberal felted laps at all joints and contacts.



Folds One Section at a Time to Outer Wall

Pass doors of equal efficiency with balance of wall, may be used.

Guarantee

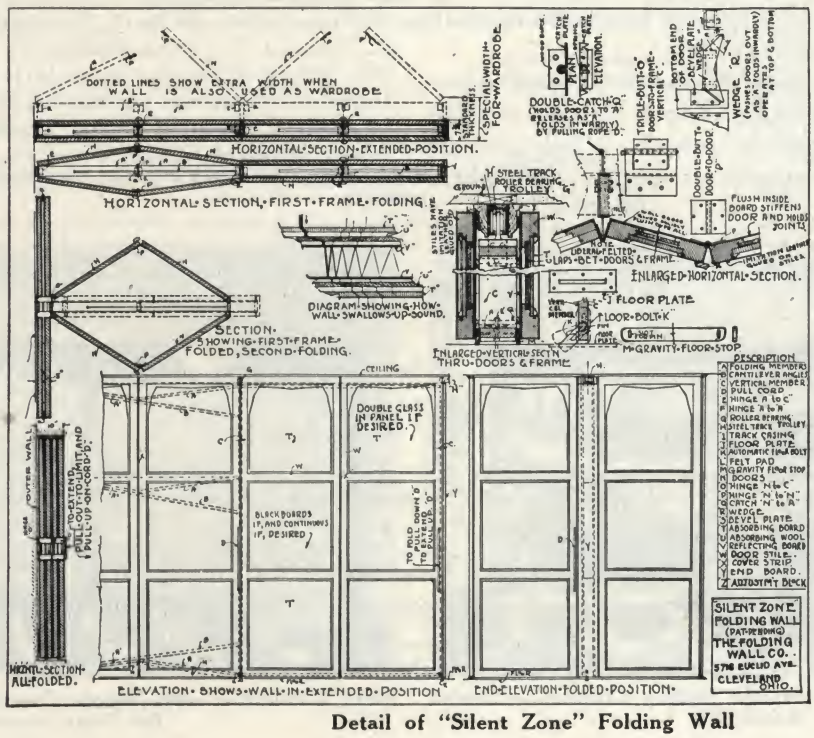
Its very design and sturdy construction assure permanent wall endurance. Service, if needed, is free for two years.

Prices

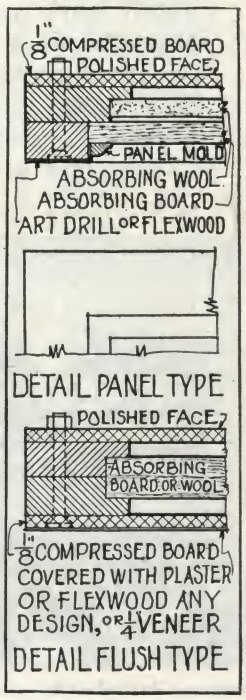
As low as is consistent with superb quality of material and workmanship. For prices of "Silent Zone" erected, send us your floor plan with desired divisions indicated. Sample installation layouts and methods on request.

"Silent Zone" Folds Flat at Outer Wall, or in Closet or Recess

Doors on One Side Removed to Show Frame Mechanism



Detail of "Silent Zone" Folding Wall



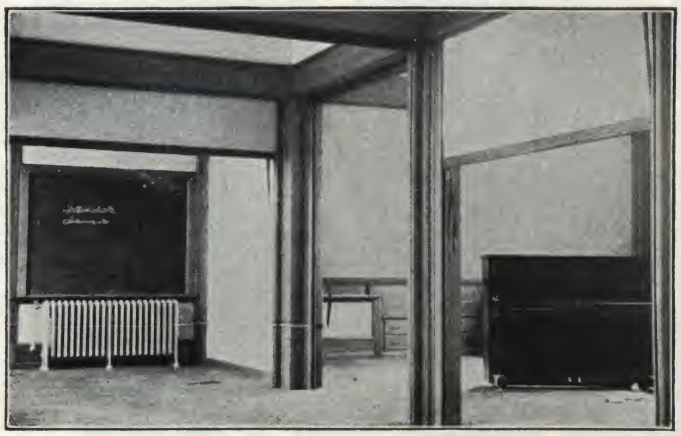
WRIGHT & GAMBER

Sole Manufacturers of the Wright Rolling Canvas Curtain

LEBANON, PA.

Description of the Wright Rolling Canvas Curtain

This curtain is made of strong, wear-resisting double-filled duck, sponged and shrunk. It forms a partition as soundproof as a wooden rolling partition but occupies considerably *less space*. In addition this curtain can be painted to match any interior or harmonize with any woodwork.



The Wright Rolling Canvas Curtain Installed in Sunday School Rooms

Shown in three positions—closed, open and half open

The curtain rolls up out of the way on an all-metal roller encased in a box immediately above the wall opening. This roller is guaranteed for five years. It makes the operation of the curtain so easy that a child can raise or lower the curtain with little effort.

Many leading architects are specifying the Wright Rolling Canvas Curtain for installations where a durable, quietly operating partition at a moderate cost is desired. The fact that many of these curtains have been in use for the past twenty-two years proves their satisfactory performance.

The Wright Curtain is made in any width up to 16 ft., and any height up to 15 ft.

On the opposite page is shown a detail drawing of a typical three-way Wright Curtain installation, where the support or column is only 9¾ by 11 in. This type of support can be used only where there is no heavy overload to carry, as the only part of the column to run to ceiling is the 2x6-in. stud shown on detail. Jambs and casing stop at the bottom of the roller box.

Uses

Because the Wright Rolling Curtain is simple to install and operates easily and quietly, it is ideally suited to installations in Sunday school and other assembly rooms where movable partitions are required.

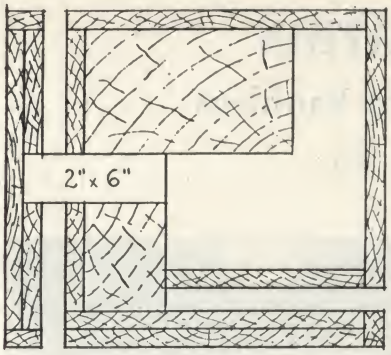
Installations

Reformed Church, Washington, D. C.
Lutheran Church, Middletown, Md.
Lutheran Church, Waterloo, Ont.
Fourth United Brethren Church, York, Pa.
Trinity Lutheran Church, York, Pa.
Otterbein United Brethren, Harrisburg, Pa.
Emanuel Lutheran Church, Pottstown, Pa.
St. Peters Lutheran Church, Littlestown, Pa.
St. James Lutheran Church, Gettysburg, Pa.
St. Pauls Reformed Church, Quarryville, Pa.
St. Peters M. E. Church, Reading, Pa.
First Reformed Church, Shoemakersville, Pa.
Memorial Presbyterian Church, Lancaster, Pa.
St. Andrews Reformed Church, Lancaster, Pa.
Trinity Reformed Church, Tower City, Pa.
St. Johns Reformed Church, Sabillasville, Md.

Typical Installations of Wright Rolling Curtains—Curtains Rolled Up

Same Installation with Wright Curtains Drawn to Separate the Class Rooms

Continued on next page



SECTION THRU COLUMN

Specifications of Wright Rolling Canvas Curtain

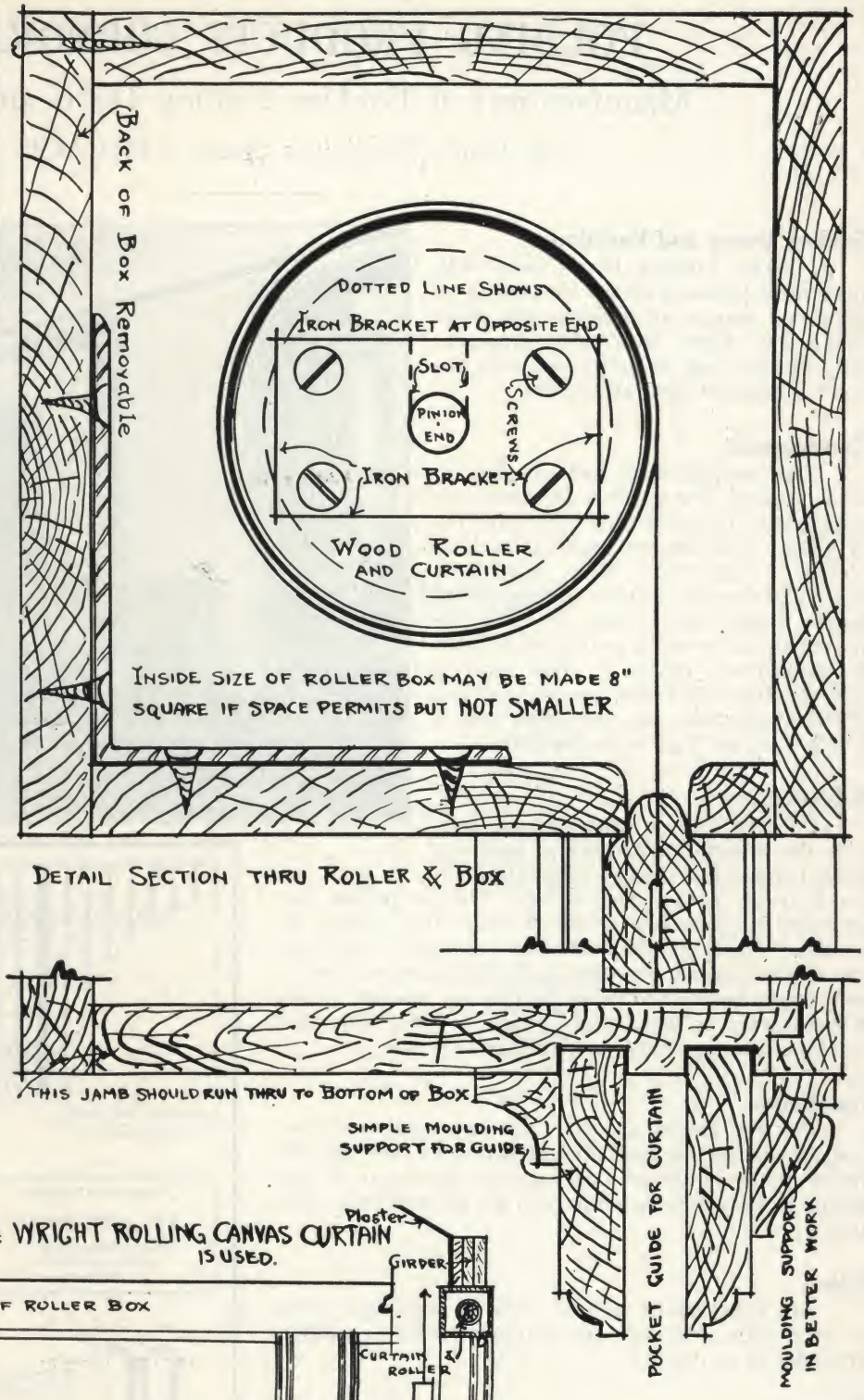
Roller box to be 8 in. square *inside*. (Under certain conditions, it can be reduced to 7 in. inside.)

Guides to be not less than 3 in. deep and full 7/8 in. wide for regular size curtains. For extra large openings, the guides should be 4 in. deep.

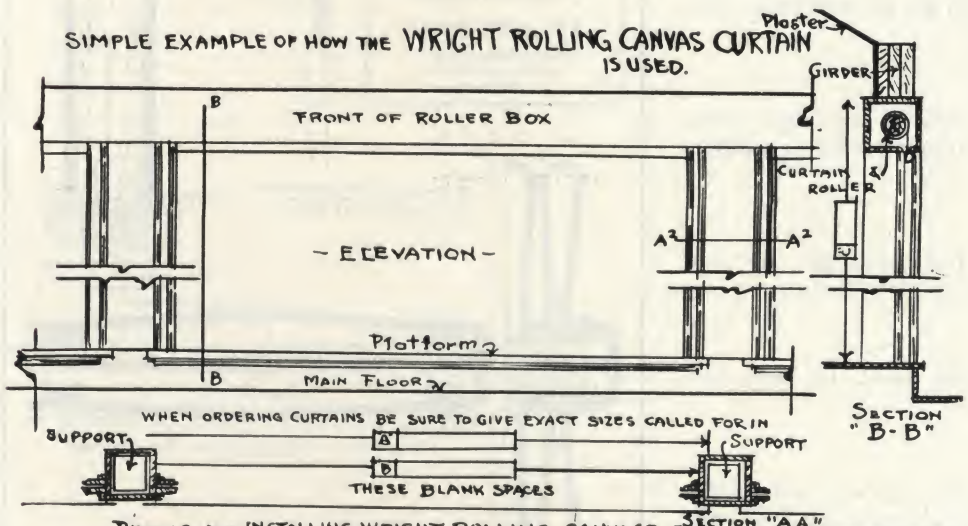
All jambs and casings must stop at bottom of roller box. Bottom, back and front of box will rest on the jambs and casings.

Bottom and back of roller box to be made in one part and braced with strap angle brackets placed about three feet apart.

Guides to be gained into jamb as shown and either type moulding used.



DETAIL SECTION THRU ROLLER & BOX



DETAILS FOR INSTALLING WRIGHT ROLLING CANVASS CURTAINS IN S.S. PARTITIONS

- PLAN -

Detail Section Through Jamb and Curtain Guide

Note: This detail is drawn exactly one-half actual size.

FOLDING PRODUCTS CORPORATION

Manufacturers of Fol-Dec Folding Doors and Partitions

228 South Desplaines Street, CHICAGO, ILL.

Folding Doors and Partitions

Fol-Dec Folding Doors and Partitions are a patented means for closing off adjoining rooms or dividing one room into smaller units. Resembling draperies, they can be made to harmonize with any color scheme or decorative effect.

Construction

Steel upright stiles, held in place by steel spacers, are covered on each side with a layer of heavy felt. Over this felt is placed a decorative material such as Velours, Tapestries, Silks, Fabrikoid, etc. The decorative fabric is so attached to the frame that it may be easily removed in the event it is desired to have it cleaned or replaced. Ball bearing rollers, under each stile, assure easy and noiseless operation as they glide over a small track set flush with the floor.

Advantages

Fol-Dec Doors when folded back give the general appearance of perfectly folded draperies, thereby eliminating the necessity of further decorations. The air pocket construction between two layers of heavy felt, insures the greatest privacy and improves the acoustics. They conserve space, permit economy in building construction, as well as add beauty and refinement to any interior. They will not warp or stick. Fol-Dec are the only doors that combine beauty, utility, economy and privacy.

Installation

Fol-Dec Doors are self contained and easily installed, needing no special construction as they are fastened to the jambs or side walls by means of vertical spring locks, which fasten in both the top and the bottom tracks.

Color

Any color can be selected to match the color scheme or decoration, and each side can be made up in a different color if so desired.

Fabric

Velours, Tapestry, Silks, Fabrikoid, etc., are used for the decorative covering on Fol-Dec Doors.

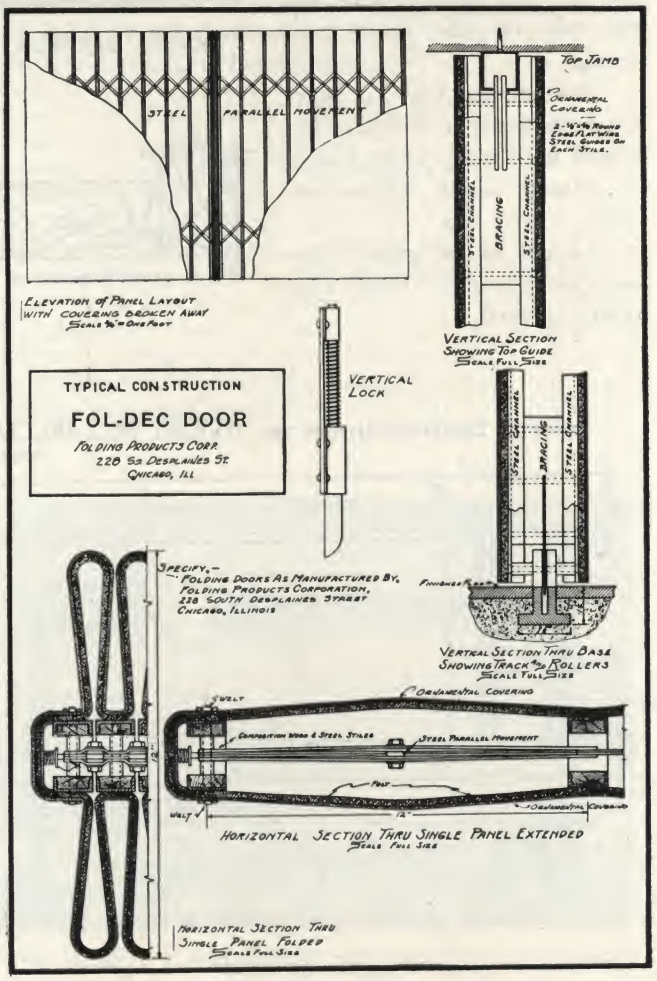
Size

Fol-Dec Doors are custom built for any size opening.

Service

Doors are shipped complete with top and bottom track ready for installation and all necessary hardware.

We will gladly submit plans, estimates or further information on request. Specify Fol-Dec Doors.



INTERIOR STONEWORK

Asbestos Limited Inc.....B2982–2983
Bagatta, G. B2984
Chicago Art Marble Co.....B2985–3002
Formica Insulation Co.....B3057–3061
Marietta Mfg. Co.....B3020–3021
Pittsburgh Plate Glass Co.....B3017–3019
Structural Slate Co.....B3039–3056
Travatex Products Corp.....B3003
Triplex Safety Glass Co. of North America, Inc.....B3022
United Marble & Tile Co.....B3016
Vibrex Co. B3004–3006
Vitrolite Co. B3023–3038
Wise, John J., & Co.—Inc.....B3015
Zenitherm Co., Inc.....B3007–3014

ASBESTOS LIMITED INC.

Manufacturers of "Newmarble"—Asbestos Marble Panels in Sheet Form

8 West 40th Street
NEW YORK, N. Y.

WORKS: MILLINGTON, N. J., U. S. A.; LACHINE, CANADA; GENOA, ITALY

Product

"NEWMARBLE" Asbestos "Marble" Panels in sheet form.

For "Newtile" Asbestos Tiling in sheet form, see Manufacturers' Index.

"Newmarble"

"Newmarble" is made from asbestos in panel form with a finish that perfectly reproduces standard marble and all its qualities. It is fireproof and waterproof; it will not crack or warp; it is entirely sanitary; soap and water keeps it spotless and it may be quickly installed by any carpenter.

Its lovely, colorful surface, long life and surprising economy qualify it for innumerable interior and exterior purposes, especially for panels or entire walls in kitchens, bathrooms, etc.

"Newmarble" Panels Are Easy to Handle

Uses

Architects have found an almost unlimited field of adaptations for "Newmarble." A few of the classes of installations rapidly gaining favor as follows:

(1) Apartment house foyers
(2) Theatre lobbies
(3) Office building lobbies and hallways
(4) Hospitals
(5) Department stores

Installations are also being made in restaurants, drug stores, barber shops, beauty parlors, bathrooms and kitchens.

It is being used on soda fountains, counter bases and display windows. "Newmarble" is effective for exterior of store front treatment. Its permanent finish, non-fading and waterproof qualities make it excellent for this purpose.

Colors

"Newmarble" is made in the following attractive colors:

Black and gold
Light Italian
French black and white
Verde antique (green)
Belgium black
Plain white
Plain red

How Furnished

"Newmarble" Standard Panels—Regularly furnished in panels, size 32x48 in., $\frac{3}{16}$ in. thick.

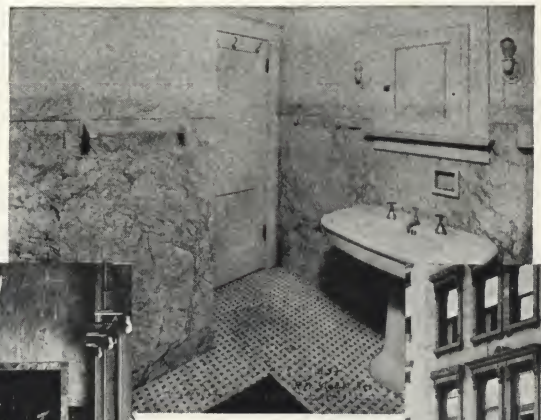
"Newmarble" Trim—"Newmarble" trim can be used where desired. A different color trim produces a striking contrast with the wall color. Top moulding and base are made in all finishes of "Newmarble" panels 4 and 6 in. widths, $\frac{3}{8}$ in. thick and 48 in. long, grooved to receive panels.

Method of Handling

Standard panels size 32x48 in. should be used wherever practical. Where cutting is necessary the following methods are recommended:

Where an electric hand saw is available, this method of cutting is preferable over all others, substituting a thin carborundum wheel for the steel saw. If carborundum wheels are unobtainable we can furnish them at a nominal cost. It has been found that grades equivalent to Carborundum Redmanol 36C8T are best adapted to this work.

Panels can be cut with a carpenter's saw or can be broken in a straight line by scoring deeply with a pointed instrument and laid over the edge of a table and broken in much the same manner that glass is cut. Edges can be



Bathroom

"Newmarble" is suitable for interior or exterior use. It provides a touch of beauty and distinction wherever used and it is furnished in a variety of colors which make it adaptable for almost any decorative scheme. It is fireproof and waterproof and does not deteriorate

Theatre Lobby

Store Front

Continued on next page

made true by the use of a file or sandpaper, making sure, however, to use a block under the sandpaper if the latter method is used. Mitering can be done by filing the edges of the sheet to the proper level.

Where rounded cuts are necessary the use of a compass saw is recommended, filing the edges after cutting. If a compass saw is not obtainable the curve can be cut with a nail set, punching holes along the line to be cut and breaking the piece out, the rough edge can be smoothed with a file. We have found that Vixen Utility files and half round files are particularly well adapted for filing "Newmarble." These files are manufactured by Heller Brothers Co., Newark, N. J. Rough bastard files would be the next choice.

Installation

It is important to have all surfaces where "Newmarble" is to be attached reasonably true before proceeding with the work of installing. Studs and framework should be so placed as to furnish support under each edge. Furring strips on masonry walls should be plumb and faced true. It is essential that masonry or plaster, upon which furring is attached or imbedded, be dry and set before attaching "Newmarble." Unless this precaution is observed any warping in furring of studs will result in like distortion of "Newmarble" panels.

"Newmarble" may be attached using any of the following methods:

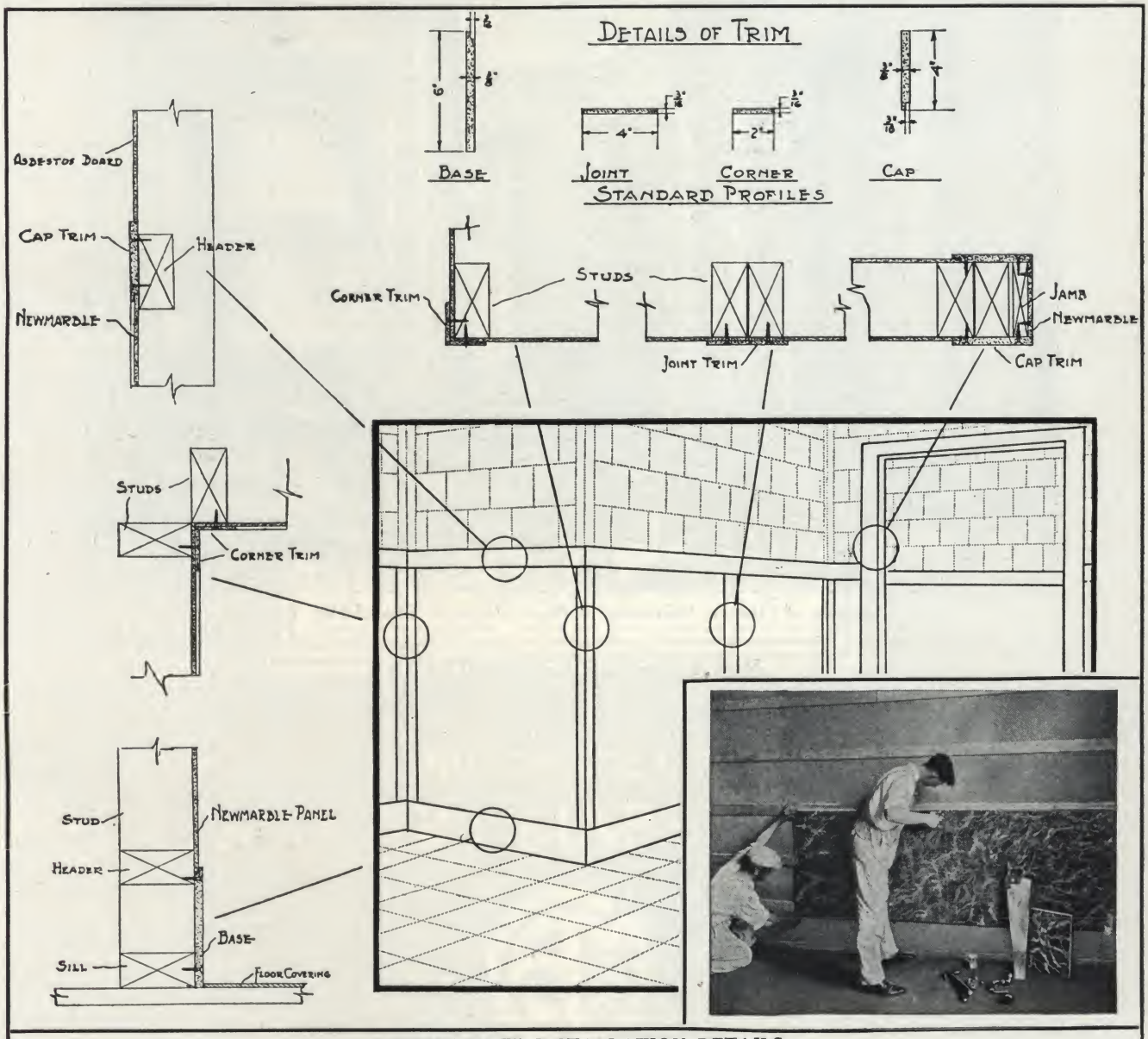
To Wood Studs and Furring—*With Flat Head Screws*—Use 1-in. No. 4 flat head screws, drilling holes with E-1 combination countersink and drill and touching up screwholes with proper shade of putty.

***With Oval Head Nickelplated Screws*—**Allow the screw head to show. Care should be exercised in placing the screws so as to present a well balanced appearance.

***With Nails*—**Use 4d finishing nails, drilling holes with a No. 45 twist drill and carefully set the nail head. Touch up nail holes with proper shade of putty.

To Masonry Walls—Use screws and lead anchors. First drill holes in the "Newmarble" panels, then place the panel in position it is to occupy on the wall and mark the location of the screw anchors on the wall. Drill holes suitable for anchors with star drill, place anchors in holes, put panel in position and screw fast to the wall.

(Note: Drill screws and touch-up putty are included in every case of "Newmarble" and are furnished free of charge.)



"NEWMARBLE" INSTALLATION DETAILS

G. BAGATTA

Artificial Marble, Scagliola, Travertine and Caen Stone

447 East 68th Street, NEW YORK, N. Y.

Products and Services

Manufacturers of and contractors for: ARTIFICIAL MARBLE, SCAGLIOLA, TRAVERTINE, CAEN STONE, etc. Synthetic Reproductions of all imported stone. We specialize in churches, banks, theatres, public and private residences and all buildings where fine architecture is the keynote.

Estimates cheerfully given for work from coast to coast. No job is too large or too small.

Craftsmanship and Materials

We employ skilled craftsmen with many years of experience in executing work of a very high character.

Materials are imported so that work, equal to the finest done abroad, can be reproduced.

Interior of Library, University of North Carolina, Chapel Hill, N. C.

Precast imitation travertine on walls, frieze and arches. Imitation marble columns and pilasters

ATWOOD & NASH, Architects — McKIM, MEAD & WHITE, Consulting Architects

Recent Contracts Completed by Us

Masonic Temple, Plainfield, N. J., A. Ware, Architect
Elks Club, New Haven, Conn., A. W. Boylen, Architect
Lawrence Trust Co., New Castle, Pa., W. G. Eckles, Architect
Temple, 169th Street and Grand Concourse, New York, N. Y., Morgan & Glazer, Architects
New York County Courthouse, Center Street, New York, N. Y., Guy Lowell, Architect; James Conroy, Plastering Contractor
Rochester Savings Bank, Rochester, N. Y., McKim, Mead & White, Architects; C. H. Meyn, Plastering Contractor
First National Bank, Altoona, Pa., J. F. Dempwolf, Architect
Drovers Mechanics Bank, York, Pa., Gemmill & Billmeyer, Architects
Central Trust & Savings Bank, Rock Island, Ill., Cervin, Horn & Stuhr, Architects
Polis Hyperion Theatre, New Haven, Conn., Thomas W. Lamb, Architect
St. Marks Church, Brooklyn, N. Y., P. McGovern, Architect
Holy Innocents Church, W. 37th Street, New York, N. Y.
St. Charles Church, Woonsocket, R. I., J. F. Hogan, Architect
St. Leo's Church, Irvington, N. J., Joseph Jackson, Architect
St. Mary's Church, Torrington, Conn., Joseph Jackson, Architect
Our Lady of Mt. Carmel, Ware, Mass., Joseph Jackson, Architect
St. Peter Claver's Church, Brooklyn, N. Y., Murphy & Lehman, Architects
Our Lady of Pompeii, New York, N. Y., M. Del Gaudio, Architect
Our Lady of Mt. Carmel Church, Worcester, Mass., R. Gorrani, Architect
New York University, New York, N. Y., Wm. Gregory, Architect; Thos. O'Reilly, Contractor
Westchester Holding Co., White Plains, N. Y., A. J. Thomas, Architect
Erlanger Theatre, Buffalo, N. Y., Warren & Wetmore, Architects
Erlanger Theatre, New York, N. Y., Warren & Wetmore, Architects
Mary Immaculate Hospital, Jamaica, N. Y., Wm. J. Boegel, Architect
York Water Co., York, Pa., Gemmill & Billmeyer, Architects
St. Josephs Church, Attleboro, Mass., W. Fontaine, Architect
St. Joan of Arc Church, Jackson Heights, N. Y., Murphy & Lehman, Architects
Loew's Journal Square Theatre, Jersey City, N. J., C. W. & Geo. L. Rapp, Architects; F. L. Hewes, Plastering Contractor
McCrory Store, Toledo, Ohio, W. Simpson, Architect
Schulte United Showroom, Lincoln, Neb., Mr. Hoffman, Architect
Plaza Hotel, New York, N. Y., Schultze & Weaver, Architect
Home of the Little Flower, Wading River, N. Y., Murphy & Lehman, Architects
Hooker Electrochemical Co., Lincoln Building, 42nd Street, New York, N. Y., McKim, Mead & White, Architects
Jaffa Temple, Altoona, Pa., Hersch & Schollar, Architects
La Salette Seminary, Enfield, N. H.
Hotel Pierre, New York, N. Y., Schultze & Weaver, Architects
Apartment Hotel, 104th St. and Central Park West, New York, N. Y., Boak & Paris, Architects
Down Town Athletic Club, New York, N. Y., Starrett & Van Vleck, Architects
Bloomingdale's Department Store, New York, N. Y., Starrett & Van Vleck, Architects
St. Andrew's Church, Pasadena, Cal., Ross Montgomery, Architect; Daprato Statuary Co., Contractor
Grand Silver Store, Lowell, Mass., Shepard & Stern, Architects

ART MARBLE

FLOOR-TILE
STAIRWAYS
WAINSCOTS
PARTITIONS
ENCLOSURES
RECEPTORS
FOUNTAINS
BANK SCREENS
NON-SLIP STEPS,
TREADS, RAMPS

PRODUCTS OF

CHICAGO ART MARBLE COMPANY

CHICAGO ART MARBLE COMPANY

Contractors and Manufacturers—Art Marble Products

Office and Factory

2883-87 Hillock Avenue, Chicago, Illinois

PRODUCTS

Art Marble and Non-Slip Art Marble (Alundum Aggregate)

DESCRIPTION OF PRODUCTS

Chicago Art Marble and Non-Slip Art Marble (Alundum Aggregate) are special (precision process) precast products composed of marble chips, Portland cement, color pigments and are manufactured according to definite controlled formulae. Art Marble products should be clearly differentiated from ordinary precast terrazzo. For complete data and manufacturing process see "Physical Characteristics—Manufacturing Process," pages 3 and 4.

TRADE MARK

The plant buildings were designed and built exclusively for the manufacture of Art Marble and Non-Slip Art Marble (Alundum Aggregate) products. The present capacity will permit the manufacture of 10,000 square feet of material daily. Ample yards at the plant provide for adequate storage of raw materials.

USES OF PRODUCTS (See opposite Page)

THE COMPANY—ITS EXPERIENCE

Chicago Art Marble Company is a pioneer in the Art Marble industry in America. For over thirty-five years the Company has devoted its entire resources to the manufacture of products known to the building industry as Art Marble and Non-Slip Art Marble (Alundum Aggregate). The Company through research and constant contact with every phase of building has kept apace with modern requirements.

EXECUTIVE PERSONNEL

The important services of estimating, designing, drafting, detailing, manufacturing and installation of Chicago Art Marble products and research work are entrusted only to men of technical training and specialized experience. Each department has at its head an executive of ten to thirty years' practical experience in the development of Art Marble and Non-Slip Art Marble products.

RELIABILITY AND RESPONSIBILITY

Chicago Art Marble Company's financial rating together with its long record of satisfaction to architects, contractors and owners is an assurance of faithful performance and continuous responsibility.

MANUFACTURING FACILITIES

The factory, covering several acres, is located on the main line of the Chicago & Alton and Santa Fe R. R. providing direct rail connections for national service.

SALES AND SERVICE FACILITIES

Complete service is guaranteed to architects and contractors regardless of location.

Art Marble and Non-Slip Art Marble (Alundum Aggregate) in addition to being manufactured and installed nationally by the Company are also sold throughout the country to reliable, experienced contractors for local installation. Therefore, architects are assured of competent installations.

Estimates, samples, shop drawings, sketches or suggestions will be submitted by the Company upon request.

TRADE MARKED PRODUCTS

Each piece of Art Marble and Non-Slip Art Marble (Alundum Aggregate) manufactured by Chicago Art Marble Company is trade marked on the back. This emblem is a guarantee that the product is made from the finest materials and has been manufactured according to Chicago Art Marble Company's standards of quality.

ALUNDUM AGGREGATE

Chicago Art Marble Company is the exclusive licensee (with territorial reservations) under Norton Company's patents for the use of Alundum Aggregate in precast products.

SPECIFICATIONS

Stevens Master Specifications and The Specification Record of The American Specification Institute contain complete specifications on Art Marble and Non-Slip Art Marble (Alundum Aggregate). Copies of specifications sent upon request.

INDEX—CHICAGO ART MARBLE COMPANY CATALOG

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1—Company, Products and Specifications
2—Uses and Advantages of Art Marble
3—Physical Characteristics of Products
4—Process of Manufacture of Products
5—Colors, Finishes and Textures
6—Colors, Finishes and Textures
7—Floor Tile (Plain & Non-Slip) and Base
8—Stair Details (Plain & Non-Slip)

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9—Tread Details (Plain & Non-Slip)
10—Toilet Stall Detail Plate
11—Shower Stall Detail Plate
12—Non-Slip Elevator Mats & Revolving Door Floors
13—Non-Slip Ramp Detail Plate
14—Inlaid Wainscot Detail Plate
15—Miscellaneous Detail Plate
16—Decorative and Ornamental Uses

Continued on next page

USES CHICAGO ART MARBLE & NON-SLIP ART MARBLE

ART MARBLE FLOORS

(a) Regular Art Marble—can be used in any room in any type of building, on either concrete or wood construction. Sizes available permit working out to scale in either plain or intricate designs. Minimum of 2" required from rough to finish on concrete, about 3" on wood. See Plate No. 1, Page 7 for details.

(b) Non-Slip Art Marble (Alundum Aggregate) for interior and exterior uses throughout building where permanent protection against slipping is essential. Especially for vestibules, revolving doors, stair landings, ramps and elevator mats.

See Plates Nos. 1, 2, 3, 6, 7, Pages 7, 8, 9, 12, 13 for details.

Chicago Art Marble Co. Drafting Room where Shop Drawings, Sketches, Details and other Services are Developed

DECORATIVE ART MARBLE

This product is especially suitable where curved or moulded detail is required. Some uses are free-standing or wall fountains, bank screens, columns, benches, radiator enclosures. See Page 16 for details.

NON-SLIP ART MARBLE RAMPS

For railroad stations, subways and other structures in which slopes, between floor levels are required. For mild slopes Non-Slip Art Marble (Alundum Aggregate) tile is adequate. For steep slopes Non-Slip Art Marble Ribbed Flooring Strips (Pat. No. 1778736) are essential. See Plate No. 7, Page 13 for details.

ART MARBLE WAINSCOT (Base, Die and Cap)

Wainscot can be used in any type of room in any character of building. Base, die and cap can be varied from low dadoes to high wainscot to conform to scale. Base, die and cap available in either plain flat faces or moulded members. Installation on structural or wood framing requires 1½" from rough to finish. See Plates Nos. 4, 5, 8, 9, Pages 10, 11, 14, 15 for details.

ART MARBLE STAIRWAYS (Plain and Non-Slip)

Art Marble can be used for any stairway in any location or type of building on either steel or concrete substructure.

Steps have tread and riser cast integral. Treads are made Non-Slip where protection against slipping is required. Strings, fascia, balustrades, step-ends and other items are available in Art Marble for plain or ornamental stairways. See Plates Nos 2, 3, Pages 8, 9 for details.

ART MARBLE ENCLOSURES (Toilet, Shower and Bath)

Partitions, wainscot, receptors (one piece), shelves, seats. Structural durability is assured because of thickness and end mullions cast integral with partition. See Plates Nos. 4, 5, Pages 10, 11 for details.

ART MARBLE INLAID WAINSCOT

For all wainscot purposes where decorative motifs are desired. Motifs inlaid either with or without metal strips. See Plate No. 8, Pages 14, 16 for details.

ART MARBLE WINDOW STOOLS

Window stools for use throughout building can be cast in any size or thickness; with plain or moulded nosing. Minimum thickness 1¼". See Plate No. 9, Page 15 for details.

ART MARBLE THRESHOLDS

Thresholds for all door openings are made in any width, thickness or profile; with plain or Non-Slip. Minimum thickness 1⅛". See Plate No. 1, Page 7 for details.

ART MARBLE RADIATOR ENCLOSURES

Radiator enclosures are desirable for beauty and utility. Made complete with sides, fronts and tops. Plain or moulded.

ART MARBLE RADIATOR TOPS

Made for all types of radiators. Plain or moulded nosings. With or without color inserts.

ART MARBLE RADIATOR MATS

These are Art Marble slabs for use under radiators. Particularly adapted to hotel and club rooms as they are fireproof, decorative and sanitary and save carpet.

ART MARBLE EXTERIORS

Uses No. 1 to No. 12 are for interior purposes mainly. Art Marble and Non-Slip Art Marble (Alundum Aggregate) are also used for exterior purposes such as store front base, wainscot, Non-Slip vestibules, benches, fountains, terrace and porch floors and steps. See Plate No. 1, Page 7; Plate No. 6, Page 12; Plate No. 8, Page 14 and Page 17 for details.

ADVANTAGES CHICAGO ART MARBLE & NON-SLIP ART MARBLE

A few of the outstanding advantages are presented for consideration.

- Durability with beautiful satin-honed finishes.
- Unlimited color combinations in plain or Non-Slip.
- All Art Marble colors resist traffic wear uniformly.
- One Piece Steps (Tread and riser cast integral).
- Sanitation because of dust-free surfaces.
- Permanence, low maintenance, no replacements.
- Non-Slip products permanently prevent slipping.
- Forty years experience guarantees all products.

Continued on next page

PHYSICAL CHARACTERISTICS—ART MARBLE AND NON-SLIP ART MARBLE

COMPOSITION

GENERAL—Chicago Art Marble standard products are composed of marble chips, portland cements and color pigments. Non-Slip Art Marble has same materials except Alundum Aggregate is added and replaces a part of the marble chips.

MARBLE CHIPS—The marble used whether domestic or imported comes from the quarries in man-size spauls and is crushed, screened and graded automatically in specially designed crushers which assure the characteristic textures peculiar to Chicago Art Marble products.

Partial view of Yard showing marble spauls before crushing and conversion into Chicago Art Marble products

CEMENTS — Cements used are either gray or white portland. Selection of the cement depends entirely upon the color required. All cements used conform to the American Society for Testing Materials' standards.

PIGMENTS—Color pigments are the best quality, non-fading mineral colors guaranteed light- and lime-proof. Proportions used in coloring cements vary, but in no way affect the strength of the product.

REINFORCEMENT—Round steel rods are used for reinforcement. Size, placement and spacing depend upon thickness and type of product. All Chicago Art Marble products except machine-made floor tile and six inch cove base are reinforced.

NON-SLIP AGGREGATE—Alundum Aggregate manufactured and patented by Norton Company is used exclusively in all Non-Slip Art Marble products as the abrasive to prevent slipping.

PROCESS OF MANUFACTURE—ART MARBLE AND NON-SLIP ART MARBLE

Plastic material is placed in moulds together with proper steel reinforcement. This mix is tamped, air pressed or otherwise agitated to eliminate air voids. Top face of material finished on both sides such as partitions is trowelled smooth before it sets in moulds. Top face of materials such as wainscot, steps, base, floor slabs is finished with a rough scored backing to assure bond when installed. All material is made face down against an absolutely smooth water-level surface.

After the material has attained a sufficient set in the moulds, requiring twenty-four to forty-eight hours, the moulds are stripped. Then the material is put through a series of water-curing, rubbing, filling, re-filling and finishing operations. Normally, the curing operation alone requires two weeks and the other processes an additional week. To assure best results specifications should always allow a minimum period of three weeks for the proper manufacture of Chicago Art Marble products.

Corner of Pressing Department showing layouts and steel reinforcement for Chicago Art Marble products

All Chicago Art Marble products, except standard size floor tile are made as above. Standard size floor tile are manufactured in steel moulds in specially constructed presses designed by Chicago Art Marble Company, that in successive operations automatically receive the plastic material, vibrate, compress and eject the tile. Curing and finishing operations are the same as for other products.

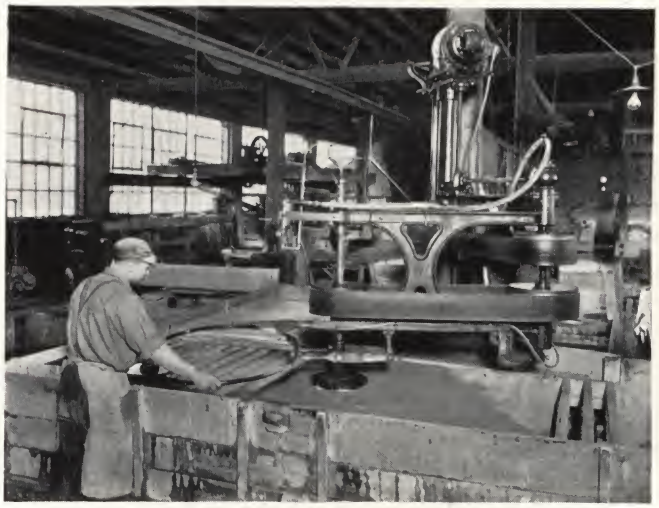
One of many Rubbing Beds where Chicago Art Marble products are rubbed after they are taken from moulds

Curing Room where Chicago Art Marble products are thoroughly seasoned to develop maximum strength

Continued on next page

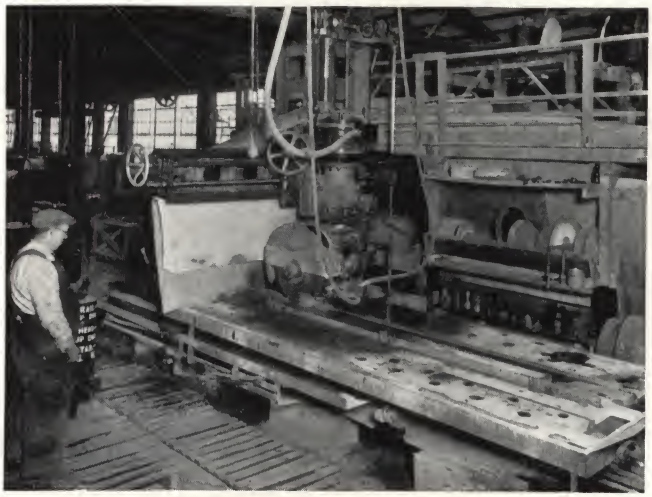
The various pressing, curing, rubbing, filling, refilling and finishing operations are performed by skilled experienced artisans in a day-light factory under ideal working conditions and with the most modern machinery. Most of the machinery and equipment has been especially designed to manufacture Chicago Art Marble products. This results in Art Marble of great density, uniform color and perfect finish. Before Chicago Art Marble products are ready for shipment excess moisture is removed in a drying room. This final process assures architects that Chicago Art Marble products are absolutely free from any tendency to shrink or warp.

All processes during manufacture are carefully controlled. Absolute uniformity is secured through maintained records of all formulae so that any product may be exactly matched at all times.



One of a battery of Polishing Machines required to give Chicago Art Marble products a dust-free satin-honed finish

Portion of Hand-Polishing Department. Chicago Art Marble products of irregular or intricate design are hand-finished here



Coping and Moulding Machine used to accurately cope, mould or cut Chicago Art Marble products to any shape or size

Tile Presses in which machine-made tile of standard size are moulded under tons of pressure

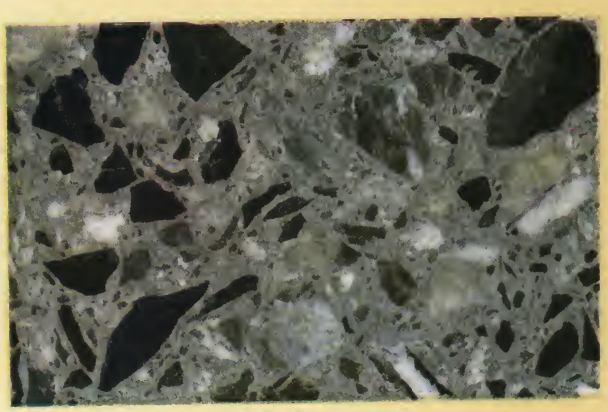
Part supply of Norton Alundum aggregate which is used under exclusive license in Chicago Art Marble Non-Slip products

Shipping Department where finished Chicago Art Marble products are temporarily stored, awaiting shipment to various jobs

Continued on next page

Botticino #2

Champlain #16



Dark Green #3

Gray Tennessee #5

CHICAGO ART MARBLE COLORS, FINISHES & TEXTURES

Art Marble Colors

Colors shown at the side and bottom of this page and the page following are actual color reproductions at full size. These colors have been selected from the many available on account of their popularity and use, over a period of many years, by a great number of architects.

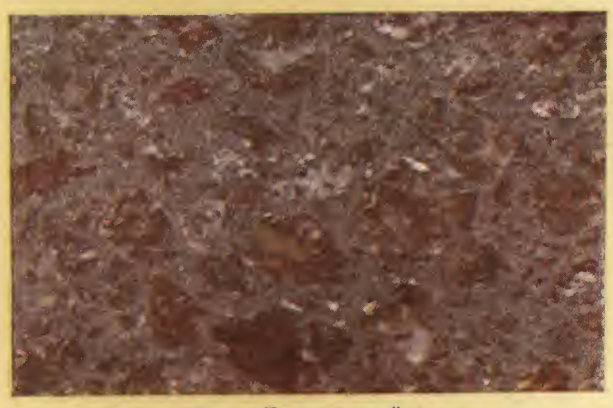
Art Marble has a wider color range than natural products because not only can different color marbles be combined but the cement colors can be changed without limit. Thus in Chicago Art Marble products the architect may carry out his color harmony to the fullest extent. One hundred and forty-six color formulae have been developed and recorded for further use.

Finishes and Textures

The colors shown here represent the standard satin-hone finish and the average texture produced by the gradation of the marble chips. Note that in most of these colors the cement matches the general color of the marble. This is not essential. The chips can be made any size desired and the colors varied to suit the most discriminating. Other finishes and textures to meet special requirements may be obtained.

Color Combinations

Art Marble in colors shown and others make very pleasing patterns for floors and wainscot when used alone or in combination. Sharp contrasts, modern motifs or soft harmonies are easily obtainable. Any colors may be used together in flooring without fear of uneven wear. All Chicago Art Marble, regardless of color, resists wear uniformly. Please refer to sketches and photographs following which show a few combinations of Chicago Art Marble colors.



Cedar Tennessee #15

Continued on next page

CHICAGO ART MARBLE COLORS, FINISHES & TEXTURES

Non-Slip Art Marble (Alundum Aggregate)

The color range for this material is practically the same as for standard Chicago Art Marble—the only difference is that Norton Alundum Aggregate added as the abrasive to prevent slipping, slightly changes the color, but the general tone remains the same. Color harmony is possible in Chicago Art Marble Company's Non-Slip products because Norton Alundum Aggregate is available in Gray, Buff, Cream, Green and Brown and is skillfully blended with the marble chips and colored cement. Because of its excellent abrasive qualities, color harmony, permanent bond with cement and other features Norton Alundum Aggregate is used exclusively by Chicago Art Marble Company in all Non-Slip Art Marble products.

Inspection and Uniformity

All marble, cements, color pigments and abrasives used to produce Art Marble and Non-Slip Art Marble (Alundum Aggregate) colors and textures are subject to constant inspection. This assures uniformity and permits perfect matching for future alteration work.

Special Colors or Requirements

Certain jobs require special aggregate mixtures or treatments of cements to take care of unusual conditions, such as extremely heavy traffic, exposure, matching natural stones, protection against chemicals. Services and suggestions for the proper handling of such conditions are available. Special samples furnished upon request.

Color Sketch Service

Original color sketches and recommendations made independently or in collaboration with architects or designers may be obtained at no charge.

Pink Tennessee #6

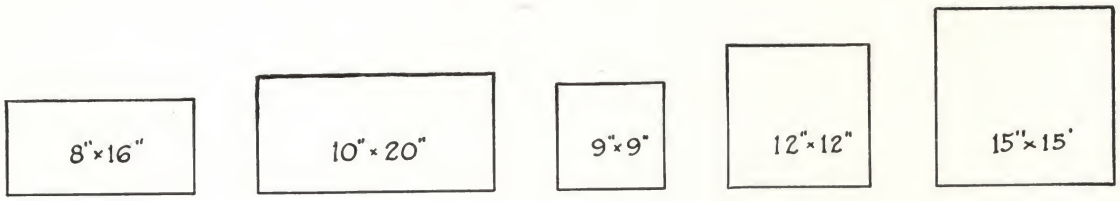
Light Green #4

Red Verona #14

Black #1

White #7

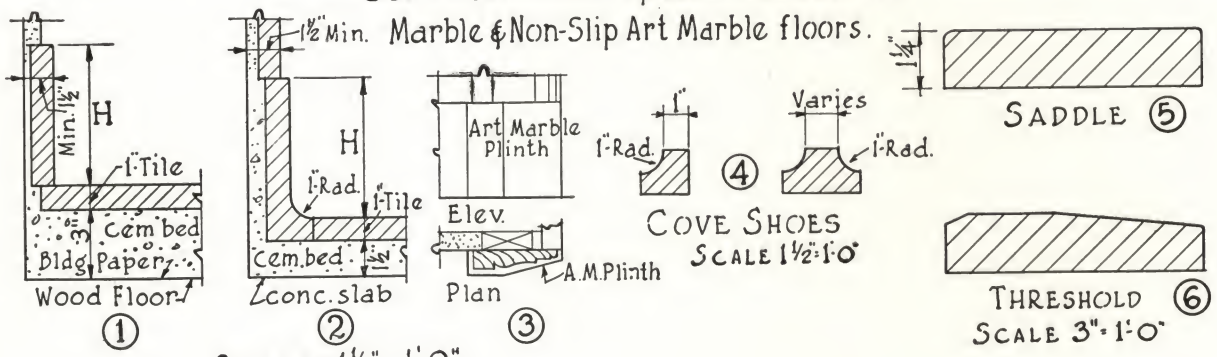
Continued on next page



· FLOOR · TILE · SCALE 3/4" = 1'-0" ·

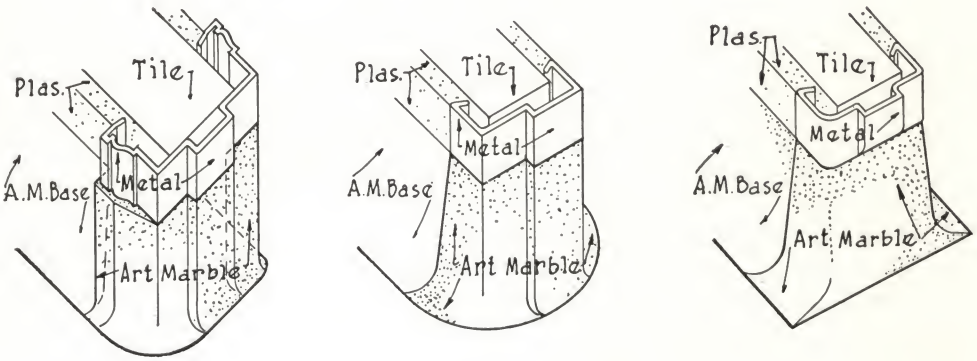
Chicago Art Marble Floor Tile, regular and non-slip are manufactured in standard shapes and sizes shown. Adherence to these standards assures economy. Many other shapes or sizes if desired are obtainable. Floor Designs and suggestions available free upon request.

See Plts. 6-7-8 for special uses of Art Marble & Non-Slip Art Marble floors.



SCALE - 1½" = 1'-0"

① Section Thru Art Marble Straight Base and Floor-Wood Const. "H" = Any height.
② " " " " " " Cove " " " Conc. " " "H" = " " "
③ Plinths made any Height or Profile for all Types of Base.
④ Section Thru Cove Shoes for Toilet Room Wainscot and Partitions.
⑤ " " " Flat Saddle ⑥ Sect. thru Bevelled Threshold for all Door openings.



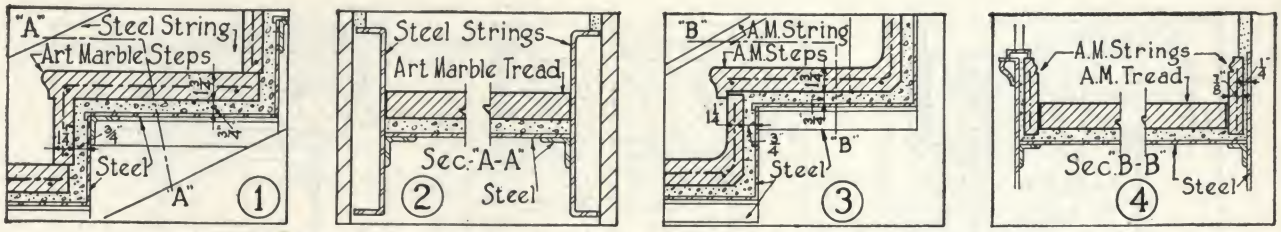
Jamb Blocks made in Art-Marble assure the utmost sanitation at door openings.

Drawings at left show three applications as used in Hospitals and Public Buildings.

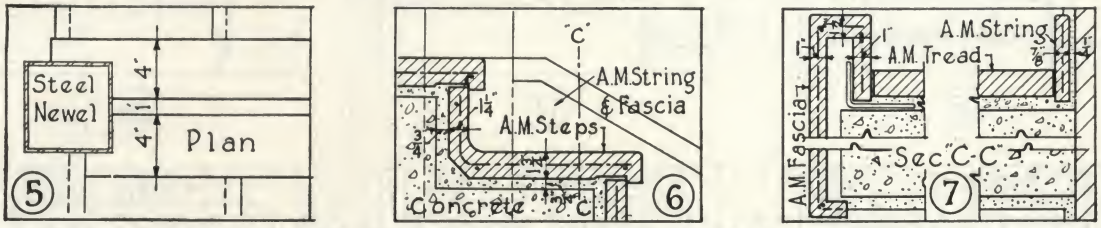
· ART · MARBLE · JAMB · BLOCKS · SCALE 1½" = 1'-0"

CHICAGO ART MARBLE CO.	CHICAGO ART MARBLE NON-SLIP AND PLAIN FLOOR TILE, & BASE	SCALE AS SHOWN	PLATE ①

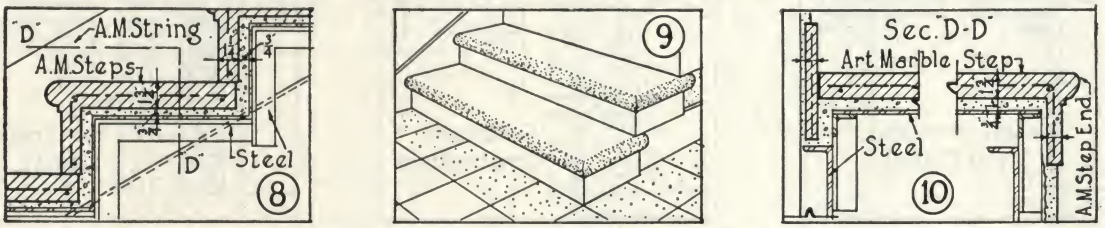
Continued on next page



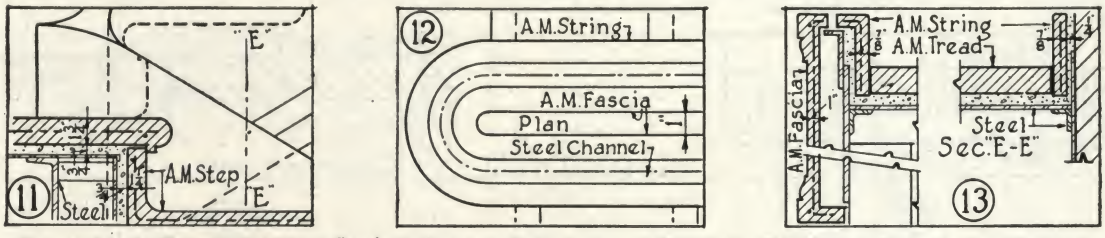
·SECTIONS·THRU·ART·MARBLE·STEPS & STRINGS·



·PLAN & SECTIONS·ART·MARBLE·STEPS·STRINGS & FASCIA·

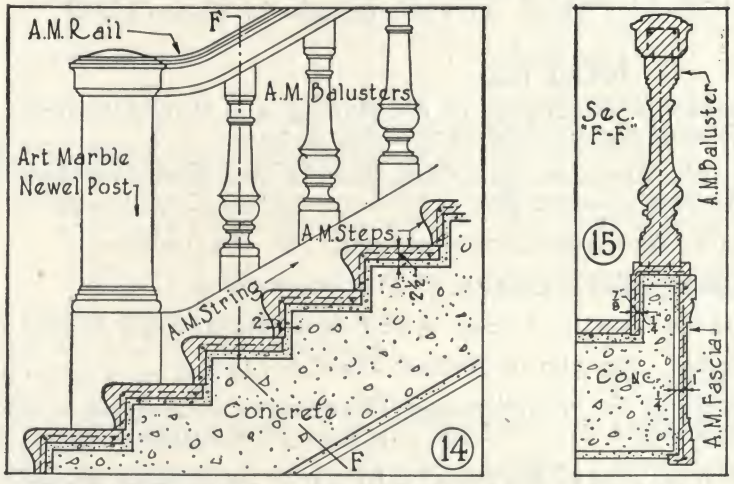


·SECTIONS & ISOMETRIC·VIEW·ART·MARBLE·STEPS & ENDS·



PLAN & SECTIONS ART MARBLE STEPS STRINGS & FASCIA

No. 1 to 13 - SCALE - 1" = 1'-0"



·ELEVATIONS & SECTION·ART·MARBLE·
·STEPS & BALUSTRADE· SCALE ½"=1'-0"

NOTES

Min. thickness Risers 1" Treads 1¼" Strings ⅞"
Standard " " 1¼ " 1¾ " 1"
Nosings-Fascia-Strings made any profile.
All material reinforced with steel rods.
⅜" required back of A.M. for setting. Max. ¾".
Steps have tread & riser cast integral.
A.M. weighs about 12# per sq ft. - 1" thick.
Steps weigh about 35# per lin. foot.
Steps made up to 12 ft. long in one piece.
Strings & Fascia made about 3 ft. long.
No stock carried. All items made to order.

If your stair construction problems involve details or data not shown on this plate, additional information is available upon request. Please refer to details by number shown.

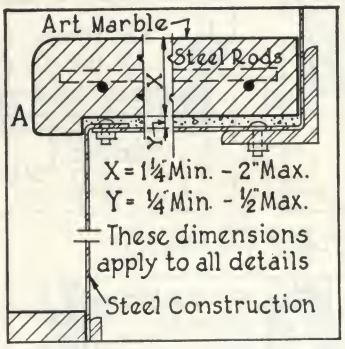
See plate #3 for Tread details.

A.M. in above notes = Art Marble.

These details apply to either regular or non-slip (Alundum aggregate.) Art Marble steps.

CHICAGO ART MARBLE CO.	CHICAGO ART MARBLE NON-SLIP & PLAIN STAIR DETAILS	SCALE AS SHOWN	PLATE 2

Continued on next page



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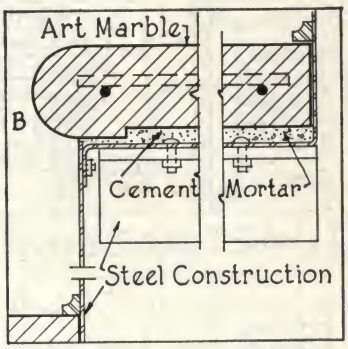

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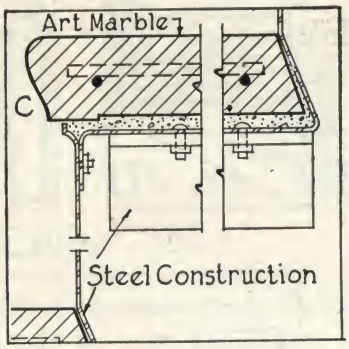

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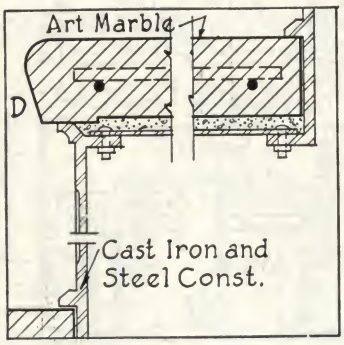

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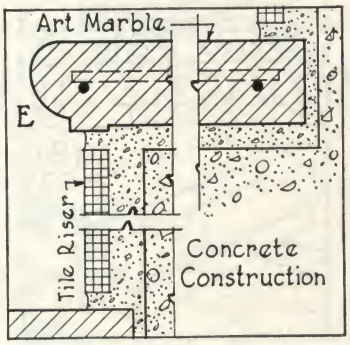

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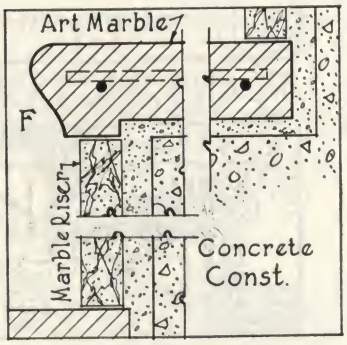

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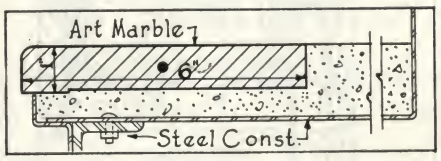
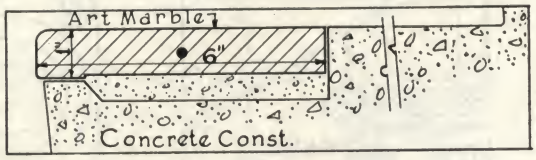


22

SCALE-3"=1'-0"



23

· SECTIONS · THRU · ART · MARBLE · TREADS ·

NOTES

Details 16 to 21 Show Practicable Applications Of Art Marble and Non-Slip Art-Marble (Alundum Aggregate.) Treads for All Ordinary Conditions.

Details 22 & 23 Show Practicable Applications Of Art Marble and Non-Slip Art-Marble (Alundum Aggregate.) Nosing Inserts For Very Economical Construction....

Minimum Tread Thickness - 1¼". Average Recommended - 1½". Maximum - 2".

Minimum Bed (Cement Mortar) Under Treads - ¼" Maximum - ½".

Nosings Made To Any Profile Or Depth. Types A to F are Illustrated Above .....

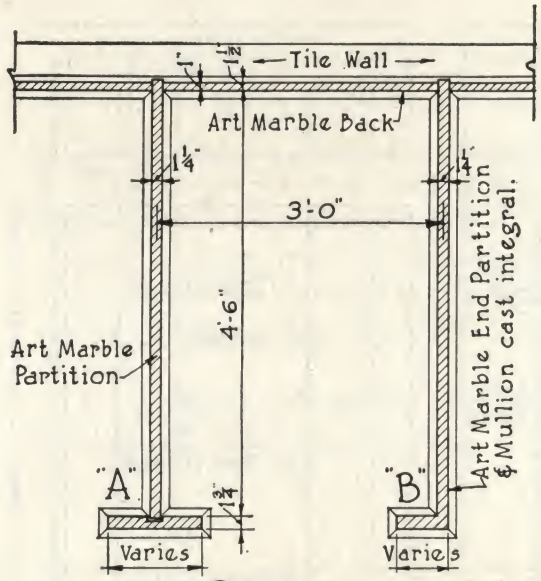
All Treads Are Made To Order. No Stock Sizes Are Carried.

Tread Weights Vary According To Widths and Thickness Required. Average Weights Of Tread 12" Wide Overall, 1½ - Thick is 20 Pounds.

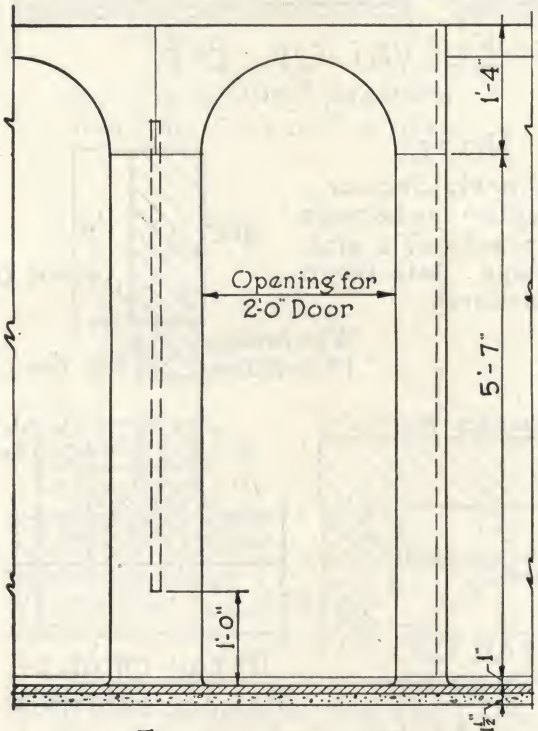
All Treads Are Re-inforced With Steel Rods As Shown in Sections Above ...

CHICAGO ART MARBLE CO.	CHICAGO ART MARBLE NON-SLIP & PLAIN TREAD DETAILS	SCALE AS SHOWN	PLATE 3

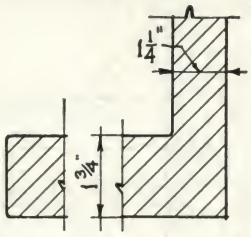
Continued on next page



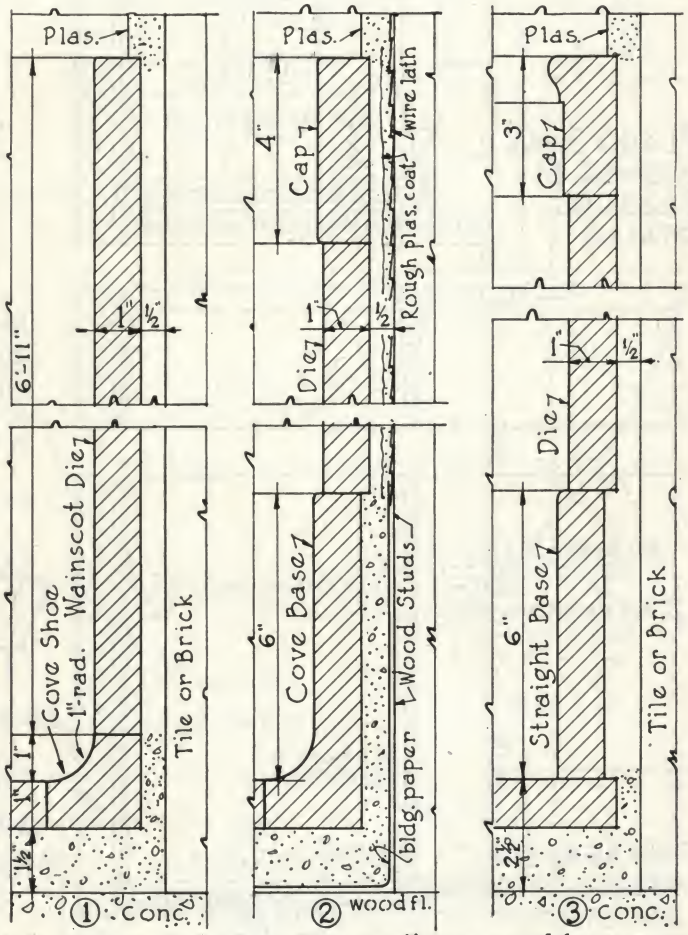
· PLAN · SCALE ½"=1'-0"



· ELEVATION · SCALE ½"=1'-0"



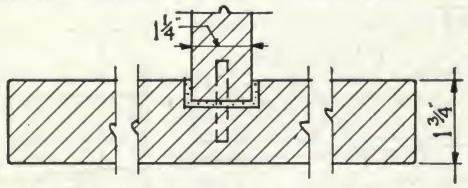
· END MULLION DETAIL "B" ·
SCALE · 3"=1'-0"



· SECTIONS SHOWING THREE TYPES OF WAINSCOT ·

· NOTES ·

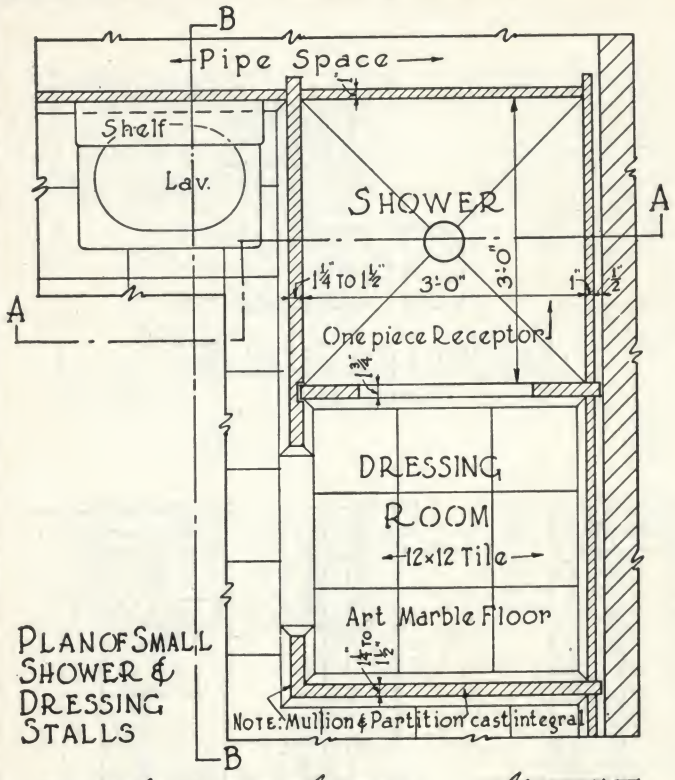
Head Rails over Doors may be Arched as shown or the usual 4" or 6" Flat Cap Piece.
Hardware for Doors either furnished and installed by Art Marble Contractor or furnished by others. All drilling by A.M.Contr.
Stall sizes shown are standard.



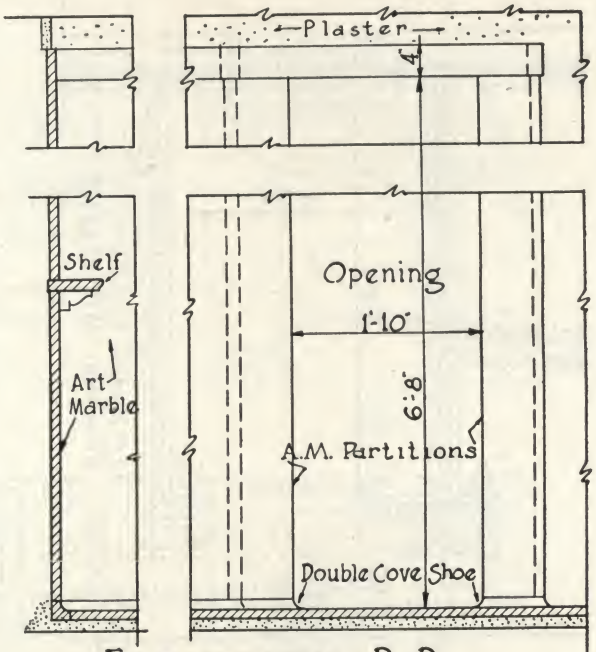
· MULLION DETAIL "A" SCALE 3"=1'-0"

CHICAGO ART MARBLE CO.	CHICAGO ART MARBLE TOILET STALL DETAILS	SCALE AS SHOWN	PLATE ④

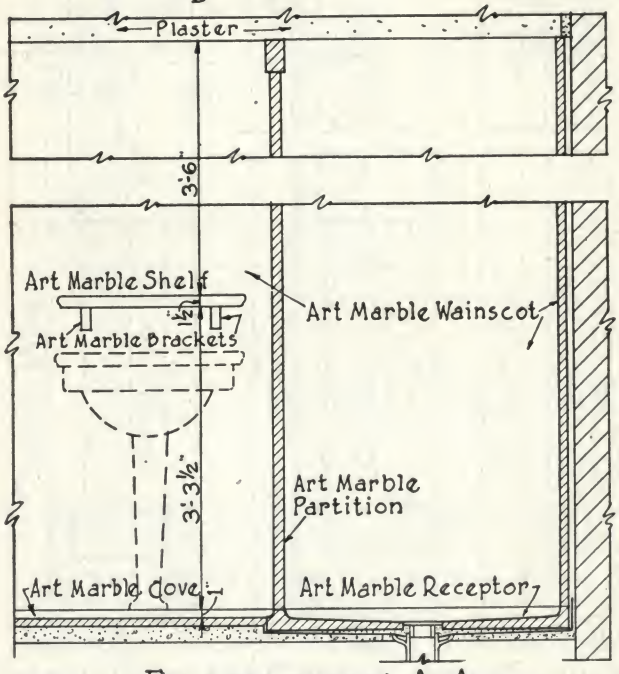
Continued on next page



PLAN OF SMALL SHOWER & DRESSING STALLS



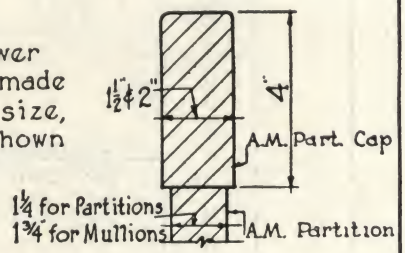
· ELEVATION · B-B
SCALE ½"=1'-0"

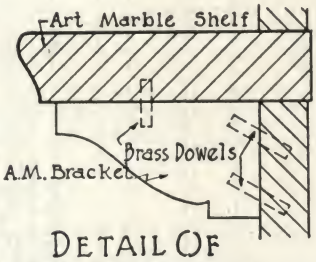


· ELEVATION · A-A SCALE ½"=1'-0"

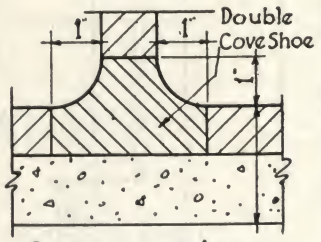
NOTE.

Art Marble Shower Receptor can be made any practicable size, or shape. Data shown is standard.

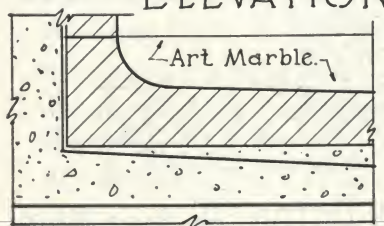


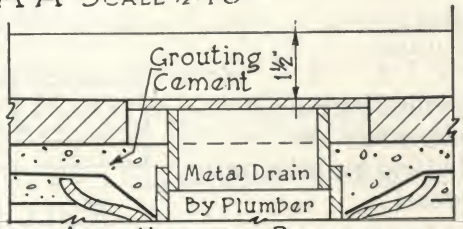


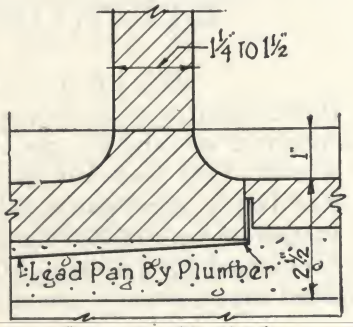
DETAIL OF ART MARBLE BRACKET & SHELF
SCALE 3"=1'-0"



DETAIL OF ART-MARBLE PARTITION







· DETAIL · OF · ONE · PIECE · ART · MARBLE · RECEPTOR · · SCALE · 3"=1'-0"

CHICAGO ART MARBLE CO.	CHICAGO ART MARBLE SHOWER DETAILS	SCALE AS SHOWN	PLATE 5

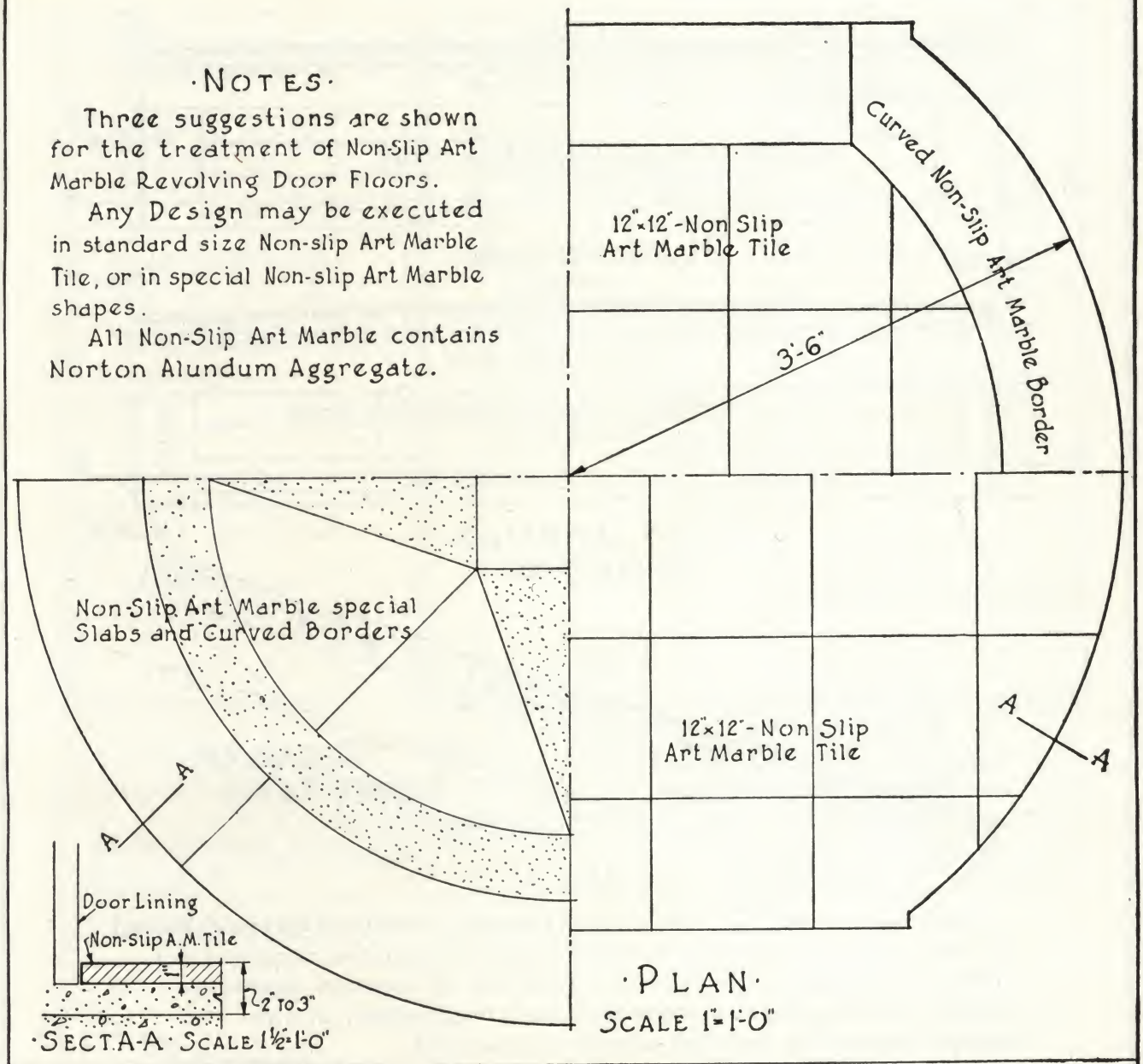
Continued on next page

NOTES

Three suggestions are shown for the treatment of Non-Slip Art Marble Revolving Door Floors.

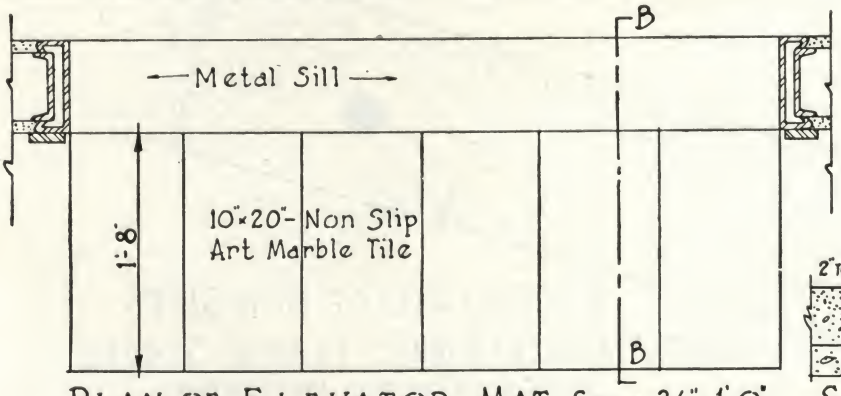
Any Design may be executed in standard size Non-slip Art Marble Tile, or in special Non-slip Art Marble shapes.

All Non-Slip Art Marble contains Norton Alundum Aggregate.



·SECT. A-A· SCALE 1½"=1'-0"

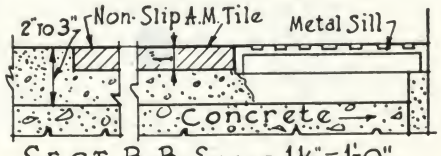
·PLAN·
SCALE 1"=1'-0"



·PLAN·OF·ELEVATOR·MAT· SCALE·¾"=1'-0"·

NOTES

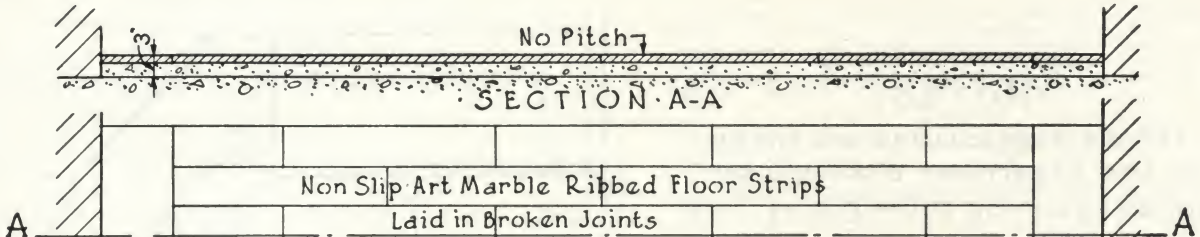
Non-Slip Art Marble Elevator Mats can be detailed as shown by using any standard size Tile or special slabs.
18" min. width recommemded.



SECT. B-B-SCALE 1½"=1'-0"

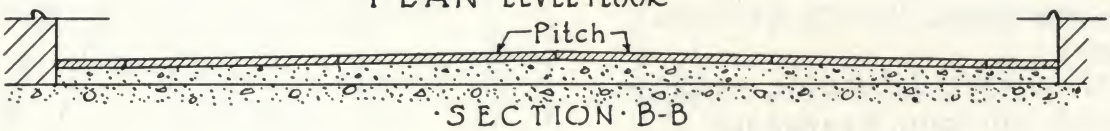
CHICAGO ART MARBLE CO.	CHICAGO ART MARBLE NON-SLIP REVOLVING DOOR FLOORS ~ ELEVATOR MATS	SCALE AS SHOWN	PLATE 6

Continued on next page

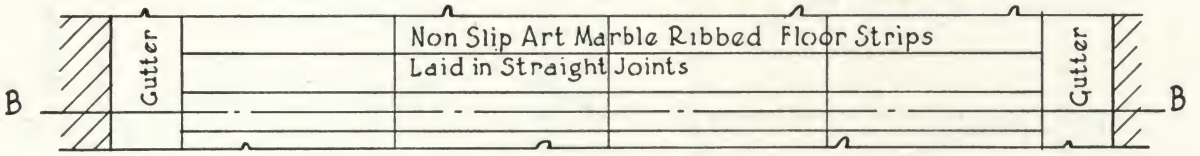


SECTION A-A

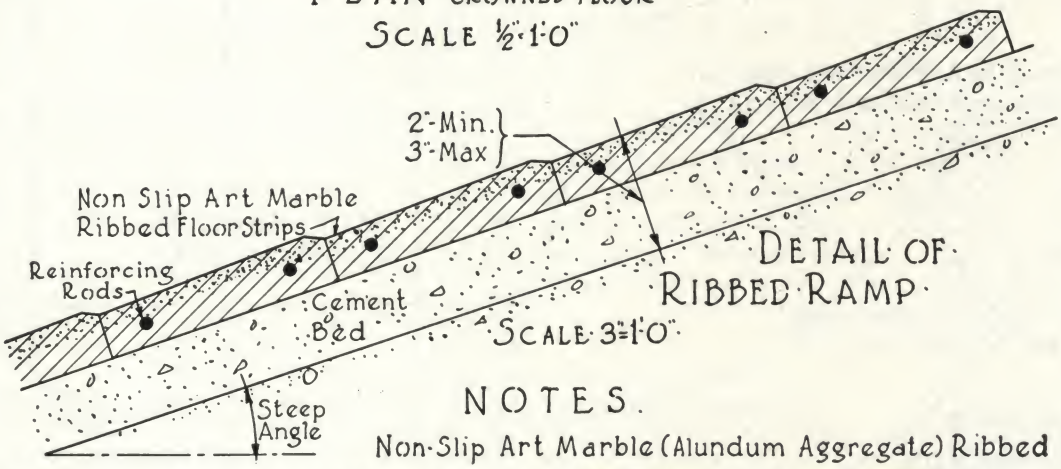
PLAN LEVEL FLOOR



SECTION B-B



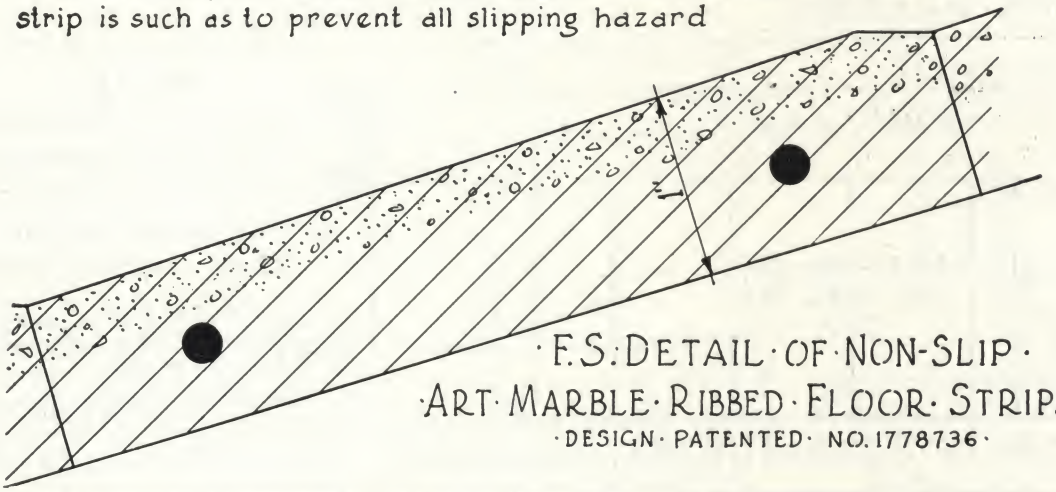
PLAN CROWNED FLOOR
SCALE ½"-1'-0"



DETAIL OF RIBBED RAMP
SCALE 3"=1'-0"

NOTES.

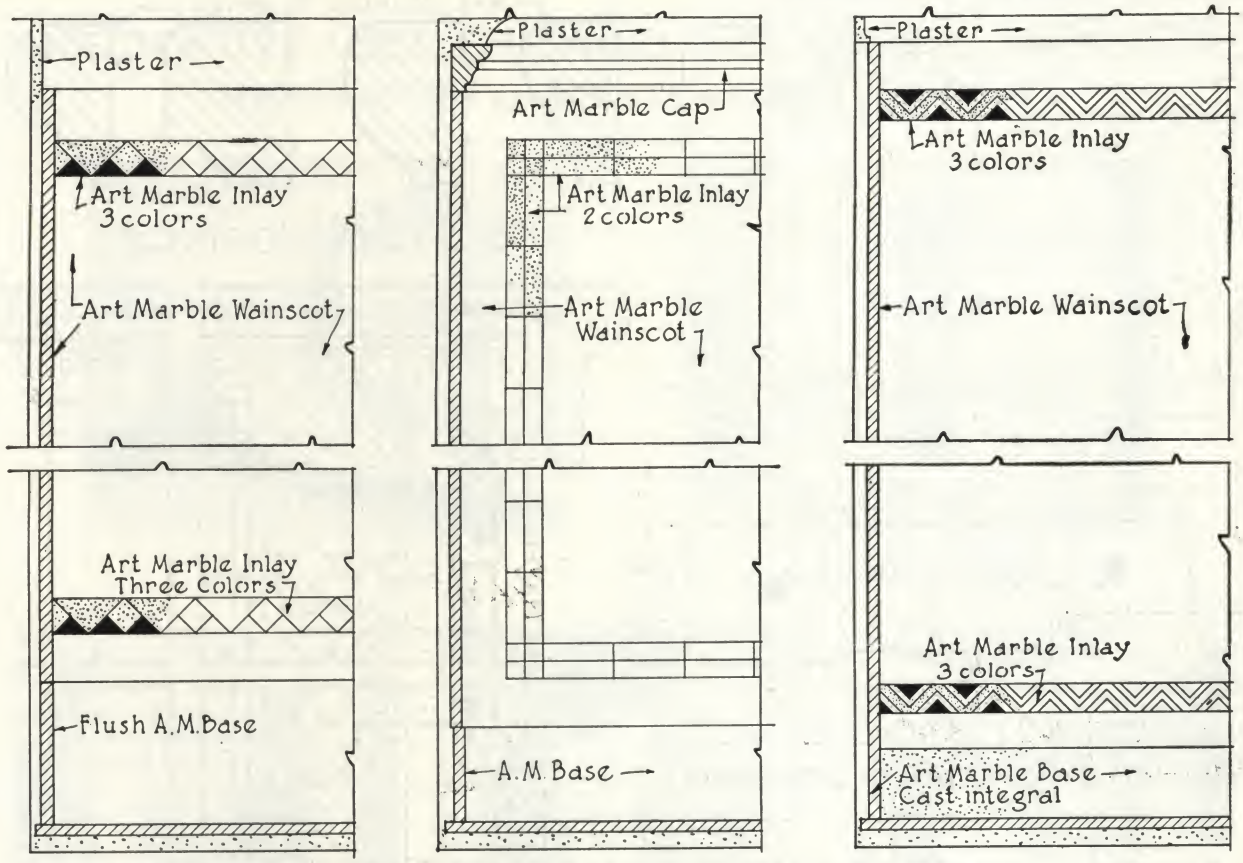
Non-Slip Art Marble (Alundum Aggregate) Ribbed Floor Strips are necessary, where steep Ramps are required, for heavy foot traffic. In addition to the use of Alundum Aggregate as the Non-Slip abrasive, note that the construction of the strip is such as to prevent all slipping hazard



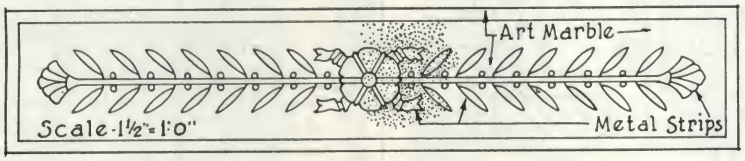
F.S. DETAIL OF NON-SLIP ART MARBLE RIBBED FLOOR STRIPS
DESIGN PATENTED NO. 1778736

CHICAGO ART MARBLE CO.	CHICAGO ART MARBLE NON-SLIP RAMPED FLOORS	SCALE AS SHOWN	PLATE 7

Continued on next page

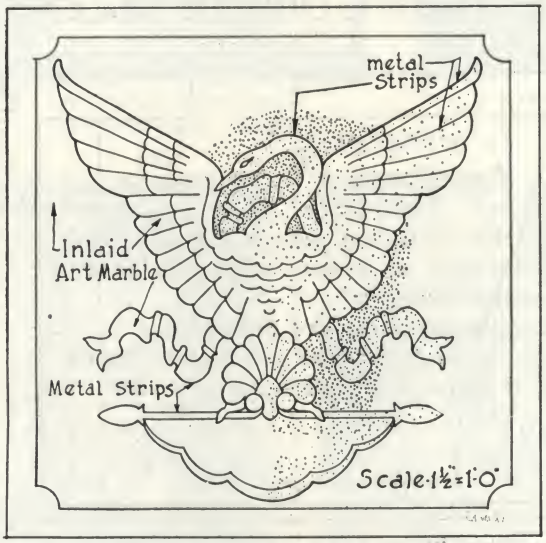


·ELEVATIONS·OF·ART·MARBLE·INLAID·WAINSCOTS·SCALE-3/4"=1'-0"



·ART·MARBLE·WAINSCOT·· ·METAL·STRIPS·

Simple designs inlaid in Chicago Art Marble wainscot can be effected with or without metal strips, according to desire of Architect.



·ART·MARBLE·WAINSCOT·METAL STRIPS·

NOTES

Inlaid Color Designs in Art Marble Wainscot are flush with and cast integral with Wainscot. Designs may also be raised or recessed.

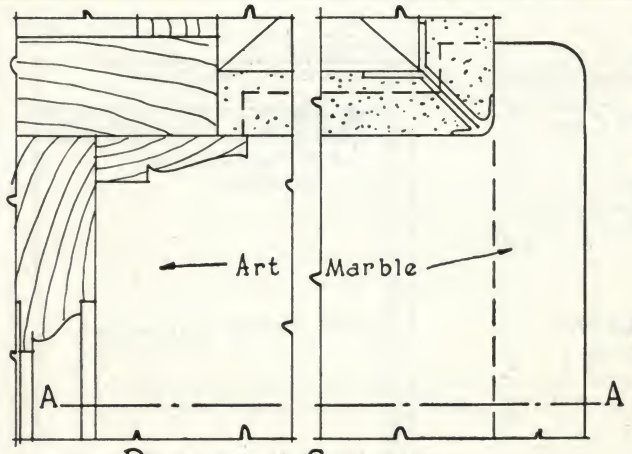
Where an intricate inlaid design in Art Marble wainscot is desired, Pascal Sylvester's metal strips are used.

See photographs following for additional information.

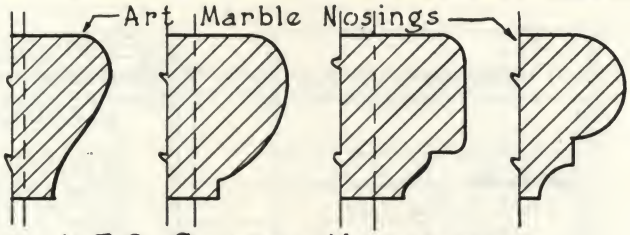
Inlaid Designs may also be executed in Art Marble and Non-Slip Art Marble Floor Slabs.

CHICAGO ART MARBLE CO.	CHICAGO ART MARBLE INLAID WAINSCOTS	SCALE AS SHOWN	PLATE 8

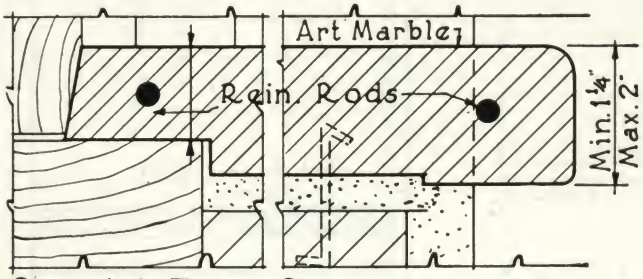
Continued on next page



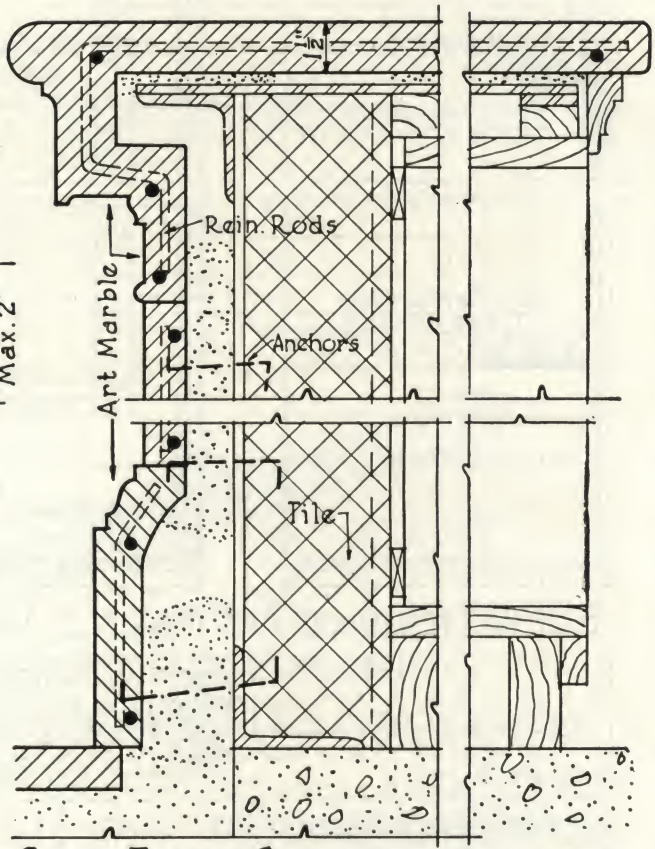
· PLAN · OF · STOOL ·



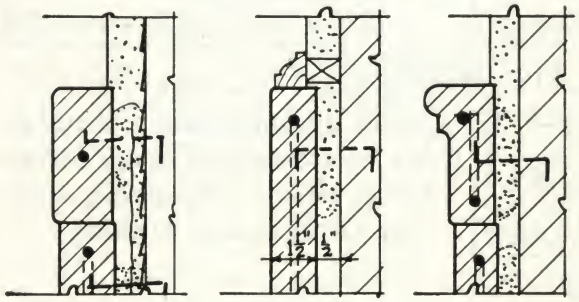
· ½ F.S. · STOOL · NOSINGS ·

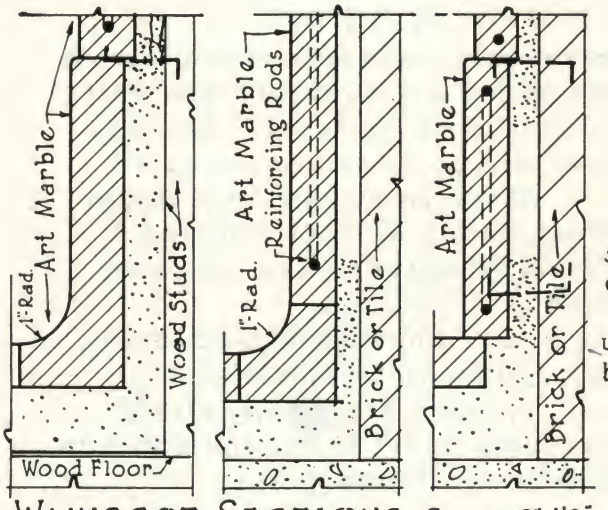


· SECT. A-A THRU · STOOL SCALE 6" = 1'-0" ·

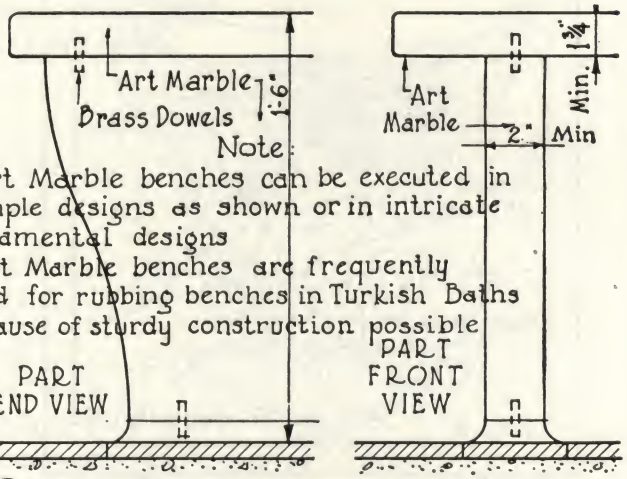


· SECT · THRU · COUNTER · SCALE 3" = 1'-0" ·





· WAINSCOT · SECTIONS · SCALE 3" = 1'-0" ·



Note:
Art Marble benches can be executed in simple designs as shown or in intricate ornamental designs
Art Marble benches are frequently used for rubbing benches in Turkish Baths because of sturdy construction possible

· BENCH · DETAILS · SCALE · 1½" = 1'-0"

CHICAGO ART MARBLE CO.	CHICAGO ART MARBLE MISCELLANEOUS DETAILS	SCALE AS SHOWN	PLATE 9

Continued on next page

DECORATIVE USES CHICAGO ART MARBLE PRODUCTS

Suggesting unlimited possibilities for architectural interpretations

Art Marble wainscot with three color inlaid borders.

Modern use of Art Marble wainscot for a store front.

Art Marble Bank Screen of interesting design.

Life size Fountain executed in Art Marble.

Art Marble Columns with contrasting stripes inlaid.

Art Marble Wall Fountain in modern motif.

Check Desk of intricate design and seat moulded in Art Marble.

Art Marble Wall Fountain executed in French motif.

Continued on next page

ART MARBLE

PRODUCTS OF

CHICAGO ART MARBLE COMPANY

TRAVATEX PRODUCTS CORPORATION

SUBSIDIARY OF THE UNIVERSAL PIPE AND RADIATOR COMPANY

Graybar Building, 420 Lexington Avenue, NEW YORK, N. Y.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

TRAVATEX

TRADE MARK REG. U. S. PAT. OFF.

THE SYNTHETIC TRAVERTINE MARBLE

Product

TRAVATEX, the synthetic Travertine Marble. Stock sizes and special ornamental pieces.

Uses

In place of travertine and other high grade marbles, for the interior walls, floors and stairs of banks, schools, libraries, theaters, restaurants, churches, clubs; office and apartment building lobbies; fine residences, etc.

Description

A synthetic travertine marble; composed chiefly of marble dust, precast with exact accuracy from selected specimens of Roman travertine. Has a warm ivory tone and a surface of fine, smooth texture. Contains no portland cement, Keene's cement nor plaster.

Sizes

Carried in stock in 12x24x½ in. for walls and in 12x24x1 in. for floors. On special order, in any size up to 24x48 in., and in curves, cornices and all other ornamental shapes. Also bullnose stair treads.

Advantages

All the natural beauty of Roman travertine. Feels like stone and looks like it. Is harder than travertine and equally durable. Large variety of patterns. Every panel a selected design. Saves space and labor. Low cost. Will not warp. Can be washed. Special color effects on special order.

Facilities and Resources

TRAVATEX PRODUCTS CORPORATION is a subsidiary of The Universal Pipe and Radiator Company, which is also parent company of The Central Foundry Company, makers of F & W trade-mark fittings and Nuhub trade-mark soil pipe; Central Radiator Company, Lansdale boilers and radiators; Molby Boiler Company, Inc., Molby magazine-feed boilers; and Essex Foundry, SX drainage and steam fittings. The vast resources of this group of industries, with a reputation for more than a quarter of a century of quality and service, are behind Travatex.

Service

Architectural or erecting assistance and advice gladly supplied free of charge.

Erecting

By Whom Applied—By marble setters.

Method of Application—Travatex may be applied on any rigid wall. Stock material is applied with plaster of paris without anchoring. Sizes larger than 2 sq. ft. should be anchored the same as marble. When stock sizes are to be applied without anchoring, walls of hollow tile, brick, gypsum block or similar materials should be leveled off to from ⅞ to 1¼ in. from finished face of Travatex.

Cutting and Fitting—Cutting from shop drawings or according to exact measurements may be done at factory. Fitting on the job may be done with a chisel or portable emery wheel.

Properties

Weight—Approximately 5½ lb. per sq. ft. for ½-in. thickness.

Crushing Resistance—4000 lb. per sq. in.

Wear—Will withstand four times as much abrasion as natural travertine.

Absorption—6.5% of its own weight of water in 24 hours.

Fire Resistance—No serious disintegration at temperatures below 1300° F.

Cost

In most sections of the country the erected cost of Travatex is about two-thirds the erected cost of Roman travertine. Price per square foot or per job (stone only or including the erecting) upon request.

Specification for Travatex Walls

All artificial travertine is to be Travatex as supplied by TRAVATEX PRODUCTS CORPORATION, 420 Lexington Avenue, New York, N. Y. Where ashlar calls for blocks 12x24 in. or smaller, material ½ in. thick may be used and shall be applied by buttering over the entire back of the moistened Travatex and applied immediately to moistened wall, carefully lined up and plumbed. Blocks larger than 2 sq. ft. shall be anchored according to approved marble setters' practice, but shall first be thinly buttered with plaster of paris over the entire back of the stone.

Specification for Travatex Floors and Stair Treads

These shall be laid according to standard marble setters' practice. Travatex risers shall be set in accordance with the standard specification for setting Travatex wall panels.

THE VIBREX COMPANY

Walls and Floors of Vibrex

GENERAL OFFICES
101 Park Avenue
NEW YORK, N. Y.

FACTORY: NEW HAVEN, CONN.

AGENTS IN PRINCIPAL CITIES OF UNITED STATES AND CANADA

For Mantels of Vibrex, see Manufacturers' Index

Vibrex—A Floor and Wall Material in Slabs

The Nature of Vibrex Building Material

A scientifically and architecturally correct building material produced in slabs of various standard sizes, ¾ in. thick for floors, and ⅝ in. thick for walls, completely finished at the factory and shipped ready for installation.

Vibrex is stonelike in appearance, light in weight, can be cut and fitted at the job, and can be installed at a price which represents a considerable saving in building costs. The Vibrex manufacturing process (patent applied for) gives to the finished product an interesting texture and color variation, strength, resilience, and density which, to our knowledge, cannot be achieved by any other mechanical means. The Vibrex process is owned and used exclusively by THE VIBREX COMPANY.

Characteristics

Vibrex is light in weight, uniform in quality, resilient, dense, strong, fireproof and verminproof, and it will not warp, shrink, expand, or crack. No painting, surfacing or finishing is required. It is easily kept clean with soap and water.

Because of its fibrous content it is efficient for acoustic and insulating purposes.

Uses

Vibrex is used for walls, floors, stair treads, risers, stringers, sills, moulding, base, ornament, cornice, pilasters, columns, capitals, fireplaces, wainscots, arches, panels, etc.

Colors

The wide variety of Vibrex colors and standard sizes makes possible an almost unlimited choice of designs and color combinations. Vibrex ranges in color from soft neutral tints to brilliant shades for contrast. Twenty Vibrex colors are shown in the Vibrex standard color chart on the following page.

Standard Sizes in Inches

6x 6	8x 8	12x12	18x18	24x24
6x12	8x12	12x18	18x24	24x36
6x18	8x18	12x24	18x36	24x48
6x24	8x24	12x36	18x48	24x60

Ornament

Vibrex ornament is made by the same protected process as the flat material, and in designs exactly in accordance with your own architectural details.

Installation

Vibrex floors and walls are installed by THE VIBREX COMPANY or by its responsible accredited agents in the territories where the material is used. See standard specifications on second page following.

Vibrex Floors

Vibrex for floors is ¾ in. thick and of closer texture and greater density than the wall material—due to an extended period of application of the Vibrex exclusive process of manufacturing.

The advantages of strength and toughness which this process imparts to Vibrex are particularly desirable in its extensive use for flooring.

Vibrex resists wear with stonelike tenacity—yet is resilient and easy to walk on. Its surface texture is a natural preventive of slipping or skidding—and under heavy traffic Vibrex floors retain their interesting color variation and brightness of tone.

Vibrex floors will not scuff or dust—the natural resilience of the material affords a tough wearing surface and the original surface appearance is maintained throughout the life of the floor.

The wide range of colors and sizes in Vibrex flooring make it possible to select a floor scheme in harmony with almost any type of interior. The bright colors and large sizes are adaptable to modern work—the warm reds and browns are typical of Spanish interiors and the buffs, grays, and stonelike colorings harmonize with decorations reminiscent of the English and other Old World periods.

Vibrex can be laid over any sound type of underfloor.

It can be nailed to wood or bonded to masonry, stone, or cement underfloors with Vibrex non-staining, waterproof cement.

Vibrex flooring is completely finished at the factory—no grinding, sanding or surfacing is required. Corners, borders, or any cutting or fitting can be done with a wood saw at the building. After laying Vibrex floors can be left with their natural, dull stonelike finish, or can be brought to a high luster by waxing and polishing.

Vibrex floors are easily kept clean by washing with soap and water—and can be laid indoors or exposed to the weather.

Vibrex sanitary cove or straight base is supplied to

Continued on next page

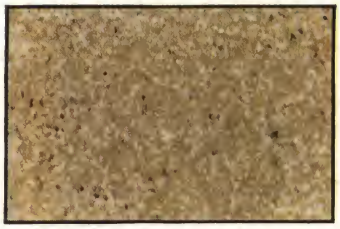
VIBREX

STANDARD COLORS

Much of the beauty of VIBREX colorings is in the interesting variation in a single shade. Solidity of color is broken by the characteristic mottling which is achieved intentionally in the manufacturing process.

Ivory

Gold Antique


Light Olive

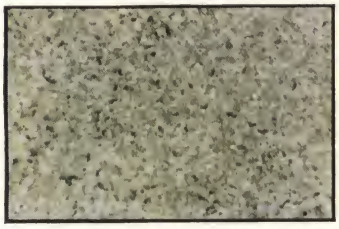
Sand

Sienna

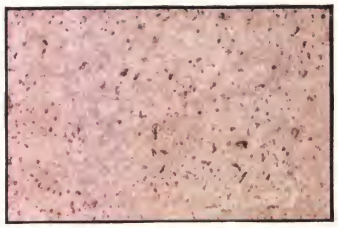
Tan

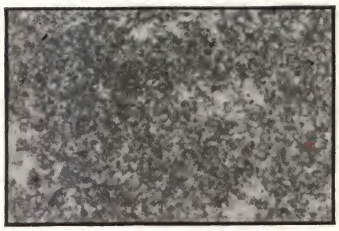
English Red

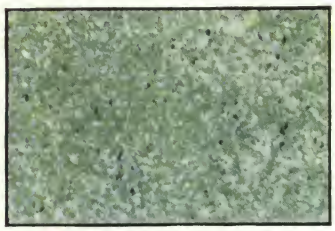
Buff

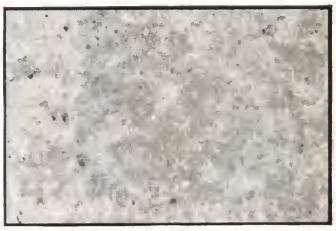

Dark Olive

Morocco

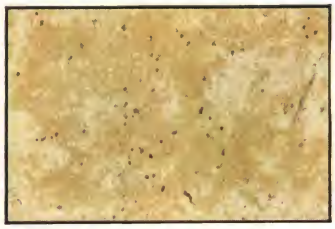

Shell Pink


Stone Gray

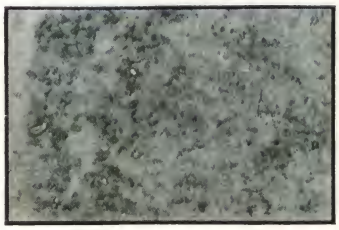

Apple Green


French Gray

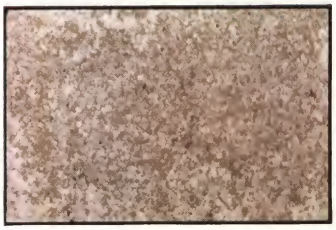
Chocolate


Gold

Spanish Red


Dark Green

Black


Sepia

Continued on next page

match Vibrex flooring. Vibrex stair treads and stair risers are durable and economical and can be made in a variety of sizes or to follow special templets to carry out architecturally correct details.

Vibrex Floor Specifications

Instructions for supplying and installing Vibrex floors should be written under a separate "Vibrex" heading in specifications.

Vibrex as supplied and installed by THE VIBREX COMPANY, or as installed by accredited Vibrex agent.

Vibrex Over Masonry Floors

General contractors shall supply a screed finish underfloor, level and true to a point 7/8 in. below the desired finished floor line.

Vibrex floor slabs to be set in 1/8-in. bed of Vibrex cement and tamped into place true to line and level.

Joints—Edges of Vibrex floor slabs to be buttered with Vibrex cement and squeezed tightly into place. Excess cement to be wiped clean with damp cloth as each slab is laid.

Alternate—Leave 1/8 to 1/4-in. space between joints and grout with portland cement. This method of jointing will slightly darken the surface of the floor, but does not detract from the stonelike appearance.

Vibrex Over Wood Underfloors

General contractors shall furnish wood underfloor nailed tight, level and true to a point 3/4 in. below the desired finished floor line.

Vibrex slabs to be face-nailed (6d galvanized or brass finishing nails), nails to be countersunk and nailholes pointed with Vibrex pointing compound.

Joints—See specifications for Vibrex over masonry underfloors.

Alternate—Vibrex set in Vibrex Cement Over Wood Underfloor.

General contractors to supply wood underfloors nailed tight and true to a point 7/8 in. below the desired finished floor line.

Lay Vibrex as outlined in specifications for installation over masonry underfloor.

Vibrex Walls

Vibrex walls are most interesting when the slabs are used in various color combinations, such as ivory, buff, sand, and gold. Blending of these four shades on one wall gives a harmony of color and warmth of tone that breaks up in an interesting and artistic manner the monotony of flat surface areas.

The texture of Vibrex wall material can be regulated to a certain extent; for instance, we can supply you with a coarse, heavy texture which is particularly effective for churches, auditoriums, or any large wall surface to be finished in Vibrex. A smoother texture can be supplied for school walls, lobbies, bathrooms, or any other wall area where a surface easily kept clean with soap and water is desired.

Vibrex for walls provides a hard surface finish, permanent and economical for surface areas subject to hard wear. Vibrex requires no painting, the colors are permanent, and where Vibrex walls are used maintenance costs are eliminated.

There is throughout the thickness of Vibrex, due to the Vibrex process of manufacturing, confined air spaces, which, together with the fibre content of the material, give to Vibrex efficient insulating and acoustic properties. These qualities, together with the natural surface texture of Vibrex, greatly enhance the tone values of the interiors of churches, auditoriums, concert halls, or any building where the acoustical treatment is important.

Vibrex wall slabs can be put up over brick, hollow tile, gypsum block, or any type of masonry ground walls, and are set in place with Vibrex cement in much the same manner that any stone facing is erected. THE VIBREX COMPANY is responsible for your entire satisfaction, both as to material and installation.

Vibrex can also be nailed to wood furring or sheathing if the conditions of the work require this method of installation.

Vibrex wall installations can be carried out architecturally correct in every detail. The flat work can be supplemented with Vibrex ornament, which has all the characteristics of the regular wall slabs. THE VIBREX COMPANY offers to architects the facilities of an Ornamental Department completely under the supervision of an artist, nationally known for his ability in sculpture, modeling, and knowledge of the processes which make Vibrex ornamental work distinctive and in exact accordance with your own special details.

Vibrex for walls reduces the cost of building without sacrificing beauty, permanence, or limiting individual architectural expression.

Vibrex Wall Specifications

Instructions for supplying and installing Vibrex walls should be written under a separate "Vibrex" heading in specifications.

Vibrex Over Masonry Backing

(Brick, hollow tile, gypsum block, concrete, terra cotta blocks, etc.)

General contractors shall supply cement mortar coat with wood float finish level and true.

Vibrex slabs to be set in place by buttering back of slab with Vibrex cement, slab to be tamped in place true to line level and plumb.

Joints—Edges of Vibrex slabs to be buttered with Vibrex cement and squeezed tightly into place. Excess cement to be wiped clean and joints sealed.

Supply a stone joint recessed on the edges of Vibrex slab any width up to 3/4 in.

Alternate—Supply Vibrex slabs with 1/8 or 1/4-in. forty-five degree chamfer on edges to form a V-joint when laid up close.

Vibrex on Wood Furring or Wood Sheathing

Allow 2 1/2 in. from grounds to finished face of Vibrex. Brick masonry or hollow tile grounds to be double furred (7/8x3-in. spruce furring recommended), furring to run horizontally and vertically—vertical furring on 12-in. centers, horizontal furring to be spaced to meet horizontal joints of Vibrex slabs. Single furring may be used where space is not sufficient for double. Face of furring to be true to line, level, and plumb.

Joints—Choice of different types of joints as given under specifications for masonry method of installation.

Vibrex slabs to be laid up with close butt joints and edges buttered with Vibrex cement for sealing. Slabs to be nailed to furring through face (6d galvanized or brass finishing nails recommended), nails to be countersunk and nailholes pointed with Vibrex compound.

ZENITHERM COMPANY, INC.

Manufacturers of Interior and Exterior Walls and Floors

110 East 42nd Street, New York, N. Y.
HOME OFFICE AND PLANT: KEARNY, N. J.
BRANCH OFFICES
CHICAGO, ILL., 612 N. Michigan Avenue
BOSTON, MASS., 11 Beacon Street
PHILADELPHIA, PA., 806 Otis Building
DETROIT, MICH., Penobscot Building
REPRESENTATIVES IN ALL PRINCIPAL CITIES OF UNITED STATES AND CANADA

Zenitherm, the Material and Its Uses

Zenitherm has all the dignity and massiveness, without the coldness, of stone. It has all of the convenience of wood, since it can be nailed, sawed, drilled and screwed.

Zenitherm is made of a combination of selected wood fibre and highest quality calcined magnesium oxide. This is treated with a weatherproofing binder and subjected to hydraulic pressure in steel moulds. The pressure is maintained until the mass sets into a dense block, which is not only highly fire resistant but is exceptionally low in absorption. It does not distort or shrink. The process is covered by patents and its production is under factory control. There is no substitute having the specific advantages of Zenitherm.

Qualities and Properties

Zenitherm is impervious to frost or any climatic conditions. Constant physical characteristics together with low thermal conductivity make Zenitherm preferable as a permanent material insuring comfort, beauty, durability, weather resistance and safety in its fireproof qualities.

Uses

Zenitherm is used for interior or exterior walls, floors, fireplace facings, wainscot, arches, panels, sills, stair treads, risers, string, base, walks, et cetera.

Standard Colors

Zenitherm is made in 21 standard colors: natural, buff, gold, pink, coral pink, olive, drab, light gray, stone gray, light brown, dark brown, red, green, blue, black, tangerine, havana brown, maya brown, £1000, sea green, lichen green.

(See color chart on Zenitherm page 5.)

The fact that Zenitherm is available in different shades gives the architect ample opportunity to secure beautiful and permanent effects. Colors are obtained by mineral pigments, *not dyes.*

Standard Sizes

Zenitherm is made in fifteen standard sizes. Other sizes can be furnished according to specifications. Prices on application. All wall and floor material is ⅝ in. in thickness. Cove base measures 4¾ in. from top of base to finish floor. Straight plain base, any height desired. Stair treads 1¼ in. in thickness. Risers ⅝ in. in thickness. (See details of Zenitherm base stair treads and risers on Zenitherm page 6.)

STANDARD SIZES

Width, in.	Length, in.	Width, in.	Length, in.	Width, in.	Length, in.	Width, in.	Length, in.
5½	5½	5½	47½	8½	23½	15½	15½
5½	11½	8½	8½	8½	47½	15½	17½
5½	17½	8½	11½			17½	23½
5½	23½	8½	15½	11½	17½	17½	47½

Standard Mouldings and Trim

Zenitherm standard mouldings are made for use in conjunction with Zenitherm walls. There are thirteen different designs available. (See details on Zenitherm page 6.) Zenitherm mouldings and trim adaptable to ashlar surfaces assure a finish correct in design and effective in treatment.

Corner Pieces

Zenitherm solid corners are manufactured to eliminate the appearance of joining and edge mitering. (See details on Zenitherm page 6.) They carry out completely the effect of solid stone for columns, pilasters, beams, returns, reveals, quoins, et cetera. Where Zenitherm corner pieces are used, all edge mitering or joining is eliminated and installation costs are reduced to a minimum. Zenitherm corner pieces are supplied only when called for.

Zenitherm Walls, Temple Emanu-el, Paterson, N. J.
FRED WESLEY WENTWORTH, Architect

Zenitherm Floors, Office of W. Burke Harmon, Harmon National Real Estate Corporation, New York, N. Y.

Continued on next page

Door Saddles

On Zenitherm page 6 are detailed five different types of Zenitherm door saddles which may be explained as follows:

Type A—Made from standard ⅝ in. material. The maximum dimensions are 47½ in. long and 17½ in. wide.

Type B—This type is standard ⅝ in. material planed in such a manner that it acts as a ramp between the Zenitherm floor level and either concrete or linoleum level.

Types C and D—These are special hand cast saddles and can be had up to a length of 5 ft. Maximum width for safe shipping 17½ in.

Type E—Any saddle made in accordance with architect's detail.

Zenitherm Exterior Walls, Bridge House, North Western Avenue Bridge, Chicago, Ill.

Weight Data

The following information will be found valuable in computing the freight costs on Zenitherm:

⅝ in. Zenitherm.....4 lb. per sq. ft.

Bedding compound:

3½ lb. per sq. ft. for ¼-in. bed.

1¾ lb. per sq. ft. for ⅛-in. bed.

1¼ in. stair treads.....8 lb. per sq. ft.

Note: In the case of ⅝ in. material for walls, the weight is to be based on the gross area; that is, net area plus 15%. It is essential that the additional 15% be added in, as it is impossible to tell what portion of the allowable waste must be shipped in order to complete the job.

The weight of ⅝ in. material for floors should be based on net area plus 8%, as it is necessary to send some waste over the actual net required.

For all ornamental items, except standard mouldings (which can be taken on the basis of the 1¼ in. treads), it is wise to figure 10 lb. per sq. ft. for an average thickness of 1 in. While the material itself does not weigh quite this much, it is often necessary to pack it in bulky boxes which have a tendency to raise the weight out of proportion to the actual pieces shipped.

Installation

Zenitherm presents no difficulties of installation. The blocks, cut into standard sizes at the factory, are face nailed with galvanized finishing nails to furring, or haired brown coat of plaster or mortar, for ashlar surfaces. Zenitherm Floors follow the standard methods of installing floor materials. Any competent carpenter can lay Zenitherm Floors and erect Zenitherm Walls if a reasonable amount of care is exercised.

Our "Installers' Guide" gives full information and helpful suggestions to make the installation of Zenitherm a simple task. A copy is furnished with every order; extra copies on application.

Literature for Architects, Their Clients and Contractors

We have several booklets and folders available which we shall be glad to mail on request. Included among these publications are "Zenitherm for Walls and Floors"; "A Folio of Patterns"; "Zenitherm Defined"; "Banking on Zenitherm"; "Some Architectural Mouldings and Bases Achieved with Zenitherm"; "Installers' Guide."

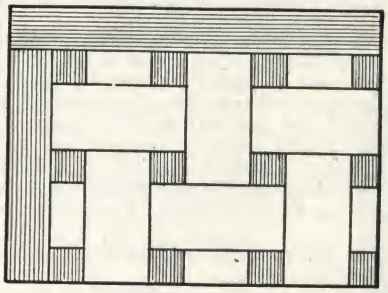
Zenitherm Walls, Calcasieu National Bank, Lake Charles, La.
FAVROT & LIVAUDAIS, LTD., Architects

Zenitherm Floors, Sun Room, Haddon Hall Hotel, Atlantic City, N. J.
RANKIN & KELLOGG, Architects

Continued on next page

STANDARD FLOOR PATTERNS

The national reputation which Zenitherm Floors have gained and consistently maintained is richly deserved for many reasons, including their good looks, durability and general workability. But one of the chief claims to consideration is the wide range of selection afforded by a multiplicity of beautiful and striking patterns offered in all sorts of shapes, sizes, colors and styles. Fourteen of the more popular standard Zenitherm Floor patterns are shown below. A series of Zenitherm Floor patterns, reproduced in actual colors, will be supplied upon application.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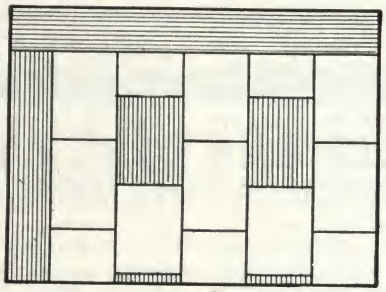
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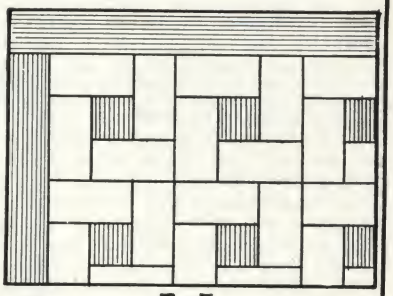
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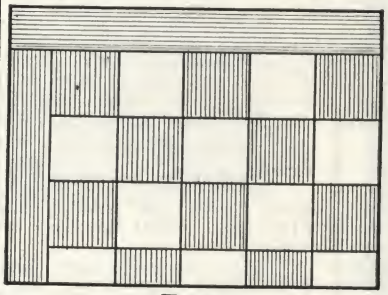
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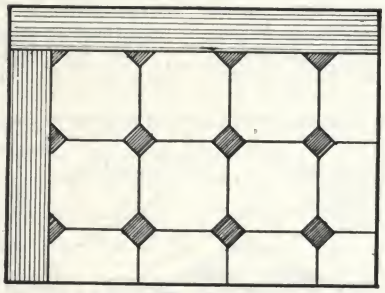
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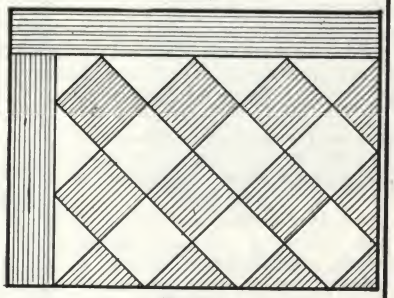
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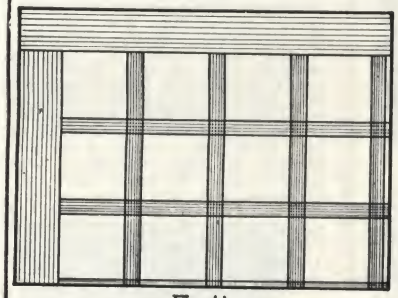
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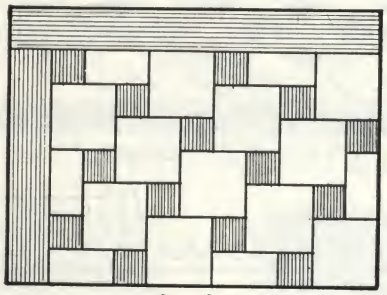
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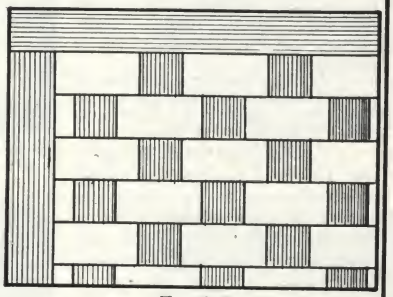
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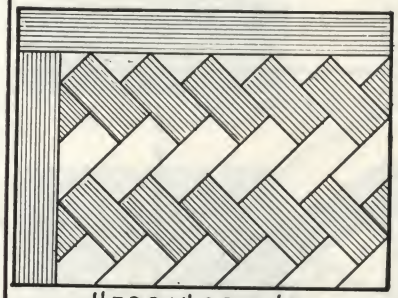
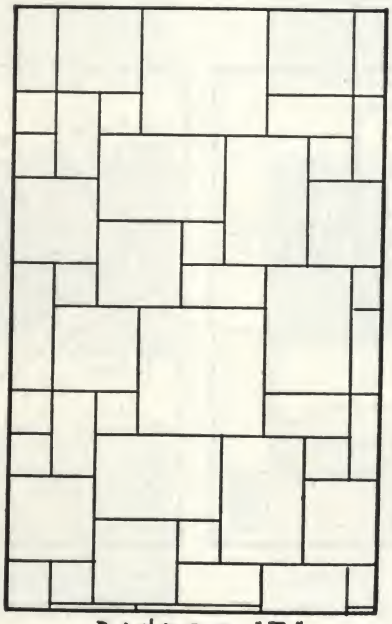
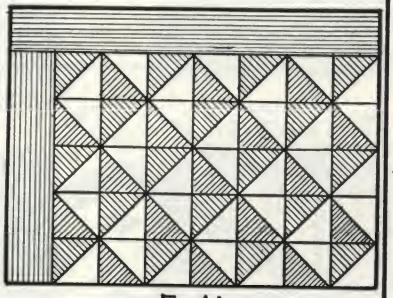

HERRINGBONE


RANDOM "T"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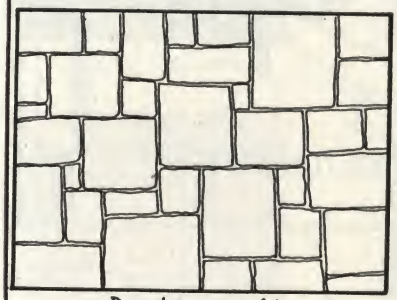
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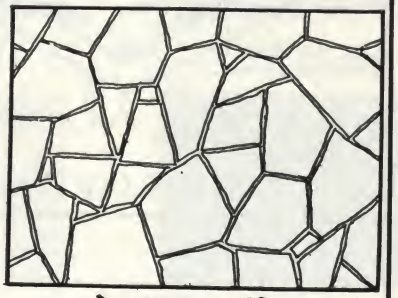
RANDOM "200"

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SPECIFICATIONS FOR THE PROPER INSTALLATION OF ZENITHERM

The following specifications are recommended for architects' use. They are designed to cover all possible uses of Zenitherm.

Specifications for Zenitherm Floors

Zenitherm Floor on Wood Underfloor

(1) Furnish and install in the following portions of the work, Zenitherm Floors as manufactured by the ZENITHERM COMPANY, INC., Kearny, N. J., laid strictly in accordance with the following specifications and the manufacturer's directions.

Note: List here the portions of the work that are to have Zenitherm Floors and specify the sizes and colors of blocks to be used.

(2) ***Preparatory Work***—Before the Zenitherm Floors are laid, the General Contractor shall see that all wood underfloors are level and true ¾ in. below the finish floor level; boards to be laid up tight and securely toe-nailed to prevent warpage. Wood underfloor on new work should be tongue and groove flooring not over 4 in. wide, driven tight, well nailed, true and level.

(3) When the underfloor has been properly prepared, Zenitherm blocks ⅝ in. thick shall be nailed directly to the underfloor. A ⅛-in. skim coat of Zenitherm Bedding Compound shall be spread over the wood underfloor as the laying of the blocks proceeds, filling up any depressions to a true and level surface. As the blocks are laid, edges of blocks shall be buttered with Zenitherm Pointing Compound and squeezed up tight, the surplus compound that oozes out being wiped off immediately after nailing. 6d hot-dipped galvanized finishing nails shall be used and shall be set ⅛ in., the nail holes being filled with Zenitherm Pointing Compound.

Zenitherm Floor on Concrete Underfloor

(4) Furnish and install in the following portions of the work, Zenitherm Floors as manufactured by the ZENITHERM COMPANY, INC., Kearny, N. J., laid strictly in accordance with the following specifications and the manufacturer's directions.

Note: List here the portions of the work that are to have Zenitherm Floors and specify the sizes and colors of blocks to be used.

(5) ***Preparatory Work***—The General Contractor shall see that provision is made for leaving the concrete underfloors *level* and *true* ⅞ in. below the finish floor level. On new concrete work, top coat need only be screeded or floated to a *level* ⅞ in. below finish floor level. Troweled surface not needed or desirable, but a uniform level must be maintained.

(6) Over the level and true underfloor shall be spread a ¼ in. thick layer of Zenitherm Bedding Compound as the blocks are laid, filling up any depressions to proper level by the use of the Zenitherm Bedding Compound. The backs of the Zenitherm blocks shall be cleaned of dust and dirt and shall be dampened with water. The Zenitherm blocks shall be buttered on two edges with Zenitherm Pointing Compound and set in position, care being taken to keep the Compound off the finished surface of the blocks. The finished floor shall be allowed a minimum of ten hours for setting.

(7) ***Border***—Zenitherm border shall be laid in the same manner as specified for Zenitherm Floors.

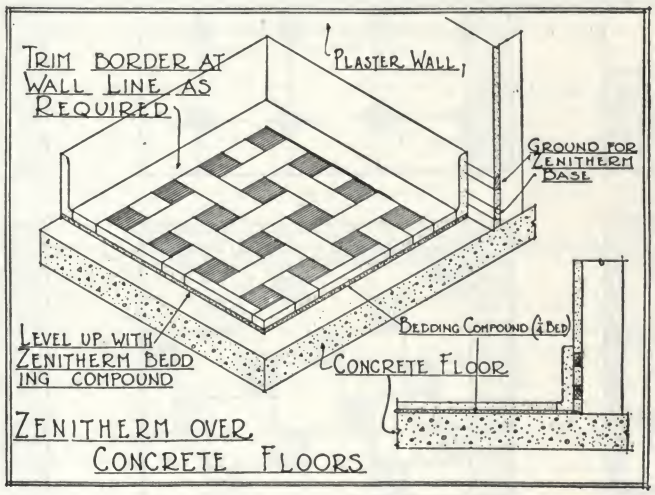
(8) ***Base***—Zenitherm base, of the height indicated on drawings or specified herein, shall be set in the following portions of the work:

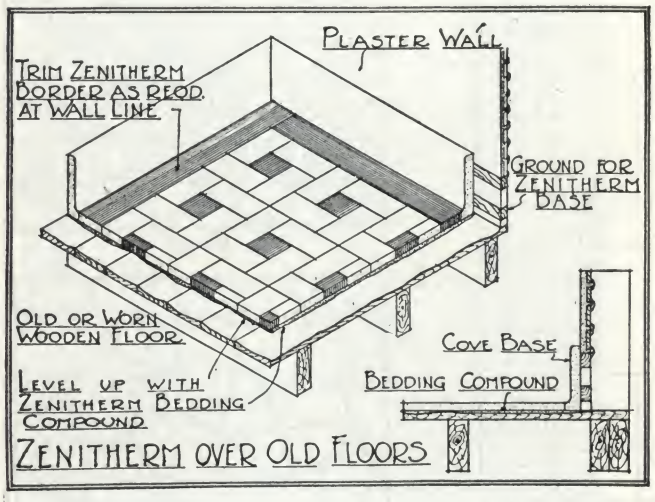
(Insert here the areas affected.)

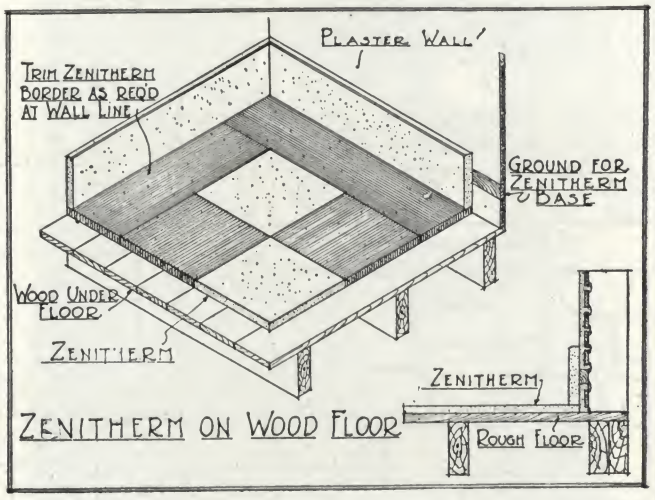
(9) Base shall be set in 47½-in. lengths, in blocks ⅝ in. thick and secured to grounds with 6d hot-dipped galvanized finishing nails. Nails shall be set ⅛ in. and nail holes filled with Zenitherm Pointing Compound.

(10) ***Stairs***— Zenitherm stair treads and risers (and strings) shall be laid as follows:

Note: On wood stairs, Zenitherm should be specified as above for Zenitherm Floors over wood underfloor. On concrete stairs, Zenitherm treads should be specified exactly as for floors over concrete. On iron stairs, specify as follows: Toggle bolt shall be inserted through hole in iron step. The toggle bolt shall be countersunk and hole filled to surface of Zenitherm tread or riser with Zenitherm Pointing Compound. If it is possible to get under the stairs, drill hole through the iron and fasten with wood screw. The use of stove bolts is optional, in which case countersink head in Zenitherm tread and point with Zenitherm Pointing Compound. It is safer to use galvanized or brass screws to avoid development of rust spots.







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LIGHT COLORS

DRAB

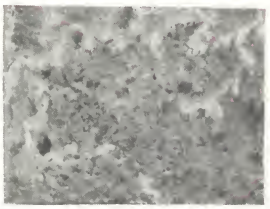
CORAL PINK

GOLD

PINK

NATURAL

OLIVE


STONE GREY

LIGHT GREY

BUFF

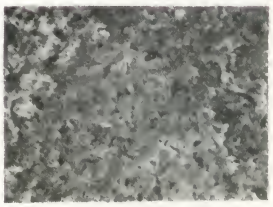
ZENITHERM
STANDARD COLORS

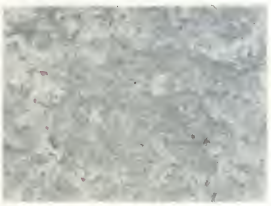
These exact reproductions of the entire range of Zenitherm shades and colors illustrate the beauty and character of Zenitherm texture and coloring. Note how well the flat monotony of solid tones is eliminated through the variation of color and texture in each piece. With this variation, however, a general harmonious tone is maintained, and the effect of the finished Zenitherm floor or wall is both pleasing and desirable.

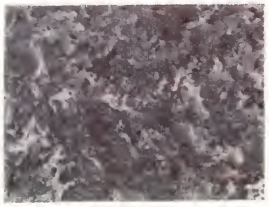
ZENITHERM COMPANY, INC.

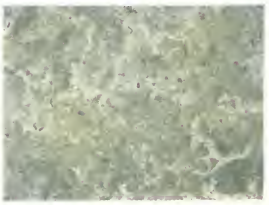
KEARNY NEW JERSEY

DARK COLORS

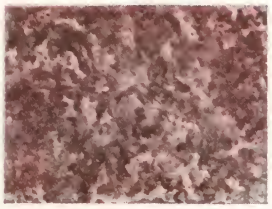

LICHEN GREEN

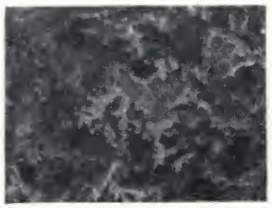

SEA GREEN

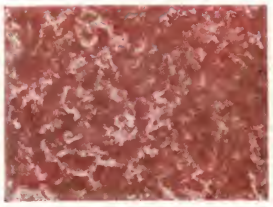

DARK BROWN

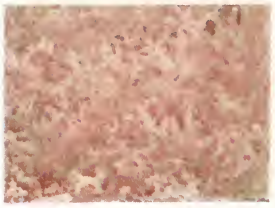

GREEN

LIGHT BROWN


MAYA BROWN


BLACK


RED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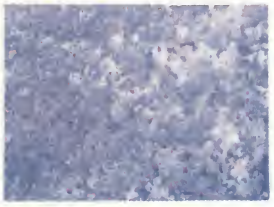

BLUE

HAVANA BROWN

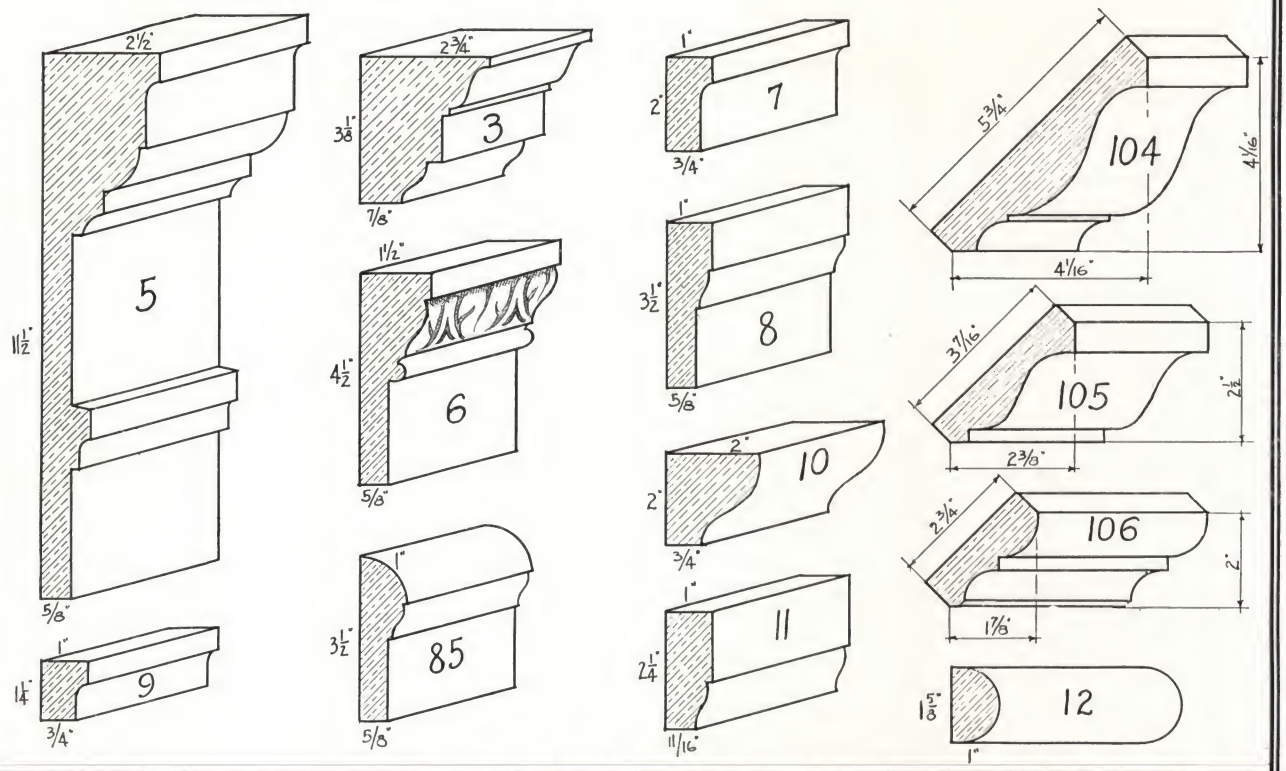
£ 1000

Continued on next page

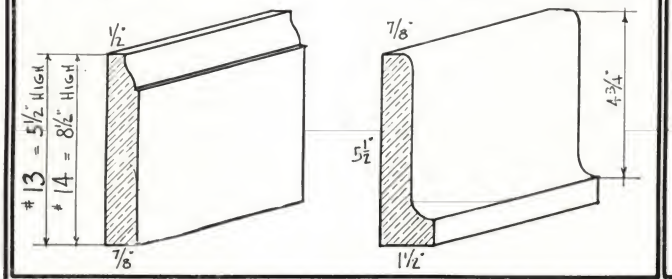
ZENITHERM ORNAMENTAL WORK

The use of Zenitherm for architectural and decorative ornament has certain decided advantages over the use of stone or a similar material. Zenitherm mouldings, base and stair treads can be obtained at moderate cost. Zenitherm is pressed, not cut, thereby insuring perfect detail and absolute duplication. Zenitherm can be supplied in a variety of colors at very little extra cost. No surfacing or finishing is necessary, thus adding to the economy of its use. Our architectural department is always glad to assist architects and builders with suggestions as to how Zenitherm may be used most effectively.

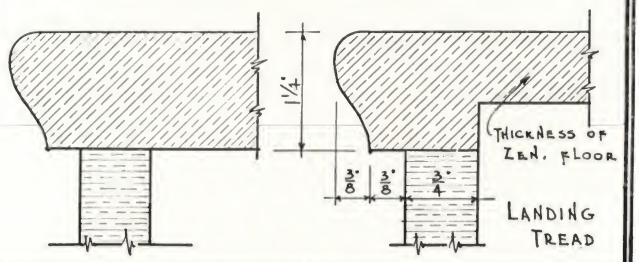
STANDARD MOULDING DETAILS



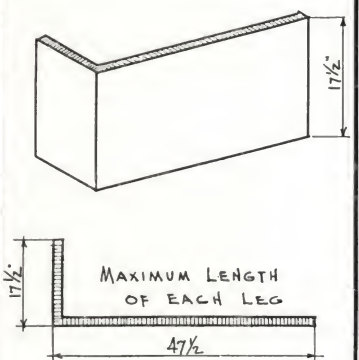
STANDARD BASE DETAILS



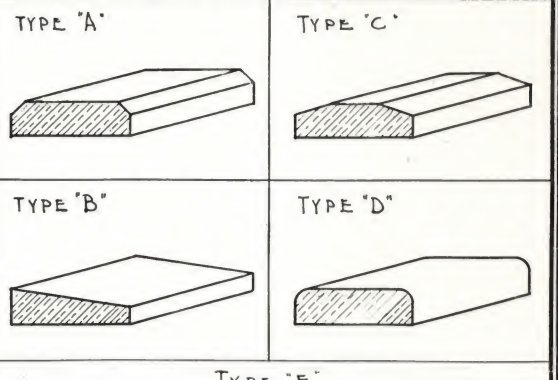
STANDARD TREADS & RISERS



SOLID CORNER PIECES

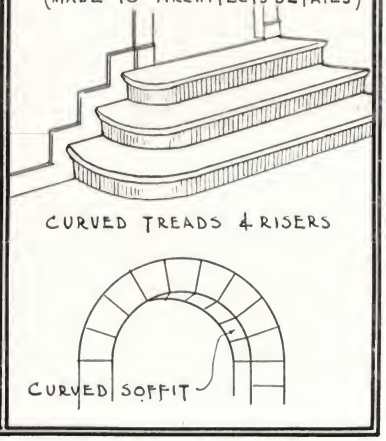


TYPICAL DOOR SADDLES



SPECIAL CURVED MATERIAL

(MADE TO ARCHITECT'S DETAILS)



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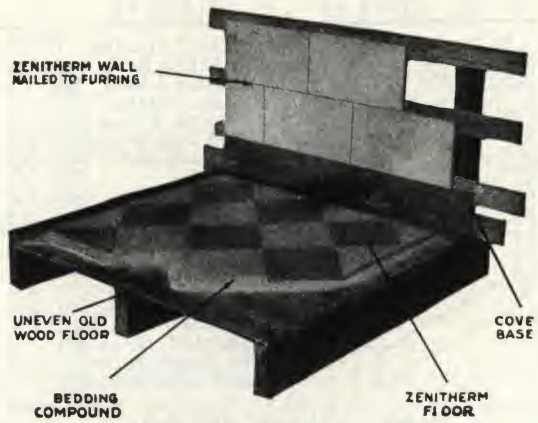
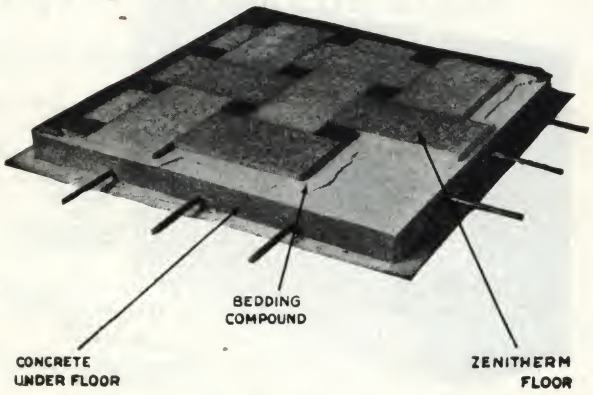


Photographic Detail Showing the Installation of Zenitherm Walls Over Furring and Zenitherm Floors Over Old Wood Floors



Photographic Detail of the Installation of Zenitherm Floor Over Concrete Underfloor

Specifications for Zenitherm Walls

Zenitherm on Interior Walls

(11) Zenitherm Walls and wainscot shall be provided in the following portions of the work:

Note: If Zenitherm Floors have not been previously specified, paragraph 12 should be used instead of paragraph 11.

(12) Furnish and install in the following portions of the work, Zenitherm Walls (and wainscot) as manufactured by the ZENITHERM COMPANY, INC., Kearny, N. J., laid strictly in accordance with the following specifications and the manufacturer's directions:

(Insert here the areas affected.)

(13) Before the Zenitherm is applied, the General Contractor shall see that all wall surfaces are true and plumb.

Note: Paragraph 15, 16, 17 or 18 should be used, depending upon the type of joint desired.

(14) Zenitherm blocks shall be 5/8 in. thick and shall have 1/8-in. (or 1/4-in.) chamfered edges to form V joint when laid up close. All blocks shall be laid up absolutely level and true. All edges of block shall be buttered with Zenitherm Pointing Compound before setting the next block, all excess Compound being wiped from the face of the finished block.

(15) Zenitherm blocks shall be 5/8 in. thick and shall have straight and square edges and shall be laid up absolutely level and true to form 1/8-in. (or 1/4-in.) open joint. All edges of block shall be buttered with Zenitherm Pointing Compound before setting the next block, all excess Compound being wiped from the face of the finished block. (Solid sheathing instead of furring strips is best with open joint design.)

(16) Zenitherm blocks shall be 5/8 in. thick and shall have straight and square edges and shall be laid up absolutely level and true with butt joints. All edges of block shall be buttered with Zenitherm Pointing Compound before setting the next block, all excess Compound being wiped from the face of the finished block.

(17) *Note:* If rusticated joints are desired, indicate the depth and width of the rustication and have specification read: Zenitherm Walls with rusticated joint shall be installed in strict accordance with the manufacturer's directions.

(18) ***Bathrooms*—The** wood backing around tubs and shower stalls shall be covered with a layer of heavy waterproof paper or Ruberoid, applied like flashing at rim of tub or shower pan, and the Zenitherm shall be nailed with 6d galvanized finishing nails, driven at an angle, nails to be set 1/8 in. and the nail holes filled with Zenitherm Pointing Compound. All edges of block shall be buttered with Zenitherm Pointing Compound before setting the next block, all excess Compound being wiped from the face of the finished block.

(19) ***On Concrete, Hollow Tile or Masonry Walls Using Furring*—**

Note: It is recommended, for the sake of economy, that wood nailing blocks be provided when the wall is erected, to which attach 7/8 x3-in. furring strips.

(20) Zenitherm blocks shall be nailed to furring strips or sheathing with 6d galvanized finishing nails as above specified.

(21) Center all vertical joints of Zenitherm ashlar on furring strips, and, where double furring is used, center horizontal joints on horizontal furring strips. (In lieu of horizontal furring, the vertical furring may be covered with sheathing.)

Note: If close joint is specified, butter edges of block with Zenitherm Pointing Compound. Point open joints as specified under paragraph 15.

(a) *Alternate*—Secure furring for Zenitherm with expansion bolts.

(b) *Alternate*—On hollow tile walls, secure vertical furring with toggle bolts about 18 in. on centers. Apply horizontal furring as above.

(22) ***On Cinder Nailing Block or Gypsum Block Walls, Without Furring or Sheathing*—**

Note: The General Contractor shall see that provision is made for the application of a skim coat of haired brown coat of gypsum plaster or mortar sufficient to bring the wall plumb, true and straight 5/8 in. behind finished wall face.

(23) Zenitherm shall be face-nailed in the usual manner with *brass* finishing nails, nails being driven at an angle directly into the supporting wall. Nail holes shall be pointed as above.

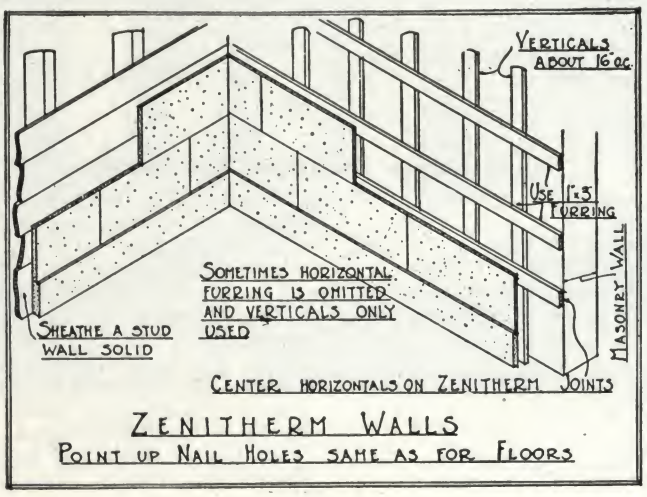
(24) ***On Brick, Concrete, Hollow Tile or Masonry Walls, Without Furring or Sheathing*—**

Note: The General Contractor shall see that provision is made for the application of a minimum 3/4 in. thickness of haired brown coat of gypsum plaster or mortar, bringing wall perfectly true, plumb and straight 5/8 in. behind finished wall face.

(25) Before applying the Zenitherm, this contractor shall see that the brown coat of gypsum plaster or mortar is thoroughly set and dry, true, plumb and straight, of proper strength and nailable.

(26) Before nailing the Zenitherm Blocks, the back surface of blocks shall first be spread with a thin coating of Zenitherm Bedding Compound over the entire surface of the block. The block shall be pressed plumb into place against the plaster backing and nailed as specified below.

(27) Zenitherm shall be nailed with hot-dipped galvanized finishing nails driven through face of Zenitherm at an angle into the brown coat (specify 3d nails for 3/4-in. thick brown coat; 4d for brown coat thicker than 3/4 in.). Use 4, 6 or 8 nails, according to size of block. Edges of Zenitherm blocks shall be buttered with Zenitherm Pointing Compound while being erected. Nails shall be set 1/8 in. and filled with Zenitherm Pointing Compound.



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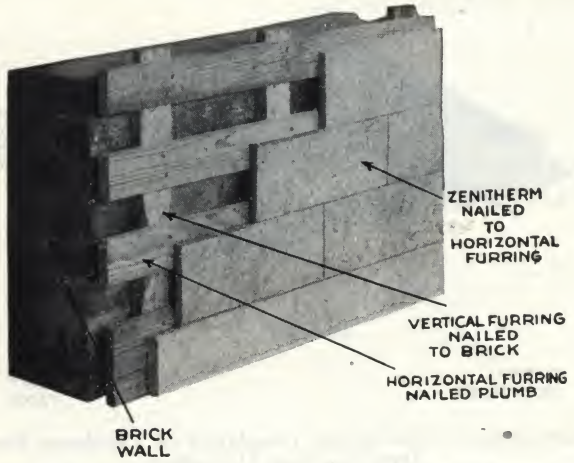
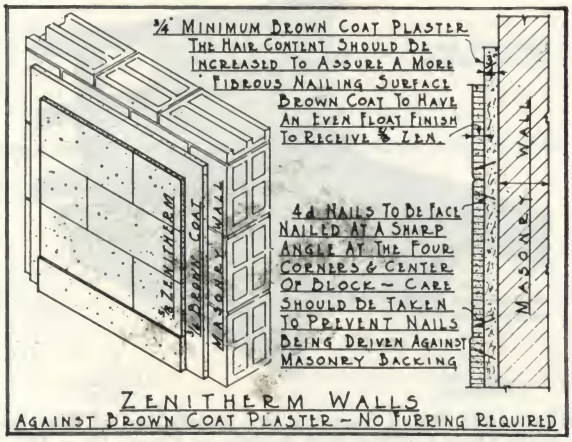


Detail of the Installation of Zenitherm Walls Over Masonry Construction



Zenitherm on Exterior Walls

(28) ***Frame Construction***—Sheating shall be covered with waterproof building paper and Zenitherm blocks nailed to sheathing with 6d brass finishing nails. Nails shall be set ⅛ in. and nail holes filled with Zenitherm Pointing Compound.

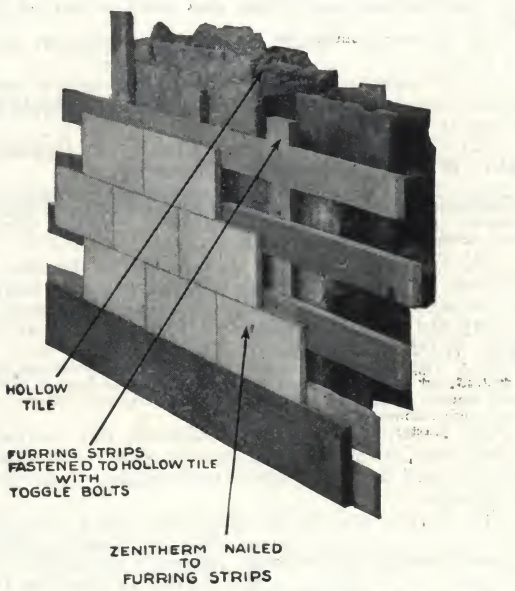
Note: If close joint is specified, butter edge of block with Zenitherm Pointing Compound and squeeze into place before nailing, wiping off excess compound. Point open joints as specified under paragraph 16.

(29) ***Masonry Construction***—⅞x3-in. furring strips shall be nailed to wood plugs or metal wall plugs set in masonry wall. Zenitherm blocks shall be nailed to furring strips with 6d brass finishing nails, the nails set ⅛ in. and the nail holes filled with Zenitherm Pointing Compound. All vertical joints of Zenitherm ashlar shall be centered on furring strips where single furring only is used. Horizontal joints shall be centered on horizontal furring strips where double furring is used. Vertical furring may be covered with sheathing instead of the use of horizontal furring.

Note: (a) If close joint is specified, butter edges of block with Zenitherm Pointing Compound. Point open joints as specified under Frame Construction.

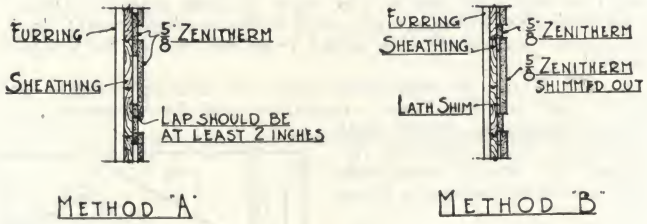
(b) *Alternate*—Secure furring for Zenitherm with expansion bolts.

(c) *Alternate*—On hollow tile walls, secure furring with toggle bolts about 18 in. on centers vertically.



Detail of the Installation of Zenitherm Walls Over Hollow Tile Construction

Photographic View of Rusticated Joint



Representative Zenitherm Installations

Joseph E. Widener Residence, New York, N. Y.
Faris Russell Residence, Mill Neck, N. Y.
J. P. Donahue Residence, Southampton, N. Y.
O. O. Eaton Residence, Watsonville, Calif.
Evans Spaulding Residence, Lake Forest, Ill.
E. T. Stotesbury Residence, Bar Harbor, Me., and Palm Beach, Fla.
Waterloo High School, Waterloo, N. Y.
Lackawanna High School, Lackawanna, N. Y.
Florence Avenue School, Irvington, N. J.
Fairmont High School, Fairmont, W. Va.
Michelangelo School, Boston, Mass.
L. Bamberger & Co. Department Store, Newark, N. J.
Best & Co. Department Store, New York, N. Y.
B. Altman & Co. Department Store, New York, N. Y.
I. Magnin & Co. Department Store, San Francisco, Calif.
Crane Co. Shoowrooms (in over 100 cities)
Fordham University Chapel, New York, N. Y.
Greek Orthodox Church, Chicago, Ill.
St. James Church, Manville, R. I.
Second Church of Christ Scientist, New York, N. Y.
Capitol City Bank, Madison, Wis.
Elks Temple, Auburn, N. Y.
Masonic Temple, New Haven, Conn.
Shoreham Hotel, Washington, D. C.
Molly Pitcher Hotel, Red Bank, N. J.
Philadelphia Hospital, Philadelphia, Pa.

JOHN J. WISE & COMPANY—INCORPORATED

Artificial Marbles, Scagliola and Travertine

TELEPHONE
ALGONQUIN 2699

428 East 13th Street
NEW YORK, N. Y.

Products and Services

Manufacturers and Contractors for:

ARTIFICIAL MARBLES, KROME-MARBLE, SCAGLIOLA, IMITATION TRAVERTINE, KATO STONE, KASOTA STONE, etc.

All other varicolored Domestic and Imported Marbles and Stones Reproduced for interiors of monumental buildings such as banks, churches, theaters and public and private buildings of distinction. (See illustration below.)

In Krome-Marble we are offering a highly polished pre-cast product with a natural glaze adaptable for interior finishes of class and distinction. It can be compared with the finest Domestic or Imported marbles.

Krome-Marble is specially adaptable for sanitary bases as well as being a decorative element similar to marble in uses, wear, thickness and application, making possible an efficient solution of costly interiors, where used by itself or in conjunction with other materials.

Krome-Marble besides being moisture proof will withstand the effects of excessive heat or cold. Its hard non-porous surface is easily cleaned, being unaffected by washing or cleaning solutions.

We undertake to manufacture, also contract for erection of the above materials in any part of the United States or Canada, etc.

Quality

Products of this firm are of the best character, both in æsthetic values in reproductions of natural marbles and in quality of workmanship and materials.

Co-operation

We welcome any opportunity to be of service to architects and contractors in any capacity. Samples, estimates and suggestions will be submitted on request.

Prompt and attractive proposals will be sent to the inquirer on receipt of plans and specifications.

A Few Recent Installations

BUILDING	LOCATION	ARCHITECT
Bloomfield Bank & Trust	Bloomfield, N. J.	Uffinger, Foster & Bookwalter
County Trust Co.	New York, N. Y.	W. Whithill
Rhode Island Hospital Trust	Woonsocket, R. I.	Thomas M. James
Hotel St. Moritz	New York, N. Y.	Emery Roth
Hotel Dixie	New York, N. Y.	Emery Roth
Beresford Apartments	New York, N. Y.	Emery Roth
St. Columbia R. C. Church	Newark, N. J.	M. White
Boca Raton Club	Boca Raton, Fla.	Schultz & Weaver
Broadway National Bank	New York, N. Y.	Louis H. Friedland
400 Madison Ave. Bldg.	New York, N. Y.	H. Craig Severance
Equitable Trust Co.	New York, N. Y.	York & Sawyer
Ticonderoga High School	Ticonderoga, N. Y.	Tooker & Marsh

Bloomfield Bank and Trust Co., Bloomfield, N. J.
UFFINGER, FOSTER AND BOOKWALTER, Architects
The columns in this bank were executed in imitation red Levanto marble

UNITED MARBLE & TILE COMPANY

Co-ordinated Installations of Marble, Tile, Terrazzo and Slate

MAIN OFFICE

PITTSTON, PA.

Co-ordinated Service in the Beginning

In the beginning, co-ordinated service offers to the discriminating architect the opportunity of discussing the problems and possibilities in the use of four crafts which must at any time be considered as very kindred materials.

Our Representatives

Our representatives are trained men prepared to discuss with knowledge the four subjects, giving an architect pertinent information as to prices, samples and requisite information to allow him to form his decisions without needless trouble.

The Cost

Co-ordinated installations naturally, through the fact that several crafts are handled by one organization, reduce the cost.

Grand Staircase Feature, Fox Great Lakes Theatre, Buffalo, N. Y.

After a Project Has Been Launched

After a project has been launched the architect or owner with co-ordinated service has simple control of four crafts with one party, eliminating the delay so often incurred when two or three parties must be consulted.

Trained Mechanics

Trained mechanics are used in each trade under co-ordinated supervision, effecting a harmony between each craft that only can be produced when they are under one control.

Revisions or Changes

Revisions or changes may be made after work has been started by advising one party with the assurance that all four crafts will be properly considered and treated.

Some of Our Installations and Their Architects

BUILDING	LOCATION	ARCHITECT
St. Gabriel's R. C. Church	Hazleton, Pa.	Sheridan & Knobloch, Hazleton, Pa.
Robert Packer Clinic Building	Sayre, Pa.	Ellerbe & Company, St. Paul, Minn.
First National Bank	Binghamton, N. Y.	Halsey, McCormack & Helmer, New York, N. Y.
Miners Bank Addition	Wilkes-Barre, Pa.	W. L. Stoddart, New York, N. Y.
Integrity Trust Building	Philadelphia, Pa.	A. H. Lavalle, Philadelphia, Pa.

CARRARA STRUCTURAL GLASS

MANUFACTURED BY
PITTSBURGH PLATE GLASS COMPANY
Grant Building, PITTSBURGH, PA.

For Warehouses and Branch Houses, see our pages on Vista Plate Glass
For our Other Products, see Manufacturers' Index

Carrara Structural Glass

Carrara is a special type of structural glass made in flat slabs. These slabs come in a full range of practical sizes, up to 5x7 ft., and are applied like marble.

Carrara does not deteriorate. It is not easy to break, nor does it check or "craze." In fact, laboratory tests, as well as actual usage, have proved that Carrara expands less than other types of material to which it might be compared. Carrara has this very great advantage—it always matches perfectly. The surface and thickness are always uniform—the color, too, so that, even in alterations, no evidences of patching are apparent. Cararra does not lose its polished surface and alterations are easy to make at any time.

Sanitation

Carrara is of extremely dense homogeneous structure. This is one of its most valuable qualities. Moisture or liquids cannot penetrate it. It cannot absorb odors. Salt water, acids or strong chemicals do not affect it. It is impervious to pencil marks. It is not easy to deface in other ways.

Its hard, highly polished surface may be kept spotlessly clean with little effort. It saves cleaning work and cleaning expense. No abrasive preparations, powders or chemicals are ever needed for Carrara. This explains its wide and highly satisfactory use in toilet rooms, where no other material of like nature has ever surpassed Carrara in service.

CARRARA
MODERN
Structural Glass

Carrara Has Strength and Bulk
There is satisfaction in its appearance and in its use

Made in Three Different Finishes

Polished White Carrara—A pleasing pure white in color, uniform in thickness, free from warps or twists, White Carrara provides a mirror surface of remarkable beauty. Its gleaming finish is obtained by grinding and polishing processes similar to those used in making fine plate glass. This highly polished surface is useful as a reflector of light for interiors that otherwise would seem dim. White Carrara is obtainable with either one side or both sides polished. Five thicknesses: 3/8, 1/2, 3/4, 1 and 1 1/4 in.

Polished Black Carrara—Similar in every respect to White Carrara—except color. Black Carrara, with its permanent dense blackness, is unexcelled for uses where the design calls for broad, unbroken surfaces to catch and hold every passing light, to enrich and emphasize other colors. Black Carrara also comes with one or both sides polished. Five thicknesses: 3/8, 1/2, 3/4, 1 and 1 1/4 in.

Frostex—This is a form of White Carrara whose surface, instead of having a mirror finish, is slightly rippled, producing a soft sheen or luster. But it is free from the distorted reflections seen in ordinary fire-finished materials. With walls of Frostex a room takes on a soft, gentle glow, without glare. Frostex is often contrasted with cap, base, stiles and other trim of Black Carrara, or a very harmonious effect is obtained when these members are of White Carrara, whose polished surface accentuates the rippled texture of Frostex. Frostex is made in white only. Three thicknesses: 3/8, 1/2 and 13/16 in.

Laminated Frostex—The regular grades of Frostex are finished on one side only. For sheets thicker than 13/16 in. or sheets finished on both sides—toilet partitions, for instance — Laminated Frostex is generally used. This consists of two sheets of regular thickness Frostex joined securely together, forming a slab remarkable for strength, elasticity and conservative cost. The laminating process is done at the factory, with special equipment that produces permanent, uniform, durable results. Six thicknesses: from 3/4 to 1 5/8 in.

Helpful Data on Installation

Carrara is easy to install. It is handled similarly to marble. To insure installations being made according to our standards, we maintain our crews of experienced marble setters.

Carrara may be installed over any wall surface, but an allowance should be made of 1 1/8 to 1 1/2 in. from the face of the glass to the wall to provide space for setting, 1 1/8 in. for ashlar.

In the case of ashlar wall treatment, where small pieces are used, we recommend setting with our plastic cement, which bonds permanently with the glass and the wall—yet allows for settling, shrinkage and expansion.

We provide all hardware necessary for the erection of our material and will have the slabs drilled for any hardware or fixtures which we do not supply, such as hinges, strikes, etc., provided we are furnished their location and dimensions, so that the drilling may be done at the factory.

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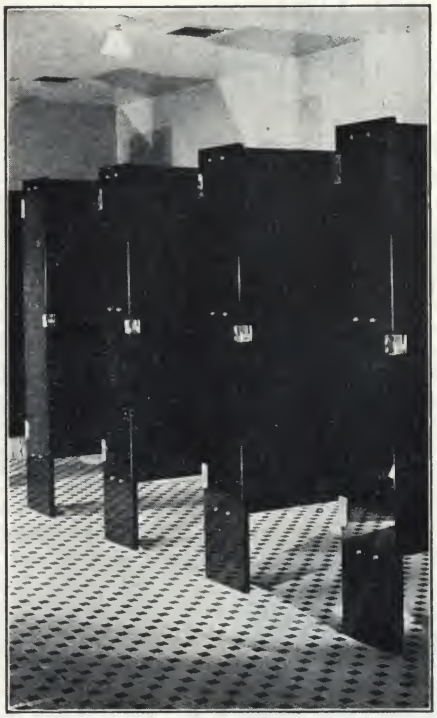


Toilet Room

Carrara—Its Uses Endless

The modern hotel, restaurant, cafeteria, store, theatre and soda fountain—wherever beauty, permanence and sanitary value are desirable—offer numberless opportunities of using Carrara. For churches, clubs, libraries, public comfort stations, barber shops, beauty shops, laboratories, dairies, bakeries, confectioners—there are endless uses for this sanitary, permanent structural material.

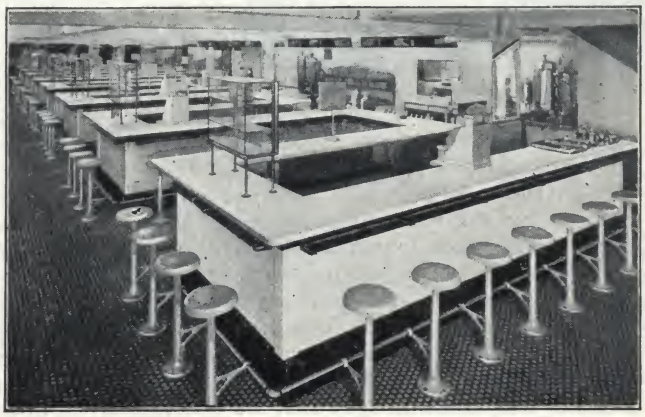
- Wainscoting
- Bases
- Bulkheads
- Ceilings
- Store fronts
- Shower compartments
- Counters
- Bank desks
- Switchboards
- Lamp bases
- Shelves
- Table tops
- Deal plates
- Radiator covers
- Laboratory equipment
- Refrigerator linings
- Bread oven covering
- Scale tops or platforms
- Cash registers
- Ink stands
- Window stools
- And countless others

Decoration

Corridors

A Few Recent Carrara Installations

Building	Architect
Board of Trade, Chicago, Ill.	Holabird & Root
Bank of Manhattan, New York, N. Y.	H. Craig Severance, Inc. Yasuo Matsui, Associate
Chanin Tower, New York, N. Y.	Sloan & Robertson
Daily News, New York, N. Y.	John Mead Howells and Raymond M. Hood and Lockwood Green Engineers, Inc.
Lincoln, New York, N. Y.	J. E. R. Carpenter
New York Central, New York, N. Y.	Warren & Wetmore
New York Life, New York, N. Y.	Cass Gilbert
Grant, Pittsburgh, Pa.	Henry Hornbostel, Eric Fisher Wood & Co., Associates



Counters

Desk Tops and Deal Plates

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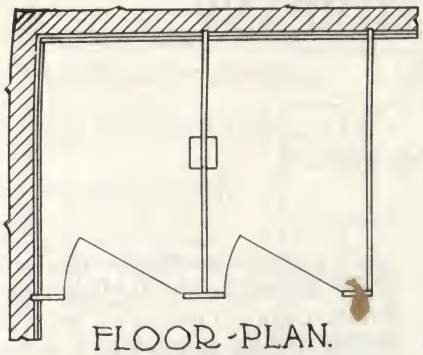
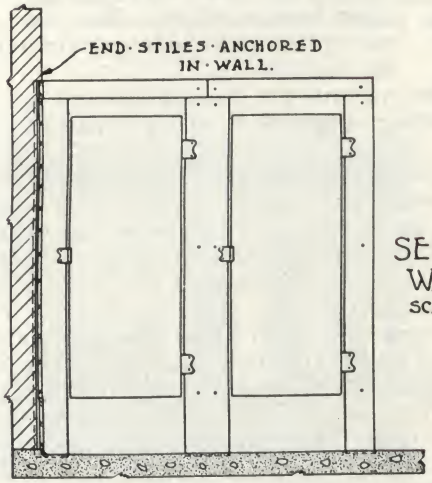
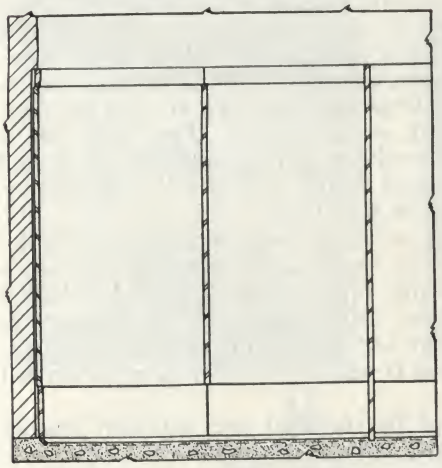


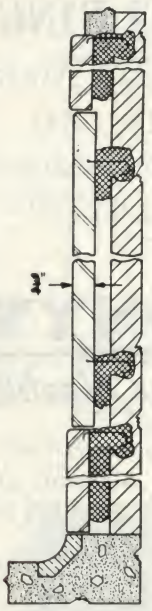
FLOOR-PLAN.
SCALE-¼"-1'-0"~



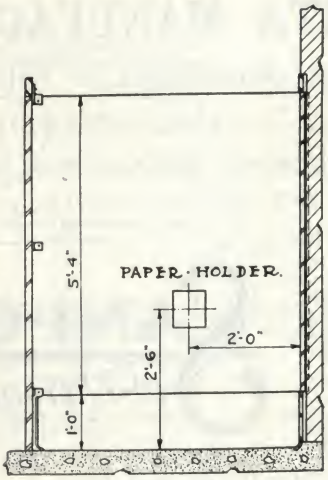
FRONT-ELEVATION.
DOORS-MAY-BE-METAL-OR-WOOD.
USUAL-WIDTH – 2'-0" OR 2'-2"



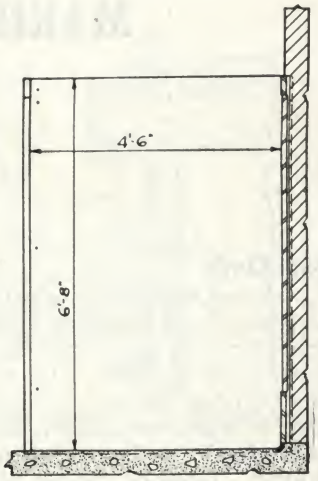
REAR-ELEVATION.
IN-COMPARTMENTS-TOP-OF-BASE IS-USUALLY 12" ABOVE FLOOR-TO-SUPPORT-REAR-END-OF-PARTITION.



SECTION-THRU WAINSCOT.~
SCALE-1½"-1'-0"~

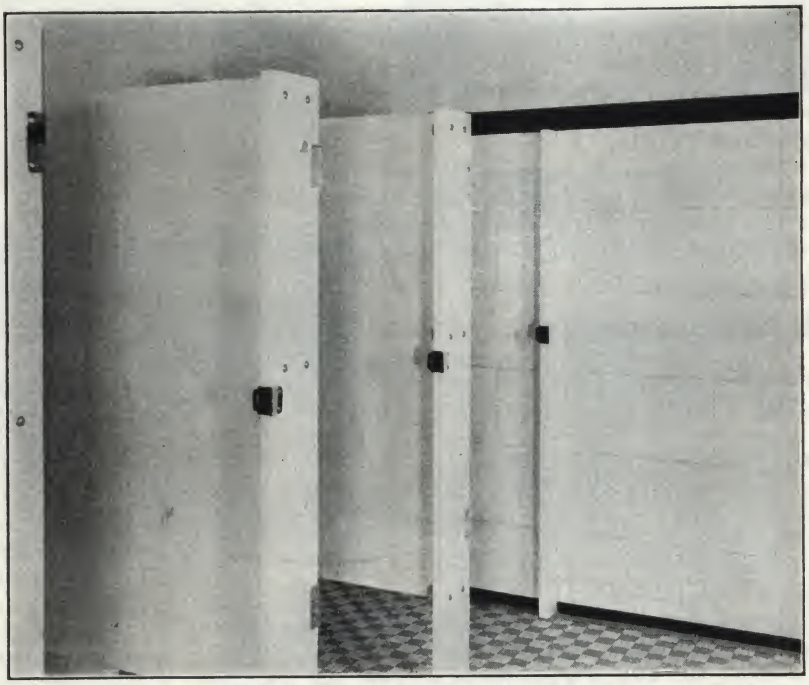


ELEVATION of DIVIDING-PARTITION.



ELEVATION of END-PARTITION.

SCALE—¼" = 1'-0"



A Combination of Polished Carrara and Frostex Installed in the Toilet Rooms of the Lincoln Building, New York, N. Y.

As in this case the strength of Carrara and our sturdy construction permit of a large saving by omitting the headrail with a consequential lowering of partition height

Type and Thickness of Carrara Recommended for Various Members

Wainscot, panel	¾ in.	Bulkheads	¾ in.	Stiles	1¼ in.
Partitions	1 in.	Base	¾ in.	Ceiling	⅜ in.
Partitions, Laminated Frostex	¾ in.	Lintel	1¼ in.	Shower Seat	1¼ in.
Wainscot, Ashler	⅜ in.	Cap	¾ in.	Deal Plates	1 in.
Counter Tops	1¼ in.	Door and Window Trim	1 in.		

Actual Weight of Carrara

⅜ in. — 5.13 lb. per sq. ft.	¾ in. — 10.25 lb. per sq. ft.	1 in. — 13.68 lb. per sq. ft.
½ in. — 6.84 lb. per sq. ft.	13/16 in. — 11.12 lb. per sq. ft.	1¼ in. — 17.10 lb. per sq. ft.

MARIETTA MANUFACTURING COMPANY

Sani-Onyx, a Vitreous Marble

INDIANAPOLIS, IND.

FACTORIES: INDIANAPOLIS, IND., and TORONTO, ONT.

BRANCH OFFICES IN PRINCIPAL CITIES

Sani-Onyx

Sani-Onyx is an impervious, vitreous, acid resisting material manufactured from rock ingredients fused at 2600°. Its natural fire polished surface is impermeable to water or other liquid, including all acids except hydrofluoric. Literally, Sani-Onyx "stands the acid test." Laboratory tests prove it to be 40% harder than marble, or in other words, an imaginary sheet of flint will give you some idea as to the strength and durability of Sani-Onyx. Unlike other materials Sani-Onyx will not craze nor discolor. The bright lustrous surface is unimpaired after many years of the hardest kind of service and unless maliciously destroyed, it will outlast the building itself. Climatic conditions will not alter Sani-Onyx in the slightest degree. Warmth, moisture or salt air will not affect it.

SANI-ONYX a Vitreous Marble
TRADE-MARK

Sani-Onyx is in no sense a substitute for natural marble or tile. It combines all the advantages of these and similar products with added exclusive features, which for many purposes, make it distinctly superior.

Color and Texture

Sani-Onyx is made in white and black, and five standard colors: gray, orchid, light apple green, blue, and ivory, and can be furnished in surface textures such as flame glaze, matte, polychrome, embossed and tiffany-faience.

Tile Pattern (Patented)

Tile indentations of 3x3 or 6x6 in. can be furnished in all colors, and in any size not exceeding 48x120 in. in $\frac{1}{32}$ and $\frac{7}{16}$-in. thick material.

Plain Surface

Plain surface Sani-Onyx can be furnished in all colors, and in any size not exceeding 54x120 in. in $\frac{1}{32}$, $\frac{7}{16}$, $\frac{5}{8}$, $\frac{3}{4}$ and 1-in. thick material.

Raised Rim (Patented)

Raised rim for table, counter and sink tops can be furnished in all colors in $\frac{3}{4}$-in. center $\frac{7}{8}$-in. rim, 1-in. center $1\frac{1}{8}$-in. rim and $1\frac{1}{8}$-in. center $1\frac{1}{4}$-in. rim material.

Adaptability

Sani-Onyx is extensively used for wainscot, walls, ceilings, toilet partitions, window and door trim, bulkheads in store fronts, and for other general interior and exterior construction. Black and olive green material with dulled surface makes ideal writing boards.

Applications

Walls—Sani-Onyx can be applied in sizes most adaptable for installation over walls of brick, building block, cement or plaster with our special plastic cement.

This cement has been scientifically mixed for its practical use. It never hardens rigidly, thus permitting self-adjustment of the slabs to the settling of floors and walls, universally encountered in practically all buildings. While tenaciously and permanently holding the material to its backing the Sani-Onyx setting cement remains plastic, thus eliminating the crack-tending strains on the material.

All joints of the material are pointed with our specially prepared pointing compound in colors to match the Sani-Onyx.

Ceiling—Sani-Onyx ceiling plates are stocked in sizes which we recommend, namely: 16x16, 18x18 and 20x20 in. in the $\frac{11}{32}$-in. thickness. The plates are fastened securely in place with vitreous china or metal rosettes screwed to wood furring strips. Rosettes may be had in colors to match the material.

Toilet Partitions—Standard Sani-Onyx partitions are 60 in. deep and 83 in. high over all. The width is governed by the available space and any variation in width is taken care of by the width of the mullion at each side of the door. The standard size door is 26x60 in. x $1\frac{1}{8}$ in. thick. Single panel wood doors and hardware is usually furnished by carpenter contractor. All necessary drilling of Sani-Onyx for plumbing and hardware is done by Sani-Onyx contractor.

Standard partitions consist of a 1x1x$\frac{3}{16}$-in. angle iron frame to which $\frac{3}{8}$-in. Sheetrock wall board is riveted. This makes a rigid core to which $\frac{7}{16}$-in. Sani-Onyx panels are attached with a special plastic cement.

The front mullions and head rail are $1\frac{1}{4}$ in. thick Sani-Onyx polished on both sides. The head rail is doweled to top of mullions and the mullions are bolted to the concealed metal frame. All metal work is completely concealed with Sani-Onyx.

The bottom of center or division partition is 12 in. above the floor. The front end of this partition has a metal extension to the floor and the rear end is bolted to the wall, thus the entire weight of the partition is carried by metal core and no strain is on the Sani-Onyx. The metal extension is neatly covered with an enameled leg.

The bottom of the finished end partition usually sets on the floor and the rear end is bolted to the wall.

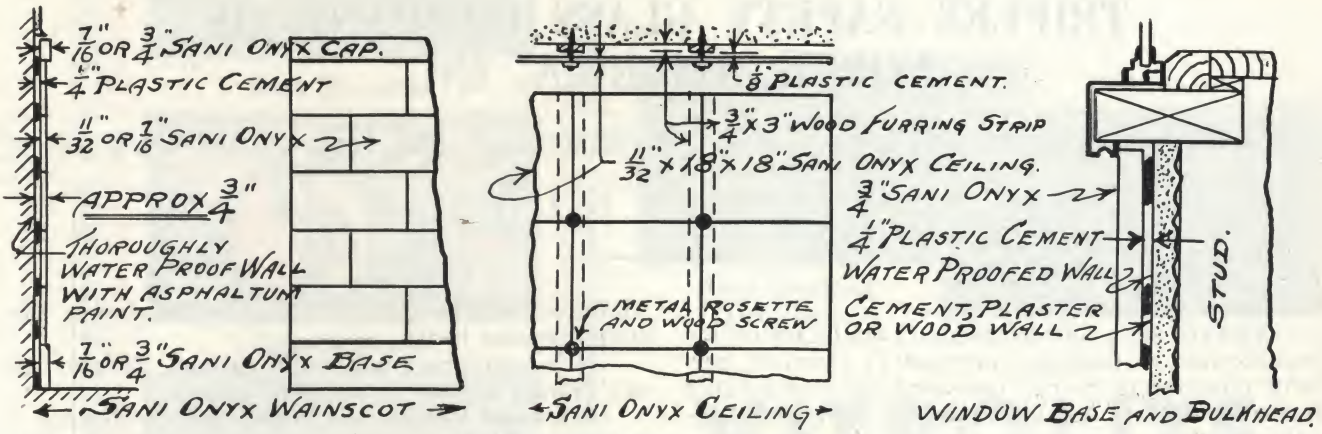
Organization Facilities

We maintain a large sales force at the office, and also have agents and construction houses in all the principal cities throughout the United States, Canada and foreign countries.

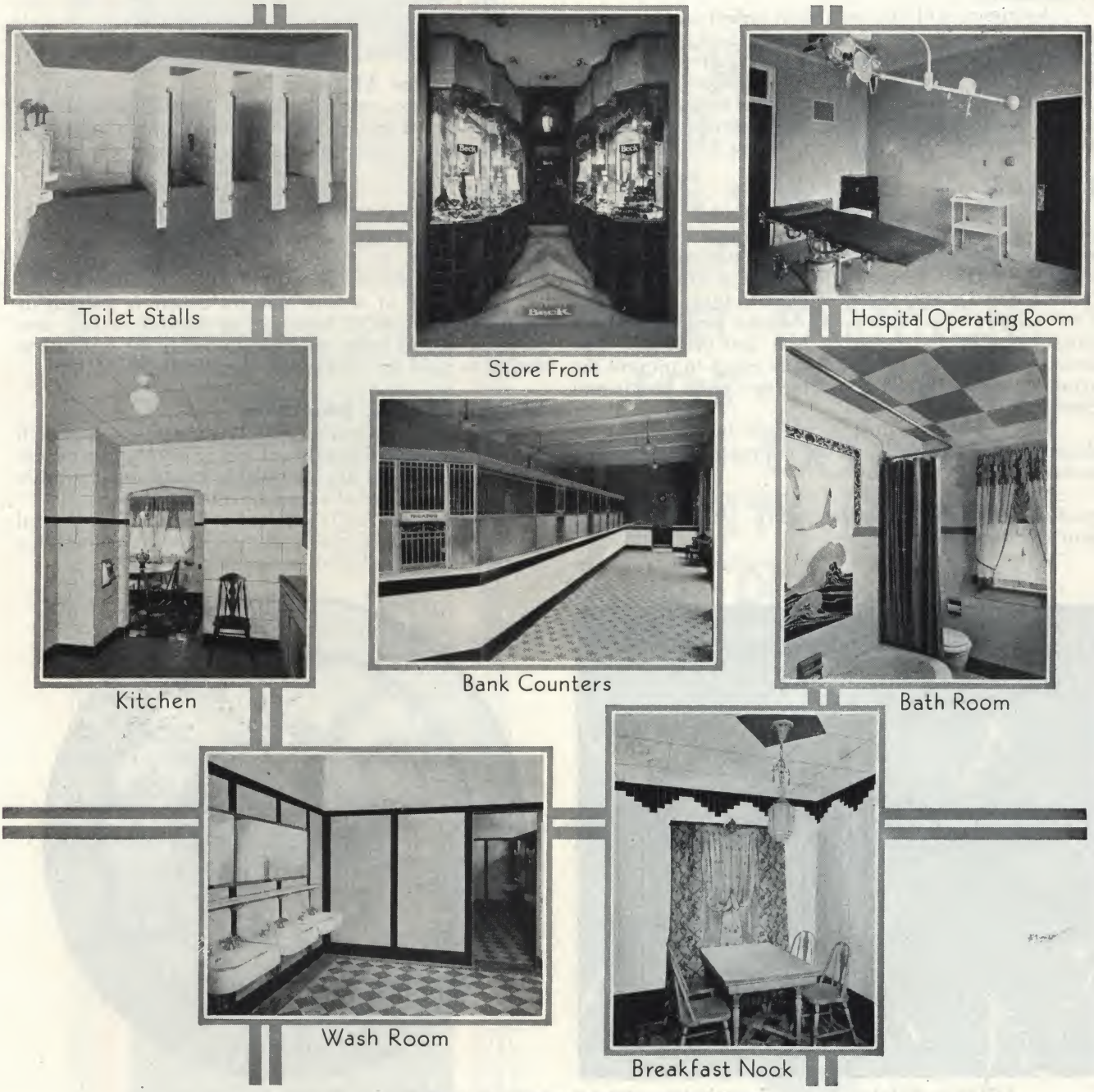
Engineering Co-operation

We maintain an Engineering Department at the main office which is glad to co-operate with architects and builders either direct or through any of our construction agents in planning Sani-Onyx installations. This department will furnish detail blue prints and working drawings for any specified installation of any size. This co-operation is freely offered to any one interested.

Continued on next page



Detail Showing Sani-Onyx Installations



Typical Sani-Onyx Installations

TRIPLEX SAFETY GLASS COMPANY OF NORTH AMERICA, INC.

Manufacturers of Safety Glass for Structural and Decorative Uses

CLIFTON, N. J.

Products

ARTRIPLEX, a SHATTERPROOF PLATE GLASS for the beautification of buildings, interiors or exteriors, perfectly reproducing the rich tones and lustre of polished architectural stone and the various grainings of decorative woods.

Adaptability

Architects will find an almost unlimited field in the use of ARTriplex for decorative surfaces, as in theatre lobbies, hospitals, apartment foyers and store fronts. It is an ideal sanitary facing for ceilings and walls of bath and toilet rooms, corridors, laboratories, operating rooms, soda and lunch fountains, barber and beauty shops, shelving, table tops and similar fixtures.

Description

Process—In the manufacture of ARTriplex, two pieces of thin, specially selected, ground and polished glass are each coated with chemicals to form a cement coating. A layer of pyroxylin plastic is introduced between the two coated sheets of glass to form a sandwich. This sandwich is united to form a single sheet of laminated glass by means of heat and pressure. The laminated sheet is then sealed at all edges to prevent the action of air and moisture on the pyroxylin plastic and chemicals.

The finished product is without bow, uniform in thickness and strength. This entire process requires seventeen distinct operations.

No expense is spared in materials and labor to produce the highest possible quality. It is for permanent construction.

When broken, each small particle of glass in ARTriplex adheres firmly to the pyroxylin plaster. The design remains intact.

It is waterproof and easily cleaned. Neither age nor cleaning will affect the high lustre.

Sizes and Colors—ARTriplex may be obtained in sizes up to 50x20 in. and in thicknesses most adaptable for its installation.

ARTriplex provides countless color blends and combinations to harmonize with any finish, setting or style of architecture.

Other Uses for ARTriplex

ARTriplex opens up many possibilities for the architect in the way of new creations in the stained glass and tile field. Detailed information sent upon request.

Facilities

The factory, conveniently located at Clifton, N. J., is modern in every respect and occupies an area of 300,000 sq. ft. It is designed and constructed for the most efficient standards of production and distribution.

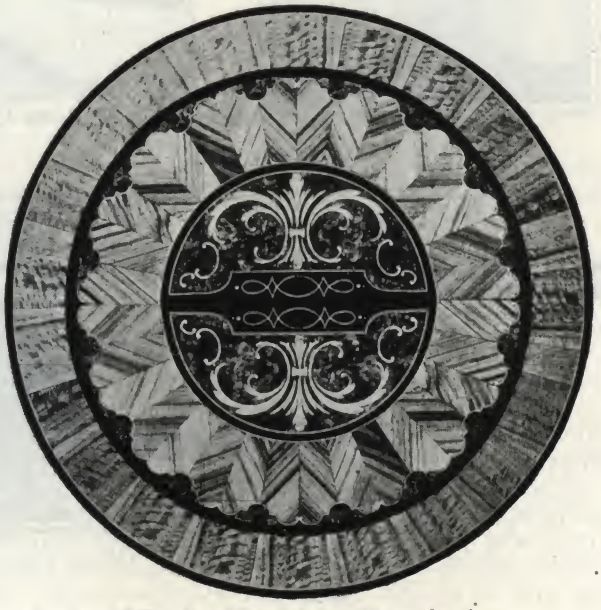
Our staff of artists and craftsmen is thoroughly trained in the art of reproducing natural surface textures as well as being qualified to create the unusual in design to meet the various modern-day effects.

Services, Samples, Information

The company maintains a well equipped Research and Development Department where problems and details of application are thoroughly tested out to insure reliable and well established specifications.

Samples of ARTriplex and any desired special information will be gladly furnished upon request for any specified installation of any size.

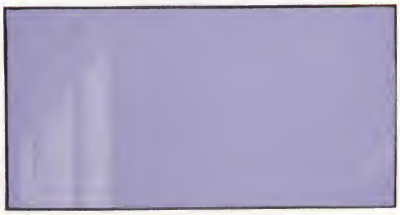
ARTriplex Polished Marble Reproduction



ARTriplex Wood Inlay Reproduction

Black Decorated

Color Decorated



Blue

Grey

Jade

Ivory

White

Black

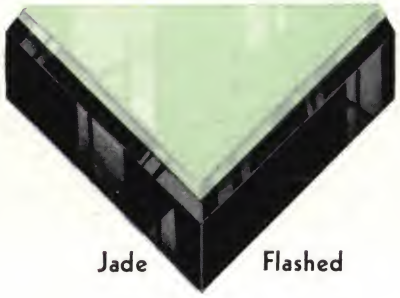
Black Sandblast Decorated

Black Dendric

VITROLITE

A • FUSED • ROCK SLAB • MATERIAL FOR • WALLS • CEILINGS • AND TOILET • PARTITIONS —FOR • INTERIOR AND • EXTERIOR CONSTRUCTION AND • DECORATION

THE VITROLITE COMPANY
EXECUTIVE OFFICES
120 SOUTH LA SALLE STREET
CHICAGO, ILLINOIS
FACTORY
PARKERSBURG • WEST VIRGINIA



Jade Flashed

THE VITROLITE COMPANY

Vitrolite—A Fused Rock-Slab Material

EXECUTIVE AND SALES OFFICES
120 So. La Salle Street
CHICAGO, ILL.

LOCAL REPRESENTATIVE

FACTORY
PARKERSBURG,
WEST VIRGINIA

OFFICES IN ALL PRINCIPAL CITIES IN UNITED STATES AND CANADA

VITROLITE
"BETTER THAN MARBLE"

Vitrolite Structural Details

In recent years Vitrolite has set the pace for all structural glass materials. It is the answer of science to the modern demand for sanitation, combined with beauty. Vitrolite has long been considered a standard material for all purposes having to do with sanitation and cleanliness. With the variety of colors and textures now available, the architect has come to recognize in Vitrolite a means of securing the highest degree of beauty and architectural character.

Especially since the modern trend in design has become so widespread has Vitrolite come into favor as a material of first importance for such purposes as fine office buildings and theatre lobbies. The list of prominent buildings in which it has been used by leading architects is an imposing one.

Vitrolite requires distinctively different structural methods and detailing than marble or tile. To make it easier to work our projects in Vitrolite, the information and details on the following pages are presented to the architectural profession with the assurance that in Vitrolite they will find a material that not only meets the most exacting requirements of service, but will prove a source of increasing interest and fascination to the designer who is striving to interpret this modern age in terms of directness, simplicity and beautiful color.

Facts About Vitrolite

Composition—Vitrolite is an opaque and impervious fire polished, vitreous slab material. In its manufacture, Feldspar, Fluorspar, China Clay, Sand, Kryolith, Manganese and about ten other minerals are fused under tremendous heat, rolled into slabs of various thicknesses and tempered in annealing ovens. Each slab of Vitrolite is trade marked on the back.

Qualities—Vitrolite is non-porous and non-absorbent, consequently it is impervious to moisture, grease, or even to the effects of all acids except hydrofluoric which is used to etch glass. It is stainproof even after years of service. Its hard, fire polished surface will never disintegrate and will retain its luster indefinitely. It will never become marred by surface cracks or crazing. It cannot warp, swell, or pull apart. It is very difficult to write or mark upon and any marks that might be made can be easily wiped off. It is particularly easy to keep clean, the stroke of a damp cloth being sufficient in most cases.

Strength—Vitrolite has a minimum tensile strength of 937 lb. per sq. in. and crushing strength of 31,658 lb. per sq. in., which is about 40% greater than marble. It has a very high resistance to abrasion. Under laboratory tests for staining, a solution consisting of concentrated hydrochloric acid, concentrated sulphuric acid and 50% sodium hydroxide solution was poured on the surface of Vitrolite and allowed to stand for twenty-four hours and at the end of that time no staining occurred or deterioration of surface. Another regular staining test was used, with a solution of 5% potassium permanganate, 5% iodine and 5% crystal violet (an organic dye) and no staining resulted. Under either of these tests marble will stain very badly. Vitrolite is impervious to fruit acids, lactic acid, uric acid and red ink.

Weight—Actual weight, lb. per sq. ft.: $\frac{11}{32}$ in., 4 lb.; $\frac{7}{16}$ in., 5¼ lb.; ¾ in., 9½ lb.; 1 in., 11 lb.; 1¼ in., 14½ lb.

Packed weight, lb. per sq. ft.: $\frac{11}{32}$ in., 5 lb.; $\frac{7}{16}$ in., 6½ lb.; ¾ in., 12 lb.; 1 in., 14 lb.; 1¼ in., 18 lb.

Surfaces and Textures

Fire Polished—Vitrolite is rolled with a fire polished surface that is extremely dense and smooth and has a very high polish. The surface is very slightly wavy and is preferred for most purposes because of the interesting quality of the reflections produced.

Satin Finish—Black and jade are also rolled with a semi-matt stippled surface called "satin finish."

Mechanically Polished—A mechanically perfect mirror-like surface is only produced by mechanically polishing and can be supplied in Vitrolite at extra cost. This surface should be used with considerable discretion as it imparts an effect of empty space and unreality that is very effective in confined panels but gives an effect of inconsistency when used on structural members or regular wall surfaces, the fire polished surface being preferable in most cases.

Sandblast—Where greater richness or effects of scale are desired the various degrees of sandblast, especially on black, can be used to produce a type of ornament of lustrous beauty, which takes its quality not only from the pattern produced but also from the various modifications of light reflection. The sandblast may be used to produce effects of modeling; signs of all kinds and grilles may be had by penetrating entirely through slabs.

Dendric Surface—This is done by the glass process of glue chipping. The resulting surface is an irregular pattern effect similar to frosting on glass, giving a very interesting quality of reflection.

Acid Etching—Various surface effects may be produced by acid etching but they are difficult to control on opaque glass and are not in general use.

Continued on next page

Colors—Vitrolite is produced regularly in white, black, ivory, jade (a light green), orchid, gray, and blue. Other colors are in course of preparation.

Flashed Vitrolite—A new development is flashed material with a layer of about ⅛-in. of one color fused over a base of another color. At present jade flashed over black and blue flashed over black are available and other combinations will be produced. This material makes beautiful table tops, especially with beveled edges. It can be used for silhouette and cameo effects for decoration by sandblasting through the upper layer, exposing the lower color as a background. It also makes effective two color signs.

Reinforced Vitrolite—Vitrolite reinforced with expanded metal is a new development that offers wide possibilities in exterior work. It makes the use of Vitrolite practical for the entire surfacing of office buildings and many other types of structures. Reinforced Vitrolite is made in the standard Vitrolite colors and at present only in ¾-in. thickness.

Decoration—Arrangement and Color Combination—There has become such a widespread recognition among architects of the beauty of the highly polished surface of Vitrolite that it is being increasingly used for the finest kinds of interiors, such as entrance ways, vestibules, main lobbies and elevator lobbies of office buildings and theatres. It is advised that decorative effects be confined as far as possible to the wall arrangements and color combinations obtained by the use of different sizes, shapes and colors in the fire-finished or mechanically polished surface, or in combination with metals and mirrors.

Inlaid Enamels, Lacquers, etc.—Vitrolite may be used as a background for colored ornamentation, decorative panels, insignia, etc., by sandblasting patterns to a certain depth and then inlaying colored enamels or lacquers. Bronze colors, and gold or silver leaf can also be used in this way. Mosaic inlay combined with black Vitrolite as a background may be used effectively for theatre and other types of decoration. It is advised that these decorative processes be used with discretion and that designs be carefully studied with reference to the processes.

Sizes and Thicknesses—Vitrolite is rolled in slab form and in thicknesses of $\frac{1}{32}$, $\frac{7}{16}$, ¾, 1 and 1¼ in. White Vitrolite only may be had also in thicknesses of ¼ and ½ in. The sizes and thicknesses to use in actual installations are dependent on the location and construction, and the purpose for which it is used. Table and counter tops, and window stools are generally ¾-in. thick or over; base, door, and window trim, pilasters, caps, borders, $\frac{7}{16}$ or ¾-in. thick or more where greater reveals are desired. Ashlar panels from 8x12x$\frac{1}{32}$-in. thick to 12x24x$\frac{1}{32}$-in. thick are generally used for wainscoting. Large panel wainscoting should be not less than $\frac{7}{16}$-in. thick and should not exceed 2 ft. 6 in. x 7 ft. 0 in. Vitrolite ceiling plates are generally $\frac{1}{32}$ in. and not to exceed 24x24 in. These are held in place by screws, metal rosettes, or metal mouldings, screwed to wood furring strips.

Working of Edges, etc.—Vitrolite may be furnished with cut, ground, polished, rounded, mitered, or beveled edges. It may be notched, drilled or cut to special shapes, but not moulded.

Preparation of Walls, Installation, etc.—Vitrolite may be applied to any hard, dry, rigid wall surface. Generally it is applied to walls with a brown coat of plaster, finished smooth, although hard finish plaster makes an ideal surface to cement to. The wall is first painted with waterproof sizing compound, then the Vitrolite is applied with a special non-hardening plastic cement $\frac{3}{16}$ to $\frac{5}{16}$-in. thick. All joints are hairline contact joints and are pointed and sealed with a cement compound in colors to match the Vitrolite, or in contrasting colors that contribute to the decorative effect.

Construction—Vitrolite being a vitreous material must be considered with respect to the construction technique required to take advantage of its desirable qualities. It should not be subjected to structural strains nor to sudden extremes of temperature. Edges in contact with other materials should always be cushioned with felt or elastic cement. On wall work, small slabs not to exceed 12x24x$\frac{1}{32}$ in. or 2 ft. 0 in. x 3 ft. 0 in. x $\frac{7}{16}$ in. are preferable to larger slabs and are very rarely broken. Exposed edges subject to severe usage should be rounded or protected with metal mouldings. On store front work it must be detailed so that moisture will not get back of it, and so that it is not subject to a crushing load from the deflection of structural beams or other members. Every few courses on exterior work should be supported on the bottom edge with concealed sheet metal angles fastened to the wall. Bulkheads should have ample clearance between metal construction and sidewalk or the sidewalk should be caulked in front of Vitrolite. It is advisable to consult with the Vitrolite Company's representative concerning special construction problems. As Vitrolite can be applied directly to present plaster or other solid wall surfacing, it is especially adaptable for remodeling work in comparison with tile or marble, which require costly preparatory work.

Uses—Vitrolite is in general use the world over for wainscoting and partitions in wash rooms, toilet compartments and shower baths of public and private buildings. In industrial plants, especially those handling foods, it is used for walls and ceilings of laboratories, bakeries, dairies, and industrial lunch rooms, also for work tables. In hospitals it is used for many purposes, the satin finish jade being especially favored for operating room walls. In restaurants and confectioneries it is used for wall facing, lunch counters, soda fountains, and table tops. It is in general use for barber shops, meat markets and other shop interiors. It is especially effective for modern store front work and is being increasingly used for the facing of entire buildings. Corridors of office buildings are frequently faced with Vitrolite. In the home Vitrolite is unexcelled for wainscoting of bathrooms, kitchens, and breakfast rooms, also work table tops and splash backs. Tops for the finest furniture, especially in connection with metal work, are most appropriate in Vitrolite.

Structural Organizations—Organizations representing the Vitrolite Company are maintained in the principal cities of this country and in many foreign countries. They have crews of expert workmen for installing Vitrolite and will supply information concerning Vitrolite or submit estimates for installations. In many cases they maintain shops for fabricating material from stock sheets, or carry ashlar and trim in stock for immediate service.

Service Departments—To co-operate with architects the Vitrolite Company has an Art Department employing expert designers especially trained in the use of Vitrolite and under the direction of Mr. Frank Sohn. They will prepare colored sketches suggesting arrangements and color schemes for work in Vitrolite, without obligation to the architect. There is also an Engineering Department to prepare working drawings and details, and to assist the architect in developing construction methods and details for new applications.

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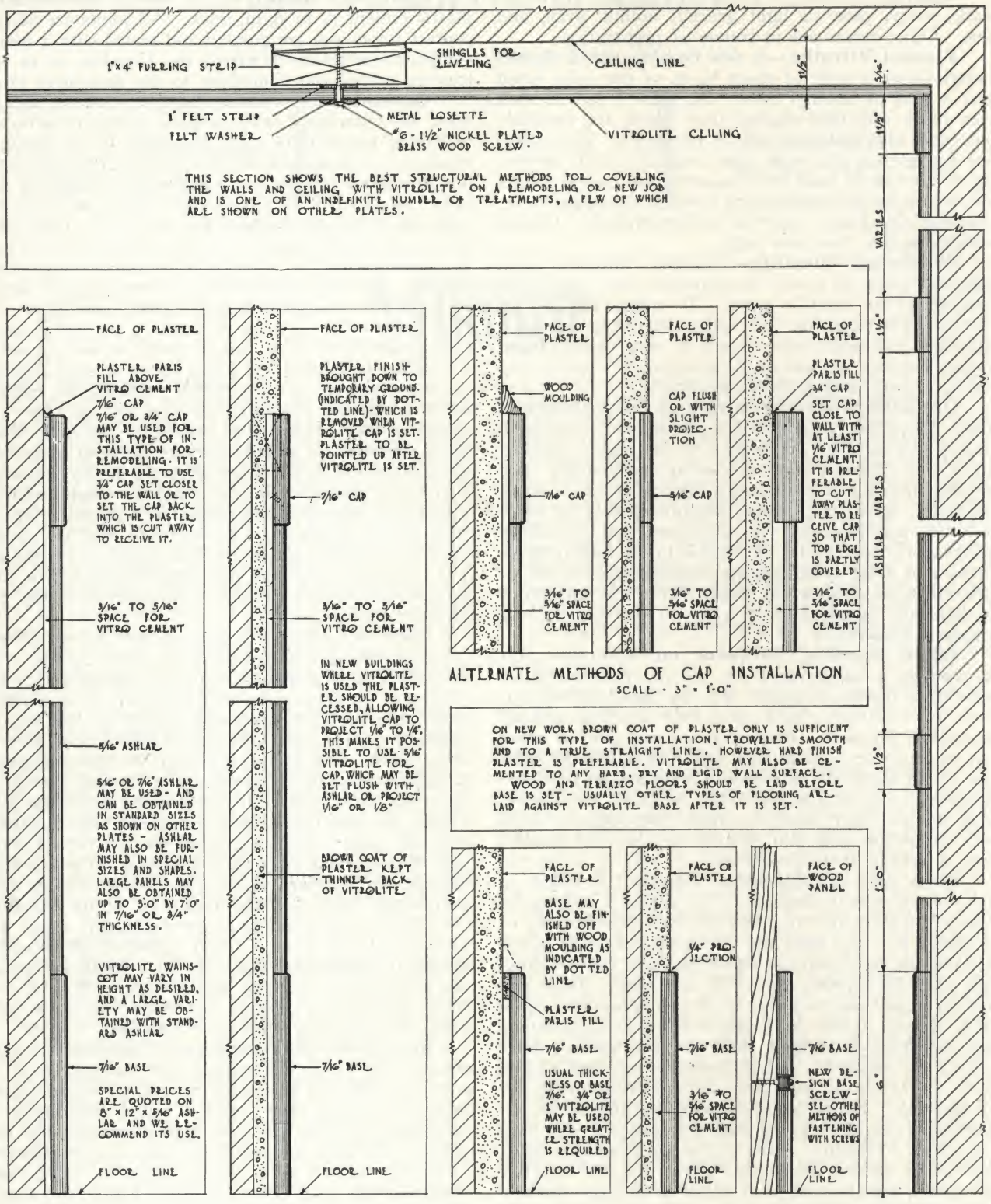

SECTION THRU WAINSCOT

ABOVE CONSTRUCTION RECOMMENDED FOR REMODELING WHEN CAP IS ABOVE EYE LINE. FOR LOW WAINSCOT USE WOOD MOULDING ABOVE CAP. (SEE ALTERNATE)

SCALE - 3" = 1'-0"

SECTION THRU WAINSCOT

ABOVE CONSTRUCTION RECOMMENDED FOR NEW BUILDINGS.

SCALE - 3" = 1'-0"

ALTERNATE METHODS OF BASE INSTALLATION

SCALE - 3" = 1'-0"

TYPICAL WAINSCOT & CEILING SECTION

SCALE - 3" = 1'-0"

DETAILS SHOWING METHODS FOR INSTALLING BASE - CAP - WAINSCOT & CEILING — PLATE NO. 1

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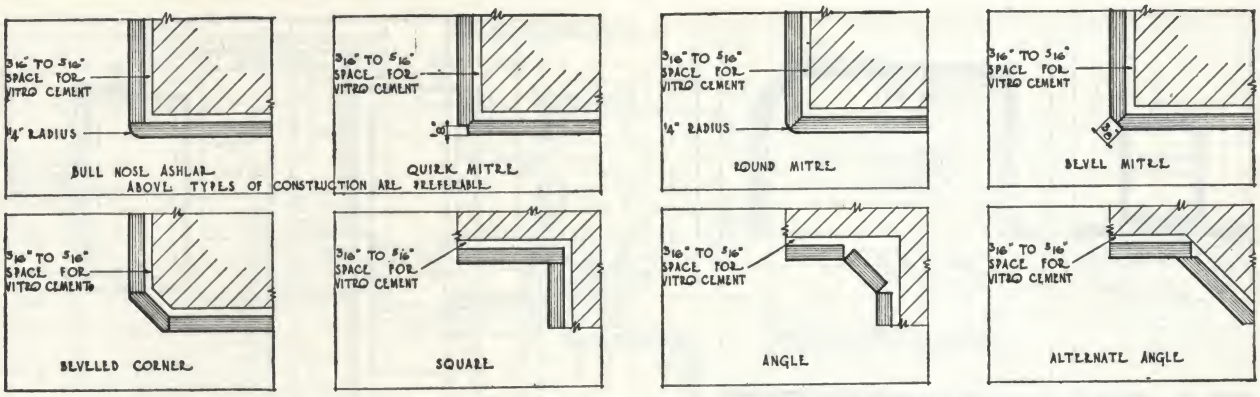
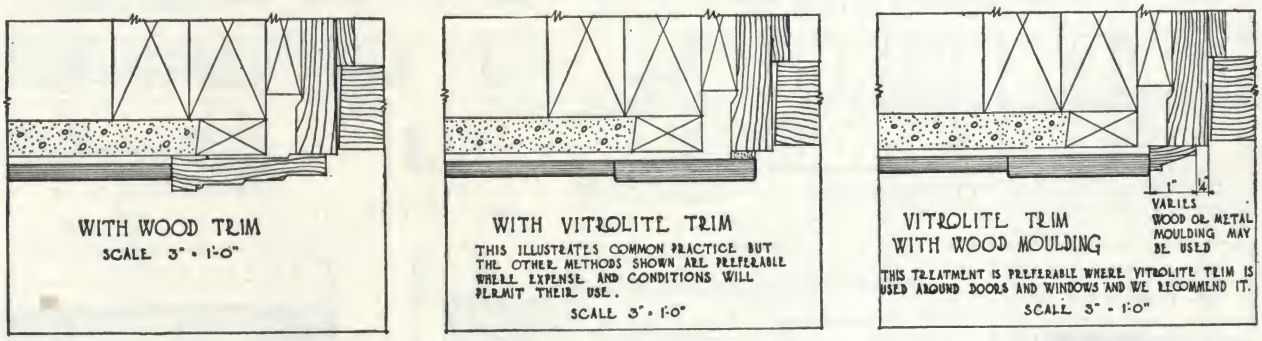
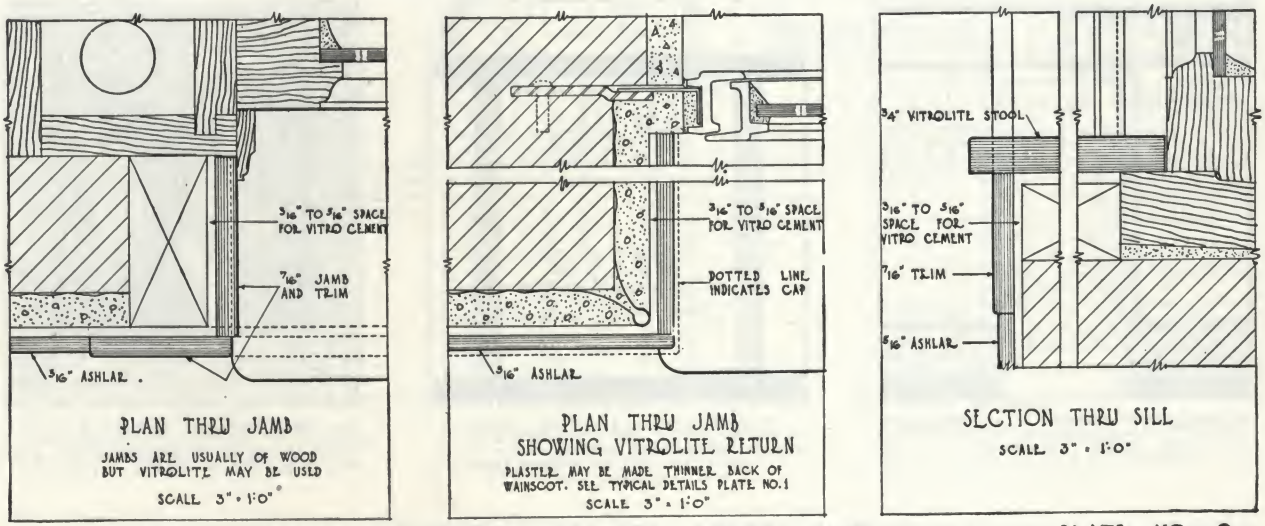


PLANS THROUGH EXTERIOR AND INTERIOR CORNERS

SCALE 3" = 1'-0"



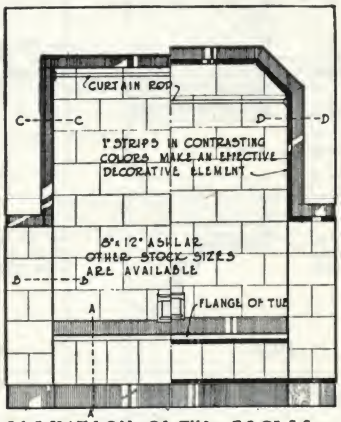
PLANS THROUGH DOOR JAMBS SHOWING VARIOUS TYPES OF CONSTRUCTION



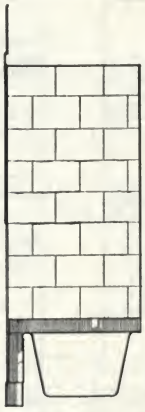
DETAILS SHOWING METHODS OF CONSTRUCTION FOR CORNERS - JAMBS & SILL PLATE NO. 2

Continued on next page

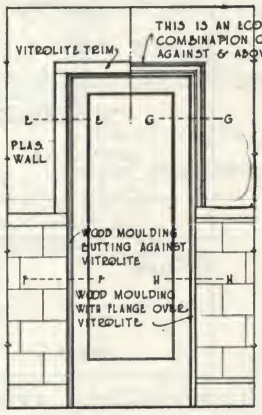
LOW WAINSCOT



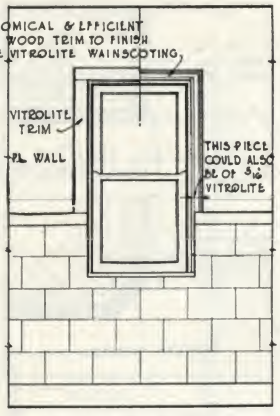
ELEVATION OF TUB RECESS
SHOWING TWO FINISHES FOR TOP OF RECESS. TUB MAY OR MAY NOT HAVE VITROLITE FACE



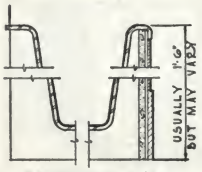
SECT. TUB RECESS
SCALE 1½"=1'-0"



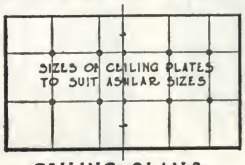
DOOR TRIM
SHOWING VITROLITE AND WOOD TRIM



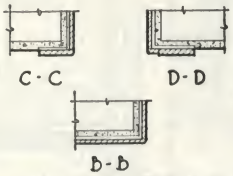
WINDOW TRIM
SHOWING VITROLITE & WOOD TRIM



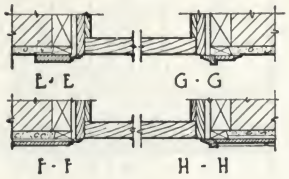
SECTION A-A
SCALE 3/4"=1'-0"

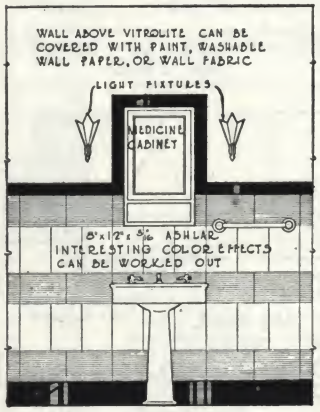


CEILING PLANS
SCALE 1/4"=1'-0"

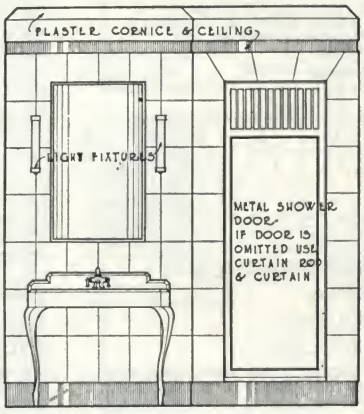


SCALE OF SECTIONS - 3/4"=1'-0"

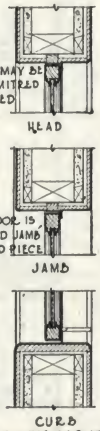




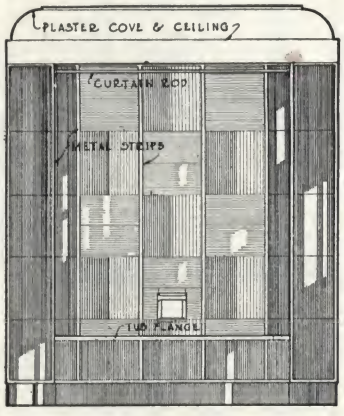
WAINSCOT SHOWING ALTERNATE COLORS



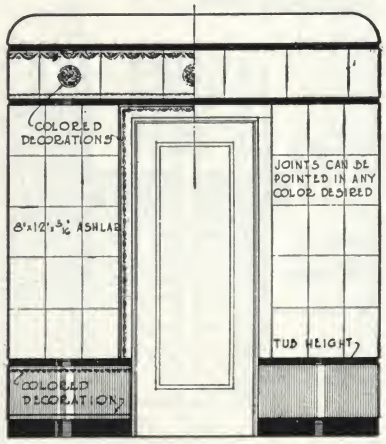
ELEVATION SHOWING SHOWER DOOR
SCALE - 1½"=1'-0"



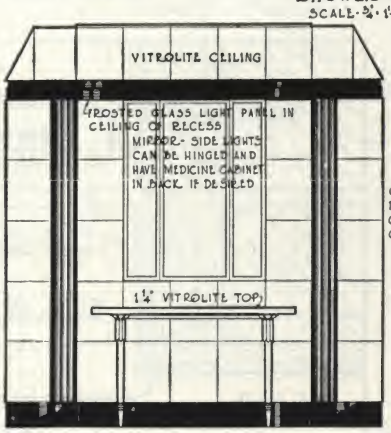
SECTION THRU SHOWER DOOR
SCALE - 3/4"=1'-0"



ELEVATION SHOWING TUB RECESS
METAL STRIPS COMBINE EFFECTIVELY WITH VITROLITE



DECORATIVE EFFECTS IN VITROLITE
MANY DIFFERENT PATTERNS AND COMBINATIONS ARE AVAILABLE

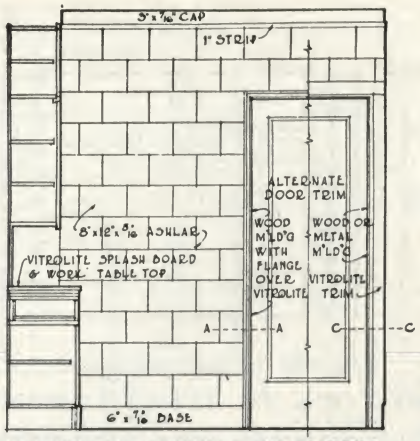


DRESSING TABLE RECESS
VITROLITE CEILINGS MAY BE USED WITH ANY WALL SCHEME SHOWN
SCALE- 1½"=1'-0"

DECORATIVE PANEL IN TUB RECESS
AN ENDLESS VARIETY OF DECORATIVE EFFECTS IS POSSIBLE WITH VITROLITE COLORS & PROCESSES.

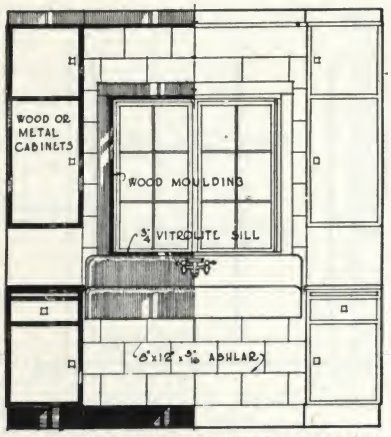
ELEVATIONS & DETAILS SHOWING USES OF VITROLITE IN BATHROOMS PLATE NO. 3

Continued on next page



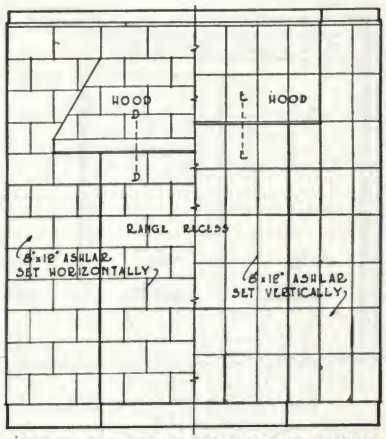
ELEVATION SHOWING DOOR TRIM
SCALE 1/4" = 1'-0"

VITROLITE CAN BE CUT TO ANY SIZE, BUT CERTAIN SIZES, SUCH AS 6"x12", 6"x16", 9"x18" ASHLAR, 6" BASE, 1" STRIP AND 3" CAP ARE TURNED OUT IN QUANTITIES AT SPECIAL PRICES.



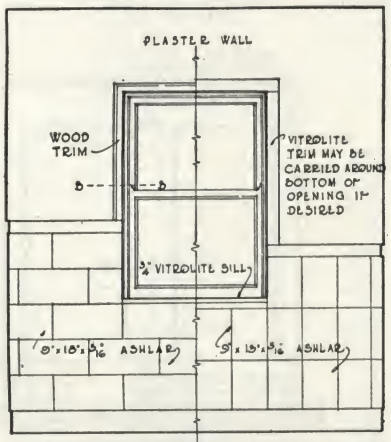
ELEVATION WITH SINK AND CABINETS
SCALE 1/4" = 1'-0"

TO CONTROL COSTS CONSULT LOCAL VITROLITE REPRESENTATIVE AS TO SIZES CARRIED IN STOCK AND BEST METHODS OF CONSTRUCTION.



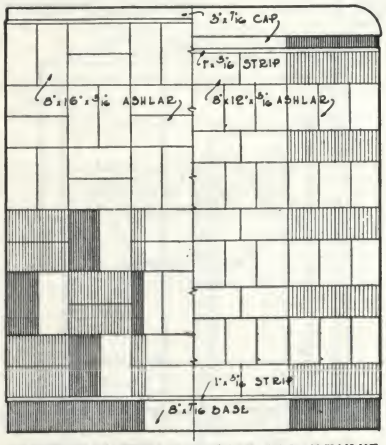
ELEVATION SHOWING RANGE RECESS & HOOD
SCALE 1/4" = 1'-0"

ASHLAR SET UP VERTICALLY COSTS A LITTLE MORE THAN HORIZONTALLY; RANGE RECESS CAN BE DEEP ENOUGH TO DISPENSE WITH HOOD OR HOOD CAN BE USED ALONE.



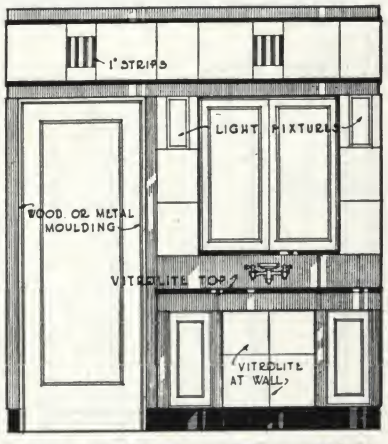
LOW WAINSCOTING SUGGESTIONS
SCALE 1/2" = 1'-0"

SHOWING ARRANGEMENTS USED IN MORE MODEST INSTALLATIONS. WALLS ABOVE WAINSCOT CAN BE PAINTED OR COVERED WITH WASHABLE WALL PAPER.



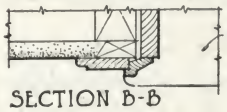
ELEVATION SHOWING VARIETY OF ARRANGEMENT
SCALE 1/4" = 1'-0"

A WIDE VARIETY OF COLOR AND PATTERN EFFECTS IS POSSIBLE WITH VITROLITE EVEN WHEN ONLY STOCK SIZES ARE USED.

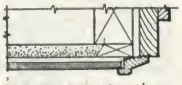


ELEVATION SHOWING DECORATIVE POSSIBILITIES
SCALE 1/4" = 1'-0"

WHILE SPECIAL SIZES COST A LITTLE MORE THEY OFFER THE ARCHITECT UNLIMITED POSSIBILITIES FOR DECORATIVE ARRANGEMENT.

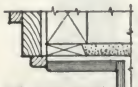


SECTION B-B



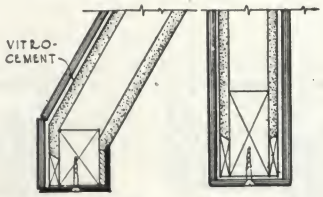
SECTION A-A

AN EFFECTIVE TRIM THAT MAKES POLISHED EDGE ON VITROLITE UNNECESSARY AT OPG & PROVIDES FINISH OVER WSCT.



SECT. C-C

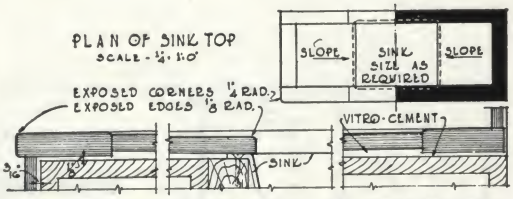
SIZE & SHAPE OF WOOD MOULDING MAY VARY TO SUIT REQUIREMENTS.



SECT. D-D SECT. E-E.

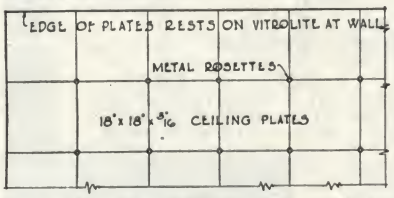
SCALE OF SECTIONS 1 1/2" = 1'-0"

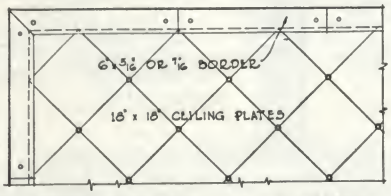
A VARIETY OF ARRANGEMENTS IS POSSIBLE. INSIDE OF HOOD MAY BE FINISHED WITH PLASTER OR VITROLITE. BOTTOM MAY BE VITROLITE OR METAL.



SECTION THRU SINK TOP AND DRAIN BOARDS.

VITROLITE SINK TOPS IN ONE PIECE WITH HOLE CUT OUT ARE NOT PRACTICAL BUT THE ABOVE CONSTRUCTION IN SEVERAL PIECES IS WIDELY USED. THE SLIGHT SLOPE DRAINS EASILY. EFFECTIVE COLOR COMBINATIONS ARE POSSIBLE. SUPPORT SINK FLANGE INDEPENDENTLY OF TOP.

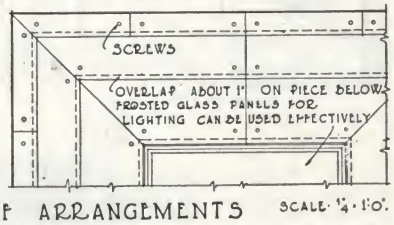




PLANS OF VITROLITE CEILINGS SUGGESTING A VARIETY OF ARRANGEMENTS SCALE: 1/4" = 1'-0".

METAL ROSETTES ARE AVAILABLE IN A VARIETY OF COLORS & FINISHES. SPECIAL GLASS ROSETTES CAN BE USED EFFECTIVELY.

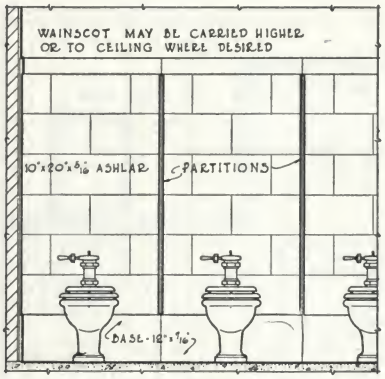
VITROLITE CEILINGS ARE IDEAL FOR MANY PURPOSES, BOTH FOR DECORATIVE EFFECT AND FOR PERFECT SANITATION AND EASE OF CLEANING



CEILING EFFECT WITH SERIES OF OVERLAPPING BORDERS WITH POLISHED EDGES - EXPOSED SCREWS MAY BE COUNTERSUNK WITH HOLES FILLED AND PAINTED OR WITH COLORED TACK HEADS - SEE PLATE NO. 7.

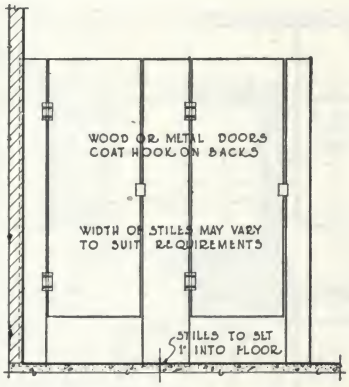
ELEVATIONS AND DETAILS OF VITROLITE FOR KITCHENS - CEILING PLANS PLATE NO. 4

Continued on next page



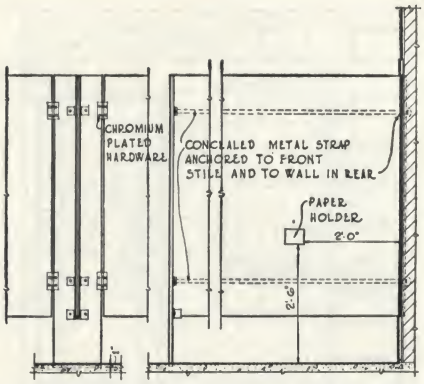
ELEVATION OF REAR WALL
SCALE 1/4" = 1'-0"

VARIOUS SIZES OF ASHLAR, PATTERNS OF WALL ARRANGEMENT AND COLOR SCHEMES CAN BE WORKED OUT, BUT TO AVOID EXCESSIVE COST IT IS WELL TO CONSULT THE VITROLITE REPRESENTATIVE IN YOUR LOCALITY OR WRITE THE MAIN OFFICE OF THE VITROLITE COMPANY, CHICAGO.



FRONT ELEVATION
SCALE - 1/4" = 1'-0"

THIS IS THE STYLE OF PARTITION FAVORED BY THE MOST PROMINENT ARCHITECTS AND USED IN SUCH STRUCTURES AS THE EMPIRE STATE BUILDING, GRAYBAR BUILDING, WALL AND HANOVER BUILDING, IN NEW YORK CITY AND MANY OF THE FINEST BUILDINGS THROUGHOUT THE COUNTRY. IT REPRESENTS THE ULTIMATE ACHIEVEMENT IN TOILET PARTITIONS.

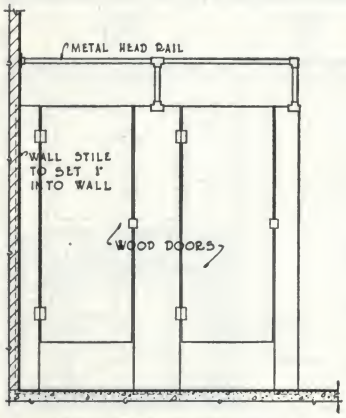


BACK OF CENTER STILE
SCALE - 1/4" = 1'-0"

STILE POLISHED ON SIDES, FRONT, AND BACK. USUAL THICKNESS - 1 3/16".

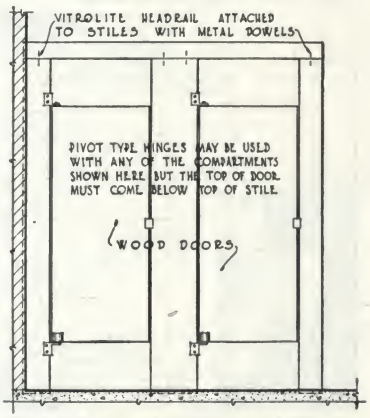
ELEVATION OF PARTITION
SCALE - 1/4" = 1'-0"

VITROLITE PARTITIONS CONSIST OF TWO 7/16" SLABS CEMENTED TOGETHER, BACK TO BACK WITH TWO METAL STRAPS CONNECTING STILE AND REAR WALL.



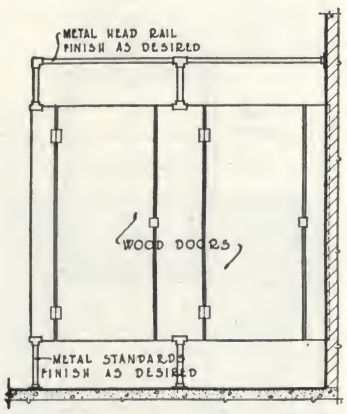
FRONT ELEVATION
SCALE 1/4" = 1'-0"

METAL HEADRAIL TYPE SOMETIMES IS USED WHERE ARRANGEMENT OR CONDITIONS MAKE NECESSARY THE EXTRA STIFFNESS AND PROTECTION AFFORDED.



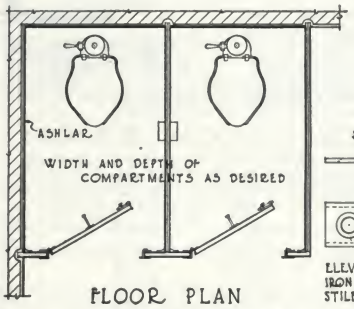
ELEVATION SHOWING HEADRAIL
SCALE 1/4" = 1'-0"

USED ONLY WHERE SOME SPECIAL REQUIREMENT OF SERVICE OR DESIGN MAKES IT NECESSARY.

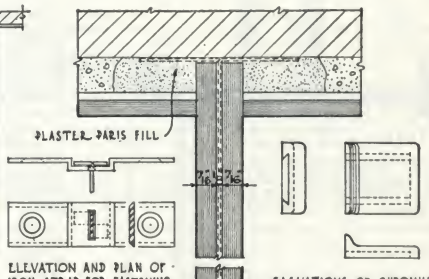


FRONT ELEVATION
SCALE 1/4" = 1'-0"

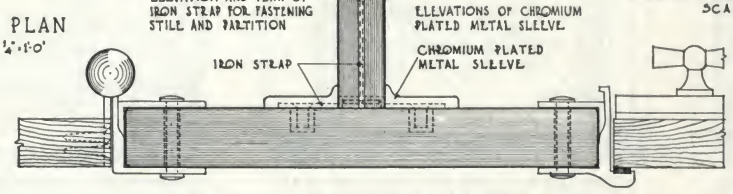
THIS TYPE OF CONSTRUCTION HAS BEEN DEVELOPED TO COMPLY WITH THE STANDARD SPECIFICATIONS OF THE SUPERVISING ARCHITECT OF THE TREASURY DEPARTMENT, U.S. GOVERNMENT, FOR USE IN POST OFFICES, FEDERAL BUILDINGS, ETC.



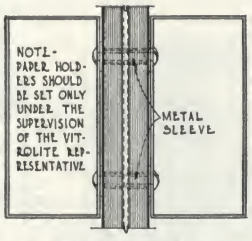
FLOOR PLAN
SCALE - 1/4" = 1'-0"



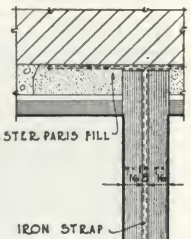
ELEVATIONS OF CHROMIUM PLATED METAL SLEEVE.



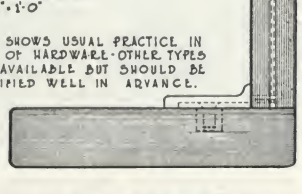
PLAN OF CENTER STILE AND PARTITION
SCALE 3" = 1'-0"



PAPER HOLDERS
SHOWING METHOD OF ATTACHMENT
SCALE - 3" = 1'-0"



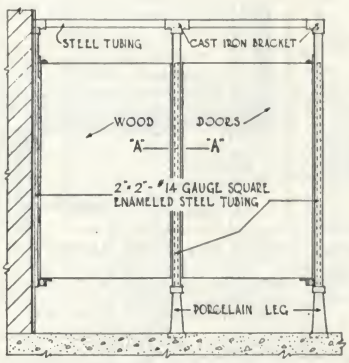
THIS SHOWS USUAL PRACTICE IN TYPE OF HARDWARE - OTHER TYPES ARE AVAILABLE BUT SHOULD BE SPECIFIED WELL IN ARVANCE.



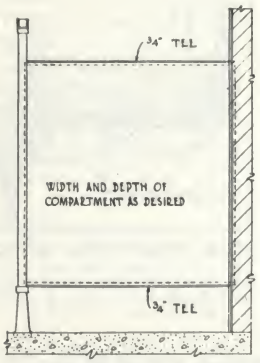
PLAN OF END STILE AND PARTITION
SCALE - 3" = 1'-0"

DETAILS OF SOLID STILE TYPE OF VITROLITE TOILET COMPARTMENTS PLATE NO. 5

Continued on next page

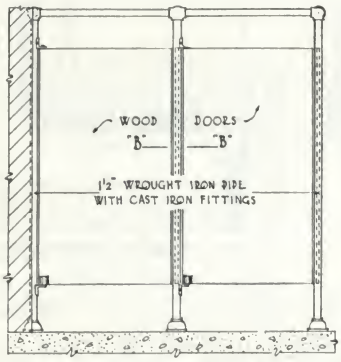


FRONT ELEVATION
SCALE 1/4" = 1'-0"

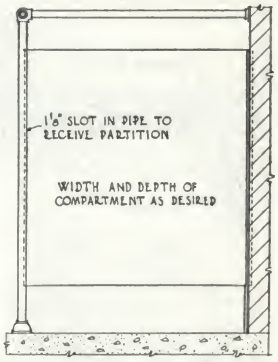


ELEVATION OF CENTER PARTITION
SCALE 1/4" = 1'-0"

THIS TYPE OF CONSTRUCTION DEVELOPED FOR SAN FRANCISCO SCHOOLS. MAY ALSO BE USED FOR COMMERCIAL BUILDINGS WHERE VITROLITE STILES ARE OMITTED. DOORS MAY ALSO BE OMITTED

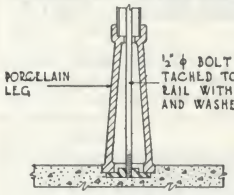


FRONT ELEVATION
SCALE 1/4" = 1'-0"

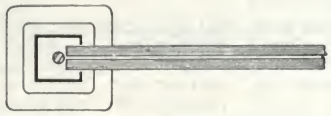


ELEVATION OF CENTER PARTITION
SCALE 1/4" = 1'-0"

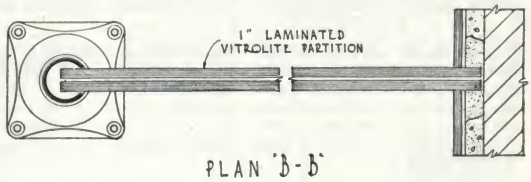
THIS CONSTRUCTION USING ROUND IRON PIPE HAS BEEN USED BY PROMINENT ARCHITECTS IN A NUMBER OF NEW ENGLAND ACADEMIES.



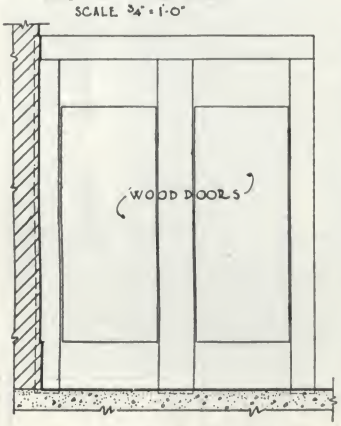
SECTION THRU LEG
SCALE 3/4" = 1'-0"



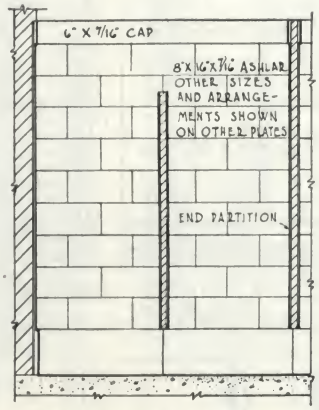
PLAN "A-A"
SCALE 1½" = 1'-0"



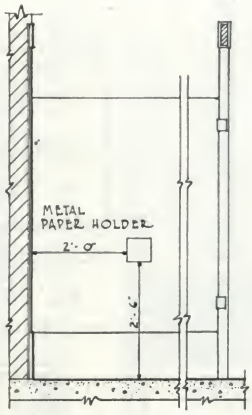
PLAN "B-B"
SCALE 1½" = 1'-0"



FRONT ELEVATION
SHOWING "BUILT-UP" TYPE WITH CORE TO WHICH SLABS OF VITROLITE ARE CEMENTED. VERY STRONG - PERMITS OF COLOR COMBINATIONS.



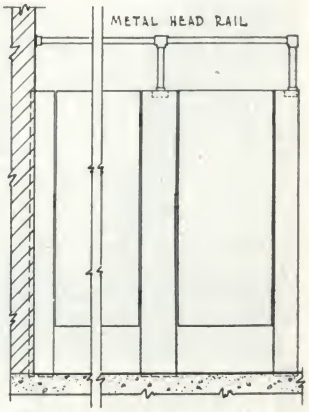
ELEVATION OF REAR WALL



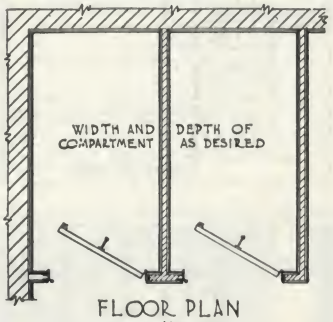
ELEVATION OF CENTER PART'N

SCALE OF ELEVATIONS 1/4" = 1'-0"

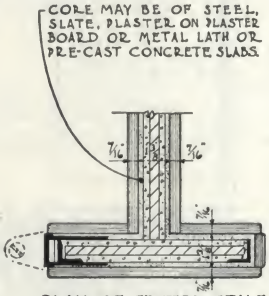
THIS TYPE OF CONSTRUCTION WAS USED BEFORE SOLID STILE TYPE WAS DEVELOPED AND IS NOW USED MOSTLY WHERE SOLID STILES ARE NOT AVAILABLE.



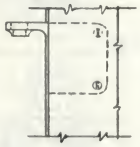
FRONT ELEVATION
HEAD RAIL IS SOMETIMES USED ON SCHOOL CONSTRUCTION - METAL FOOT STANDARDS ARE SOMETIMES USED



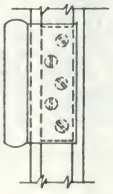
FLOOR PLAN
SCALE 1/4" = 1'-0"



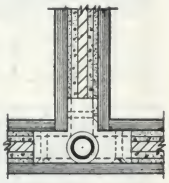
PLAN OF CENTER STILE
SHOWING PIVOT HINGE.



ELEV. OF PIVOT HINGE
THIS HINGE IS USED WHEREVER MINIMUM OF EXPOSED HARDWARE IS DESIRED.

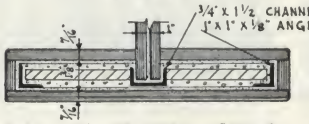


END ELEV. OF STILE
SHOWING EXPOSED TYPE OF HINGE

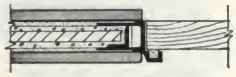


PLAN-TOP STANDARD

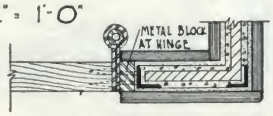
SCALE OF DETAILS 1½" = 1'-0"



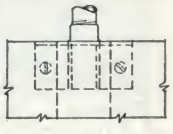
PLAN OF CENTER STILE
SHOWING DOUBLE-SLAB CEMENTED PARTITION WITHOUT CORE.



PLAN THRU JAMB
SHOWING DOOR STOP.



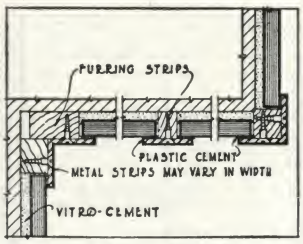
PLAN OF END STILE
SHOWING EXPOSED TYPE OF HINGE.



ELEV.-TOP STANDARD

MISCELLANEOUS TYPES OF TOILET COMPARTMENT CONSTRUCTION PLATE NO. 6

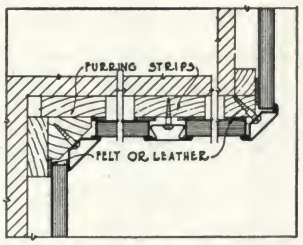
Continued on next page



METAL STRIPS

SCALE - 3" = 1'-0"

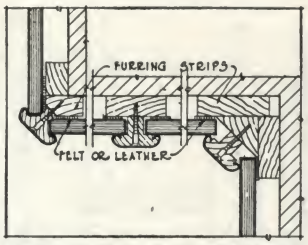
SIZE AND SHAPE OF METAL STRIPS AS REQUIRED. METAL COMBINES BEAUTIFULLY WITH VITROLITE IN DECORATIVE EFFECT



SNAP-ON METAL MOULDING

SCALE - 3" = 1'-0"

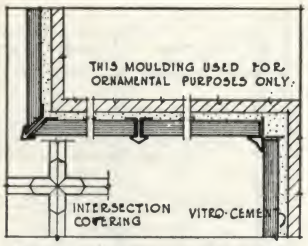
SPECIALLY DEVELOPED FOR USE WITH VITROLITE. HAS SPRING EFFECT AND LOOKS NEAT BECAUSE NO SCREW HEADS ARE EXPOSED.



METAL COVERED WOOD MOULDING

SCALE - 3" = 1'-0"

SEE CATALOGUES FOR VARIOUS SHAPES AND SIZES. METAL CAN BE FINISHED AS REQUIRED.



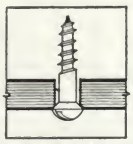
ART GLASS METAL MOULDING

SCALE - 3" = 1'-0"

CONSIDERABLE VARIETY OF SHAPES AVAILABLE. MAKES AN EFFECTIVE AND INEXPENSIVE DECORATION.

ROUND HEAD WOOD SCREW

HEAD WITH DOUBLE GROOVE MAKES BEST APPEARANCE. AVOID DRAWING SCREWS UP TOO TIGHT



OVAL HEAD WOOD SCREW

CLEARANCE ALWAYS MUST BE LEFT BETWEEN VITROLITE & SURFACE TO WHICH IT IS SCREWED

FLAT HEAD WOOD SCREW

CAN BE COUNTERSUNK DEEP ENOUGH TO BE PUTTIED UP & COLORED SAME AS VITROLITE

FLAT HEAD EXPANSION ANCHOR

SCALE

LOCATION MUST BE DETERMINED PROPERLY TO AVOID STRAIN.

EXPANSION ANCHOR IN ¾" VITROLITE

OF DETAILS - 6" = 1'-0"

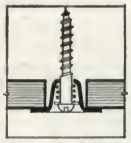
CONCEALED ATTACHMENT. USE ONLY AFTER CONSULTING VITROLITE AGENT.

FLAT HEAD SCREW WITH TACK-HEAD

MAKES NEAT EFFECT. ENAMELED HEAD WITH STUD FITTING INTO HOLE IN SCREW HEAD

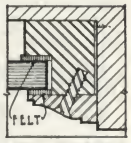
SCREW & METAL ROSETTE

METHOD USUALLY USED FOR FASTENING CEILINGS. GLASS & SPECIAL ROSETTES ALSO USED.



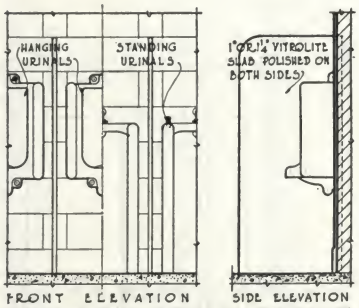
SPRING SCREW

SPECIALLY MADE TO FASTEN VITROLITE & MINIMIZE BREAKAGE.



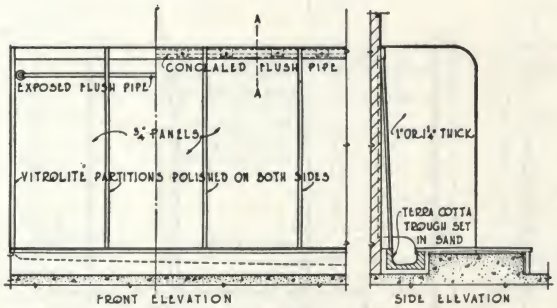
METAL MOULDING

FOR SIGNS, SPANDRELS, ETC. AVOID SCREWING MOULDING TIGHT AGAINST VITROLITE.



URINALS WITH VITROLITE WAINSCOT AND PARTITION SLABS.

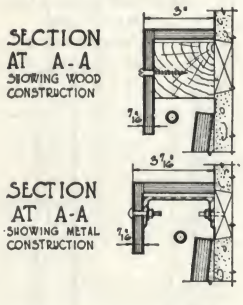
SCALE - ¼" = 1'-0"



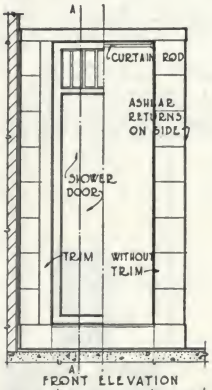
ALL VITROLITE URINAL STALLS

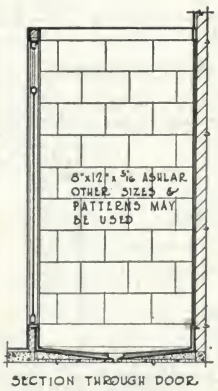
SCALE - ¼" = 1'-0"

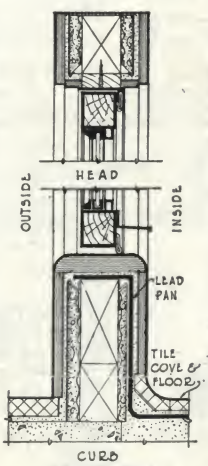
USED IN STADIUMS, FACTORIES, INSTITUTIONS, ETC.

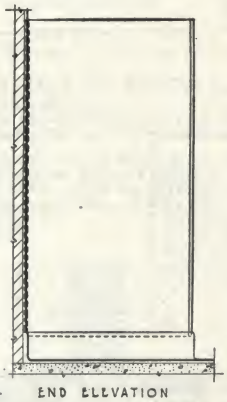


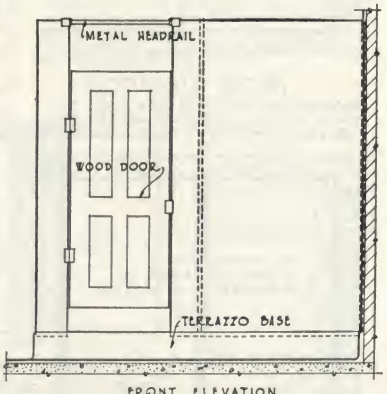
SCALE OF DETAILS - 1½" = 1'-0"

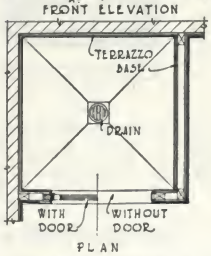


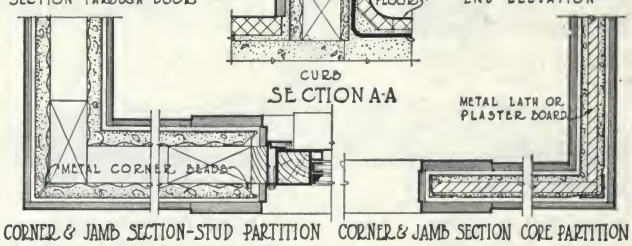






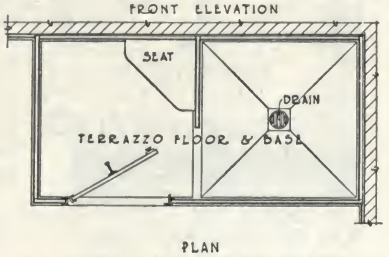






SHOWER STALLS OF ASHLAR ON STUD PARTITIONS

SCALE OF PLANS & ELEVATIONS - ¼" = 1'-0"

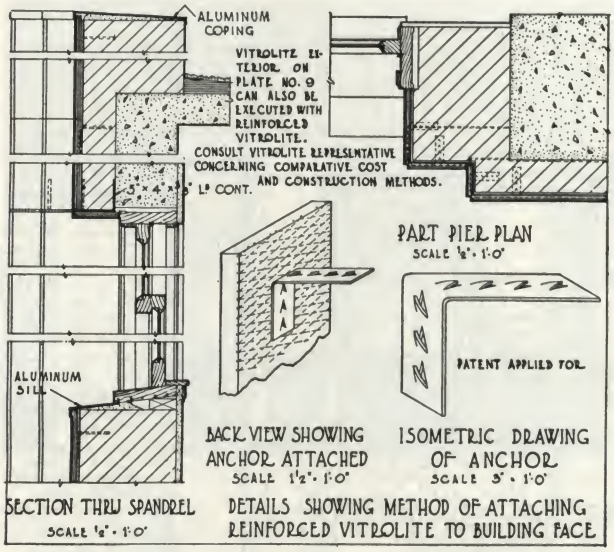


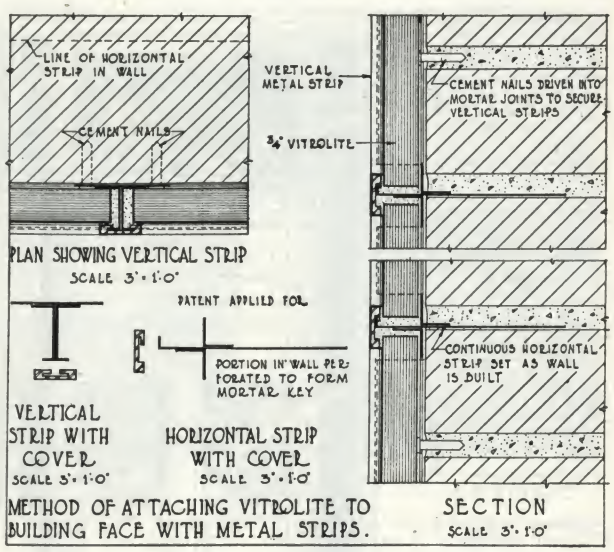
SHOWER STALLS OF LARGE SLAB CONSTRUCTION

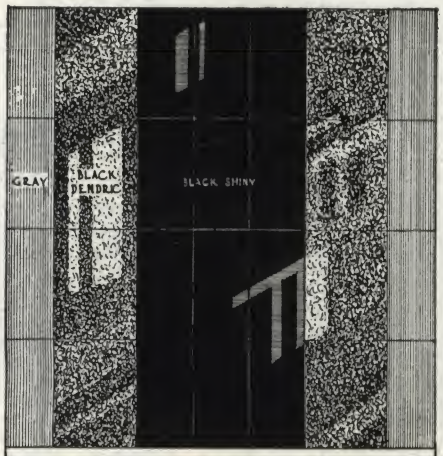
SCALE OF DETAILS - 1½" = 1'-0"

METHODS OF FASTENING VITROLITE WITH SCREWS & METAL MOULDINGS · URINAL & SHOWER STALL DETAILS · PLATE NO. 7

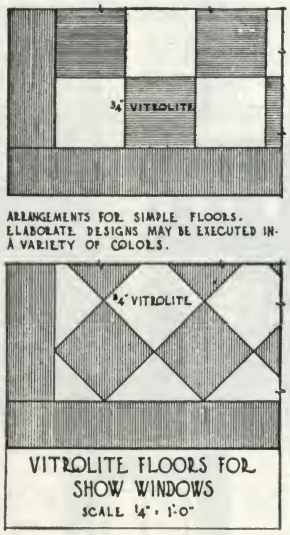
Continued on next page





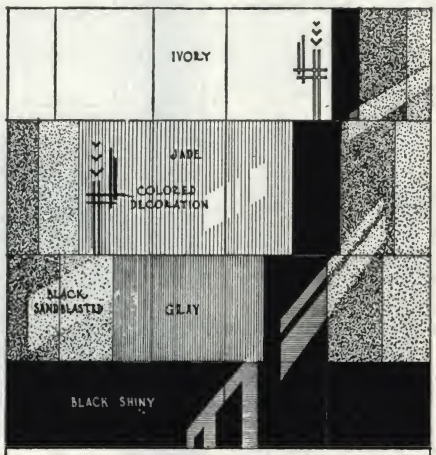


VITROLITE SHOW WINDOW BACKING
SCALE 1/4" = 1'-0"
MANY SIMPLE AND EFFECTIVE WINDOW BACKINGS ARE POSSIBLE BY COMBINING THE VARIOUS COLORS AND TEXTURES OF VITROLITE.

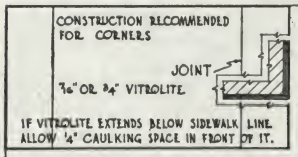


ARRANGEMENTS FOR SIMPLE FLOORS. ELABORATE DESIGNS MAY BE EXECUTED IN A VARIETY OF COLORS.

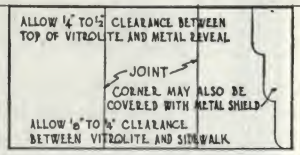
VITROLITE FLOORS FOR SHOW WINDOWS
SCALE 1/4" = 1'-0"



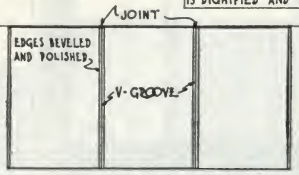
VITROLITE SHOW WINDOW BACKING
SCALE 1/4" = 1'-0"
A MODERN TREATMENT FOR WINDOW BACKING OF VITROLITE WHICH IS DIGNIFIED AND SPARKLING.



ARRANGEMENT FOR SIMPLE BULKHEAD-CORNER. PIECES SHOULD BE FROM 4" TO 6" WIDE AND CORNERS ROUNDED OR BEVELED.



AVOID LARGE SLABS WHICH ARE IMPRACTICAL BECAUSE OF EXPANSION OF ADJOINING MATERIALS.

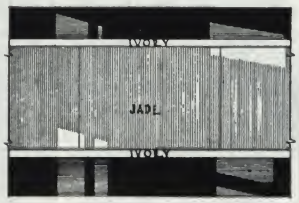


BEAUTIFUL EFFECT THAT IS SPARKLING AND ATTRACTIVE BECAUSE OF REFLECTION ON BEVELED EDGES

LETTERING MAY BE SANDBLASTED ONLY,—SANDBLASTED AND COLORED OR METAL. IF METAL LETTERS ARE USED VITROLITE MUST BE DRILLED AND LETTERS FASTENED WITH SCREWS

A REALISTIC EFFECT OF FLUTING IS SECURED BY SHADED SANDBLASTING. WIDTH OF FLUTES AS REQUIRED

EFFECTS OF FLUTING AND V-GROOVES PRODUCED BY SANDBLASTING. GREAT VARIETY OF EFFECTS IS POSSIBLE.



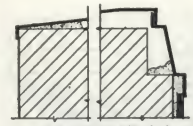
COLORFUL ARRANGEMENTS MAY BE MADE BY COMBINING THE VARIOUS COLORS AND TEXTURE OF VITROLITE

A RICH EFFECT IS SECURED BY USING VITROLITE DENDRIC SURFACE AS ACCENTS TO POLISHED BLACK

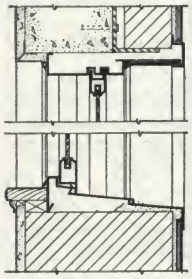
ELEVATIONS OF VITROLITE BULKHEADS SHOWING VARIETY OF DESIGNS AND CONSTRUCTION
SCALE 1/4" = 1'-0"

ELEVATIONS AND DETAILS OF EXTERIOR CONSTRUCTION - SHOW WINDOW BACKING AND BULKHEADS PLATE NO 8

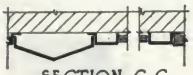
Continued on next page



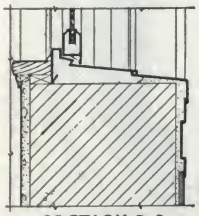
SECTION A-A
ALLOW AT LEAST ¼" CLEARANCE OVER TOP OF VITROLITE.



SECTION B-B
DETACHABLE MOULDINGS MAY ALSO BE USED.



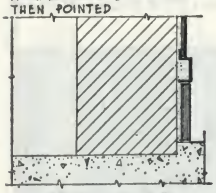
SECTION C-C
ALLOW ⅛" JOINT POINTED WITH PLASTIC CEMENT BETWEEN VITROLITE AND METAL.



SECTION D-D
ALLOW AT LEAST ¼" CLEARANCE OVER TOP OF VITROLITE.

SECTION E-E
SET STRIP OF RUBEROID ROOFING UNDER VITROLITE AND ½" BACK FROM FACE TO ALLOW FOR POINTING

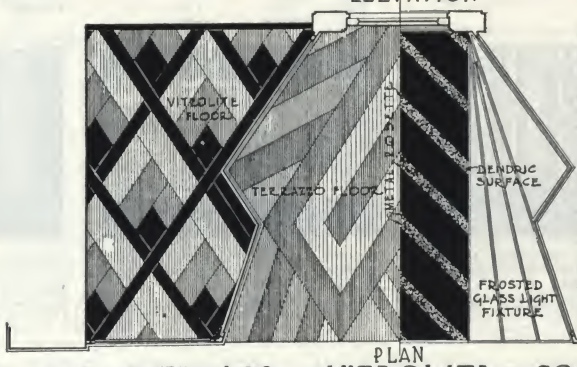
TOP & BOTTOM OF BASE ⅛" FROM METAL & SIDEWALK THEN POINTED



SECTION F-F
IF BOTTOM IS BELOW SIDEWALK LEVEL SET ON A STRIP OF RUBEROID AND ALLOW ½" TO ½" CAULKING SPACE IN FRONT OF VITROLITE.

SCALE OF ELEVATION ⅜" = 1'-0"
SCALE OF DETAILS ¾" = 1'-0"

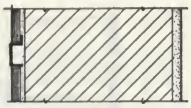
ELEVATION



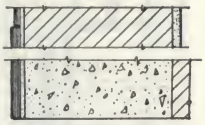
PLAN

CLEARANCE ALWAYS MUST BE LEFT WHERE VITROLITE IS HELD BETWEEN OTHER MATERIALS TO ALLOW FOR EXPANSION OF OTHER MATERIALS OVERLAPPING FRAMES OR OTHER METAL SHOULD NOT TOUCH VITROLITE BUT A THIN LAYER OF POINTING CEMENT SET BETWEEN THEM. ⅜" & ½" VITROLITE USED AND SET WITH VITRO-CEMENT. DONT SCREW VITROLITE TO STORE FRONTS. HORIZONTAL JOINTS WHERE ANGLE IS NOT USED SHOULD HAVE A THIN NARROW STRIP OF RUBEROID SET BACK ⅛" TO ¼" FROM FACE & POINTED UP. AVOID LARGE SLABS.

REINFORCED VITROLITE AS SHOWN ON PLATE NR 8 MAY BE USED INSTEAD OF CONSTRUCTION SHOWN HERE

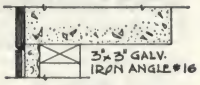


SECTION G-G
⅛" POINTED JOINT BETWEEN VITROLITE AND METAL.

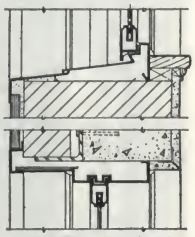


SECTION H-H A
CONDITION AT ADJOINING WALL

SECTION H-H B
CONDITION AT CORNER. ALLOW ¼" TO ⅜" POINTED JOINT BETWEEN VITROLITE AND ADJOINING WALL.

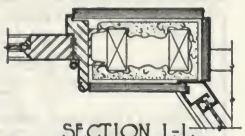


SECTION I-I
USE ANGLE EVERY SECOND HORIZONTAL JOINT. KEEP BACK ⅜" FROM FACE TO ALLOW FOR POINTING.

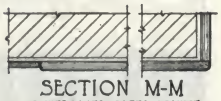


SECTION J-J

SECTION K-K
4"x1⅛" WOOD STRIP TO RECEIVE SCREWS. OUTER EDGE RESTS ON METAL FRAME OF LIGHT FIXTURE.



SECTION L-L
½" CLEARANCE BETWEEN VITROLITE & METAL OF SHOW WINDOWS.



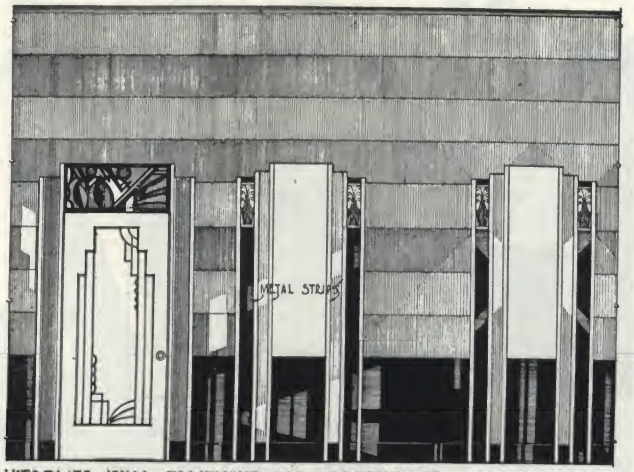
SECTION M-M
IF VITROLITE BUTTS AGAINST ADJOINING WALL, LEAVE ¼" TO ½" POINTED JOINT.

SECTION N-N
EXPOSED CORNERS ON BULKHEADS TO BE ROUNDED SEE OTHER DETAILS FOR MITERING IF DESIRED.

STORE FRONT AND EXTERIOR VITROLITE CONSTRUCTION. PLATE NO. 9

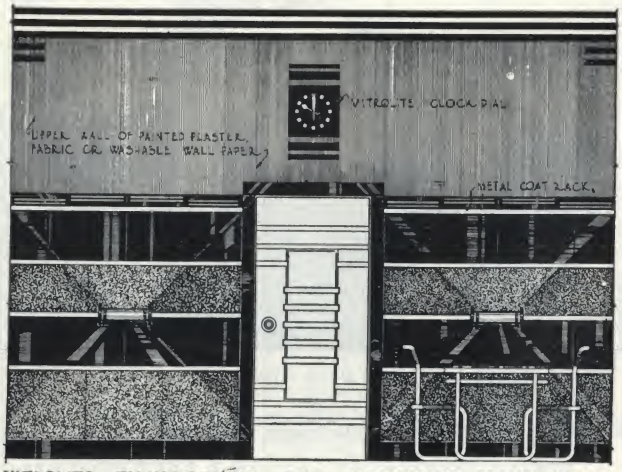
SHOWING ONE OF MANY POSSIBLE TYPES OF CONSTRUCTION, BUT SAME PRECAUTIONS MUST BE OBSERVED.

Continued on next page



VITROLITE WALL TREATMENT FOR RESTAURANT. DESIGN NO. 300
SCALE 3/16"-1'-0"

SET WITH VITRO-CEMENT OR CAN BE ATTACHED WITH METAL STRIPS & SCREWS TO WOOD FRAMEWORK IN BACK THUS BECOMING A MOVABLE FIXTURE.

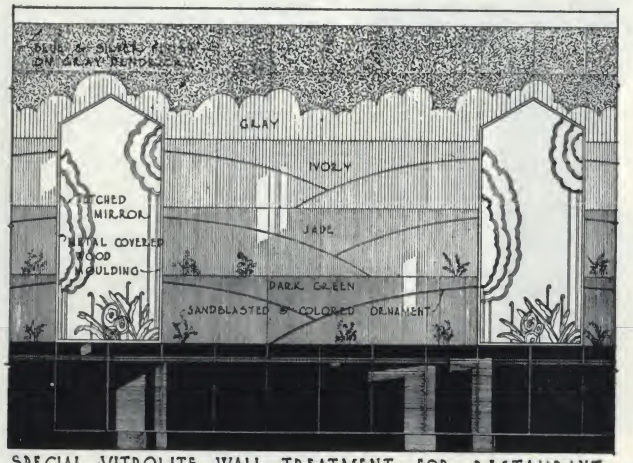


VITROLITE WAINSCOTING FOR RESTAURANT. DESIGN NO. 400
SCALE 3/16"-1'-0"

FOR CEMENTED OR SCREWED ON TREATMENT. SEE BOOKLET "VITROLITE IN THE RESTAURANT" FOR ADDITIONAL WALL AND WAINSCOT TREATMENT

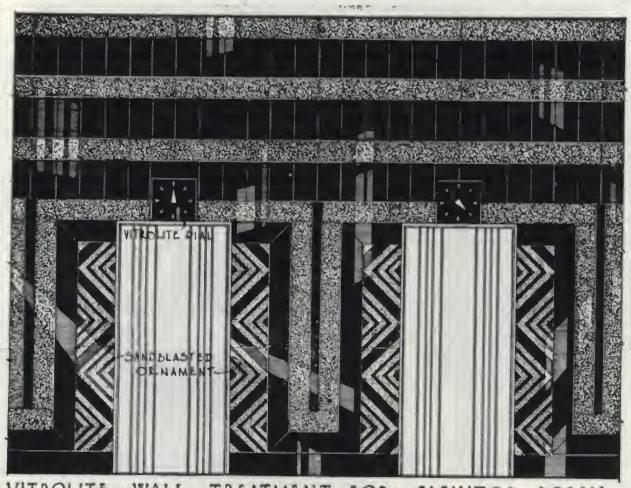
SPECIAL VITROLITE WALL & CEILING SCHEME FOR RESTAURANT
SCALE 3/16"-1'-0"

THE POSSIBILITIES FOR INTERESTING EFFECTS IN VITROLITE ARE UNLIMITED. RECENT INSTALLATIONS HAVE BEEN SENSATIONAL SUCCESSES IN ATTRACTING PUBLIC PATRONAGE.



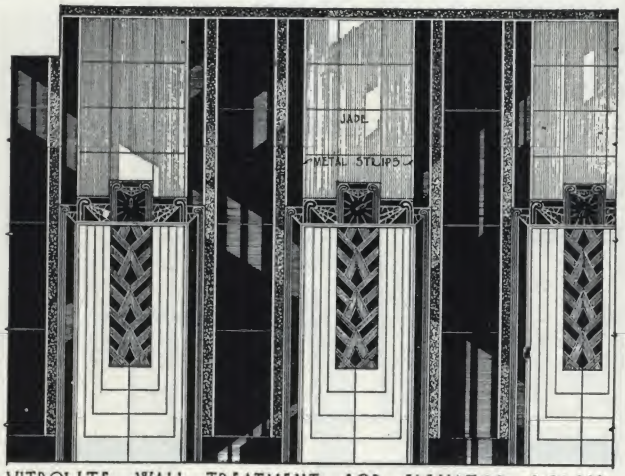
SPECIAL VITROLITE WALL TREATMENT FOR RESTAURANT
SCALE 3/16"-1'-0"

EFFECT OF DISTANCE GIVEN BY HORIZONTAL BANDS OF DIFFERENT COLORS INCREASES APPARENT SIZE OF ROOM



VITROLITE WALL TREATMENT FOR ELEVATOR LOBBY.
SCALE 3/16"-1'-0"

DISTINCTIVE DESIGNS ARE READILY OBTAINED WITH DIGNIFIED BLACK IN ITS VARIOUS TEXTURES OCCASIONALLY RELIEVED BY COLORFUL ORNAMENT.

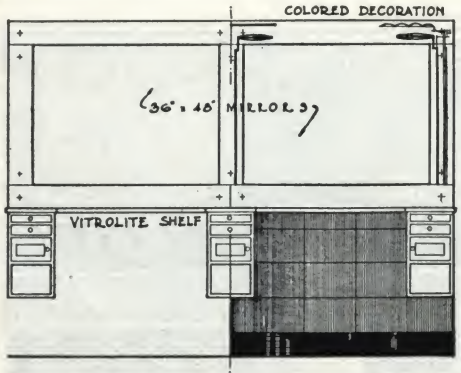


VITROLITE WALL TREATMENT FOR ELEVATOR LOBBY
SCALE 3/16"-1'-0"

A SPARKLING AND DRAMATIC EFFECT MAY BE SECURED BY COMBINING SHINY BLACK WITH DENDRICK FINISH AND METAL MOULDINGS WITH COLORED PANELS.

VITROLITE INSTALLATIONS IN RESTAURANTS AND LOBBIES PLATE NO. 10

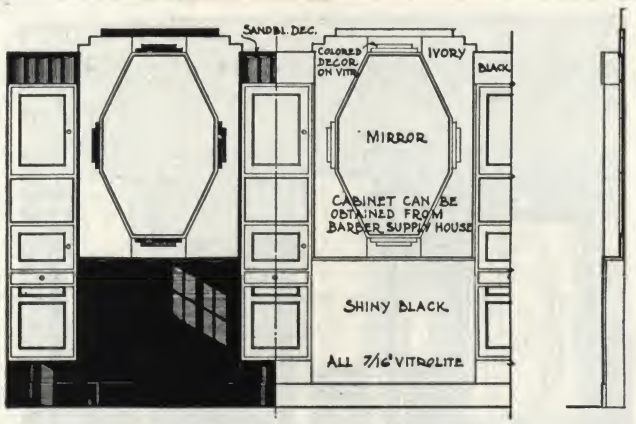
Continued on next page



MIRROR CASE WITH SHELF

SCALE: ¼" = 1'-0"

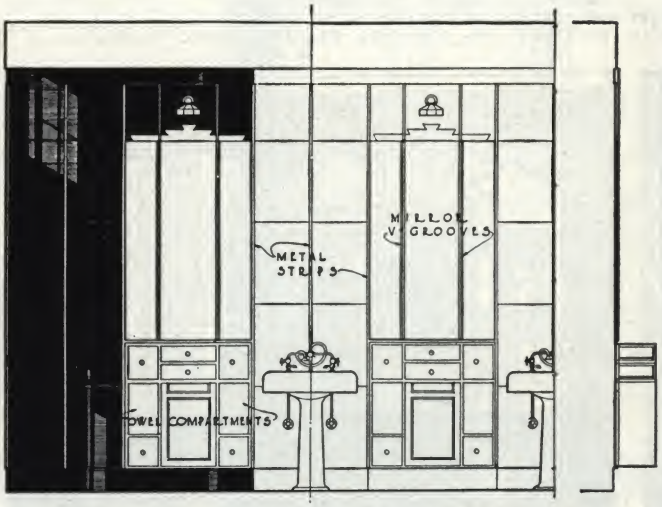
SIMPLE & ELABORATE MIRROR CASES OF VITROLITE ARE CARRIED IN STOCK BY LEADING BARBER SUPPLY Co's.



THE BOUL MICH NO 1007 SECTION

SCALE: ¼" = 1'-0"

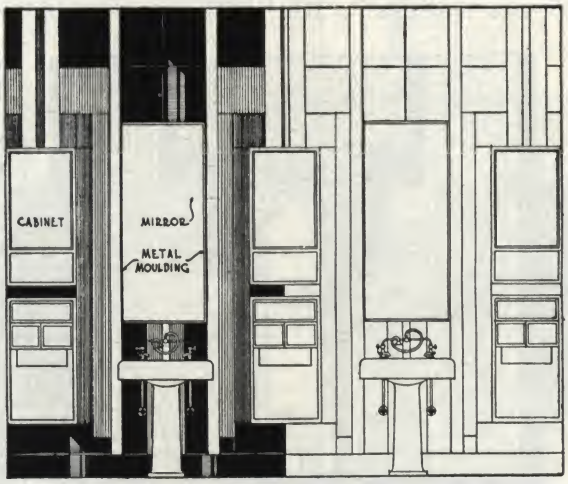
MANY ATTRACTIVE & NOVEL DESIGNS SUITABLE FOR A GREAT VARIETY OF CONDITIONS ARE AVAILABLE. ASK FOR CATALOGUE ON BARBER CASES.



TYPICAL BARBER SHOP SECTION

SCALE ¼" = 1'-0"

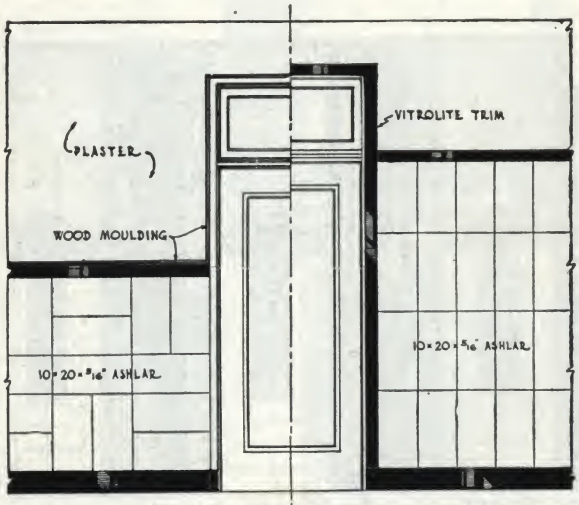
THE ART DEPARTMENT OF THE VITROLITE COMPANY WILL FURNISH SPECIAL DESIGNS INCORPORATING THE LATEST TRENDS IN DECORATIVE STYLES.



MODERN BARBER SHOP INSTALLATION

SCALE ¼" = 1'-0"

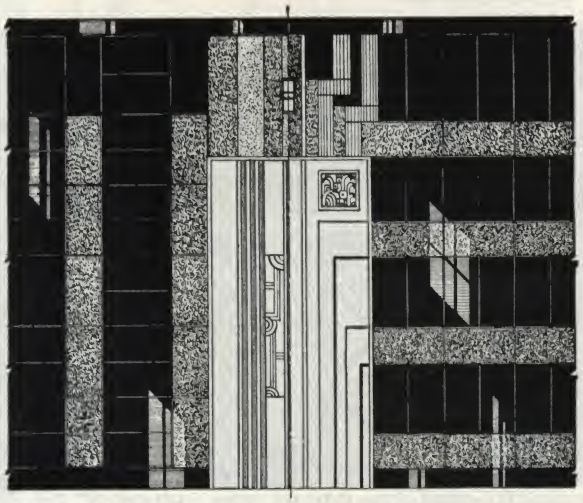
VITROLITE IS UNUSUALLY ADAPTABLE FOR DESIGNS OF MODERN CHARACTER AND MAY BE OBTAINED IN A GREAT VARIETY OF DESIGNS AND COLOR COMBINATIONS.



VITROLITE WAINSCOT IN CORRIDOR

SCALE ¼" = 1'-0"

SIMPLE AND INEXPENSIVE CORRIDOR TREATMENTS OF ANY DESIRED HEIGHT MAY BE OBTAINED BY THE USE OF VITROLITE ASHLAR IN VARIOUS STOCK SIZES - SEE AGENT FOR INFORMATION.



VITROLITE WAINSCOT IN CORRIDOR

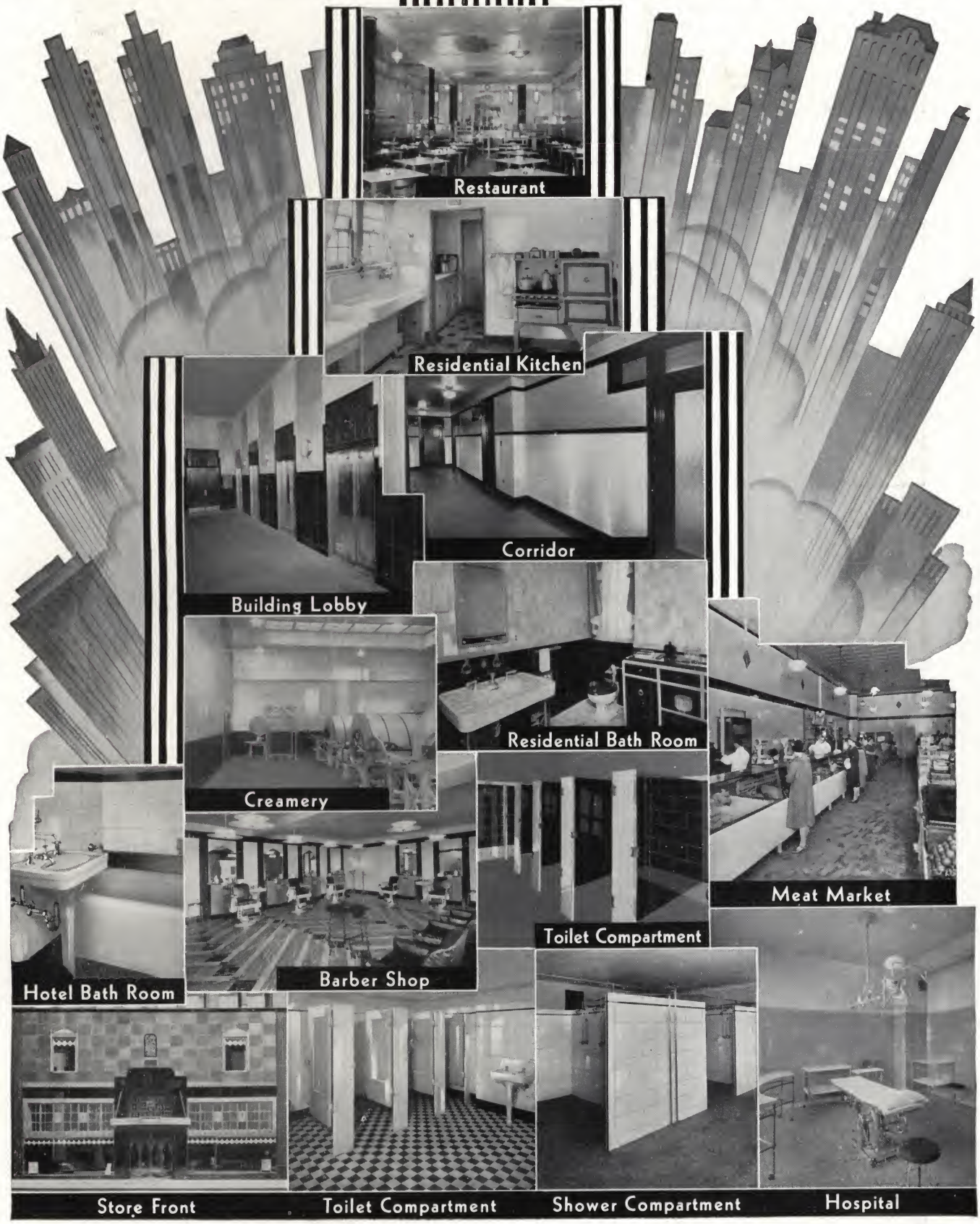
SCALE ¼" = 1'-0"

A RICH AND STRIKING EFFECT MAY BE OBTAINED BY COMBINING VARIOUS TEXTURES OF BLACK VITROLITE AS ILLUSTRATED BY THE DESIGNS ABOVE.

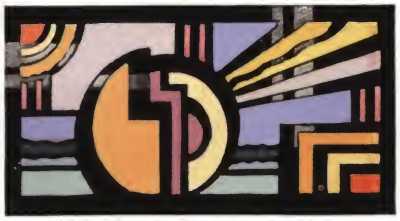
ELEVATIONS OF MIRROR CASES - BARBER SHOP INSTALLATIONS AND CORRIDOR WAINSCOTS PLATE NO. 11

VITROLITE

A FEW RECENT INSTALLATIONS



Black Decorated



Color Decorated

Blue

Grey

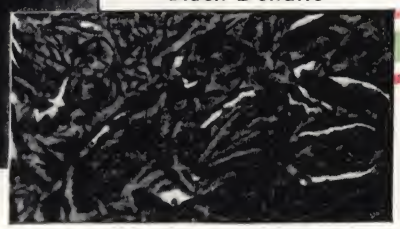
Jade

Ivory

White

Black

Black Sandblast Decorated

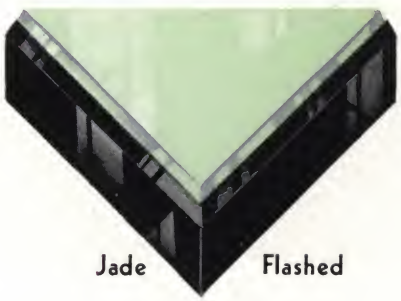


Black Dendric

VITROLITE

A • FUSED • ROCK SLAB • MATERIAL FOR • WALLS • CEILINGS • AND TOILET • PARTITIONS —FOR • INTERIOR AND • EXTERIOR CONSTRUCTION AND • DECORATION

THE VITROLITE COMPANY
EXECUTIVE OFFICES
120 SOUTH LA SALLE STREET
CHICAGO, ILLINOIS
FACTORY
PARKERSBURG • WEST VIRGINIA



Jade Flashed

THE STRUCTURAL SLATE COMPANY

EXECUTIVE OFFICES ∴ PEN ARGYL, PENNSYLVANIA

BRANCH OFFICES

ATLANTA, GA., 504 Walton Building
BOSTON, MASS., 627 Old South Building
BUFFALO, N. Y., 1111 Walbridge Building
CHICAGO, ILL., 140 South Dearborn Street
CINCINNATI, OHIO, 622 Broadway
CLEVELAND, OHIO, 1836 Euclid Avenue
NEW YORK, N. Y., Rm. 701, 110 E. 42nd Street
KANSAS CITY, MO., 210 West 8th Street
MEMPHIS, TENN., 246 Court Avenue

Member of the National Slate Association

PHILADELPHIA, PA., 1006 Fox Building
PITTSBURGH, PA., 1002 Union Bank Building
ST. LOUIS, MO., 721 Olive Street
TAMPA, FLA., 508 Cleveland Street
WACO, TEX., 108½ South 6th Street
WASHINGTON, D. C., 620 Bond Building
MINNEAPOLIS, MINN., 538 Builders Exchange

The deposits of slate in the counties of Northampton and Lehigh, State of Pennsylvania, possess characteristics which, with the abundant supply and ease of working, make this material particularly adaptable to a wide variety of uses in building construction and for commercial and scientific purposes.

In order to develop the most efficient standards of extraction, workmanship, assembling, distribution and methods of installation, as well as to encourage the maximum production and use of slate, the majority of quarries throughout this slate district co-operate through one organization—THE STRUCTURAL SLATE COMPANY.

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Window Sills, Interior and Exterior .. Page 7
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Details of Toilet Enclosures .... Pages 9, 10, 11
Shower Stalls ..... Page 12
Details of Shower Stalls ..... Pages 13, 14
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Pyramid PENN-MONT *Roofing* ..... Page 18

Equipment and Production

The different member companies have thus been enabled to enlarge and modernize mills and machinery, to co-ordinate in producing slate for all types of installations either of the standards adopted or to suit any special requirements and to co-operate with architects, engineers and constructors in obtaining desired results.

This has also made it possible to constantly maintain a stock of standard sizes ready for prompt shipment.

Inspection and "Pyramid" Brand Trade-mark

All slate produced by this group of operators is thoroughly inspected before and after working and given the name "Pyramid." This trade-mark is registered and can be relied upon as indicative of the best that can be produced through careful methods of quarrying and experienced workmanship. Specifications need only call for "Pyramid" brand structural slate to insure that excellence of product and service which is obtainable through THE STRUCTURAL SLATE COMPANY organization alone.

Research and Service

In addition to the work of the Company's own service department, containing specialists in the quarrying and utilization of slate, the Structural Service Bureau of Philadelphia, as architectural advisor and structural standardist, has conducted a series of researches into the production, uses and methods of installation within buildings as best adapted to their occupancy. As a result The Structural Service Bureau has advocated the adoption as standards of certain sizes, parts and details and has prepared data as to number, arrangement, accessories and preparatory work for the various slate installations.

This data prepared in co-operation with THE STRUCTURAL SLATE COMPANY, has been issued by it in the form of three Volumes, which contain eleven Chapters. These may be obtained by addressing the Company.

The Purpose of This Catalogue

The Chapters, before mentioned, contain complete data on many subjects including grave vaults, electrical slate, and such uses.

In SWEET's, however, only structural slate products which are of direct interest to architects are included. The information, while in much more condensed form than in the Chapters, is complete on the products included, with necessary details and specifications given.

Structural Characteristics of "Pyramid" Slate

Among the chief characteristics of structural slate from the Pennsylvania quarries are its fine, even grain, its uniform color, and its cleavage or fissility, which allows it to be split into slabs of practically any thickness.

The results of tests which are given in Chapter I show that slate is one of the least absorptive of Nature's products, having a mean absorption of only 174/1000 of 1% when immersed in water for 24 hours.

Slate is extremely tough and elastic, as manifested by its resistance to strain, shock, blows and the effect of settlement. Moreover, it will not contract or expand.

Further data in connection with the natural formation and quarrying of slate may be secured from Bulletin 586 of the U. S. Geological Survey.

"Pyramid Penn-Mont" Slate for Roofing, Flagging, Flooring, Etc.

In addition to "Pyramid" brand structural slate we now furnish "Pyramid Penn-Mont" slate in all natural colors desired for roofing, flagging, flooring, steps and terraces. Information regarding the interesting textures and shades of "Pyramid Penn-Mont" slate may be obtained from this company direct or from any of its branch offices. For further information see pages 17 and 18 of this insert.

These pages contain but a few of the many slate products produced by this Company from the twenty-two famous quarries of "Pyramid" Slate

Continued on next page

STRUCO SLATE -- A BEAUTIFUL BUILDING MATERIAL IN ANY COLOR

Durability of "Struco Slate"—The finish on Struco Slate is guaranteed not to crack, craze or peel. It is moisture and stain proof; highly resistant to acids, and under no circumstances will be unsightly or unsanitary.

For 12 years before its adaptation to slate, this finish was in use on wood and composition bases, for drainboards, toilet seats, golf balls, and other products where a hard, elastic, non-staining, non-cracking surface is a prime requisite. For all these purposes it has given entire satisfaction. Slate, during the tests, showed that because of its non-absorptive structure, it was peculiarly adapted to receive a finish of this sort.

"Struco Slate" Is an Exclusive Product—THE STRUCTURAL SLATE COMPANY has secured exclusive rights to the use of this finish on slate. It has arranged for the colored finishing of slate to be a separate branch of its production, and has adopted "Struco Slate" as its trade-marked name for this material.

"Struco Slate" is marketed as a separate product, without conflict with natural slate in its many diversified uses.

Where "Struco Slate" Is Used—"Struco Slate" can be installed wherever the slate is not subjected to abrasive action, being specially recommended for shelving, wainscoting, trim, and for toilet, shower and urinal stalls.

Standard and Special Colors—"Struco Slate" will prove especially useful for installations where color harmony is essential, for it can be manufactured in a wide range of solid and "spattered" colors and also in special colors, without any additional expense.

However, too much emphasis cannot be placed on the fact that this Struco finish, wherever installed, is utilized merely to lend added beauty to the natural slate. Many materials require some sort of surface coating to protect them, but on structural slate the new finish, although lightening the color, merely extends the usefulness of its natural characteristics.

Integral Penetration—Either three or four coats of the Struco finish are applied, according to the use and effect desired.

Note: Special attention is called to the fact that since the solvents in each coat react upon those in all the previous coats, there is penetration entirely through, and the result is a multiple single coat which, during the lifetime of a building, should require no expense for upkeep or repairs.

Color Samples Submitted on Request—Samples of any obtainable color will be prepared in either finish and submitted for approval upon request to THE STRUCTURAL SLATE COMPANY.

A booklet containing colored illustrations of the many effects obtainable will also be supplied.

Continued on next page

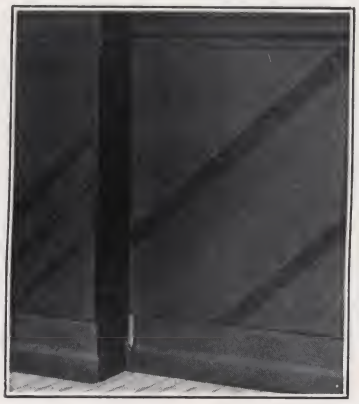
GRADING OF STRUCTURAL SLATE

Slate is produced in one quality only, but the stock is divided into two natural gradings, known as "clear stock" and "ribbon stock."

Ribbon Stock—About 80% of the natural slate has ribbon veinings, which in no way affect its impermeability or strength.

The appearance of the ribbon stock varies indiscriminately, selection for ribbons never being made. Ribbon stock is standard for structural and sanitary installations, and will be furnished for such purposes unless the clear stock is definitely specified.

After being given the commercial oiled finish, it presents almost the same uniform dull black as the clear stock.



Slate Wainscot, Showing Typical Markings of Ribbon Stock

However, an increasing number of users prefer not to conceal the ribbons, which lend a distinctive appearance to the material.

Clear Stock—Represents the remaining 20% of the natural slate. It is a special selection, but is standard for electrical panelboards and blackboards, and can also be specified wherever the elimination of veinings seems desirable from the standpoint of appearance. Its cost is from 25 to 30% more than ribbon stock.

Color—The mill stock of commerce in the Pennsylvania district is a dark blue-gray color and has been called black slate, because of its appearance when finished with oil.

SURFACES AND FINISHES OF STRUCTURAL SLATE

It is important that architects and users have a knowledge of the commercial surfaces and finishes in which slate is procurable. This assures the selection of surface and finish best and most economically adapted to the specific purposes for which the slate is to be used. Proper selection saves time and money and does away with confusion, delays and misunderstanding.

Split Face Surface—This is the surface left as a result of the first cleaving or splitting at the mill and before the slate has gone to the planing machine.

Use—Split face finish should be used where a smooth finish is not necessary or where a rough surface or texture effect is desired, such as the undersides of floor or roof slabs or wherever the surface is concealed. For outside steps, terrace floors, cloister effects, stepping stones or garden walks.

Planed Surface—This is the surface left by the planing machine. While it has not the rough characteristics of the split face finish, the marks of the plane are faintly indicated.

Use—Planed surface for reasonable economy should be used for the underside of stair treads, landings and risers, and wherever absolute uniformity of finish is not essential.

Standard Sand Rubbed Finish—After being smoothed by the plane, slate is sand rubbed under the action of sand and water on large revolving metal disks. The result is a uniformly smooth, even surface, having the slightest kind of a grain or stipple. This surface finish will be supplied unless otherwise specified.

Use—Standard sand rubbed finish should be used for toilet room partitions, lavatory stalls, shower baths, urinals, washtubs, tanks, etc., unless in special instances it is desired to go to the additional expense of honing.

Honed Finish—The mistake is often made of confusing sand rubbed finish with honed finish.

Honed finish is much smoother than sand rubbed, being the nearest approach to actual polish that can be given slate. It is not a necessary or suitable finish to be used where slate is subjected to the constant abrasion given floors, stair treads, thresholds, etc.

Honing is the final process through which slate can go in the mill after being planed and sand rubbed, and this finish is only applied in special instances or for particular purposes.

Use—Honed finish is most generally used for electrical installations and other purposes where a velvety smooth surface is required or desirable.

Sawed Edges—This is the surface left by the saw on the edges of all slate—a series of curved serrations somewhat resembling a coarse tooled finish.

Use—Sawed edges are confined to slabs 6 in. and under, and are particularly adaptable to the faces of window sills, edges of wall copings, the straight nosing of outside steps, etc. Choice may be had between this and the standard sand rubbed finish for the same purposes.

Split Face Surface
Actual scale

Planed Surface
Actual scale

Standard Sand Rubbed Finish
Actual scale

Honed Finish
Actual scale

Sawed Edges
Actual scale

Continued on next page

FACTORS DETERMINING THE COST OF STRUCTURAL SLATE

While the prices of slate vary from time to time, the approximate figures for the relative cost of the various areas and thicknesses will bear, approximately, the same relative value. The cost per square foot increases in proportion to the increased area of the slab and it should be kept in mind, if the cost is an important consideration, the sizes of the pieces should be kept small. Slate slabs of almost any desired size, however, may be obtained when necessary for some particular use.

ESTIMATING DATA FOR STRUCTURAL SLATE

Group	Area in sq. ft.	List price in cents per sq. ft.					Special lengths, not over 6 ft. wide					
		1 in.	1¼ in.	1½ in.	1¾ in.	2 in.	Over, ft.	Group price	Over, ft.	Group price	Ft.	Group price
1	1 to 10	30	34	40	44	50	6	2	7	3	8 to 9	4
2	10 to 16	36	40	46	52	60	7	3	8	4	9 to 10	5
3	16 to 22	44	48	52	60	68	8	4	9	5	10 to 11	6
4	22 to 28	52	56	62	70	76	9	5	10	6	11 to 12	7
5	28 to 35	62	66	72	80	86	10	6	11	7	Over 12	Special
6	35 to 40	77	81	87	95	101	10	7	11	Special	Over 12	Special
7	40 to 45	90	100	110	120	130	10	Special	11	Special	Over 12	Special

Notes Regarding Cost:

Prices are based on slabs cut at right angles—rubbed one face and edges.

An extra charge of 60% added to the lists is made for irregular shapes.

No slab figured less than 6 in. wide, or less than 1 sq. ft. in area.

No slabs figured less than 1 in. thick. Intermediate thicknesses take next higher list.

An additional charge of 6¢ per sq. ft. is made for each additional ¼ in. in thickness over 2 in.

Rubbing two faces: Add, for stones 16 sq. ft. and less, 6¢ per sq. ft.; and over 16 sq. ft., 8¢ per sq. ft.

Allow 4¢ per sq. ft. net for not rubbing.

Crating: 5¢ net per sq. ft. to and including 2 in.; over 2 in., 2¢ net for each inch or fraction. Minimum charge, 35¢ net.

All fractions figured as full inches.

Thresholds, stools and sills, 10% additional.

NOTES ON PREPARATORY WORK FOR SLATE WALL AND FLOOR SLABS

The following paragraphs refer to items usually not made a part of the work of the Structural Slate Contractor, and are here presented as suggestions or reminders, in connection with other specifications, or parts thereof, for the work of the various building trades. The Standard or Basic Specification presupposes that the following structural requirements have been complied with by other trades.

For Slate Used Vertically

(1) Masonry Backgrounds—Wall or partitions of brick, hollow tile, concrete, or other masonry afford excellent backgrounds for slate surfacing, either as parts of enclosures, or as wainscots, bases, etc. It is not necessary to insert plugs or grounds in any such walls, as the specification for slate work requires that the slatesetter drill, or otherwise provide, for his own anchors. Mortar or plastering is unnecessary on masonry backgrounds, as the slatesetter's backing up and jointing will take care of inequalities in these surfaces.

(2) Where shower enclosures are supported on wooden joists, all vertical slate features should be independent of the walls or partitions or have sliding anchors to allow shrinkage in the joists to permit all slate to settle equally and avoid the opening of joints which might otherwise result.

(3) Such opening of joints in the case of wainscots, or wall slabs, where wood joists occur, may be avoided by several means—such as bases, coves, wooden scotias, cutting the finished floor against the slabs, and otherwise.

(4) Wood or Metal Backgrounds—On wood or metal studs or furring back of slate, it is desirable that lathing and plastering should be placed.

(5) Wood studs should be not less than 2x4 in., and spaced not over 16-in. centers, braced at least once in their height with 2x4-in. horizontal bracing.

For Slate Used Horizontally

(6) Masonry Floor Construction—The tops of all structural tile or concrete floor construction should be kept down below the finished floor line to the depth required by the thickness of the concrete bed and the slate floor slabs and setting-bed to be used.

(7) Steel Beams—The tops of any steel beams or girders should be kept down at least 3 in. below the finished floor line, and should be covered with roofing slate, sheet metal or waterproof paper to prevent adhesion of the concrete bed.

(8) Concrete Bed on Masonry Floor Construction—The top of floor construction should be swept clean, well drenched with water and a 2-in. thick concrete bed of stone, sand or cinder concrete laid, ready to receive the slate contractor's setting-bed.

(9) Where any pipes are to be run in the concrete bed, the floor construction should be lowered, so that the top of any pipe will not come above the top of the concrete bed.

(10) Concrete Bed on Earth or Fill—When slate slabs or floors occur in connection with earth, cinder or gravel fill, the fill should be thoroughly puddled and tamped, and a concrete bed not less than 3 in. thick provided. The bed should be of crushed stone, slag or gravel for outside work, and may be of clean cinders for inside, mixed with cement and sand in accordance with good practice ready for the setting-bed of cement mortar to be furnished and applied by the contractor for slate work.

(11) Reinforcement—Reinforcing metal, where required for concrete beds under slate floors, should be from 2 to 3-in. mesh No. 16 gauge expanded metal, or 3x8 in. No. 8 and No. 10 gauge reinforcement.

(12) Reinforcement should be placed about ¾ in. above the bottom of the concrete bed, and where more than one width or length is required, be lapped not less than 6 in. (See Paragraph 19.)

(13) Wood Floor Joists—The tops of wood floor joists, wherever possible, should be lowered to the level required to provide space for a continuous concrete bed or foundation to receive slate and the slate contractor's setting-bed.

(14) Where floor joists can not be lowered to the required level, the tops of the joists should be beveled off to a sharp edge, until the top is at least 2 in. below the finished floor.

(15) Spans of joists from 6 ft. 10 in. should be bridged with one row of cross bridging, and spans of 10 ft. and over with one row to each 5 ft. Bridging should not be less than 1x3 in.; should be accurately cut to fit, and securely nailed at each end with two 8d nails.

(16) Wood Underflooring—On top of the joists, if the joists have been lowered, should be laid a flooring of 1 in. by not over 6-in. wide boards placed about ¼ in. apart* and securely nailed to each joist.

(17) To the sides of the joists, if the joists have not been lowered, should be securely nailed 1 in. by not less than 2½-in. cleats at the depth required. Between the joists set 1 in. by not over 6-in. wide boards laid about ¼ in. apart* and securely nailed to the cleats.

(18) Concrete Beds on Wood Joist Construction—The wood underflooring and tops of joists, if joists have not been lowered, should be covered with a layer of waterproof paper, weighing not less than 11 lb. per 100 sq. ft. For floor areas of 100 sq. ft. or less, the concrete bed, if of stone, gravel, or coarse sand concrete, should be 2 in. thick, or if of cinder concrete, 3 in. thick. For areas of over 100 sq. ft. the concrete bed, if of stone, gravel or coarse sand concrete should be 2½ in. thick, or if of cinder concrete, 3½ in. thick.

(19) For floor areas of more than 100 sq. ft., the concrete bed should be reinforced. (See Paragraphs 11 and 12.)

*If laid tight, the moisture in the concrete may swell up and buckle the floor boards.

BASIC SPECIFICATION FOR STRUCTURAL SLATE WORK

General Conditions

(See paragraphs 15 and 16 for Abbreviated Form)

(1) Furnish all labor, materials, tools and appliances necessary for the execution and completion of the work in accordance with this specification, except as the same may be modified in any way by the architect's drawings or specifications, in which case the architect's drawings and specifications shall govern.

(2) The General Conditions of the specifications written by the architect are hereby made a part of this Basic Specification and of the contract for the Structural Slate work.

(3) Work Included—For extent of work, and for the grade and finish of Structural Slate, see the architect's drawings and specifications—and schedule, if any is furnished.

(4) Acceptance of Preparatory Work—It shall be the duty of the Structural Slate Contractor before beginning any of his work to examine all floor and wall construction and any other supports for his work provided by others, and satisfy himself that everything is in proper condition to receive his work. The architect shall be notified by the Structural Slate Contractor in writing of any exception he may take to such construction. Failure to do so shall constitute acceptance of the construction by the Structural Slate Contractor as suitable in all ways to receive his work.

Continued on next page

(5) Samples—If so required, typical samples, each marked as to grade and finish of slate proposed to be used, shall be submitted to the architect for approval, and left with him, before material is ordered.

(6) Quality and Finish—All slate hereafter specified shall be dark blue-gray (black if oil finished) in color, hard and non-absorbent, whole, sound and free from irregularities in production or defects in manufacture, and of the commercial grading known as Ribbon Stock, except where Clear Stock may be specifically called for, or is customarily furnished.

(7) All slate used shall be branded with the trade-mark "Pyramid," exposed surfaces shall be smooth and free from depressions, loose pieces, cracks, or chipped edges, and all shall be left in true alignment and in every respect thoroughly neat and satisfactory.

(8) All exposed surfaces, unless honed finish is specifically called for, shall have standard sand rubbed finish.

(9) After complete erection and pointing, every piece of slate, except water-flushed backs of urinals, floors or parts of stairways noted, shall be finally treated with raw linseed oil, thinned with turpentine, unless otherwise specifically mentioned, and all shall be left clean and complete.

(10) Erection—Each piece of standing slate against any wall or partition shall be properly backed up at the edges or joints with cement mortar or plaster of paris, according to the space, and anchored in place in such a manner as to insure its remaining firm and rigid. No piece to have less than two anchors, which shall be [galvanized] [brass] [bronze], so placed as to be concealed, and where of wire, not less than No. 12, WandM gauge.

(11) Where space back of slate against masonry walls is more than 2 in., brick in cement mortar shall be applied back of all joints. Any intermediate joints necessary in slate slabs shall be of the kind specified for the corner or abutting joints in the same piece of work and thoroughly filled with the same packing material; if showing, the joints must be true, close and smooth.

(12) All slabs, partitions, stiles, curbs, bases, treads or other pieces of slate shall be erected, fastened together or secured in place in a first class manner and left rigid and complete, to the satisfaction of the architect or his representative.

(13) Joints or external angles shall be made on the side least exposed to view. All external angles and all exposed edges or corners shall be slightly rounded, unless otherwise shown on drawings, or specified. The contractor for slate shall do any cutting and drilling of slate for all other trades, and for anything that is to be connected or attached to slate.

(14) Before any work is placed in the mill, two copies of shop or setting drawings shall, if required by the architect, be submitted to him for approval of the general principles involved in construction. Such approval, when given, with any corrections required, unless taken exception to by the contractor in writing shall not relieve the contractor of obligations as to rigidity of construction, correctness of sizes and measurements, or other matters pertaining to his contractual relations or to any guarantee.

General Conditions (Abbreviated)—

(15) *Note:* As this specification is being given wide circulation among architects and slate contractors, and is copyrighted by and registered with the Structural Service Bureau, it is suggested that the brief form indicated by Paragraph 16 be used wherever desired.

(16) The General Conditions, paragraphs 1 to 14, inclusive, as printed in the Twenty-fifth Edition of SWEET'S ARCHITECTURAL CATALOGUES, and in Chapter No. 3 on Structural Slate, copyrighted by and registered with the Structural Service Bureau of Philadelphia, bearing date of September 1927, are hereby made to constitute the General Conditions of this specification.

STAIRWAYS

Information

The following may be considered to represent good practice, generally, except where specific State or municipal regulations obtain which will naturally take precedence.

Rise and Tread—Rise must bear certain relation to tread or width of step. In accordance with established practice, width of tread should be increased as height of rise decreases.

Two rules have been developed and are most generally used.

First Rule—The sum of the tread and rise should approximate 17½ in. A fairly comfortable stair is one of 10-in. tread by 7½-in. rise. The nosing projects generally ¾ to 1¼ in. beyond the face of riser and is in addition to the figured width of the tread.

Second Rule—According to the second and better rule, the sum of two times the rise, plus the tread, should total from 24 to 26 in. Thus, in the stair above noted, twice the rise of 7½ in. plus the 10-in. tread equals 25 in.

Note: Exterior steps to public building or an interior monumental stairway should always have a wider tread and less rise than ordinarily would be the case.

Intermediate Platforms—It is advisable in some cases and in many is required by law, that the flight of stairs between floors be broken by the use of platforms or landings in public buildings and places of assembly, factories, warehouses, etc. It is never desirable to have less than three steps at any point, either at landings or at floors, as it always forms a "tripper."

Winders—The use of winders should be avoided wherever possible and are only permissible in private dwellings. In public, educational, and amusement buildings and in factories, warehouses, office buildings, etc., they should never be used. The best arrangement of winders is to divide a 90° arc between risers at the angle into three equal parts. One winder should never be used, as this also is a "tripper."

Strength of Stairs—In the majority of cities the building regulations give the allowable loads for which stairs must be calculated. For general use, a load based on 150 lb. per sq. ft. may be used, although some codes permit 100 lb.

Suggested Form of Specification

(1) **General Conditions**—The General Conditions, paragraphs 1 to 14, inclusive, as printed in the Twenty-fifth Edition of SWEET'S ARCHITECTURAL CATALOGUES, and in Chapter 3 on Structural Slate, copyrighted by and registered with the Structural Service Bureau of Philadelphia, bearing date of September 1927, are hereby made to constitute the General Conditions of this specification.

(2) *Note:* Each portion of the slate work for stairs is specially mentioned in the following specification, in order that the portions not applicable in any particular instance need only be eliminated.

(3) **Materials and Work Included**—Furnish and install complete on the [metal] [concrete] (or other) structural supports supplied by other contractors, the slate work in connection with all steps or stairways indicated on the drawings and in accordance with this specification.

(4) **Finish**—All pieces of slate shall be standard sand rubbed on the face and have planed surfaces on the reverse side. Any exposed reverse surfaces shall be oiled and all sand rubbed faces shall be left clean without oil.

(5) **Treads and Landings**—Shall be of slate 1¼ in. thick, with slightly rounded edges to nosings, with a total projection of ¾ in. beyond face of riser. Treads shall be set to incline ⅛ in. from back to front (and landings set level).

(6) *Note:* For stairs in hotels, theaters, subways, etc., where traffic is heavy and for widths of over 3 ft. 6 in., treads and landings should be from 1½ to 2 in. thick; risers 1 in.

(7) **Risers**—Shall be of slate 1 in. thick, butt-jointed, and with full packing, not less than two ¼x1¼-in. brass dowels at each joint, to the backs of treads below and to the under front edge above.

(8) *Notes:* Where metal risers for stairs are used, if the same, whether cast or pressed, are specified or detailed to be angled or lipped near bottom for slate tread to slip under (see Detail I shown in the Twenty-fifth Edition of SWEET'S ARCHITECTURAL CATALOGUES, or page 6 in Chapter 9, of a series on Structural Slate, issued October 1927, by THE STRUCTURAL SLATE COMPANY, Pen Argyl, Pa.), the dowels are not necessarily required on top flange. In some instances specifications call for two or more lugs, or spuds to be cast on the top of risers, in which case the undersides of slate treads are countersunk to fit over same.

(9) The metal channels will form strings for stairs, but if metal is not continued around landings, slate bases should be specified and brought out enough from face of wall to receive the open ends of the channels.

(10) **Setting**—***For Slate Work Between or Upon Iron Supports***—All slate work shall be thoroughly dampened just before laying and each tread shall be thoroughly bedded in slater's cement on all (slate or metal) risers or supporting angles or metal work (and for open stairs this jointing shall be neatly cut back or pointed from the underneath as work progresses). All joints between slate and slate, or slate and metal, including those at ends, shall be packed with slater's cement and pointed tight.

(11) ***For Reinforced Concrete Supports***—All slate work shall be thoroughly dampened just before laying and shall be bedded in or backed with cement mortar, composed of one part portland cement and two parts of well graded, clean sand. All joints between slate and slate, or slate and cement shall be packed with slater's cement and pointed flush.

(12) *Note:* If risers are of cement (see Detail 3 shown in the Twenty-fifth Edition of SWEET'S ARCHITECTURAL CATALOGUES, and on page 7 in Chapter 9 of a series on Structural Slate, issued October 1927, by THE STRUCTURAL SLATE COMPANY, Pen Argyl, Pa.), the same should be troweled on in connection with the concrete work, if not, as in some cases, poured with paneled or recessed faces.

(13) **Stringers and Bases**—Shall be of slate 1 in. (or more) thick by ..... high, measured at right angles from edge of nosing (and the same height from level floor where stringers are continued around landings at floor levels or between same). All strings [bases] shall be rounded [moulded] at top with returns cut on the solid at any openings (and, where moulded, cut with solid returns on all interior and exterior angles).

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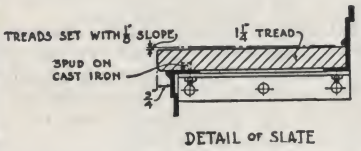
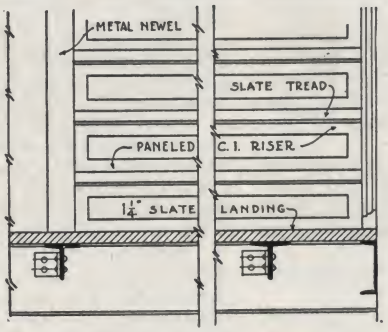
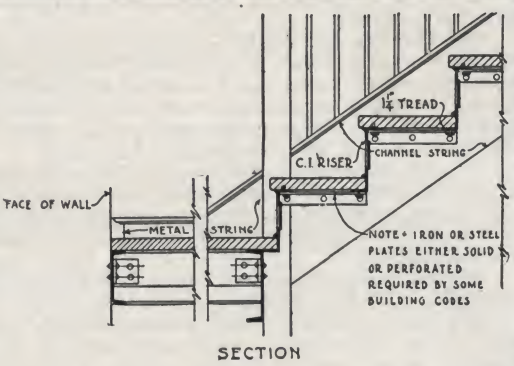
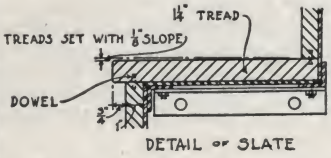


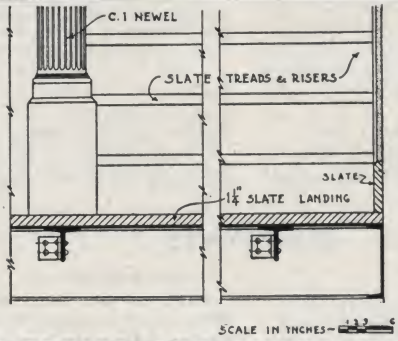


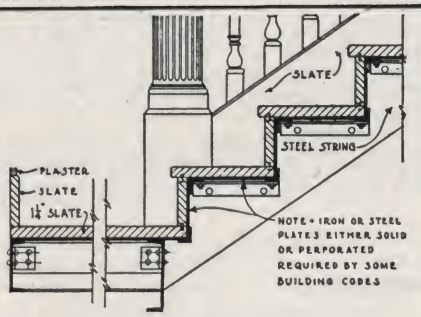


1 SLATE TREADS-CAST IRON RISERS-STEEL SUPPORTS

TYPICAL DETAIL OF A STAIRWAY SIMILAR TO ILLUSTRATION

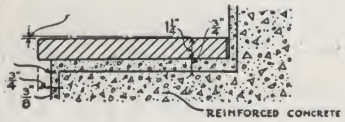


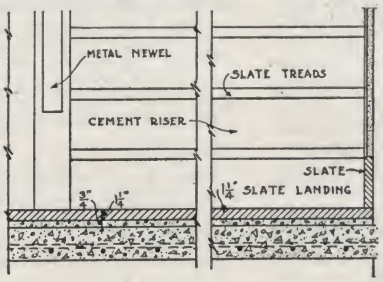


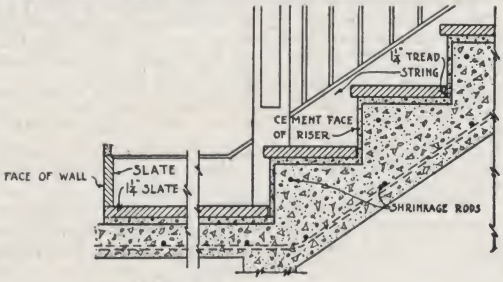


2 SLATE TREADS AND RISERS-STEEL SUPPORTS

TYPICAL DETAIL OF A STAIRWAY SIMILAR TO ILLUSTRATION

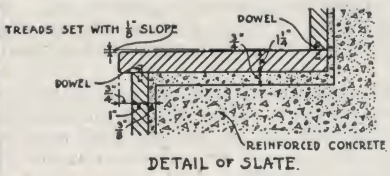


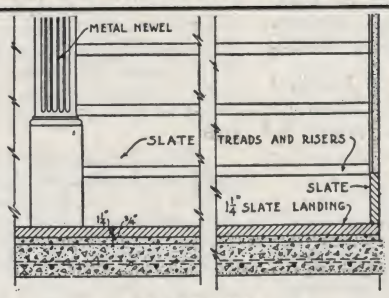


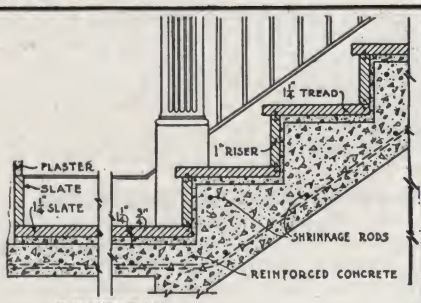


3 SLATE TREADS-CEMENT RISERS-REINFORCED CONCRETE

TYPICAL DETAIL OF A STAIRWAY SIMILAR TO ILLUSTRATION







4 SLATE TREADS AND RISERS-REINFORCED CONCRETE

TYPICAL DETAIL OF A STAIRWAY SIMILAR TO ILLUSTRATION

SCS

DETAILS OF SLATE STAIRS

11

Continued on next page

WINDOW SILLS

Although not a new use for slate, many architects have only recently appreciated the unusual advantages of this unique product of nature for window sills. The Structural Service Bureau has prepared a 32-page publication with 46 illustrations and 24 detail drawings showing the use of slate for these purposes, and the drawings below are reduced from that book which will be sent upon request.

Interior Sills

The many advantages of natural slate for interior window sills, either with or without a radiator beneath, are obvious when the material is considered. Slate is impervious to moisture; it resists blows, abrasion and wear; it does not discolor under ordinary acids and caustics and it will not contract or expand. It may be left in its natural state with any of the various surface finishes described, may be treated with paint or stain or given a "Struco" finish.

Exterior Sills

The same characteristics which make slate such an ideal material for use as interior sills are especially valuable for exterior sills. Here conditions of abuse are even harder because of the action of direct sunlight and frost. There is a rapidly growing tendency among architects to use exterior sills as thin as possible in buildings of brick or stone. This is done to make sills inconspicuous and to eliminate projections beyond plane of the wall which give undesired shadows.

Suggested Form of Specification

General Conditions—In offering the following specificational paragraphs it is assumed that the General Conditions of the general specification will also govern; also that sills will be but one item of the slate work required and that there will be general clauses governing characteristics of slate, etc. In that case, the General Conditions of the "Basic Specification for Structural Slate Work" in Chapter 3 of the Series issued by THE STRUCTURAL SLATE COMPANY might either be incorporated in full or merely referred to as follows:

Short Form General Conditions—

Note: As this Specification is being given wide circulation among architects and slate contractors, and is copyrighted by and registered with the Structural Service Bureau, it is suggested that the following brief form be used wherever desired.

The General Conditions, Paragraphs 1 to 14, inclusive, as printed in SWEET'S ARCHITECTURAL CATALOGUES, Twenty-fifth Edition, Chapter No. 3 on Structural Slate, copyrighted by and registered with the Structural Service Bureau of Philadelphia, bearing the date of September 1927, are hereby made to constitute the General Conditions of this specification except as they may be herein specifically modified.

Slate Sills—In case the particular slate installation embraces sills only, the following extracts from the 14 paragraphs referred to are suggested for inclusion as governing the slate itself—the same and all other paragraphs which follow being based upon slate sills, whether interior or exterior, even in plane and thickness with machined finishes and squared, rounded, or moulded edges or nosings, returns, etc. If split-face surfaces or planed-face surfaces are to be used, and if sawed edges or split edges and other characteristics of craftsmanship and of the inherent qualities of this product of nature are to be in evidence, then the specification should be modified according to the discrimination of the designer.

Slate—All slate hereafter specified shall be dark blue-gray (black if oil finished) in color, hard and non-absorbent, whole, sound and free from irregularities in production or defects in manufacture, and of the commercial grading known as Ribbon Stock, except where Clear Stock may be specifically called for, or is customarily furnished. All slate used shall be branded with the trade-mark "Pyramid," exposed surfaces shall be smooth and free from depressions, loose pieces, cracks, or chipped edges, and all shall be left in true alignment and in every respect thoroughly neat and satisfactory. If so required, typical samples, each marked as to grade and finish of slate proposed to be used, shall be submitted to the architect for approval, and left with him, before material is ordered.

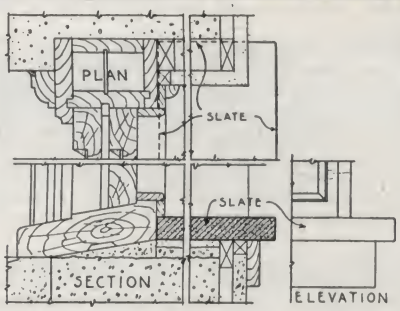


FIGURE 24. Detail, Senior and Junior High Schools, Oakmont, Pa. Boyd, Abel & Gugert, Architects, Philadelphia, Pa. Interior sills slate, 1½ inches thick, average length of each slab 4 feet 8 inches, bedded at ends and at joints, which occur at mullions, in litharge compound spread on mason's fill. All exposed arrises and corners slightly rounded.

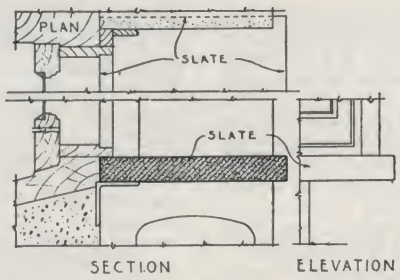


FIGURE 35. Detail, Residence at Ardmore, Pa., pictured on opposite page. Thomas Churchman and Molitor, Architects, Philadelphia, Pa. (now Thomas, Martin & Kirkpatrick). All slate sills, with and without radiators under, are 2 inches thick—lengths discussed on Page 22. Slate sand rubbed finish, painted to match wood. Sill supported at ends on projecting masonry jambs below sill.

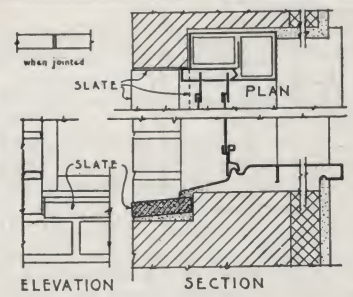


FIGURE 43. Detail, Graybar Building, New York City. Sloan & Robertson, Architects, New York. Exterior sills, to about four thousand windows, slate 1 inch thick, average length 4 feet, bedded in cement mortar, jointed at ends with same and at butt joints occurring at center of mullion in extra width windows. No anchors, wires, dowels, grooves, lugs or bevels used. Slate sand rubbed finish, left natural, all arrises sharp. Notice that lower arris is flush with wall and protects mortar joint. Metal frames and sills calked.

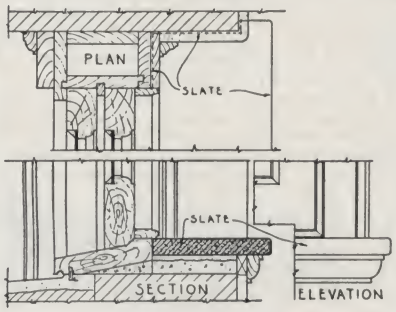


FIGURE 19. Detail, Perry High School and Addition, Pittsburgh, Pa. Typical also of slate sills in many other school buildings by Robert Maurice Trimble, Architect, Pittsburgh. Interior sills slate, 1¼ inches thick, bedded in cement mortar throughout each length with butted joints occurring at the mullions. All exposed arrises and corners heavily rounded. Extra cut-out on end of sill required by returns of nosing over return of apron. ⅛ inch. x 1¼ inch galvanized iron strips between wood and terra-cotta outside sill.

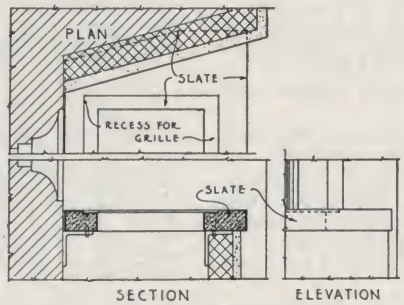


FIGURE 36. Typical Detail of Perforated Slate Sills with Radiators Under in College Buildings by Cram & Ferguson, Architects, Boston, Mass. Slate 1½ inches thick cut out for metal grille with ⅛ inch recess and supported at front and back by angles or channels to which both grille and plate are fastened with machine screws. Slate bedded on metal only if necessary to level up and ends of slab run into hollow tile or other furring as indicated. All arrises sharp.

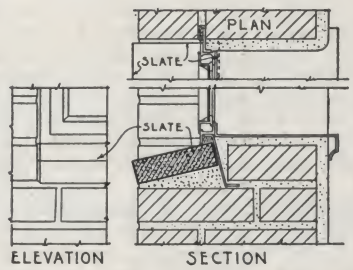


FIGURE 49. Detail, Tudor City Operation, New York City. Fred F. French Company, Architects, Engineers, Builders, New York. Exterior sills slate, 1½ inches thick, bedded in cement mortar and jointed with same at ends. Not otherwise anchored. All arrises sharp. Slate sills adopted as standard for use throughout Tudor City.

SCS | TYPICAL INSTALLATIONS OF SLATE WINDOW SILLS | 9

Continued on next page

Finish and Workmanship—All exposed surfaces, unless honed finish is specifically called for, shall have standard sand-rubbed finish. All interior slate sills shall have the arrises of exposed edges or corners slightly rounded and all exterior slate sills shall have sharp arrises, unless otherwise shown on drawings, or specified. Sills for single or double windows shall generally be in one slab. Sills to wider windows shall be in pieces of longest practicable length with neat butted joints, the same to occur at approximately the center of mullions or boxes. All joints shall be filled and made tight and flush, those on the interior with an approved compound of the same color as the slate, those on the exterior with the same mortar as used for bedding. Contractor for slate shall do any cutting or fitting and drilling of slate necessary for proper installation of the sills. All pieces of slate shall be set in a first class manner and be left secure, whole, sound and complete.

Interior Sills—Furnish and securely bed or set slate sills, or stools, to all windows throughout, except (here state exceptions). The same shall be in accordance with the typical detail drawing and shall be ..... (here stipulate whether to be left in their natural state or to be oiled [by the contractor for slate work]; or to be left ready for paint or stain [by the painting contractor]; or to be of "Struco" Slate [by the slate contractor—if so, name the color or effect desired.])

(If any sills over radiator recesses involve special features or require metal work, etc., so state here and appropriately specify the metal work here or elsewhere. If radiator recesses are to be slate lined, they may be called for to be in accordance with *Figure 38 in the book on window sills* and need not be separately detailed.)

Note 1: As to Detailing—If a typical detail is not furnished with the estimating drawings, the thickness of the slate, the projection and kind of nosing, returns, etc., should be described in the specifications and statements made about the proper bedding of the slate and that the slate sills shall be long enough to extend to the masonry jamb, wood buck, etc. (according to the types of the construction—see details throughout the book). If wide windows (long sills) or windows with recessed radiators are included, the increased thickness of such sills should be called for.

Note 2: As to Oiling—If oiled finish is to be included, the specifications should require the slate contractor to clean the sills and to furnish and properly apply the finish.

Note 3: As to Painting—If slate sills are to be painted or stained, the requirements for cleaning of slate and furnishing and applying the finish should be incorporated in the Section of the Specifications relating to Painting.

Note 4: As to Plastering—When slate sills are to be installed in windows with plastered jambs, the specifications for slate should require that the sills shall be installed before the plastering is done. As there is great likelihood of the plasterer's spotting up the sills, specifications for plaster work should require the plastering contractor to either protect or clean off the sills.

Note 5: As to Masonry Specifications—When the masonry wall would, if left by the mason at the height of the leveling off for the sills of the window frames, present an abnormal amount of space for the bedding of interior slate sills (if the sills are to be bedded), it is recommended that a clause similar to the following be inserted in the masonry specifications: "All walls between interior window jambs are to be carried up to within ½ in. of the underside of interior slate sills."

Note 6: As to Calking—When metal window frames are included and are calked on the interior, it is suggested that the Specifications for Calking provide for calking between metal frames and slate sills, and that a note to this effect be inserted in the slate specification to eliminate possible duplication of work or costs.

Exterior Sills—Furnish and set slate (slip) sills to all windows throughout, except (here state exceptions). The same shall be in accordance with the typical detail drawing and of the proper lengths and widths required for the respective openings and shall be of "Clear" stock, left natural.

Each sill shall be firmly and solidly bedded in cement mortar and each end, any joints and the back of each sill shall be thoroughly filled and pointed with the same mortar. Mortar to be composed of (here state materials and proportions to assure a rich mix). On completion of the building all slate shall not only be left whole and sound but clean and free of stains, etc.

Note 1: As to Detailing—If a typical detail is not furnished with the estimating drawings, the thickness, or thicknesses, should be stated above—also the overhang (if any) and the amount of coverage that the sill of the frame shall have over the slate—assuming that the plans will indicate the reveals of all windows.

Note 2: As to Slate Contractor or Mason—If the slate is to be set by the mason contractor the first paragraph above should be changed accordingly, and the second paragraph be inserted in the specifications for masonry.

Note 3: As to Painting—It is assumed above that the sand rubbed finish will be left "natural" without painting and it is suggested that in the specification for painting a sentence be incorporated to the effect that "exterior slate sills are to remain unfinished and shall be left free of paint spots, etc."

Note 4: As to Calking—It is assumed above that where the sills of the window frames are to be calked (or set in mortar on the slate), the same will be specified elsewhere.

TOILET ENCLOSURES

Information

Type Series A have slate backs and ends 1 in. thick and 6 ft. 11 in. high and are continuous to floor. Slate partitions 1 in. thick are set 11 in. above floor. Stiles are 1¼ in. thick, with 2x4-in. slate rail across top. Backs, ends and stiles are let 1 in. into the floor.

Type Series B have slate backs and ends 1 in. thick and 5 ft. 11 in. high and are continuous to floor. Slate partitions 1 in. thick are set 11 in. above floor. End stiles are continuous to floor, other stiles are set 11 in. above floor, supported on nickelplated brass standards. Stiles are 1¼ in. thick. Backs, ends and end stiles are 1 in. into floor. Top standards are 9 in. high to center of 1⅛-in. outside diameter tubing across front and at exposed ends, and all are of nickelplated brass. Rails are finished against walls with nickelplated cast brass flanges.

Type Series C are similar to Series B without stiles.

General—Ventilating space is 7 in. wide, covered with 1-in. slate and closed at free standing ends with 1-in. slate.

Work spaces are 1 ft. 6 in. and 2 ft. 6 in. wide, covered with 1-in. slate and closed at free standing ends with 1-in. slate, arranged to be removable.

Unless otherwise specified, enclosures will be furnished in ribbon stock with all exposed surfaces standard sand rubbed.

Enclosures will be furnished either with right or left or with both ends free standing, or with both ends against walls in accordance with drawings or instructions.

All required angles, stirrups, bolts, nuts, bottom standards, top standards, top rails and wall flanges are included with each type and will be furnished in nickelplated brass.

Any doors and hardware for doors, any register faces, fittings, accessories for enclosures may be selected from Chapter 8 on Fittings or other sources and specified accordingly.

Suggested Form of Specification

General Conditions—(a) The General Conditions, paragraphs 1 to 14, inclusive, as printed in the Twenty-fifth Edition of Sweet's Architectural Catalogues, and in Chapter 3 on Structural Slate, copyrighted by and registered with the Structural Service Bureau of Philadelphia, bearing date of September 1927, are hereby made to constitute the General Conditions of this specification, except as they may be herein specifically modified for slate toilet enclosures.

Toilet Enclosures—(b) Furnish and install all toilet enclosures, and leave rigid and complete with oiled finish, in the location shown on plans. Those in the various rooms or other places, to be as follows:

(c) In (men's lavatory, first story), all shall be of Type AAV-1, as described and illustrated in the Twenty-fifth Edition of Sweet's Architectural Catalogues, and on pages 12 and 13 in Chapter 4 of a series on Structural Slate, issued September 1927, by The Structural Slate Company, Pen Argyl, Pa.

(d) In (women's lavatory, first story), all shall be of Type AA-2, as shown in the Twenty-fifth Edition of Sweet's Architectural Catalogues, and on pages 8 and 9 of same Chapter.

(e) In (basement toilet room), all shall be of Type B-3, etc.

(f) All joints shall be made and slabs secured in accordance with Pyramid Standard details. Joints shall be set with plaster of paris, pointed with same material, colored with lampblack, except any joints occurring in or at floors, which shall be made with a full packing of glycerine and litharge.

(g) The enclosures in.....shall be left complete without doors.

(h) All other enclosures shall be supplied with wood [metal] doors, similar to No. .... as shown on page .... of Chapter 8, with butts No. .... and lock No. .... Each door and all hardware shall be furnished and hung by the slate contractor and left ready for finishing by the painting contractor.

Note: If doors are to be furnished by another contractor, paragraph (h) should be changed to suit and under carpentry, millwork and hardware and, in any case, painting, provisions should be made accordingly.

(i) The slate contractor shall furnish and set paper holder No. ...., as shown on page .... of Chapter 8, and other accessories as follows .....:

Note: The slate work of all enclosures, as provided by General Conditions, will be finished by the contractor erecting the slate work, with one coat of linseed oil and turpentine with or without the addition of lampblack, as directed at the building; but if a painted finish is desired, paragraph (j) and its note should be followed.

(j) The slate work of all enclosures shall be left free of oil and ready to be finished by the contractor for painting.

Note: Under painting, specify that all slate work of toilet enclosures shall be given 3 coats of white lead and oil paint of color selected by the architect.

Where it is desired to use the standard type of enclosure, but of a size not included in this Chapter, the following form of paragraph is suggested:

(k) (*Same as paragraph (c) to end and add*) except that the size of enclosures shall be ..... wide by ..... long.

Note: If it is desired to set any enclosures directly on any floor or upon a slate base or cove, or a cove of tile, cement or other material with which the floor may be surfaced, this will require special mention in the specifications, and separate detailing.

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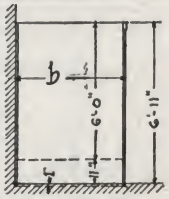

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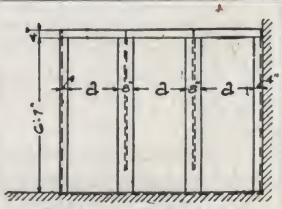
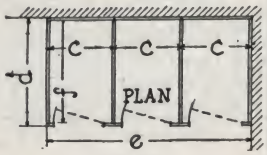


FRONT ELEVATION

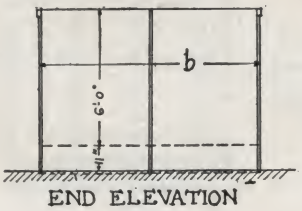
Schedule of Dimensions

Type	a	b	c	d	e	f
A1	2-2	4-8¼	2-10	4-8¼	8-6	4-6
A2	2-2	4-2¼	2-10	4-2¼	8-6	4-0
A3	2-0	4-8¼	2-8	4-8¼	8-0	4-6
A4	2-0	4-2¼	2-8	4-2¼	8-0	4-0



PLAN

TYPE·A Inward swing doors on A1 & A3, Outward on A2 & A4



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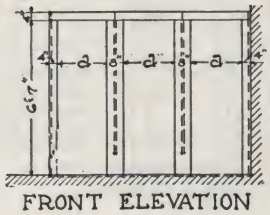
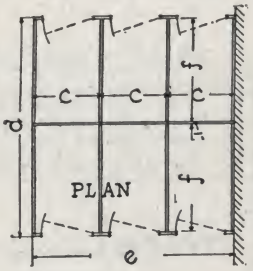


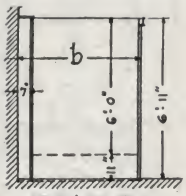
FRONT ELEVATION

Schedule of Dimensions

Type	a	b	c	d	e	f
AA1	2-2	9-3½	2-10	8-6	9-3½	4-6
AA2	2-2	8-3½	2-10	8-6	8-3½	4-0
AA3	2-0	9-3½	2-8	8-0	9-3½	4-6
AA4	2-0	8-3½	2-8	8-0	8-3½	4-0



TYPE AA Inward swing doors on AA1 & AA3, Outward on AA2 & AA4



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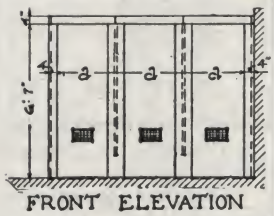
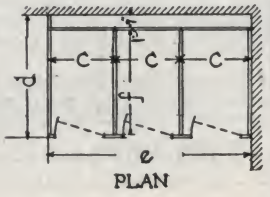


FRONT ELEVATION

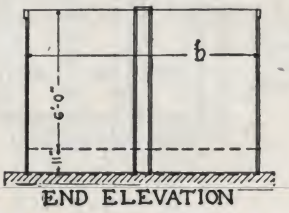
Schedule of Dimensions

Type	a	b	c	d	e	f
AV1	2-2	5-3¼	2-10	5-3¼	8-6	4-6
AV2	2-2	4-9¼	2-10	4-9¼	8-6	4-0
AV3	2-0	5-3¼	2-8	5-3¼	8-0	4-6
AV4	2-0	4-9¼	2-8	4-9¼	8-0	4-0



PLAN

TYPE·AV Inward swing doors on AV1 & AV3, Outward on AV2 & AV4



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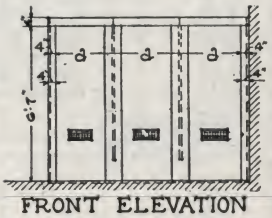
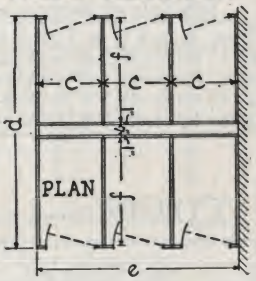


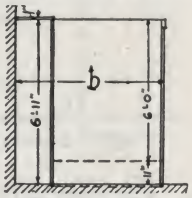
FRONT ELEVATION

Schedule of Dimensions

Type	a	b	c	d	e	f
AAV1	2-2	9-11½	2-10	8-6	8-11½	4-6
AAV2	2-2	8-11½	2-10	8-6	8-11½	4-0
AAV3	2-0	9-11½	2-8	8-0	9-11½	4-6
AAV4	2-0	8-11½	2-8	8-0	9-11½	4-0



TYPE AAV Inward swing doors on AAV1 & AAV3, Outward on AAV2 & AAV4



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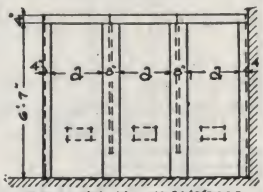
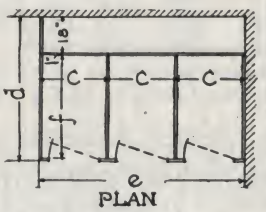


FRONT ELEVATION

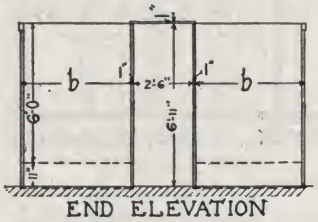
Schedule of Dimensions

Type	a	b	c	d	e	f
AW1	2-2	6-2¼	2-10	6-2¼	8-6	4-6
AW2	2-2	5-8¼	2-10	5-8¼	8-6	4-0
AW3	2-0	6-2¼	2-8	6-2¼	8-0	4-6
AW4	2-0	5-8¼	2-8	5-8¼	8-0	4-0



PLAN

TYPE AW Inward swing doors on AW1 & AW3, Outward on AW2 & AW4



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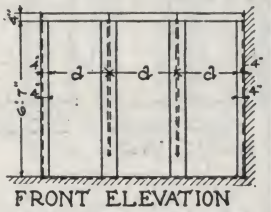
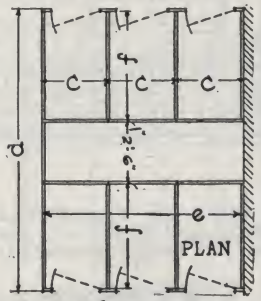


FRONT ELEVATION

Schedule of Dimensions

Type	a	b	c	d	e	f
AAW1	2-2	4-6	2-10	11-10½	8-6	4-6
AAW2	2-2	4-0	2-10	10-10½	8-6	4-0
AAW3	2-0	4-6	2-8	11-10½	8-0	4-6
AAW4	2-0	4-0	2-8	10-10½	8-0	4-0



TYPE·AAW Inward swing doors on AAW1 & AAW3, Outward on AAW2 & AAW4

SWEETS CATALOGUE SERVICE	TOILET ENCLOSURES~PYRAMID TYPES A~AA~AV~AAV~AW~AAW	NOT DRAWN TO SCALE DATE SEPT.25	DRWG. 1

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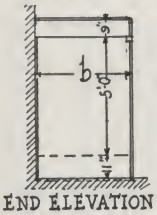
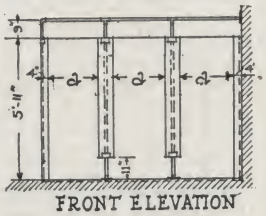


END ELEVATION

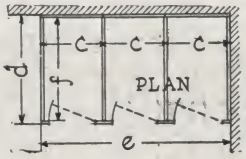
Alternate Type B Exposed Ends and Stiles are set 11 in. above floor supported on N.P. Brass Standards.



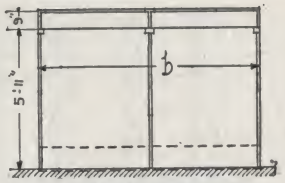
FRONT ELEVATION

Schedule of Dimensions

Type	a	b	c	d	e	f
B1	2-2	4-8¼	2-10	4-8¼	8-6	4-6
B2	2-2	4-2¼	2-10	4-2¼	8-6	4-0
B3	2-0	4-8¼	2-8	4-8¼	8-0	4-6
B4	2-0	4-2¼	2-8	4-2¼	8-0	4-0



TYPE·B Inward swing doors on B1 & B Outward on B2 & B4



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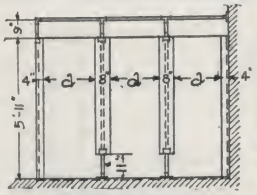
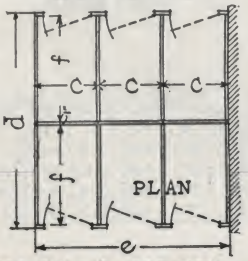


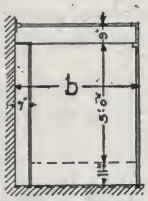
FRONT ELEVATION

Schedule of Dimensions

Type	a	b	c	d	e	f
BB1	2-2	9-3½	2-10	9-3½	8-6	4-6
BB2	2-2	8-3½	2-10	8-3½	8-6	4-0
BB3	2-0	9-3½	2-8	9-3½	8-0	4-6
BB4	2-0	8-3½	2-8	8-3½	8-0	4-0

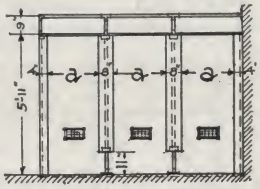


TYPE·BB Inward swing doors on BB1 & BB3, Outward on BB2 & BB4



END ELEVATION

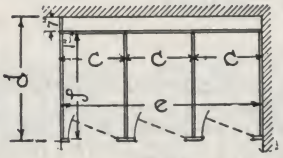
Alternate Types BV 1,2,3,4. Exposed Ends and Stiles are set 11" above floor supported on N.P. Brass Standards.



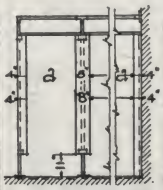
FRONT ELEVATION

Schedule of Dimensions

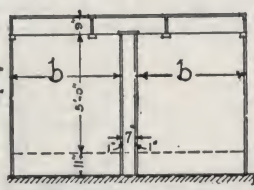
Type	a	b	c	d	e	f
BV1	2-2	5-3¼	2-10	5-3¼	8-6	4-6
BV2	2-2	4-9¼	2-10	4-9¼	8-6	4-0
BV3	2-0	5-3¼	2-8	5-3¼	8-0	4-6
BV4	2-0	4-9¼	2-8	4-9¼	8-0	4-0



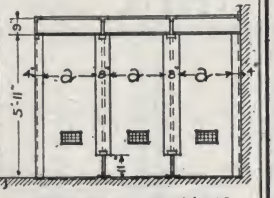
TYPE·BV Inward swing doors on BV1 & BV3. Outward on BV2 & BV4.



ALTERNATE FRONT VIEW



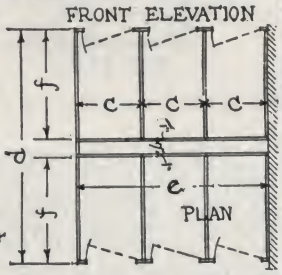
END ELEVATION



FRONT ELEVATION

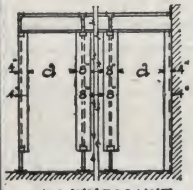
Schedule of Dimensions

Type	a	b	c	d	e	f
BBV1	2-2	4-7¼	2-10	9-11½	8-6	4-6
BBV2	2-2	4-1¼	2-10	8-11½	8-6	4-0
BBV3	2-0	4-7¼	2-8	9-11½	8-0	4-6
BBV4	2-0	4-1¼	2-8	8-11½	8-0	4-0

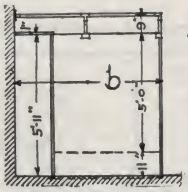


Alternate Types BV 1,2,3,4. Exposed Ends and Stiles are set 11" above floor supported on NP. Brass Standards.

TYPE·BBV Inward swing doors on BBV1 & BBV3. Outward on BBV2 & BBV4



ALTERNATE FRONT VIEW



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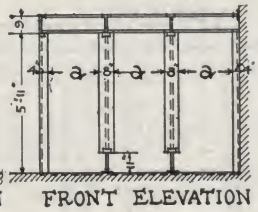
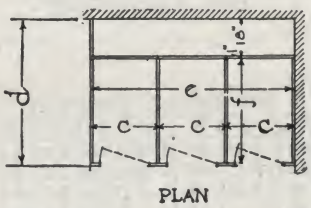


FRONT ELEVATION

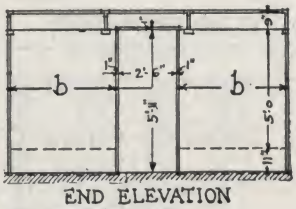
Schedule of Dimensions

Type	a	b	c	d	e	f
BW1	2-2	6-2¼	2-10	6-2¼	8-6	4-6
BW2	2-2	5-8¼	2-10	5-8¼	8-6	4-0
BW3	2-0	6-2¼	2-8	6-2¼	8-0	4-6
BW4	2-0	5-8¼	2-8	5-8¼	8-0	4-0



Alternate Types BW 1,2,3,4. Exposed Ends and Stiles are set 11" above floor on N.P. Brass Standards.

TYPE·BW Inward swing doors on BW1 & BW3. Outward on BW2 & BW4



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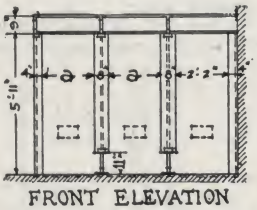
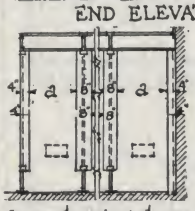


FRONT ELEVATION

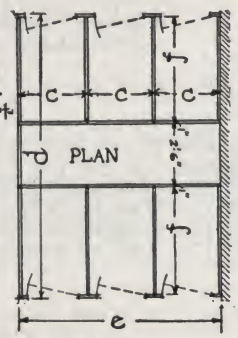


Alternate Types BW1,2,3,4. Exposed Ends and Stiles are set 11" above floor. Supported on Brass Standards.

Inward swing doors on BBW1 & BBW3, outward swing on BBW2 & BBW4

Schedule of Dimensions

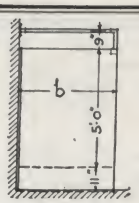
Type	a	b	c	d	e	f
BBW1	2-2	4-7¼	2-10	10-10½	8-6	4-6
BBW2	2-2	4-1¼	2-10	10-10½	8-6	4-0
BBW3	2-0	4-7¼	2-8	10-10½	8-0	4-6
BBW4	2-0	4-1¼	2-8	10-10½	8-0	4-0



TYPE·BBW

SWEETS CATALOGUE SERVICE	TOILET ENCLOSURES~PYRAMID TYPES B, BB, BV, BBV, BW, BBW	NOT DRAWN TO SCALE, DATE SEPT. 25	DRWG 2

Continued on next page



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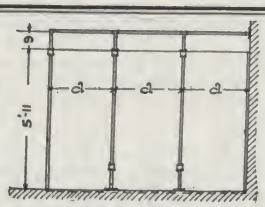
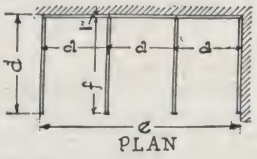


FRONT ELEVATION

Schedule of Dimensions

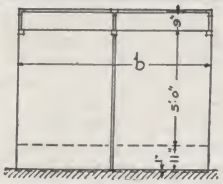
Type	a	b	d	e	f
C-2	2-10	4-1	4-1	8-6	4-0
C-4	2-8	4-1	4-1	8-0	4-0
C-5	2-10	3-7	3-7	8-6	3-6
C-6	2-8	3-7	3-7	8-0	3-6



PLAN

Alternate Types C 2,4,5 and 6. Exposed ends are set 11" above floor, supported on N.P. Brass Standards

TYPE C



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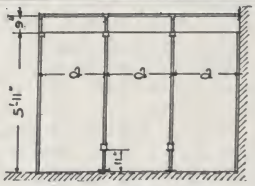
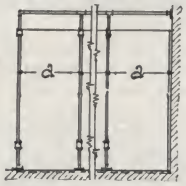
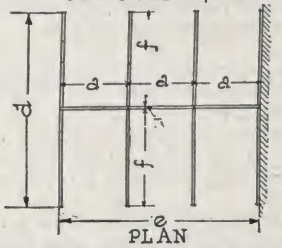


FRONT ELEVATION



ALTERNATE FRONT ELEV.



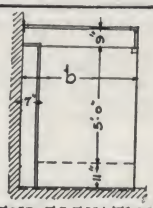
PLAN

Schedule of Dimensions

Type	a	b	d	e	f
CC 2	2-10	8-1	8-1	8-6	4-0
CC 4	2-8	8-1	8-1	8-0	4-0
CC 5	2-10	7-1	7-1	8-6	3-6
CC 6	2-8	7-1	7-1	8-0	3-6

Alternate Types CC 2,4,5 and 6. Exposed ends are set 11" above floor, supported on N.P. Brass Standards

TYPE CC



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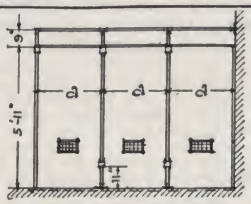

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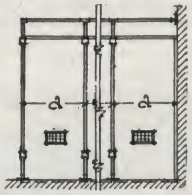
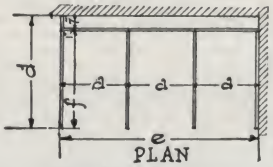


ALTERNATE FRONT ELEV.



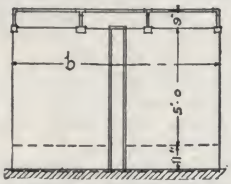
PLAN

Alternate Types CV 2,4,5 and 6. Exposed ends are set 11" above floor supported on N.P. Brass Standards

Schedule of Dimensions

Type	a	b	d	e	f
CV 2	2-10	4-8	4-8	8-6	4-0
CV 4	2-8	4-8	4-8	8-0	4-0
CV 5	2-10	4-2	4-2	8-6	3-6
CV 6	2-8	4-2	4-2	8-0	3-6

TYPE CV



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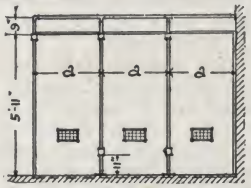

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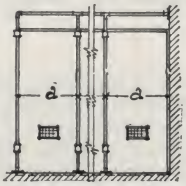
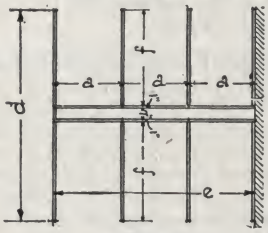


ALTERNATE FRONT ELEV



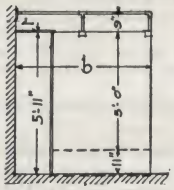
PLAN

Schedule of Dimensions

Type	a	b	d	e	f
CCV 2	2-10	8-9	8-9	8-6	4-0
CCV 4	2-8	8-9	8-9	8-0	4-0
CCV 5	2-10	7-9	7-9	8-6	3-6
CCV 6	2-8	7-9	7-9	8-0	3-6

Alternate Types CCV 2,4,5 and 6. Exposed ends are set 11" above floor, supported on N.P. Brass Standards

TYPE CCV



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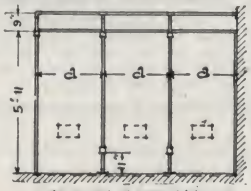

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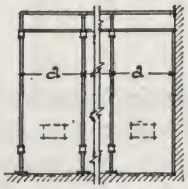
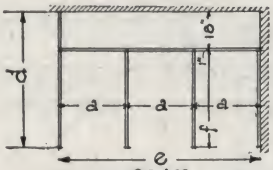


ALTERNATE FRONT ELEV



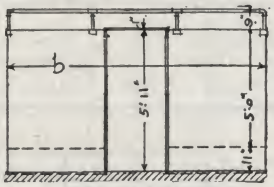
PLAN

Alternate Types CW 2,4,5 and 6. Exposed ends are set 11" above floor, supported on N.P. Brass Standards.

Schedule of Dimensions

Type	a	b	d	e	f
CW 2	2-10	5-7	5-7	8-6	4-0
CW 4	2-8	5-7	5-7	8-0	4-0
CW 5	2-10	5-1	5-1	8-6	3-6
CW 6	2-8	5-1	5-1	8-0	3-6

TYPE CW



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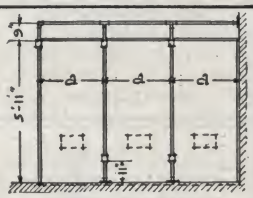

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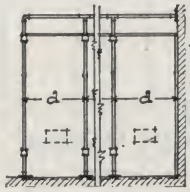
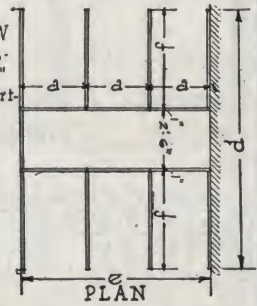


ALTERNATE FRONT ELEV.

Alternate Types CCW 2,4,5 and 6. Exposed ends are set 11" above floor, supported on N.P. Brass Standards



PLAN

Schedule of Dimensions

Type	a	b	d	e	f
CCW 2	2-10	10-6	10-8	8-6	4-0
CCW 4	2-8	10-6	10-8	8-0	4-0
CCW 5	2-10	9-6	9-8	8-6	3-6
CCW 6	2-8	9-6	9-8	8-0	3-6

TYPE CCW

SWEETS CATALOGUE SERVICE	TOILET ENCLOSURES ~ PYRAMID TYPES C, CC, CV, CCV, CW, CCW.	NOT DRAWN TO SCALE, DATE SEPT. 25	DRWG 3

Continued on next page

SHOWER STALLS

Information

Type Series A have slate backs, ends and partitions 1 in. thick and 6 ft. 6 in. high and are continuous to top of floor slab. There are no front stiles or curbs. Floor slab is 2 in. thick, sloping to drain outlet in center of slab. Top standards are 2⅛ in high to center of 1⅛-in. outside diameter tubing across fronts. Rail finished against wall and wall flange.

Type Series B are similar to Series A, except that they have in addition curbs at bottom, which are 6 in. high and 1 in. thick.

Type Series C are similar to Series A, except that they have in addition curbs at bottom, and front stiles which are 1 in. thick and continuous to top of curb.

Type Series D and E are similar to Series A, except that they have in addition front stiles of dressing rooms, a stile and curb between shower and dressing room and a slate seat in dressing room.

General—Unless otherwise specified, shower stalls will be furnished in ribbon stock with all exposed surfaces standard sand rubbed, including both sides of both ends, regardless of location.

All required angles, stirrups, bolts, nuts, bottom standards, top standards, top rails, wall flanges and double drainage drain for outlet are included and furnished in nickelplated brass.

Alternate type will be furnished only when specified as Type .. Alternate.

Where it is desired to use lead pans with showers, there will be no change in size or arrangement. Additional pieces to cover lead work will be furnished if shower is specified as Type .. for lead pan.

All type shower stalls and alternates, either without or for lead pans, as illustrated, include all slate, drilling of holes, drains and fittings for a complete installation as described, but do not include trap, valves, shower heads, piping, lead pans, shower curtains, snap hooks, doors, hardware or accessories.

Any doors and hardware required for doors, any fittings, trimmings or accessories for shower stalls may be selected from Chapter 8 on Fittings or from other sources, and should be specified accordingly.

Suggested Form of Specification

General Conditions—(a) The General Conditions, paragraphs 1 to 14, inclusive, as printed in the Twenty-fifth Edition of SWEET'S ARCHITECTURAL CATALOGUES, and in Chapter 3 on Structural Slate, copyrighted by and registered with the Structural Service Bureau of Philadelphia, bearing date of September 1927, are hereby made to constitute the General Conditions of this specification, except as they may be herein specifically modified for slate shower stalls.

Shower Stalls—(b) Furnish and install all shower stalls, and leave rigid and complete, with oiled finish, in the location shown and, in extent, to the number of stalls and dressing rooms indicated on plans, including all metal work in accordance with the Pyramid descriptions. Those in the various rooms or other places to be as follows:

(c) In (men's lavatory in basement) all to be of Type C as illustrated and described in the Twenty-fifth Edition of SWEET'S ARCHITECTURAL CATALOGUES, and on pages 78 and 79 in Chapter 6 of a Series on Structural Slate, issued September 1927, by THE STRUCTURAL SLATE COMPANY, Pen Argyl, Pa.

(d) In (girls' toilet room in basement) all to be of Type D as shown in the Twenty-fifth Edition of SWEET'S ARCHITECTURAL CATALOGUES, and on pages 82 and 83 of same Chapter.

(e) In (men's toilet room, first story) to be of Type A alternate arranged for lead pan as shown in the Twenty-fifth Edition of SWEET'S ARCHITECTURAL CATALOGUES, and on pages 70 and 71 of same Chapter.

(f) In (women's toilet room, first story) to be of Type DD for lead pan as shown in the Twenty-fifth Edition of SWEET'S ARCHITECTURAL CATALOGUES, and on pages 84 and 85 of same Chapter.

(g) Shower stalls in ..... are to have Pyramid doors No. ..... with hardware as follows (give various numbers .....) as illustrated in Chapter 8. Each door and all hardware shall be furnished and hung by the slate contractor and left ready for finishing by the painting contractor.

Note: (h) If the doors are to be furnished by another contractor, paragraph (g) should be changed to suit, and under carpentry, mill work and hardware, provisions should be made accordingly.

(i) All floor slabs shall be securely and solidly bedded in mortar composed of one volume of cement, one volume of lime and six volumes of sand on foundations furnished by other contractors. All joints shall be made and slabs secured in accordance with Pyramid Standard details. Joints shall be set with a full packing of glycerine and litharge or approved waterproof cement colored with lampblack.

Note: (j) If shower floor slabs are set over wooden joists, provide under carpenter work how preparation shall be made for receiving concrete foundations. In any case provide under appropriate section of the specification for the construction of such foundations formed ready to require only the slatesetter's mortar bed.

Note: (k) Specify that the desired kinds of shower heads, valves, curtains and hooks shall be furnished by the plumbing contractor and that all piping of every description for supplies shall be done by him as a part of the plumbing work. Heads, valves and curtains may be selected from Chapter 4 and specified accordingly.

Note: (l) Specify that the plumbing contractor shall set and connect to the double drainage drain with which all showers are equipped, furnishing and installing all such other drainage requirements in accordance with the remainder of the specification, as are not regularly furnished with the showers as described with Pyramid Standards.

Note: (m) Where lead pans are to be used, specify that plumber is to furnish lead of weight desired, and fit and set same in position properly connected to the drain ready for setting of slate floor slabs.

Note: (n) The slate work of all enclosures, as provided by General Conditions, will be finished by the contractor erecting the slate work, with one coat of linseed oil and turpentine with or without the addition of lampblack, as directed at the building; but if a painted finish is desired, paragraph (o) should be followed.

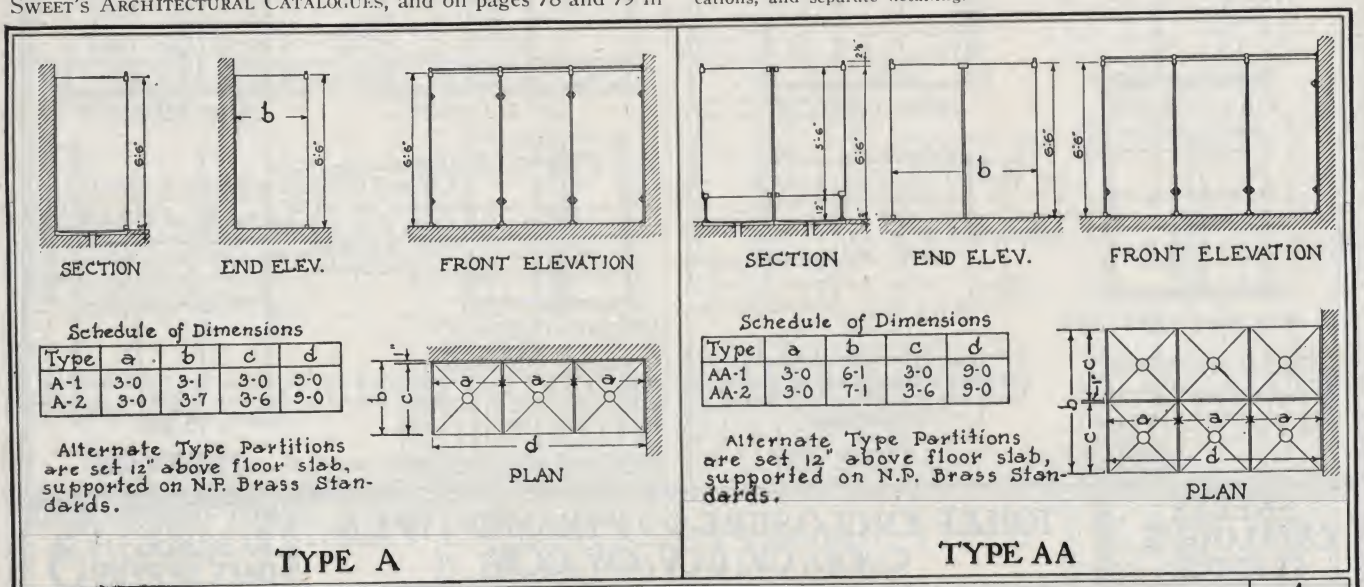
(o) The slate work of all enclosures shall be left free of oil and ready to be finished by the contractor for painting.

Note: Under painting specify that all slate work of shower enclosures shall be given 3 coats of white lead and oil paint of color selected.

Note: (p) Where it is desired to use the Standard type shower, but of a size not shown in this Chapter, the following form is suggested.

(q) *(Same as paragraph (c) to end and add)* except that size of shower stalls shall be .....

Note: If it is desired to set any enclosures directly on any floor this may be done by omitting the slate floor slab. If to be set directly upon a slate cove, or a cove of tile, cement or other material with which the floor may be surfaced, this will require special mention in the specifications, and separate detailing.



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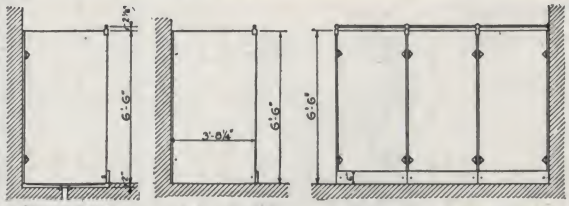
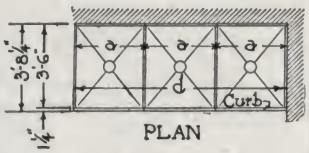


Schedule of Dimensions

Type	a	d
B-2	3-0	9-0
B-3	3-6	10-6



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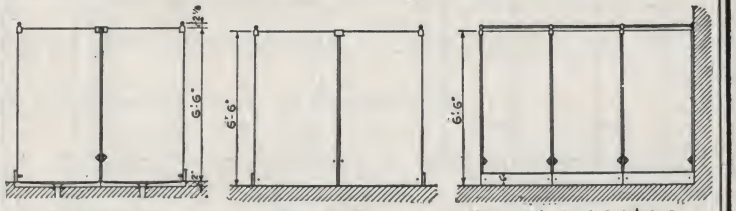
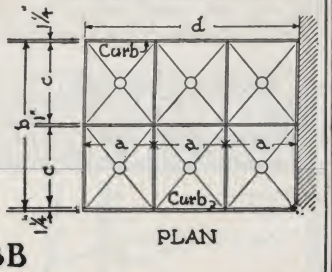
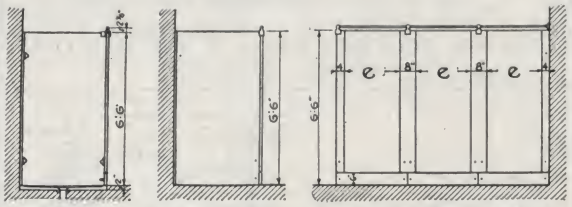


Schedule of Dimensions

Type	a	b	c	d
BB2	3-0	7-3½	3-6	9-0
BB3	3-6	7-3½	3-6	10-6

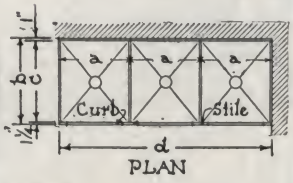


TYPE BB

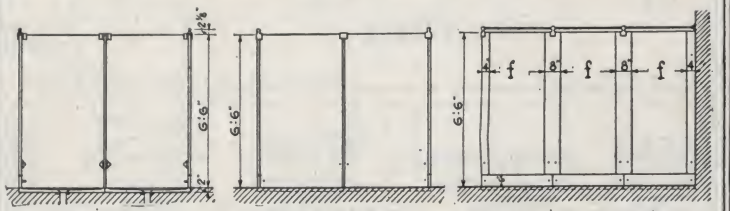


Schedule of Dimensions

Type	a	b	c	d	e
C2	3-0	3-8¼	3-6	9-0	2-4
C3	3-6	3-8¼	3-6	10-6	2-10

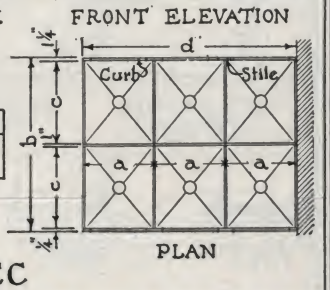


TYPE C

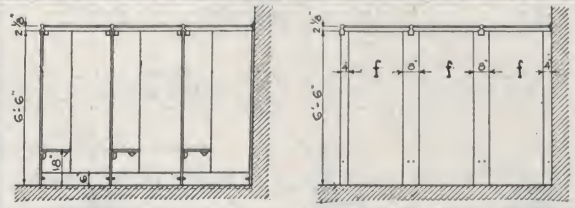


Schedule of Dimensions

Type	a	b	c	d	f
CC2	3-0	7-3½	3-6	9-0	2-4
CC3	3-6	7-3½	3-6	10-6	2-10



TYPE CC



Schedule of Dimensions

Type	a	b	c	d	e	f
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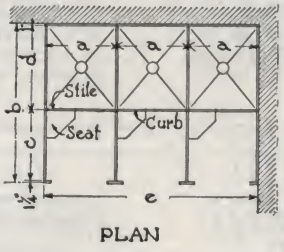
D3	3-6	6-8¼	3-0	3-6	10-6	2-10



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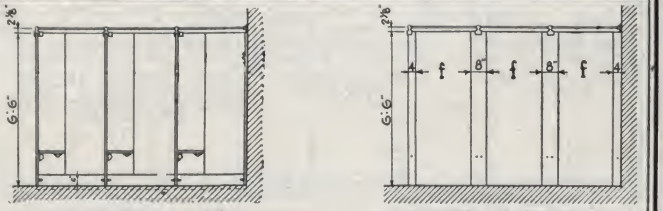

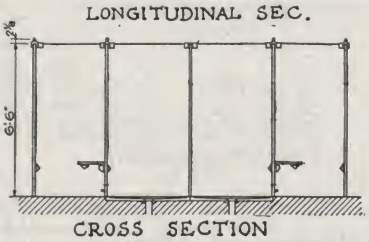

Schedule of Dimensions

Type	a	b	c	d	e	f
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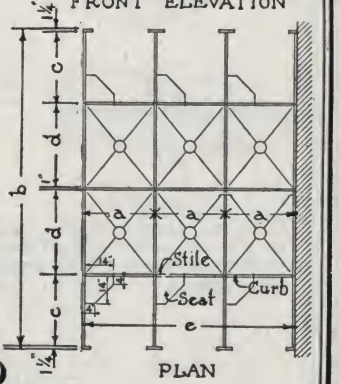
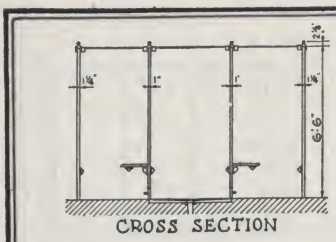
DD3	3-6	13-3½	3-0	3-6	10-6	2-10

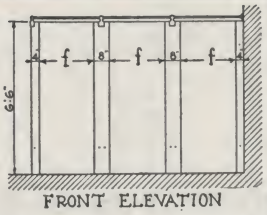


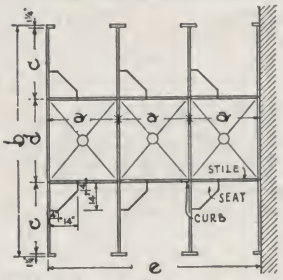
TYPE DD

SWEETS CATALOGUE SERVICE	SHOWER STALLS ~ PYRAMID TYPES B, BB, C, CC, D, DD.	NOT DRAWN TO SCALE DATE SEPT. '25	DRW'G 5

Continued on next page



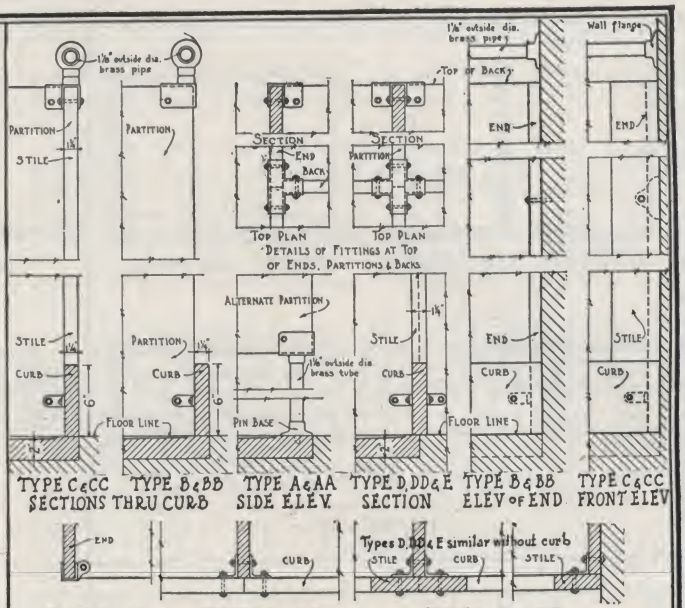




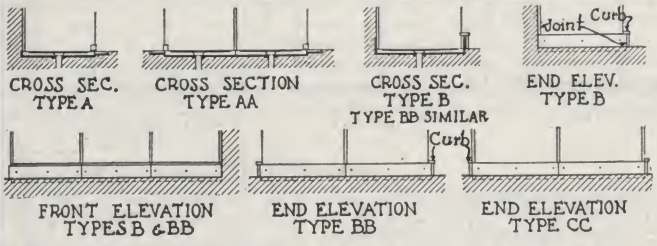
Schedule of Dimensions

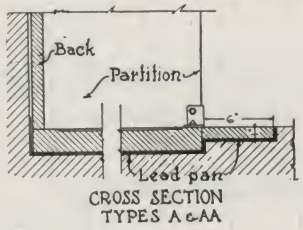
Type	a	b	c	d	e	f
E-2	3-0	9-8½	3-0	3-6	9-0	2-4
E-3	3-6	9-8½	3-0	3-6	10-6	2-10

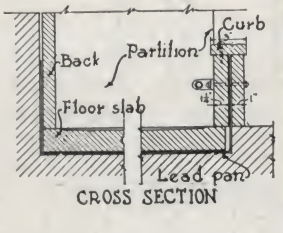
TYPE E

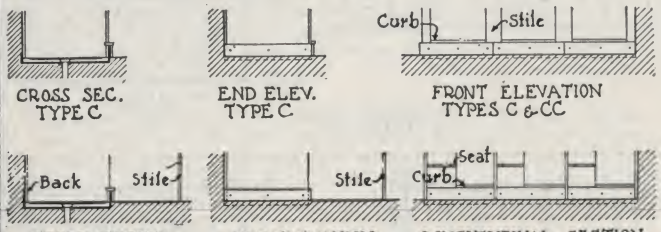


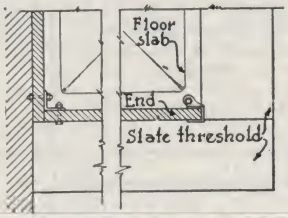
SHOWER STALL DETAILS

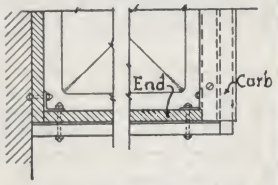


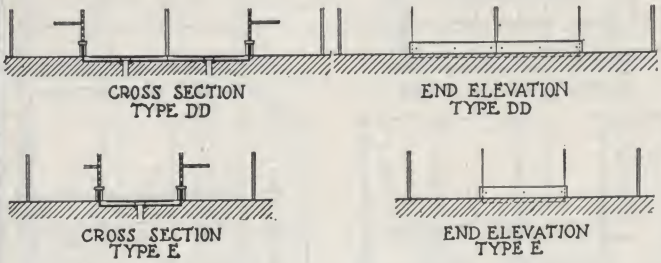


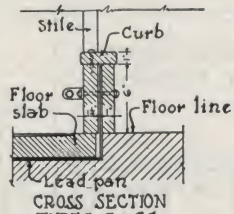


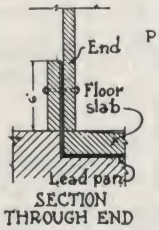


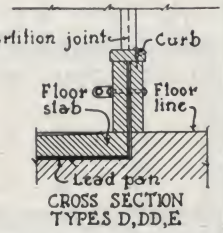




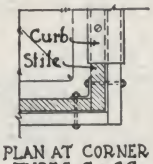


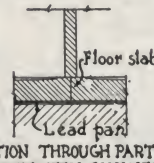


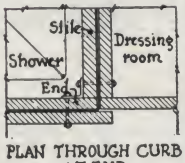




NOTE: See Drawings 4 & 5 for plans, elevations and sections of shower stalls without lead pans. All sizes and parts of stalls, dressing rooms and floor slabs are the same in both types.







DETAILS OF LEAD PANS USED WITH PYRAMID SHOWER STALLS

SWEETS CATALOGUE SERVICE	SHOWER STALLS ~ PYRAMID TYPE E DETAILS OF STALLS & LEAD PANS	NOT DRAWN TO SCALE DATE SEPT. '25	DRWG 6

Continued on next page

WAINSCOT, CAPS, BASES, PLINTHS AND THRESHOLDS

Information

Of the two grades into which slate is divided, Clear and Ribbon Stock, the latter is almost exclusively used for structural purposes.

Unless otherwise specified, it will be furnished in Ribbon Stock. If Clear Stock is desired, it must be distinctly called for.

For use in wainscoting, caps, bases and plinths the standard sand rubbed finish is most desirable, furnishing an even texture surface capable of resisting wear and tear. Where a particularly fine, smooth finish is desired the honed finish should be specified, although this is unusual.

All slate as furnished by the producer has no oil or other finish. A finish is placed on the slate by the slate contractor after erection, consisting of raw linseed oil thinned with turpentine. Slate thresholds are not oiled, requiring no finish other than being thoroughly cleaned upon the completion of all work.

Data Regarding Drawings—The sizes and details, shown on the various drawings below on this page, are suggestive only. In each case the sizes and arrangements are best left to the judgment of the architect or contractor for the special purpose for which the material is to be used. Designs and arrangements may be called for by letter or especially detailed in each instance.

The drawings shown for plinths, thresholds, angle coves, wainscot caps and bases are suggestions showing a few of the many designs which may be executed in slate for these purposes. In each case the slate is cut and fitted to suit the spaces in which it is to be placed. Specifications should clearly state the width and thickness of the slate to be used. The design should be detailed or, if desired, one of the types shown may be selected and called for as described in the suggested specifications.

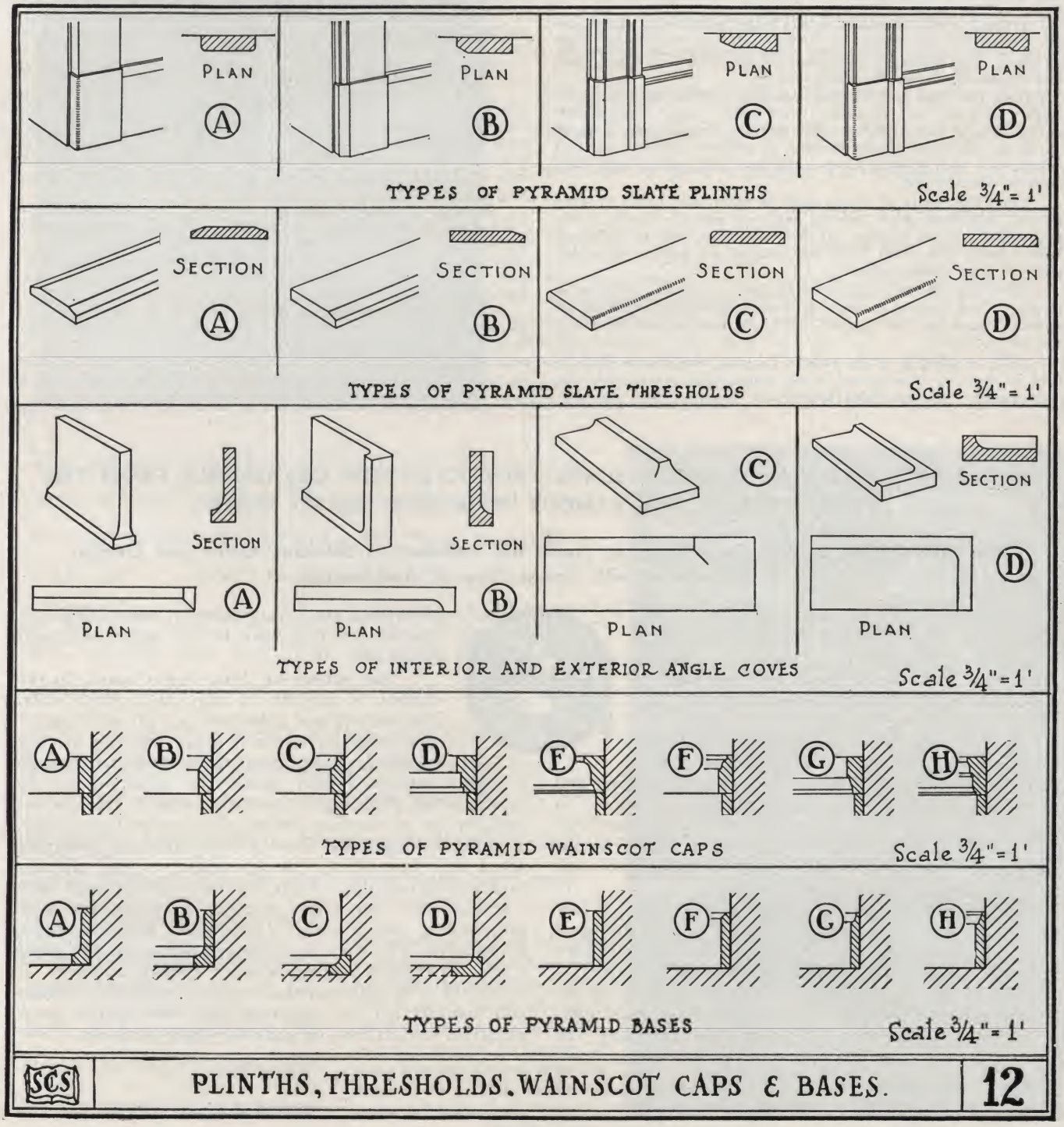
Note: Thresholds should be of sufficient length to properly butt into, receive or return against plinths or finish of openings.

Suggested Form of Specification

General Conditions—(a) The General Conditions, paragraphs 1 to 14, inclusive, as printed in the Twenty-fifth Edition of SWEET'S ARCHITECTURAL CATALOGUES, and in Chapter 3 on Structural Slate copyrighted by and registered with the Structural Service Bureau of Philadelphia, bearing date of September 1927, and hereby made to constitute the general conditions of this specification, except as may be herein especially modified.

Floors, Bases, Plinths and Thresholds—(49) The floors, bases and plinths in (here enumerate) shall be of Ribbon Stock [Clear Stock] [laid alternating] slate.

(50) The floor slate shall be 1 in. thick and about 12 in.



Continued on next page

square (or other size desired, and 1¼ in. thick if over 24 in.) cut in uniform lengths and widths to fit the spaces.

(51) The bases at all walls and partitions shall be 1 in. thick, ... high above floors and extending 1 in. below the floor. (If base is to be coved, specify it to be 6 in. high above floor, from 2-in. stock with 1-in. radius cove cut on bottom, returned on itself at all openings, and cut with solid returns at all interior and external angles.) All bases to be slightly rounded [bullnosed] on top. (Details or specifications should indicate whether or not base projects full thickness beyond face of wall finish above.)

(52) All trimmed openings where bases occur shall have plinths ..... high conforming by beveled or straight angled faces to the profile of the trims (and of jambs if door is not hung on slate finished side), in accordance with the detail drawings.

(53) Saddles, or thresholds of slate, 2 in. thick, beveled two sides shall be provided at all doors or at openings where floor materials change; the same to be, on the flat surface, the full width of the door or jamb of opening, and, in length, to either extend under plinth or return on same.

(54) *Note:* The above contemplates a sand rubbed floor for interior use. If natural split surfaces of irregular or random sizes, for either interior or exterior use, are desired, so specify, and in any case provide for proper firm and solid foundation in another part of specification. (See Preparatory Work, Paragraphs 6 to 19.)

(55) All slate and the concrete bed beneath shall be thoroughly cleaned and drenched with clear water immediately before slate is laid. Spread a full bed of mortar, from ½ to ¾ in. thick, composed of one volume of portland cement and two volumes of well graded, clean sand, and thoroughly tamp each piece of slate as laid.

(56) The joints of floors shall be tight butt joints grouted in with cement mortar, colored same as slate (or wide joints with light colored mortar, pointed, in which case so specify). Leave floors clean and flush and true at all joints, with each piece of slate solidly bedded.

(57) The bases (whether straight or coved) shall be in pieces of the longest practicable length, thoroughly bedded on cement foundation and against walls, in same mortar as floors, and pointed tight.

(58) In addition to the cement backing, the plinths shall be held in place by nickelplated brass, round head screws into the door bucks. (If concealed screws are desired, state that galvanized screws are to be used with heads countersunk and flushed with "slater's wax.")

(59) *Note:* According to location and intended use, state whether above slate is to be oiled or left unfinished.

Wainscoting—(60) Where shown or specified, furnish and set slate slabs to form wainscoting .... high, not less than ⅞ in. thick at edges, and in widths between 3 and 4 ft. to divide with approximate regularity into the various space lengths. Each slab to have (two brass or bronze dowels into base, if any, and) two anchors of brass or bronze into wall at back (at top if above eye line or covered with mould).

(61) *Note:* State whether wainscot height includes caps, if any, and whether slabs shall be cut long enough to extend 1 in. into a cement floor, will have a tile or cement cove or a wood scotia, etc. If slate base is desired, use Paragraphs 51, 57 and 63.

(62) Moulded top, or wainscot cap, shall be thoroughly anchored into wall and mortared against same, bedded to slabs and be cut true to full size details. Joints in interior and external angles and at all openings shall be cut with solid returns and not mitered.

(63) All bases, if of slate, to be thoroughly bedded, set and anchored in cement mortar (as specified for floors).

(64) All butt joints of slabs (and mouldings) to be thoroughly backed up with plaster of paris, filled and pointed with same, colored, and left close, neat and true.

(65) *Note:* Under "Plastering" in new work, state that behind all slate wainscot, plaster is to be omitted.

(66) In Existing Buildings—For the application of slate wainscots in existing buildings, with or without bases, specify the slabs to be secured through from the face, either with round head screws or with countersunk screws, concealed with "slate-wax," the screws in masonry to be inserted into expansion sockets or spot grounds and not into wood plugging.

Bases (without Slate Floors or Wainscots)—*(67) Against Masonry Backgrounds*—In all halls, corridors, passages or other portions of the building so indicated run a slate base ..... thick and ..... high at each wall or partition, pilaster, etc., same to be ..... (to complete, refer to Paragraphs 51, 57 and 63).

(68) Against Wooden Backgrounds—In other portions so noted (or here specified) run a plain ⅞x16-in. base (or other height as may be required by local ordinance) with slightly rounded top [bullnose]. To be set and applied in same manner as specified for wainscoting under Paragraph 65, except that it shall be screwed directly into wood supports.

"PENN-MONT" NATURAL COLORED SLATE PRODUCTS—NOW OBTAINABLE FROM THE PRODUCERS OF THE FAMOUS "PYRAMID" BRAND SLATE

An Architectural Service Department to Assist the Architect in Selecting Color and Design to Harmonize with Every Type of Architecture

THE STRUCTURAL SLATE COMPANY for many years has furnished only the best grade of quality slate, known as "Pyramid" brand. This name has grown with ever increasing respect and guaranteed to the architect only the best of slate on every project.

A new line has been added and will be known as Pyramid "Penn-Mont" slate. This trade-name applies to roofing, flooring and flagging and all natural colored slate, produced by this company. To continue the service and assurance already appreciated by the building trade for "Pyramid" slate, it will be the practice of THE STRUCTURAL SLATE COMPANY to issue certificates with "Penn-Mont" products.

"Penn-Mont" slate is carefully inspected for any possible defects. It is selected for color, uniformity of quality, texture and workmanship. Skilled craftsmen working "Penn-Mont" slate assures the architect a material of unusual charm and individuality. While the strict inspection that all "Penn-Mont" slate must meet is perhaps unnecessary, it gives this company the knowledge that every piece of slate shipped is represented faithfully by the green and gold certificate.

The output of THE STRUCTURAL SLATE COMPANY consists of only high grade slate. The texture and color varies with each quarry and makes it possible to obtain the type of slate specified. Prompt and efficient service through a highly organized staff under the direction of the Roofing and Flooring Department, and a tremendous capacity for production insures shipment without delay.

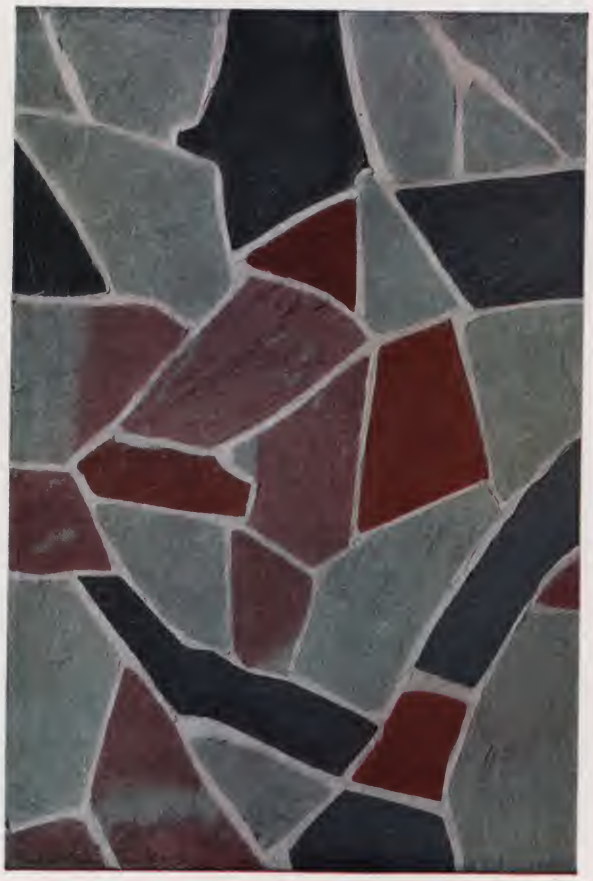
The Architectural Service Department is perhaps a novel and interesting feature added to this already capable organization. Realizing the possibilities of such a service, this department working in conjunction with the Roofing and Flooring Department was organized. Its function is to furnish to the architect ideas for using a slate as either a roofing, walk or flooring material. It furnishes specificational data, color charts and samples and submits for his approval and observation many beautiful installations of slate for these purposes.

ARCHITECTS NOW APPRECIATE THIS ADDED FEATURE IN "PENN-MONT" SLATE FLOORS AND WALKS

The "Penn-Mont" Pocono, a random rectangular floor. The colors in this floor have been reproduced by direct color photography and are faithful reproductions of the original floor. This design, embodying every characteristic of dignity and good taste, represents a popular choice of those seeking both beauty and durability.

From a selection of various products, the beautiful coloring, distinctive texture, and natural decorative characteristics of slate offer to the architect a material of unusual value. The warm colorings that blend so charmingly together are given the proper contrast by correctly mixing with the design blue grey slate. This is one of the many reasons why the Penn-Mont floors and walks have become the popular choice of architect and builder alike. There is nothing harsh about the coloring in a Penn-Mont floor. Slate is selected to give a proper combination of colors for decorative possibility, without the violent clashing of colors which are too strong in tone. Penn-Mont floors are always chastely dignified and charming.

The durability of this product guarantees long wear without upkeep. The colors of natural slate are permanent, becoming even more beautiful with use . . . With twenty-two active quarries and eighteen branch offices in the United States and Canada, we feel that our long experience prepares us to render you the right type of service. In every branch office throughout the country, district managers and their staff are at your command. Here at the home office, our Engineering Department, Flooring & Roofing Department and Service Department are each only too pleased to give your inquiry prompt attention, and will gladly submit layouts and suggestions for floors to blend with particular architectural types.



Reproduced also by direct color photography is the "Penn-Mont" Shadow-Cleft. This irregular design provides an artistic yet informal installation, well adapted for either interior or exterior use. Its rich blending of hues, charming lines and distinctive texture make it a leader among materials for installations out of doors.

Continued on next page

Craftsmanship

in every piece of "PENN-MONT" SLATE

Wm. Boone Residence
Architect, Ronald C. Nowling, Cincinnati

For years this Company has furnished the architectural profession with first grade structural slate. Now for the first time, certified roofing slate, inspected and labeled, is offered the discriminating architect.

The blue and yellow "Penn-Mont" label is not only a mark of recognition but an absolute guarantee of quality slate and workmanship.

Frank Graydon Residence
H. W. Lardes & Sons, Archts. and Builders, Cincinnati, O.

THE REASON WE ISSUE A CERTIFICATE TO YOU

With every shipment of "Penn-Mont" roofing slate a green certificate is issued. It classifies this slate and guarantees the roof the architect has selected. Every piece of "Penn-Mont" slate is selected, from our quarries, for its quality, texture, color and strength. It certifies the shipment and assures the architect that the slate has met his specification. Insist on the "Penn-Mont" green certificate.

EVERY SLATE FASHIONED BY HAND GIVES "PENN-MONT" ROOFS THEIR DISTINCTION

Pyramid "Penn-Mont" roofing slate is procured from the country's best quarries. Its texture varies and can be obtained in either a smooth or rough slate. The Structural Slate Company, because of its vast resources, makes it possible for the architect to choose from any of its quarries, the roofing best adapted for the project

Heavy architectural slates with their rugged, pleasing texture in blue-grey or colors, are cut by hand, giving them character and individuality. Thinner slate, either smooth or rough, are all hand cut. Colors that blend with the clear blue sky and the grey of dawn, through hues of autumn's tawny russet and tints of green, these beautiful "Penn-Mont" roofs offer natural charm and hand craftsmanship.

DEPARTMENT FOR ARCHITECTURAL SERVICE

One of many features sponsored by The Structural Slate Company is the newly organized department for personal architectural service.

By constant contact with America's foremost architects we can render a unique personal service which includes counsel on the various types of roof design, prints and specifications.

FORMICA INSULATION COMPANY

CINCINNATI, OHIO

BRANCH FACTORIES

NEW YORK, N. Y., 139 Hudson Street
CHICAGO, ILL., 11-17 So. Desplaines Street

SALES OFFICES

CLEVELAND, OHIO, 501 Caxton Building
ROCHESTER, N. Y., 327 Cutler Building
PITTSBURGH, PA., 405 Penn Avenue
BOSTON, MASS., 11 Beacon Street
HAVANA, CUBA, 55 Calle Obispo
MINNEAPOLIS, MINN., 1026 Second Avenue, So.
PHILADELPHIA, PA., 702 Bulletin Building
DENVER, COLO., 610 California Building
BALTIMORE, MD., 1901 St. Paul Street
SAN FRANCISCO, CAL., 585 Mission Street
TOLEDO, OHIO, 419 Ohio Building
WEST HARTFORD, CONN., 968 Farmington Avenue
NEW ORLEANS, LA., 1812 Masonic Building
ST. LOUIS, MO., 4497 Pershing Avenue
KANSAS CITY, MO., 308 E. 17th Street
LOS ANGELES, CAL., 224 E. 16th Street
PORTLAND, ORE., 54 Fourth Avenue
DETROIT, MICH., 518 Buhl Building

The Company and Its Products

The basic product of the company is FORMICA which is a laminated material made with a fibre base and phenol formaldehyde binder.

The plant is the largest unit in its industry and is specialized on just one product. Formica was the first to develop the application of material of this type to building purposes.

Decorative and Structural Uses

Formica can be used in general for the same purposes as marble, structural glass, wood paneling, and finish plaster coats.

It has been applied as:

(1) Wainscot.
(2) Store front bulkheads.
(3) Window stools.
(4) Basing on show cases and mop boards in rooms.
(5) Panels, pilasters and tops on counters.
(6) Facing on mantels.
(7) Door kick plates and push plates.
(8) Table tops for restaurant tables, coffee and end tables, card and game tables.
(9) Tops on hotel and club bedroom furniture.
(10) Tops on lobby furniture and outdoor furniture.
(11) Tops on radiator cabinet enclosures.
(12) Decorative devices in display windows, and floors in display windows.
(13) Kitchen cabinet tops both with and without sinks.
(14) Interior of elevator cabs.
(15) Ornamental signs.

Qualities, Properties and Sizes

Formica is essentially a material to provide a finished surface of attractiveness and unusual durability.

For architectural work Formica is provided in the following forms:

Sheets $\frac{1}{16}$ in. thick for use as a veneer by furniture manufacturers in making furniture.

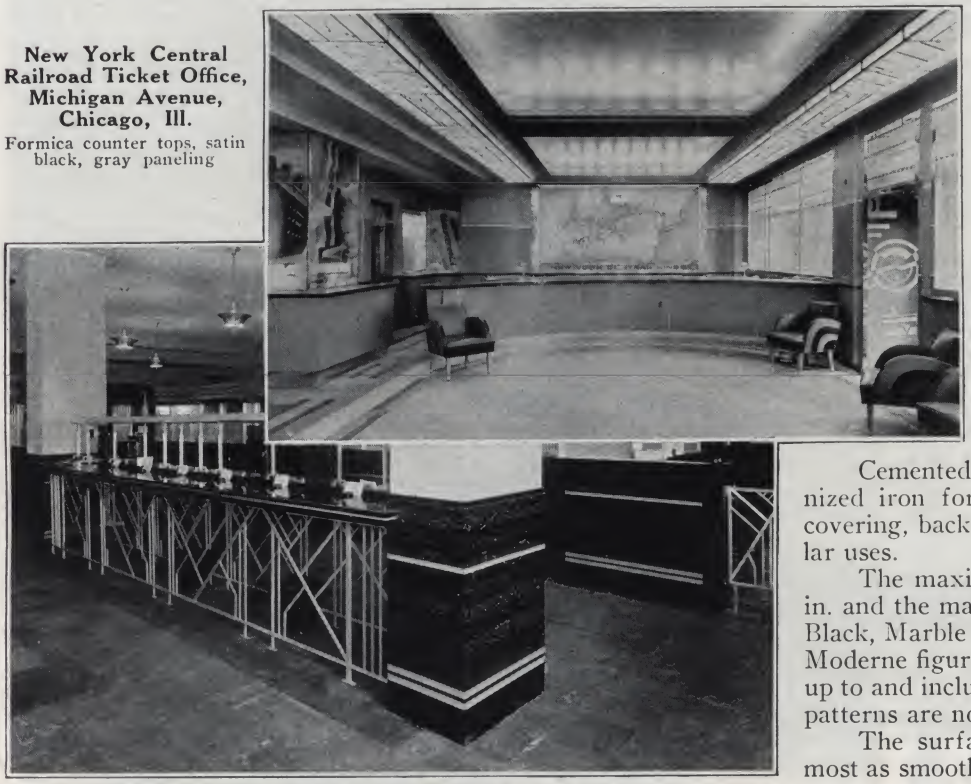
Vulcanized on two sides of $\frac{1}{4}$ in. or $\frac{3}{8}$ in. thick asbestos board for use as wall and ceiling covering store front bulkheads, and in some cases table tops.

Veneered on six sides of five-ply wood to produce a sheet $\frac{3}{4}$ in. to $1\frac{1}{4}$ in. thick for table tops, counter tops and similar uses.

Cemented to one side of 18 gauge galvanized iron for use as counter paneling, wall covering, back splashes on sink tops and similar uses.

The maximum widths of the sheets is 36 in. and the maximum standard length is 84 in. Black, Marble patterns, Wood finishes, and Art Moderne figures may be had in special lengths up to and including 10 ft. Cretonne or tapestry patterns are not available over 30 in. wide.

The surface of the gloss Formica is almost as smooth as polished plate glass. It may also be had in a satin finish produced by



New York Central Railroad Ticket Office, Michigan Avenue, Chicago, Ill.
Formica counter tops, satin black, gray paneling

Chelsea Exchange National Bank, New York, N. Y.

Continued on next page

rubbing with pumice. There are about twenty colors; two marble finishes, three walnut grains, mahogany, oak; three art moderne figures, jet black, numerous cretonne and tapestry patterns; several shades of tan.

Formica is a very hard dense material. It is unusually inert chemically and will not be injured by alcohol, gasoline, benzol, acetone or any solvent. It stands all the mild acids without any injury and will stand considerable concentrations of sulphuric acid. Solutions containing up to 10% of alkali will not affect it. It will stand over 300° Fahrenheit of heat. The surface does not lose its elasticity and craze and crack.

This means that no solutions in common use will spot or injure the material. It will stand washing and mopping without losing its lustre. It resists burning with cigars, cigarettes, etc. It is not at all brittle, and will not break, chip or crack either before or after installation.

The surfaces do not require repainting or restorative maintenance other than cleaning. Formica is light and easily handled.

Form of the Material for Particular Uses

(1) Wall covering: Use Formica vulcanized on 3/8 in. asbestos board with cap molding and basing if desired.

(2) Partitions and paneling: Formica on 3/8 in. asbestos; Formica veneered to plywood or galvanized iron. See details.

(3) Baseboard: May be molded type (see details) or plywood center with Formica veneered on all six sides.

(4) Kick Plates, push plates and grilles 1/8 in. thick solid Formica sheet with countersunk screwholes.

(5) Elevator cab linings, Formica cemented to metal.

(6) Store front bulkheads, Formica vulcanized on 3/8 in. asbestos sheets (see details).

(7) For furniture tops Formica 1/16 in. sheet may be veneered onto the wood by the furniture manufacturers.

(8) For counter tops, table tops, radiator enclosure covers 3/4 in. thick plywood with 1/16 in. Formica sheet veneered on all six sides.

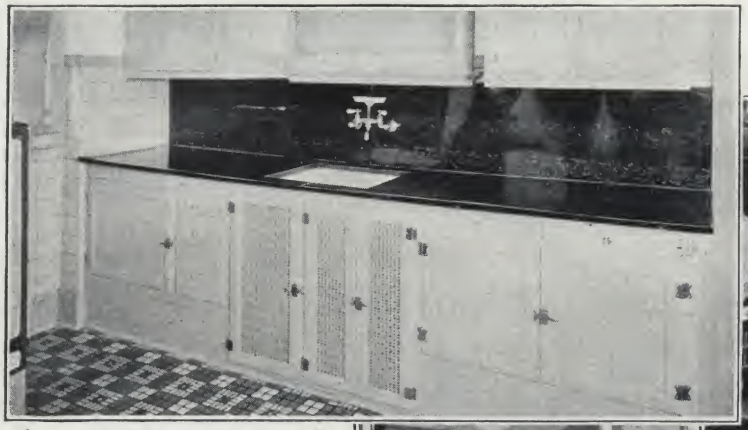
(9) For window sills the material is veneered on all six sides of plywood.

(10) On kitchen cabinet and dresser tops the material is cemented on asbestos for a top where a sink is used. The sink hole is lined. The back splash is Formica on galvanized iron. Cabinet tops where there is no sink, Formica veneered on six sides of plywood is recommended.

Details of Erection

Two pages of details showing different methods of installation are shown herewith.

Colors: As shown on color page herewith. There are two marble patterns, several wood grains, jet black, solid colors like red, green, blue, art moderne figures and tapestry effects. Each color may be had either in high gloss or rubbed satin finish.



1

2

3

4

1. Kitchen Cabinet Top with Sink and Formica Black and Gold Top and Back Splash

2. Beauty Shop in the Ernst Kern Department Store, Detroit
Formica wainscot and column covering

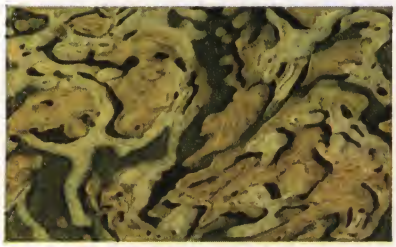
3. Elevator Cab Lined with Formica, Y. W. C. A., Cincinnati

4. Formica Store Front of Polished Black Formica, Wabash Avenue, Chicago

Continued on next page

BLACK *and* GOLD

VERDI-ANTIQUE


No. 2 DECORATED

No. 3 DECORATED

No. 6 DECORATED

No. 7 DECORATED

No. 8 DECORATED

No. 9 DECORATED

No. 10 DECORATED

No. 11 TAPESTRY

No. 12 TAPESTRY

No. 13 TAPESTRY

No. 14 TAPESTRY

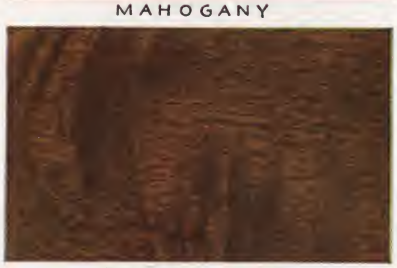
BLUE

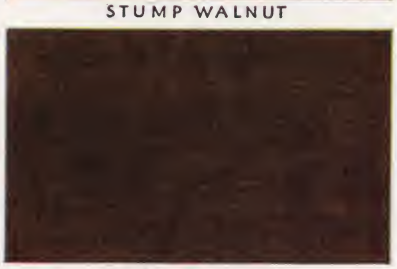
GREEN

IVORY

RED

MAHOGANY


STUMP WALNUT

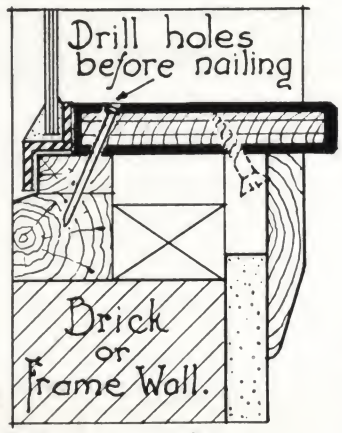

DARK WALNUT

LIGHT WALNUT

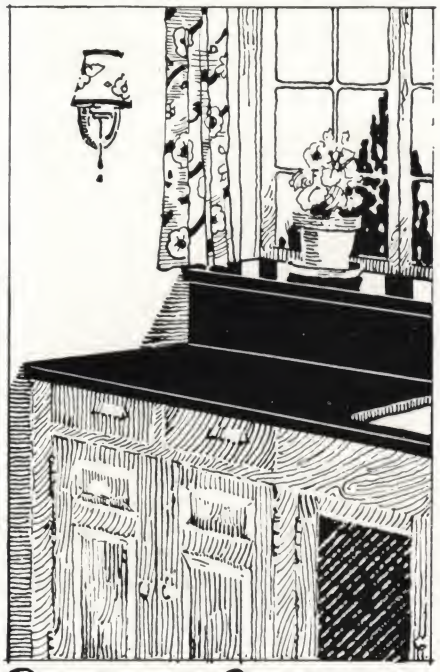
Continued on next page

FORMICA IN THE KITCHEN

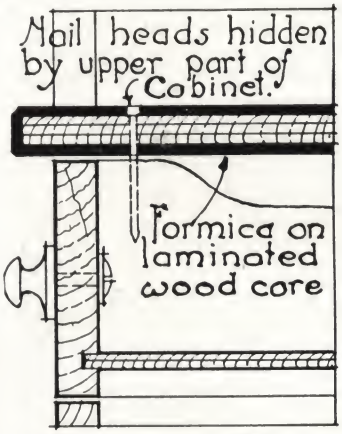
Formica has introduced, in a durable material, many novel and attractive colors that strengthen the appeal of this room. Formica dinette tops may be had in very lively colors or in wood grains in a most durable and lasting finish. Cabinet tops, window stools, and wall covering behind the sink may all match.



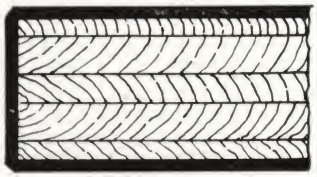
WINDOW STOOLS



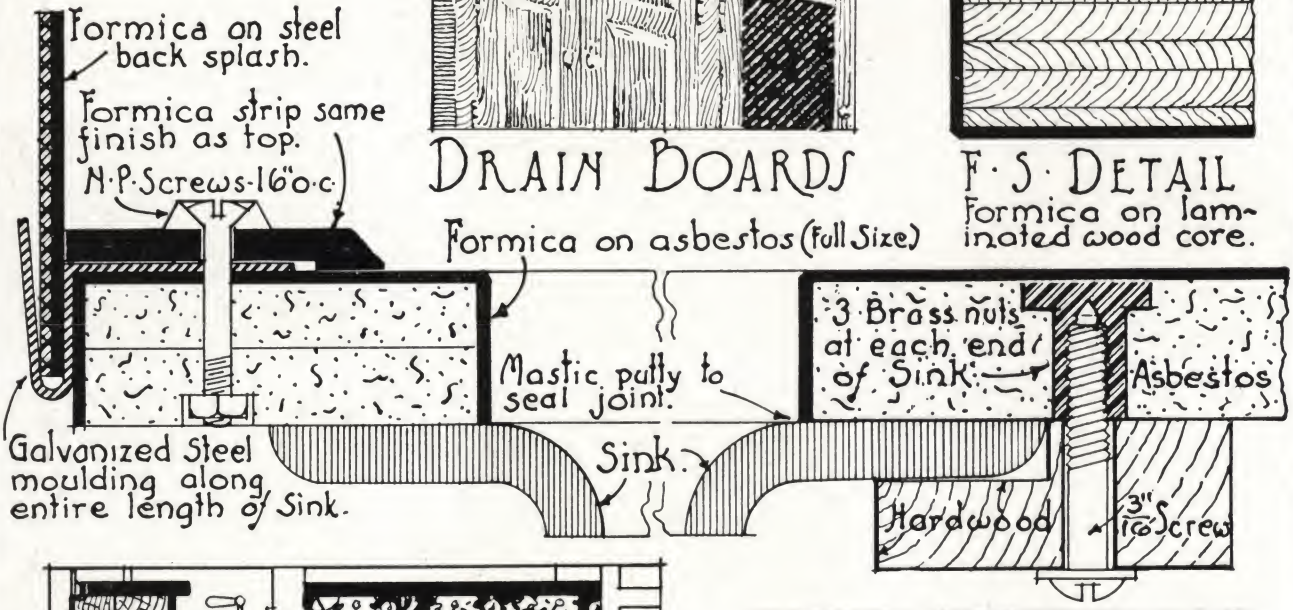
DRAIN BOARDS

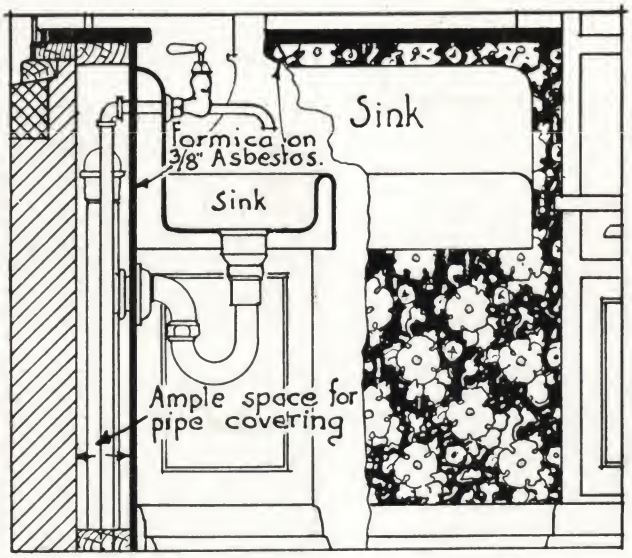


COUNTER TOPS



F·S·DETAIL
Formica on laminated wood core.





FURRING BEHIND SINK

DINING ALCOVES

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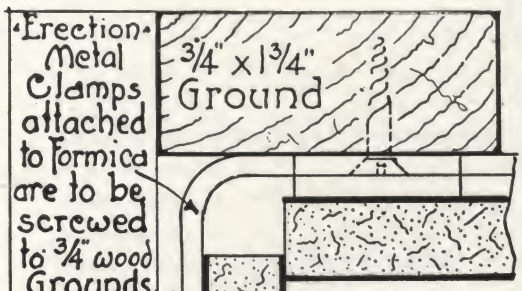
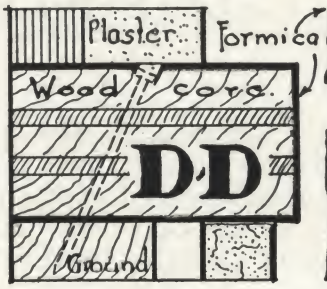
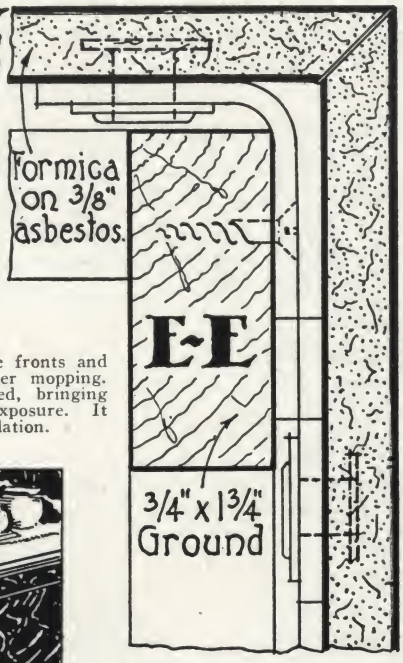




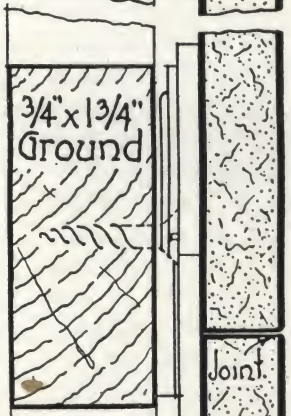


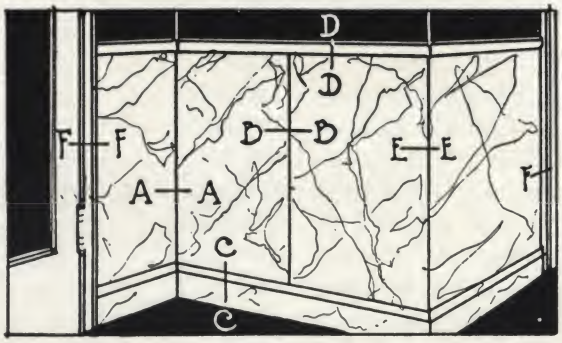
Formica Store Front Construction

Formica holds its gloss and color when used on store fronts and for other outside work. As baseboard it stands up under mopping. It is easily cleaned with any solvent and can be waxed, bringing back all the original brilliance of the finish after long exposure. It will not crack, chip or break either before or after installation.

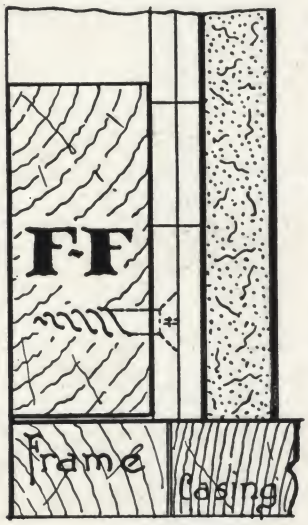
Deal Plates

Store Fronts

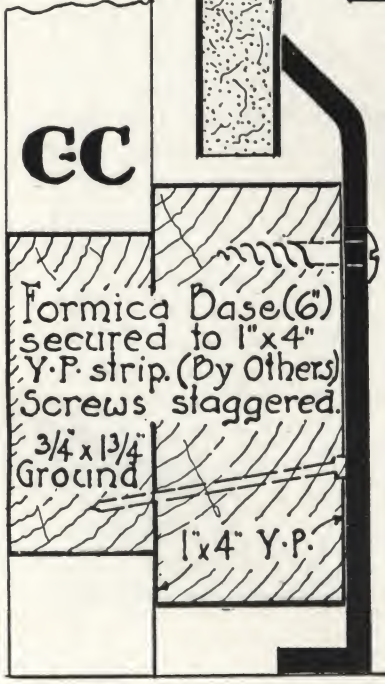




Wainscots



Method of Fastening



Fabrication and Distribution

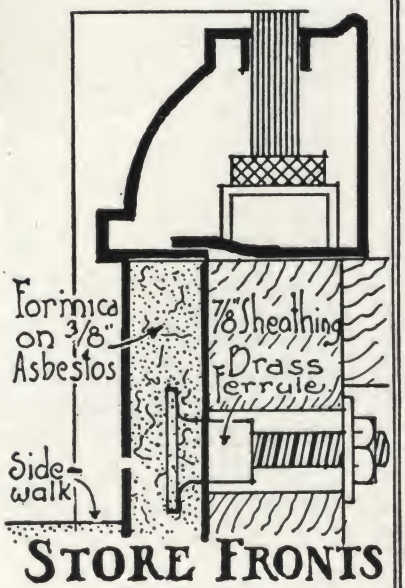
The Formica Insulation Company has 20 sales offices in leading centers and factory branches with material in stock and equipment for fabricating in New York and Chicago.

The material is sold through lumber or building material dealers. Where no dealer is handling it Formica will be shipped from the factory direct to the contractor.

Formica in any form can be ordered cut to size in the sizes desired within the limits of the standard sheets. We will fabricate the material to architects' details for erection by others. We *do not* contract for installation.

Service

Our home or branch offices, and our sales offices, will provide all necessary information and instructions regarding methods of installation.



STORE FRONTS

FLOORING

Acme Asbestos Covering & Flooring Co.....B3204
Acme Brick Co. B3066
Adams Products, Inc.....B3196
Ambastone Co. B3197–3198
Ambler Asbestos Shingle & Sheathing Co.....B3157
American Asphalt Tile Corp.....B3211
American Encaustic Tiling Co., Ltd.....B3067–3070
American Kerament Corp. B3153–3154
American Tile & Rubber Co.....B3252
Architectural Tile Co.....B3071–3072
Armstrong Cork Co.....B3273–3286
Asbestos Limited Inc.....B3158–3159
Asphalt Block Pavement Co.....B3230
Associated Tile Mfrs.....B3064–3065
Barry & Staines Linoleum, Inc.....B3290–3291
Batchelder-Wilson Co. B3074–3075
Blabon, George W., Co.....B3292–3293
Bruce, E. L., Co.....B3240
Butcher Polish Co.....B3317
Calco Tile Mfg. Co.....B3073
Cambridge-Wheatley Co. B3076
Carlyle-Labold Co. B3077–3080
Carter Bloxonend Flooring Co.....B3232
Cellized Oak Flooring, Inc.....B3241–3243
Certain-teed Products Corp.....B3287–3289
Congoleum-Nairn Inc. B3294–3308
Continental Chemical Corp.....B3318
Cromar Co. B3244–3245
De Paoli Del Turco Foscato Corp.....B3173–3176
Duraflex Co. B3212–3213
Finnell System, Inc.....B3316
Flint Faience & Tile Co.....B3081
Floor Accessories Co., Inc.....B3168
Fulton Asphalt Co.....B3214
Goodyear Tire & Rubber Co., Inc.....B3253–3254
Grauer, Albert, & Co.....B3215–3216
Hachmeister-Lind Co. B3205
Hanley Co. B3083–3084
Hasbrouck Flooring Co.....B3246
Hastings Pavement Co.....B3231
Hood, B. Mifflin, Brick Co.....B3082
Hood Rubber Products Co., Inc.....B3255
Hillyard Chemical Co.....B3319
Insulite Chemical Co.....B3219
Jennison-Wright Co. B3234–3235
Johns-Manville—
Asphalt Tile B3217–3218
Sheet Tile B3155–3156
Kleistone Rubber Co., Inc.....B3256–3257
Kompolite Co., Inc.....B3206–3207
Kraftile Co. B3086–3087
Lockstrip Mfg. Corp.....B3177–3181
Ludowici-Celadon Co. B3085
Luxor Tile Co.....B3160–3161
Manhattan Terrazzo Brass Strip Co., Inc...B3183–3194
Maple Flooring Mfrs. Assn.....B3236–3237
Marbleithic Co. B3182
Marbleloid Co. B3208–3210
Mart & Lawton, Inc.....B3088
Maximent Co. B3199
Mosaic Tile Co.....B3089–3108
Moulding, Thos., Floor Co.....B3220
Mueller Mosaic Co.....B3113
Mundet, L., & Son, Inc.....B3309
Murray Tile Co.....B3109–3112
National Floor Tile Co., Inc.....B3162–3163
National Heliopore Floor Corp.....B3195
National Terrazzo and Mosaic Assn.....B3169–3172
National Tile Co. B3119–3122
New York Belting & Packing Co.....B3258–3259
Norton Co. B3114–3115
Oak Flooring Mfrs.' Assn. of the United States B3238–3239
Pardee Matawan Co.....B3116–3118
Porcelain Tile Co.....B3164
Quabaug Rubber Co.....B3260
Revis, William H., Inc.....B3127
Rezilite Mfg. Co.....B3221
Ritter, W. M., Lumber Co.....B3247
Robertson Art Tile Co.....B3123–3126
Rookwood Pottery Co.....B3128–3129
Rose, D. M., & Co.....B3248
Rossman Corp. B3132
Sloane, W. & J., Mfg. Co.....B3310–3315
Southern Wood Preserving Co.....B3233
Sparta Ceramic Co.....B3133–3134
Standard Wall Covering Co., Inc.....B3166–3167
Stedman Rubber Flooring Co.....B3261–3265
Tile-Tex Co. B3222–3228
United States Encaustic Tile Works.....B3135–3136
United States Gypsum Co. B3165
United States Quarry Tile Co.....B3137–3152
United States Rubber Co.—
Asphalt Tile B3229
Rubber Flooring B3266–3267
Vermont Structural Slate Co.....B3200–3203
Vestal Chemical Laboratories, Inc.....B3320
Weller, S. A., Co.....B3130–3131
Wood-Mosaic Co., Inc.....B3249–3251
Wright Rubber Products Co.....B3268–3272

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Wall and Floor Tiles, Ceramic Mosaic and Faience

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FRANKLIN POTTERY
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MATAWAN TILE COMPANY
Matawan, N. J.

THE MOSAIC TILE COMPANY
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Matawan, N. J.
New York, 327 West 42nd Street
Chicago, 1336 West Washington Boulevard
St. Louis, Railway Exchange Building

NATIONAL TILE COMPANY
Anderson, Ind.
New York, 551 Fifth Avenue
Chicago, 59 East Adams Street
St. Louis, Railway Exchange Building
San Francisco, 901 Balboa Building

OLEAN TILE COMPANY
Olean, N. Y.

THE C. PARDEE WORKS, INC.
Perth Amboy, N. J.
New York, 101 Park Avenue
Philadelphia, 1600 Walnut Street

PENN TILE WORKS COMPANY
Aspers, Adams County, Pa.

ROSSMAN CORPORATION
New York, 160 East 56th Street
Chicago, 918 West Washington Boulevard
San Francisco, 310 Bankers Investment Building

THE SPARTA CERAMIC COMPANY
East Sparta, Ohio
Cleveland, 5005 Euclid Avenue

THE STANDARD TILE COMPANY
Zanesville, Ohio
New York, 101 Park Avenue

UNITED STATES ENCAUSTIC TILE WORKS
Indianapolis, Ind.
New York, 103 Park Avenue
Chicago, Monroe Building

UNITED STATES QUARRY TILE CO.
Parkersburg, W. Va.
New York, 101 Park Avenue
Chicago, 1500 South Western Avenue
1404 Tribune Tower Building

THE WHEATLEY TILE & POTTERY CO.
Cincinnati, Ohio, Box 836
New York, 101 Park Avenue

WHEELING TILE COMPANY
Wheeling, W. Va.
New York, 11th Avenue and West 26th Street

CONDENSED LIST OF TILES

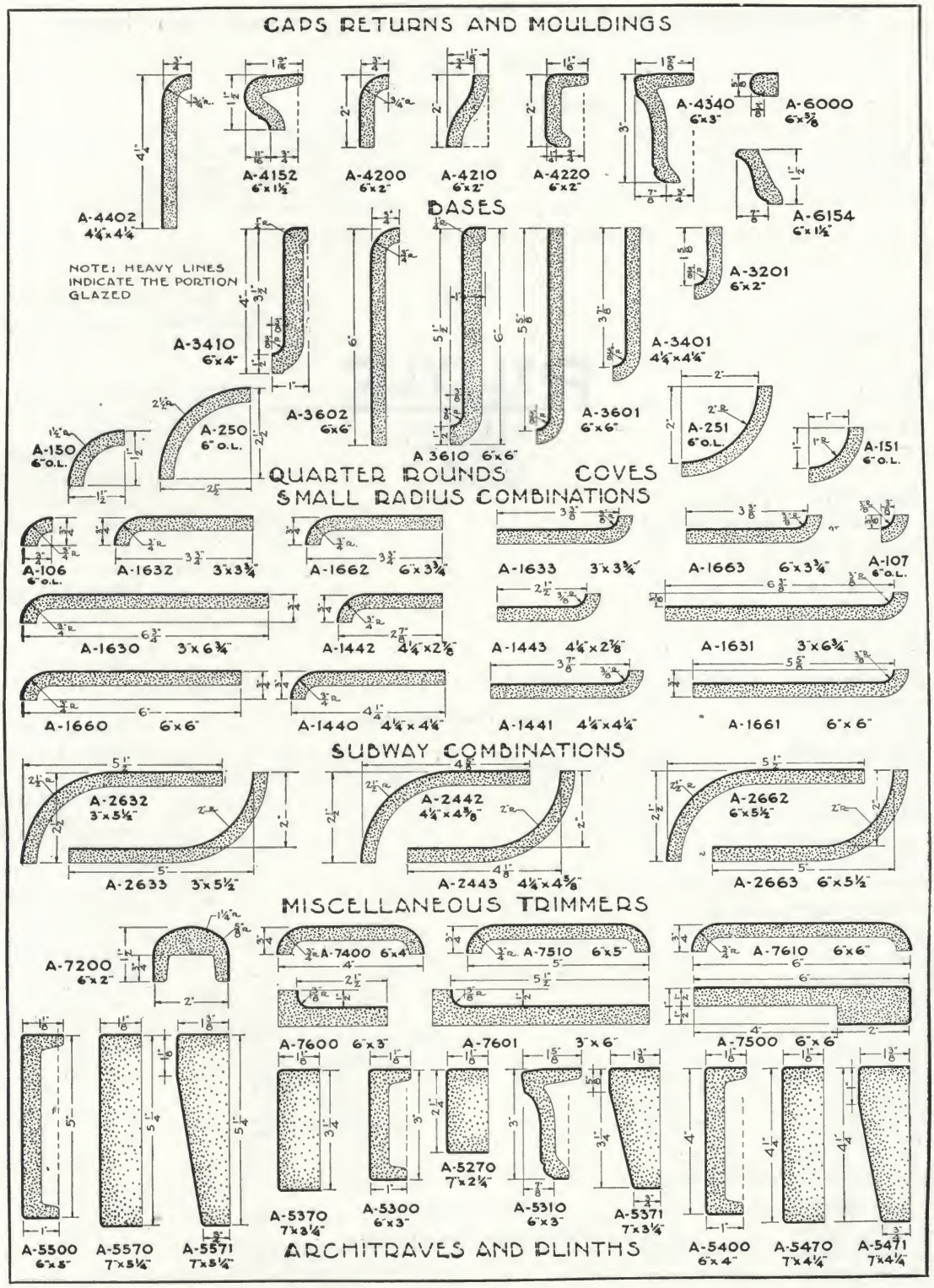
THEIR CHARACTERISTICS & USES

KIND OF TILES	THICKNESS	SHAPES AND SIZES	COLORS	SURFACES AND GLAZES	GENERAL USES
CERAMIC MOSAIC	¼	Square - 2⅜ · 1⅞ · 1⅛ · ¾ · ½ · 1/32 Oblong - 2⅜ × 1⅛ · 1⅞ × ¾ · 1⅛ × ½ Hexagon - 1¼ - 1 Pentagon - 2⅜ Trapezoid - 2 3/16 × 1 1/16	See Vitreous and Semivitreous Tiles, Also Flat and variegated colors such as Textures, & Flashings	Unglazed	Floors Walls Swimming Pools Plunge Baths Kitchen Sinks Interior Exterior
ENAMEL MOSAIC GLAZED MOSAIC			See Dull Glazed Tiles	Bright	
DULL GLAZED MOS. MATT GLAZED MOS.				Dull Matt	
FAIENCE MOSAIC	VARIABLE	Any Shape or Size Less Than 2¼ Square Inches in Area	See Faience Tiles	Plain or Embossed Bright, Dull or Matt	
PLASTIC MOSAIC			See Plastic Tiles	Plain or Embossed Unglazed	
VITREOUS TILES	½	Square - 3 - 2⅜ - 1½ - 1⅛ Oblong - 3×1½ - 3×1 - 3×½ - 2⅜×1 1/16 - 1 1/16×½ Hexagon - 3 - 2 Octagon - 3 Triangle - 3 - 1 47/64 - 1 5/32	White, Celadon, Silver-gray Green, Blue-green, Light-blue Dark blue, Pink, Cream, and Granites of these Colors	Unglazed	Floors Walls Fireplaces Interior Exterior
GLAZED				Bright	
DULL GLAZED MATT GLAZED			See Dull Glazed Tiles	Dull Matt	
SEMIVITREOUS TILES		Same as Vitreous Tiles, Also: Square - 6 - 4¼ Oblong - 9×3 - 6×4 - 6×3 - 6×2 - 6×1½ 6×⅜ - 6×½ - 4¼×2⅜ - 4¼×1 1/16 Hexagon - 6 - 4¼ - 6×3 - 4¼×2⅜ Octagon - 6 - 4¼ Pentagon - 5 5/16 - 2⅜	Buff, Salmon, Light-gray, Dark gray, Red, Black, Chocolate, and Granites of these Colors	Unglazed	
GLAZED				Bright	
DULL GLAZED MATT GLAZED			See Dull Glazed Tiles	Dull Matt	
FLINT PAVING TILES HYDRAULIC	¾	Square - 6 - 4¼ Oblong - 6×4 - 6×3 - 6×½ Hexagon - 6 - 4¼ Octagon - 6	White, Light gray, Dark gray Celadon, Sage, Light blue Dark blue, Green, Cream	Unglazed	Floors-Walls Interior-Exterior
	¾ and 21/32	Square - 6 - 4¼ Oblong - 10×5 - 9×3 - 6×3 - 6×½ Hexagon - 6 - 4¼	See Semivitreous Tiles		Floors Interior-Exterior
WHITE GLAZED TILES	½ and ⅜	Square: Basic Sizes For Fields 6 - 4¼; Other Sizes 3 - 2⅜ - 1½ - 1 1/16 - ¾ - ½ Oblong: 6×3; 6×2 - 6×1½ - 6×1 6×¾ - 6×½ - 4¼×2⅜ 4¼×1 1/16 - 3×1½ - 3×1 3×½ - 3×¼ - 2⅜×1 1/16 Hexagon 3 - 2 Octagon 3	White	Plain or Embossed Bright	Walls Interior
DULL GLAZED TILES MATT GLAZED TILES	⅜, ½		Unlimited Color Range. Selection must be made from Samples and Colors Specified by number	Plain or Embossed Dull Matt	Walls Fireplaces Interior
ENAMELS				Bright	
PLASTIC TILES	½ and over	Obtainable in all of the above, and special shapes and sizes.	Colors that result from firing of natural clays	Plain or Embossed Smooth or Rough Unglazed	Floors Walls Fireplaces Interior Exterior
FAIENCE			See Dull Glazed Tiles	Plain or Embossed Bright, Dull or Matt	
QUARRY TILES	½, ¾, ⅞, 1¼	Square - 12 - 9 - 6 - 4¼ - 3 Oblong - 12×6 - 9×6 - 9×4¼ - 9×3 - 6×3 Hexagon - 8×4	Red, Gray, Buff, Brown, and Flashed	Unglazed	Floors Interior-Exterior

K E R A M I C T I L E S

Continued on next page

INDEX OF STANDARDIZED WALL TILE TRIMMERS



The chart above shows the Wall Tile Trimmers which have been adopted as standards for the tile industry.

The 56 trimmers on the chart, together with their complementary angles, corners and stops, are designed to care for every normal trimmer requirement. A selection from this group will not only simplify the work of specification but will insure prompt delivery.

The letters and numbers labelling the trimmers when used in specifications will at once definitely identify the desired shape. No further description—except the required color—is needed to enable any member factory to supply the correct trimmers.

Master grade certificates should be called for in all specifications to insure installation of the exact grade specified.

K E R A M I C T I L E S

ACME BRICK COMPANY

Manufacturers of Floor Tile, Roof Tile and Face Brick

DANVILLE, ILL.

PRINCIPAL DISTRIBUTORS

CHICAGO, ILL., Garden City Sand Co.
ST. LOUIS, MO., Richards Brick Co.
LOUISVILLE, KY., Stearns Coal Co.
WINNIPEG, MAN., CANADA, Alsip Brick, Tile & Lumber Co.
OMAHA, NEB., Consolidated Builders Supply Co.
PHILADELPHIA, PA., Drehmann Paving & Construction Co.
NEW YORK, N. Y., Walton N. Cable
BOSTON, MASS., Dolben & Co.
DETROIT, MICH., Dresden Brick Co.
CINCINNATI, OHIO, E. F. Grand Brick Co.

DEALERS IN ALL PRINCIPAL CITIES

Products

"Ryltyle" Floor Tile — Floor Brick and Quarry Tile.

"Ryltyle" Roof Tile — Shingle Tile and Mission Tile.

"Face Brick of Character"—"Persiantex," "Vine-wove" and "Cayuga Matt."

AB C RYLTYLE "REAL TILE" SHAPES

"Ryltyle" Floor Tile

Floor Brick—For industrial floors, resisting acids, chemicals, salts, fats and oils, providing a durable floor for severe trucking. Made of finely ground, hard burned Pennsylvanian shale and fire clay, insuring a dense surface.

These tile are used in dairies, ice cream plants, refrigeration plants, packing houses, dye houses and chemical plants. Fats and oils are easily cleaned from "Ryltyle" floors, hence their use in bakeries, commissaries, kitchens, power plants, warehouses, factories and garages.

For industrial floors these tile should be laid with tight joints to insure durability.

Quarry Tile—For residences, apartments, hotels and public buildings. In deep red or buff, or colorful fire flashed blends "Ryltyle" produces permanently beautiful floors with smooth, easily cleaned surfaces.

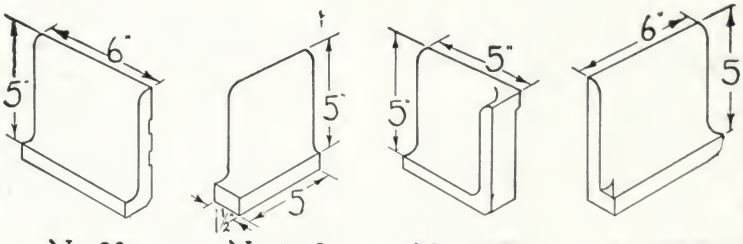
Grades — *Select*—Carefully sorted for size, shade and mechanical perfection. Suitable for residences, apartments and public buildings.

Standard — Sorted for size and shade. Suitable for use in creameries, bakeries, packing houses and other commercial work.

Industrial—Sorted for approximate size. Slight defects. Suitable for factory work.

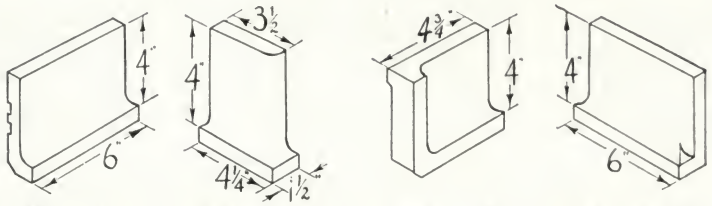
Second—Slightly chipped corners or edges. Suitable for warehouses and pavements.

Random Rubble—Irregular sizes and shapes of uniform thickness. Suitable for walks and terraces.



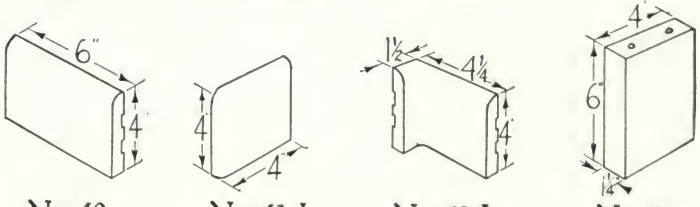
No. 20 No. 21 L No. 22 R No. 23 R

Round Top Cove Base



No. 30 No. 31 R No. 32 L No. 33 L

Square Top Cove Base



No. 40 No. 41 L No. 42 L No. 45

Wainscot Bullnose

DIMENSIONS AND WEIGHTS

Description	Size in.	Number of pieces per sq. ft.	Weight in lb. Each	Weight in lb. Per sq. ft.
Floor brick	4 x 8 x1½	4½	3.3	14.85
	4 x 8 x1¾	4½	4.0	18.0
Quarry tile	6 x 6 x ¾	4	2.0	8.0
	4 x 4 x ¾	9	.87	7.83
	2¾x 2¾x ¾	16	.5	8.0
	4 x 8 x ¾	4½	1.77	7.97
	2¾x 6 x ¾	8	1.0	8.0
		(Per 100 sq. ft.)		(Per 100 sq. ft.)
Shingle roof tile	6 x12 x ⅝	480 (5" expos.)	3.15	1512
Mission roof tile	8 x15 x ⅝	230 (11" expos.)	5.5	1265
Face brick—shale	2¼x 8 x3¾ avg.		4.7	
fire clay	2¼x 8 x3¾ avg.		4.55	

Half and diagonal half tile for all sizes floor tile.
Shapes for wainscot—see diagram.
All necessary shapes for roof tile.
Octagon and bull nose shapes for face brick.

"Ryltyle" Roof Tile

Shingle tile, mission tile made in both smooth and roughened surfaces and with necessary shapes, in the same color combinations as listed under Quarry Tile.

"Face Brick of Character"

Are furnished in straight shades and in various blends of carefully combined colors.

"Persiantex" — A superior brick having a unique granular surface, resembling the texture of a Persian rug, producing an attractive combination of light and shadow with a delightful and harmonious variation.

"Vine-Wove" — A vinelike design woven into a matt surface, resulting in added interest and depth of shadow.

"Cayuga Matt"—A wire-cut surface of great uniformity producing soft, mellow tones.

Samples

We will gladly send, on request, full information and samples of all of our products, as well as references.

AMERICAN ENCAUSTIC TILING COMPANY, LTD.

INCORPORATED 1878

Floor, Wall and Decorative Faience Tiles of Every Description » Made in the U. S. A.

EXECUTIVE OFFICES AND SHOWROOMS
Aetco Building, 16 East 41st Street
NEW YORK, N. Y.

OFFICES AND SHOWROOMS

ZANESVILLE, OHIO, Linden Avenue
PHILADELPHIA, PA., Packard Building
SAN FRANCISCO, CAL., 3 Arcade, Monadnock Building
CHICAGO, ILL., 332 So. Michigan Avenue
LOS ANGELES, CAL., 2030 E. 52nd Street
DALLAS, TEX., Santa Fe Building

FACTORIES

ZANESVILLE, OHIO
MAURER, N. J.
LOS ANGELES, CAL.
HERMOSA BEACH, CAL.

Members of the Associated Tile Manufacturers

AETCO PRODUCTS

Aetco Products include every type of Floor, Wall and Decorative Tile. Among the staples are the following simplified classifications:—

WHITE WALL TILE

Brights or Matts

Manufactured at Zanesville, Maurer, Los Angeles, and Hermosa plants. Brights—In Select, Standard and Commercial Grades with standard size trim. Matts—In Select and Commercial Grade.

MATT WALL TILE

IRIS MATTS

Manufactured at Zanesville (write for A. I. A. Iris Matt Folder).

Iris Matt Color Numbers

A500 Dark Green
A501 Medium Green
A502 Light Green
A505 Dark Blue
A506 Medium Blue
A507 Light Blue
A510 Buff
A511 Cream
A512 Ivory
A515 Dark Gray
A516 Medium Gray
A517 Light Gray
A520 Dark Pink
A521 Medium Pink
A522 Light Pink
A525 Black
A526 White
A528 Peach Blossom

GOBELIN MATTS

ON SEMI-VITREOUS BODY

A series of colors presenting a soft satiny finish on a durable body practical for surfaces subjects to wear. Manufactured at Zanesville.

MATT ENAMELS B. SERIES

Manufactured at Los Angeles Plant.

Staple Colors

B-4 Burnt Rose
B-5 Orchid
B-10 Black
B-12 Light Tan Orchid
B-18 Light Pea Green
B-20 Jade Green
B-23 Ivory
B-54 Purple Wine

HERMOSA MATT ENAMELS

BH. SERIES

Manufactured at Hermosa Plant.

Staple Colors

BH-1 White
BH-3 Light Turquoise Blue
BH-6 Sea Green
BH-7 Light Cream
BH-21 Light Tan
BH-23 Heliotrope
BH-34 Goldyellow Mottle on white
BH-39 Goldbrown Mottle on green
BH-53 Black Matt

BRIGHT ENAMELS & SEMI-MATTS

PARISIAN C. SERIES

Manufactured at Maurer and Zanesville. Colors marked (*) Manufactured at Zanesville only.

C100 Dark Green
C101 Medium Green
C102 Light Green
C105 Dark Blue
C106 Medium Blue
C107 Light Blue
C110 Dark Yellow
C111 Medium Yellow
C112 Light Yellow
*C115 Dark Gray
*C116 Medium Gray
*C117 Light Gray
C120 Dark Pink
C121 Medium Pink
C122 Light Pink
*C125 Tan
*C126 Light Tan
*C127 Ivory

BRIGHT ENAMEL A. SERIES

Manufactured at Los Angeles Plant.

A-2 Cerulean Blue
A-3 Light Green
A-7 Medium Naples Yellow
A-9 Lilac
A-22 Blue Black
A-28 Cream
A-29 Sea Green

BRIGHT ENAMELS AH. SERIES

Manufactured at Hermosa Plant.

AH-3 Turquoise Blue
AH-6 Sea Green
AH-7 Light Green
AH-9 Pale Lilac
AH-10 Champagne
AH-21 Light Tan
AH-23 Heliotrope
AH-31 Light Gray

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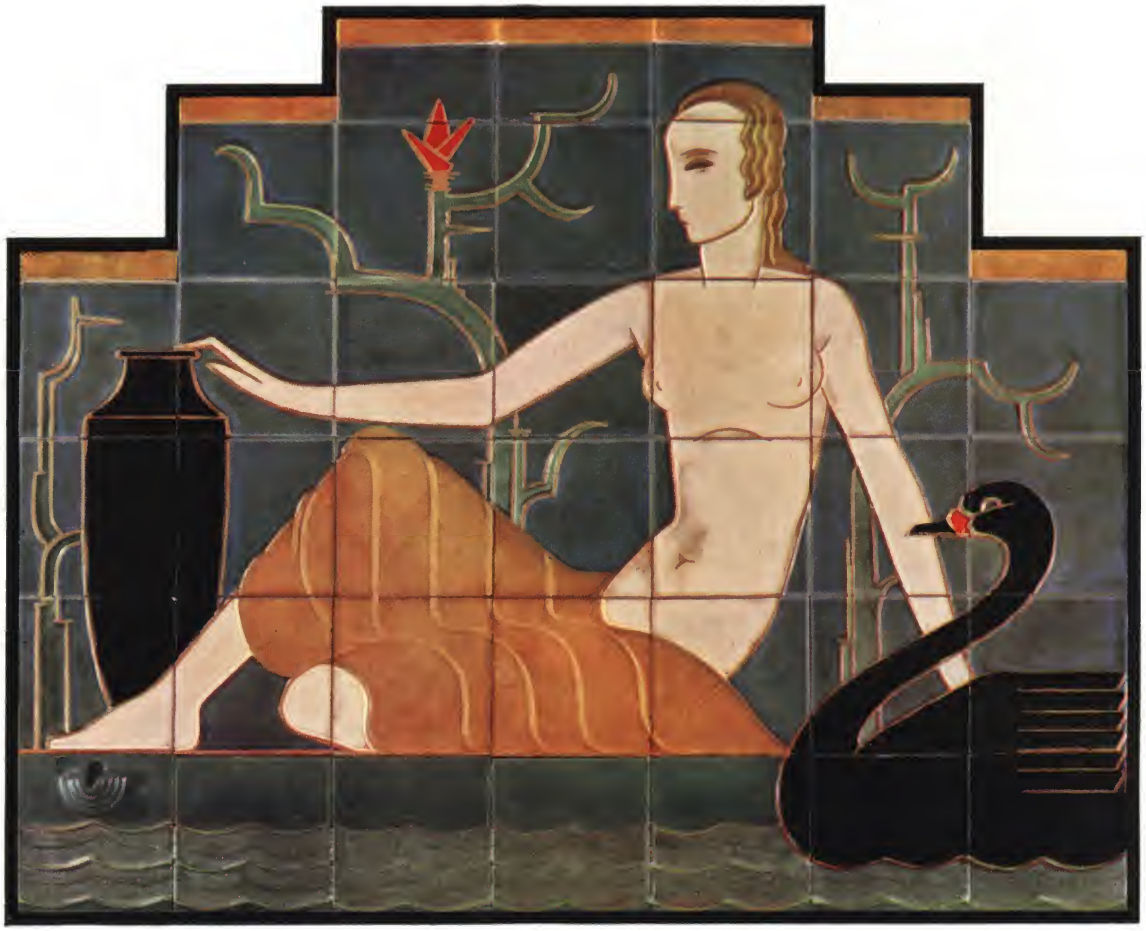
Examples of Modern Aetco Faience



SPECIAL FAIENCE FOUNTAIN PANEL

Pat. Z133, dec. 962
4¼ × 1

Pat. 9950, dec. 893
6x1

Pat. Z139, dec. 968
4¼ × 1

NORSE TILE
4¼×4¼

Pat. 9946, dec. 889
4¼ × 1

Pat. 9947, dec. 890
6x1

Pat. Z140, dec. 969
4¼ × 1

Pat. Z130F, dec. 955
Pat. Z130A, dec. 950

Pat. Z130B, dec. 951
Pat. Z130D, dec. 953

Pat. Z130C, dec. 952
Pat. Z130E, dec. 954

MODERN BASE TREATMENT

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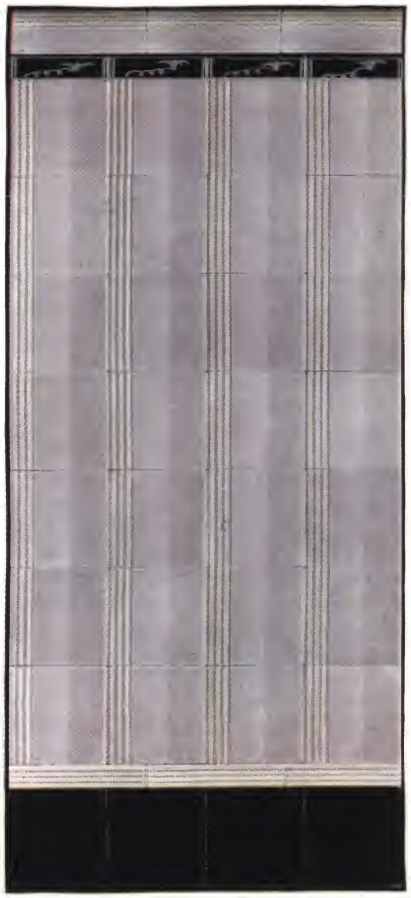
Aetco Innovations in Wall and Floor Tiles



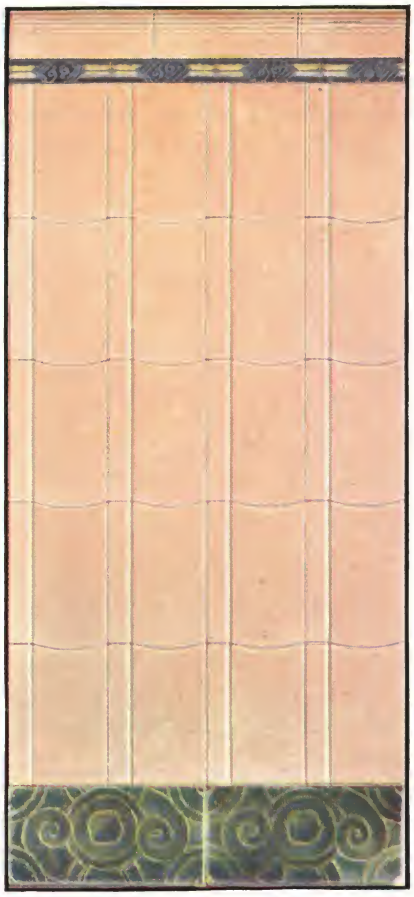
REFLECTA TILE

Cap—6x2, pat. 1174, col. C115
Strip—4¼x1, pat. 9946, dec. 921
Field—4¼x4¼, pat. 1185, col. C115
Strip—6x1, pat. 1173, col. C115
Base—4¼x4¼, plain tile, col. A525

FAIENCE FOUNTAIN MASK
Z-156, 8x12,
color 03863

COLONIAL TILES
Z160, dec. 974 Z159, dec. 974

SPORTS INSERTS SERIES
Z126, 12x12



LOKTILE

Cap—6x2, pat. 1174, col. A528
Strip—4¼x1, pat. Z139, dec. 968
Field—6x4, pat. 1181, col. A528
Base—8x4, pat. 9974, col. 03245

DESIGN C3

6x6 insert, pat. 8260; 6x3 insert, pat. 8283
3x3 insert, pat. 8272

Pat. 8275
3x3

Pat. 8283 Pat. 8285
6x3 6x3

Pat. 8266
3x3

Pat. 8267
3x3

DESIGN C2

3x3 inserts, pats. 8281, 8269, 8272, 8279
6x3 inserts, pat. 8284

Canterburic Floor Tile

Continued on next page

PERMATILE

A series of bright and semi-matt colors on special body for heavy wall duty. Manufactured at Zanesville, 4¼ x 4¼ only. (Write for A. I. A. Permatile Folder.)

REFLECTA TILE

A series of pattern tiles in all standard enamel and semi-matt colors in which the decorative effect is achieved by the light reflection on contrasting planes. Manufactured at Zanesville, 4¼ x 4¼ only. (Write for A. I. A. Design Bulletin Plate A6.)

FAIENCE

Plain and decorated Faience tile of every type. (Communicate with our ART DEPARTMENT for special design treatments.)

FOUNTAIN AND SCULPTURAL PIECES

Sculptural pieces of special design are executed by our AETCO STUDIO specializing in distinctive and original ceramic creations.

FLOOR TILE

VITREOUS & SEMI-VITREOUS FLOOR TILE

In Standard Sizes

OHIO FLINTS HYDRAULIC TILES

CAMPAGNA SEMI-VITREOUS PAVING TILE

V-1337 Oatmeal Brown
V-1335 Light Oatmeal
V-1339 Dark Oatmeal Brown
V-1266 Black
V-1286 Green

LOMBARDIC MOSAIC

(Write for illustrated catalogue)

CERAMIC MOSAIC & SISTINE CERAMICS

(Write for illustrated folder A. I. A. 23A11)

For special designs communicate with our ARCHITECT'S SERVICE DEPARTMENT.

CANTERBURIC TILES

A range of red and brown tiles of variegated shades for hallways, outdoor walks and verandas. (Write for illustrated folder.)

VITREOUS BATHROOM ACCESSORIES

Aetco Flange Fixtures . . . Aetco Apartment Fixtures
Aetco Dowel Fixtures

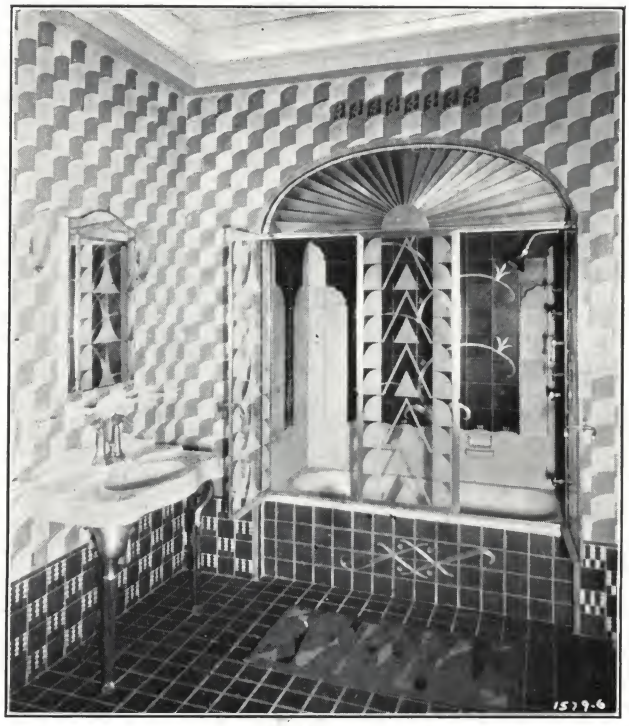
(Write for A. I. A. Aetco Accessories Catalogue)

CERTIFICATE OF GRADE

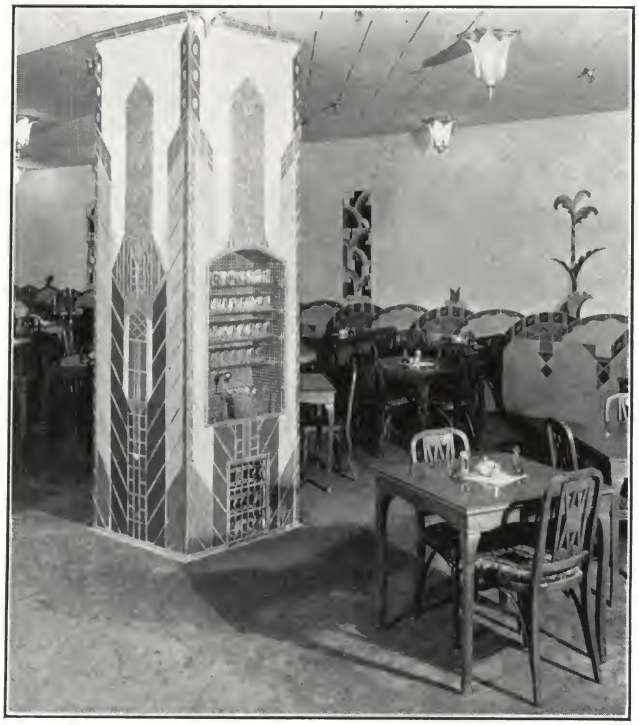
To insure proper protection in securing the quality of tile specified, ask for a grade certificate covering every detail on the invoice.

ARCHITECT'S DESIGN SERVICE

A trained force of designers is available to co-operate with the architect in working out distinctive designs for every type of building and for preparing color sketches from architect's blueprints.



MODERN BATHROOM TREATMENT



DECORATIVE FAIENCE MURAL TREATMENT

AETCO Tile designs are well adapted to the modern forms of decoration. Innumerable special shapes and novel color arrangements afford unlimited decorative possibilities. Our Architect's Service Department is available for suggesting appropriate treatments for individual requirements.

THE ARCHITECTURAL TILE COMPANY

Manufacturers of

"Architectural" Burned Clay Quality Tile

FACTORY AND HOME OFFICE KEYPORT, N. J.

DISTRICT SALES REPRESENTATIVES AND SHOW ROOMS

NEW YORK SHOW ROOM, 207-208 ARCHITECTS BUILDING, 101 PARK AVENUE, NEW YORK CITY
BOSTON SHOW ROOM, 801 ARCHITECTS BUILDING, 11 BEACON STREET, BOSTON, MASS.

DETROIT.....J. C. Moffat, 1900 E. Jefferson St.
CHICAGO.....F. R. Matson, 1404 Tribune Tower
BIRMINGHAM, ALA.....C. E. Edwards, 2915 7th Ave., S.
CHATTANOOGA, TENN.....R. O. Kloeber, 318 West 8th Street
CLEVELAND, OHIO.....Walter B. Shelar

Products

Wall Tile in colors and white.

Faience Tile in corresponding colors and other shades.

Bathroom Accessories in corresponding colors. Also colors to correspond with better grades of sanitary ware.

Quality

Architectural Tile is a *Burned Clay or Ceramic* product of quality. It represents over 40 years' experience in tile making. It has no superior . . . is beautiful in appearance, extremely durable, and suitable for use wherever tile can be used.

Duotone Effects—This is a recent "Architectural" development in which two tones of the same color are blended in one tile. We will gladly mail samples.

Colors and Textures—All colors are carefully selected and approved by well-known experts on color for their decorative value. The color textures are characteristically the same in all of our products, reflecting the individuality of our ware, having a soft sheen which is neither bright nor glaring—still it is not dull or flat.

Durability—We believe our glazes are fired to a higher temperature than any other tile of this character. This gives "Architectural" greater durability, and at the same time, it produces a beautiful, *everlasting* glaze of fine texture.

Grades

Architectural colored tiles are sold in two grades: Select and Commercial. Faience colored tiles are sold in two grades: Select and Commercial. White wall tile is sold in three grades: Select, Standard, and Commercial. Grading is done in strict conformance with the Department of Commerce Simplified Practice Regulations. A Certificate of Quality—guaranteeing the quality of any shipment—is provided when requested.

Sizes

Architectural Tile is supplied in the usual geometrical divisions of tile shapes, and if desired, can be supplied in any other shape or size in units of 6″ or less.

Reputation

Architectural Burned Clay Tile is used the country over. Any first class dealer will vouch for its quality. We shall be pleased to furnish a list of installations in public and commercial buildings, as well as in many of the finest residences in America.

Facilities

The factory at Keyport is equipped to produce select tile in large or small quantities, in any stock size, design or color, in the shortest time that modern equipment and capable workmen will permit.

Shipping—Being located on Raritan Bay, with good docking facilities, shipments can be made by water, as well as by rail or by motor truck.

Service to Architects

We maintain a service and art department to serve architects. Hundreds of architects—many of whom are nationally famous—are using this service.

Sketches—Colored sketches or drawings are prepared by capable members of our staff who specialize in this work.

Technical Advice—Any question concerning the manufacture or use of tile is gladly answered by men who are guided by over forty years' experience.

Samples of Tile—Samples of real tile are of inestimable value to the architect. We gladly mail samples promptly on request.

Printed Matter—Booklets, catalogues and bulletins of practical and historic nature are mailed periodically. We will gladly add your name to our mailing list.

Plant of the Architectural Tile Company at Keyport, New Jersey.

Continued on next page

EVERY SPECTRAL SHADE
of the
CARDINAL COLORS

The adjoining chart shows some of the standardized colors in which Architectural Burned Clay Tile is produced. But this is by no means the complete range, for we make tile in every spectral shade of the cardinal colors.

Special Duotone Colors—We have recently developed an interesting duotone or mottled coloring which is highly desirable for use where the architect wishes to evade the mechanical regularity of solid color. This can be obtained in all units including fixtures.

Matching Colors — When special colors are desired, architects are invited to communicate with us, for we specialize in this work and match any colors as closely as is humanly possible.

New Colors—Our art department is constantly experimenting with new color effects. Architects who desire up-to-the-minute information, samples, etc., will gladly be supplied upon request.

DO YOU WANT SPECIAL DESIGNS OR COLORS?

Being equipped with the most modern kiln facilities, we are able to produce any special color or design, quickly and economically, *no matter how small or large* your requirement may be.

You may wish to create a new effect in design or color for a single room, a residence, or a building. Whatever cooperation you desire, you will find our broad experience of value in creating the desired effect.

We shall be pleased to furnish you with further information if desired. Please communicate by mail or in person with any of our representatives, or with our home office.

CALCO TILE MANUFACTURING CORPORATION

Wall and Floor Tiles Machine-made and Faience

MAIN OFFICE AND FACTORY
4240 Santa Ana Street
SOUTH GATE, CALIF.
(Mailing address P. O. Box "N" South Gate, Calif.)
SOUTHERN BRANCH, 1820 Crockett Street, DALLAS, TEX.
HOLLYWOOD DISPLAY, 134 South La Brea, LOS ANGELES, CALIF.
LOS ANGELES DOWNTOWN DISPLAY, Main Floor Architects Building

Products

MACHINE-MADE WALL TILE in colored glazes, plain and mottled colors.

FAIENCE TILE, plain, hand-made and crown.

FLOOR TILE, ceramic and glazed.

MANTELS.

FOUNTAINS and POOLS.

DRAINBOARD TILE.

SPANISH and MOORISH TILE.

DECORATIVE TILE PANELS.

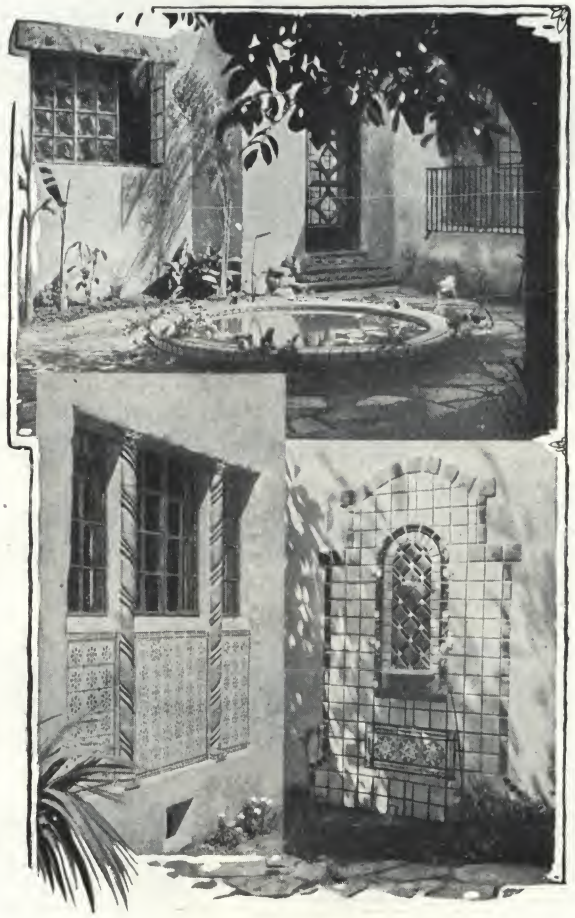
Machine-made Wall Tile

Made in satin matt and bright glazes, plain and mottled colors.

Trim in standard shapes and radius.

Faience Tile

Plain faience for wainscoting and floors, also trim. Bright and full matt glazes.



Hand-moulded faience for mantels, counters, etc., bright and matt glazes.

Double dipped hand-made and crown bisk in mottled glazes (KK line). This line is particularly adapted for wainscoting in public places, such as theater lobbies, hotel lobbies, dining rooms, and is also used extensively for counters, bulkheads and complete store fronts.

Floor Tile

Unglazed ceramics, 1 and 2-in. white hexagon. Basket weave and spiral patterns $1\frac{9}{16}$x$\frac{3}{4}$ in. in gray, green, white, blue, buff, pink and black.

Plain faience in 4x4, 3x3 and 4-in. hexagon, matt glazes.

Machine-made white body 3x3, $4\frac{1}{4}$x$4\frac{1}{4}$ and 4 in. hexagon, satin matt glazes.

Mantels

Our Aztec mantels are a special product made only in a medley of pastel shades in several sizes in combination with authentic reproductions of Mayan designs. Carried in stock for prompt shipment.

Conventional mantels are carried in stock in a number of standard designs as shown in catalogue.

Fountains and Pools

A number of standard designs are shown in our catalogue in effective combinations of bright colored faience and decorative tile.

We also make up special designs to meet the individual taste.

Drainboard Tile

2-in. Hexagon in satin glazes with glazed vitreous cap is the ideal tile for drainboard bottoms.

Colored glaze wall for splash.

Spanish and Moorish Reproductions

Colorful replicas of Spanish and Moorish designs suitable for fountain and garden use, store fronts, stair risers, reveals, wainscoting, and decorative trim of all kinds, both exterior and interior.

Decorative Tile Panels

Panels of mural decoration in practically any size. We will be pleased to prepare original sketches in color of any desired subject, or we can reproduce in colored glazes sketches or drawings submitted by the architect or artist.

Catalogue

Copy of our new catalogue gladly sent on request.

BATCHELDER TILES

BATCHELDER-WILSON COMPANY

2633 Artesian Street
LOS ANGELES, CALIF.

557 Market Street
SAN FRANCISCO, CALIF.

38 South Dearborn Street
CHICAGO, ILL.

101 Park Avenue
NEW YORK, N. Y.

Product

A High Fired, Clay Product of varied types, Glazed and Unglazed, with a common factor which permits unique combinations of color, glaze and texture.

TILES; PAVERS; PATINA GLAZES; TERRA COTTA; CRINKLE MOSAICS.

Drinking Fountains

See Sweet's Manufacturers' Index for Batchelder Drinking Fountains. We show typical wall and pedestal fountains in Patina Glazes.

Complete Data

We issue various illustrated catalogues and price lists available to architects:

Catalogue of Mottled Finish Materials
Mantel Catalogue
Drinking Fountain Catalogue
Ornamental Fountain Catalogue
Paver Catalogue
Staircase Construction
Special Fireframes
Patina Glaze Catalogue

Batchelder Tiles

Mottled Finish—They have a surface coloration of mineral slips fired to the same temperatures as the clay body assuring permanence. This material has a distinctive texture with many subtle color modifications. It is mellow toned, peculiarly appropriate for interior work, mantels, fountains, counters, wainscots, etc. Made in great variety of shapes, sizes and designs, with figure tiles, corbels, mouldings and borders to match.

Plain Tiles—Made with slightly rounded edges for recessed pointing as in mantels, fountains, wainscots. They are ⅝ in. thick up to and including 6x6 in.

Batchelder Mantels

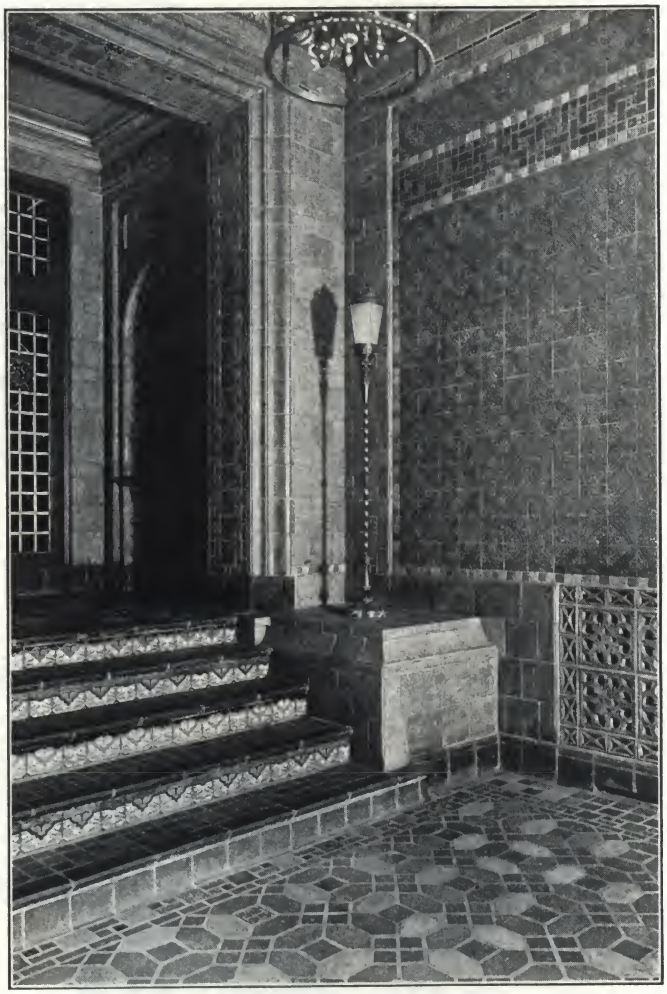
Made in mottled finish materials with many variations of style and price suitable for different environments. The distinctive characteristics are in the subtle color combinations and carefully studied designs. Spandrels, arches, hoods and many similar features are used in combination with plain tile units.

Fountains for Garden and Sunroom

These are of two general types—wall fountains with drip basin, and center fountains or pools. They are made in combinations of materials, patina, paver and mottled finish. We make many features such as bowls, drips, etc., in patina glaze useful in fountain construction.

Glazed Figure Tiles

Generally referred to as "Spanish Type." They are handmade in many designs, full glazed, with interesting color combinations. Especially useful for stair risers, wainscots, panels—in fact, wherever a mosaic of color and pattern is desirable. Made in two processes, "raised line" or "black line."



This Installation Combines All Types of Our Materials
PAUL FREDERICH OLSEN, INC., Chicago, Ill., Architects

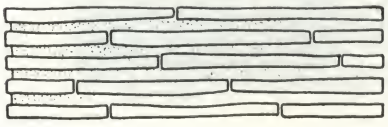
Batchelder Pavers

They are handmade, high fired, semivitreous, with a tough, compact body. They have a non-slip surface. They are unglazed, but have a color penetration throughout the thickness of the tile. Made in many shapes and sizes, and in colors from black to cream through the reds, browns and grays. Also made in greens.

Note: This material was originally intended for pavement installation only, but its wealth of soft toned colors has made it acceptable for wainscots, counters, and other similar uses. It has a very interesting texture contrast when used with our other materials.

Paver Random Strips

Are hand cut irregular strips approximately ¾ in. wide, 1¾ in. thick, with a maximum length of 12 in. Particularly interesting in color and form for firebox linings.



BATCHELDER PAVER RANDOM STRIPS - VARIED RANGES OF COLOR

Continued on next page

Batchelder Patina Glazes

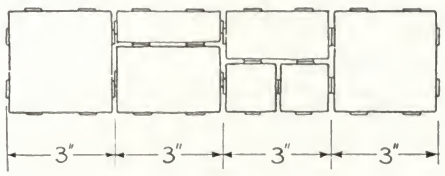
A full glazed product with a pleasing texture and without excessive gloss, made in a sequence of color blends—yellow, tan, gray-blue, blue, blue-green, green, orchid, gray-lavender, ivory, black. One value of these harmonious blends is in the dominant color note which may be established with other subordinate notes to catch the minor tones of a decorative treatment.

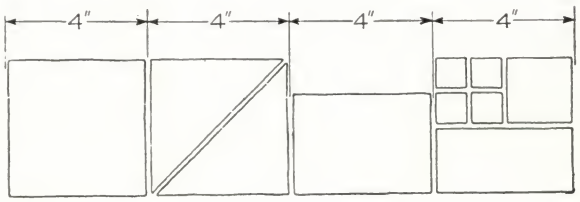
For bathroom use these tiles are made in 3x3-in. size, ½ in. thick, to set 12-in. joint centers with self-spacing lugs to insure proper joint widths. Cap, base, trim and fixtures to match.

Patina blends are also made in 4x4-in. size in color schemes generally darker than bathroom tiles, but contrasting favorably with them. They are ½ in. thick and are set three tiles to 12 in. joint centers.

Batchelder Crinkle Mosaics

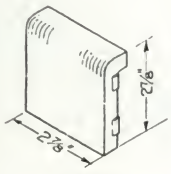
Hand cut with an irregularity of surface which adds unique character to an installation. All colors made in ⅞-in. size; certain colors also made in ½-in. size and in 1⅝-in. size. Made in solid body colors for pavements, slip glaze, dull surface colors, and full Patina glazes for wainscots, fountains, etc.

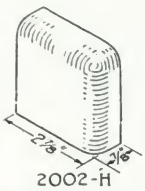


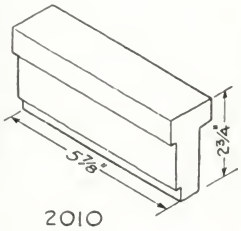


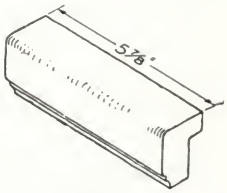
Typical Patina Inset Bathroom Accessory

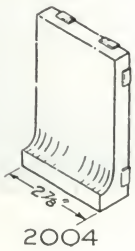
Attempt has been made to render the accessory as unobtrusive as possible rather than to make it the feature of a bathroom installation

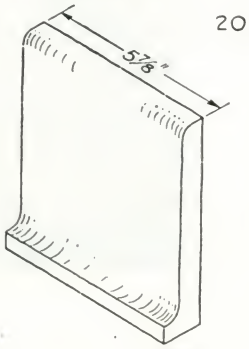


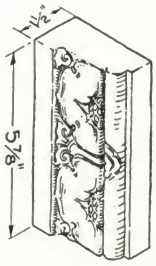


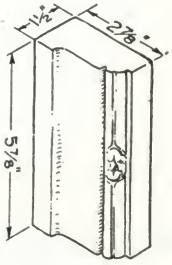


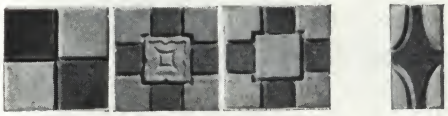


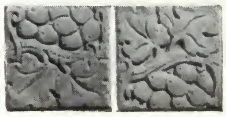


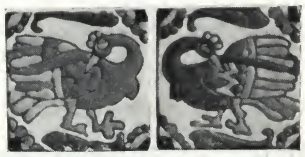


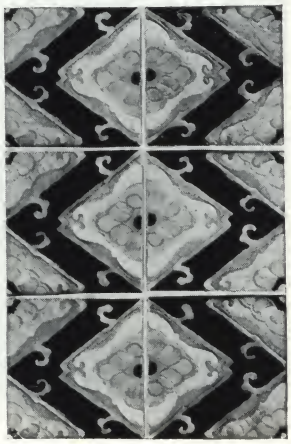












THE CAMBRIDGE-WHEATLEY COMPANY

REPRESENTING
THE CAMBRIDGE TILE MANUFACTURING CO. THE WHEATLEY TILE & POTTERY CO.
GENERAL OFFICES
CINCINNATI, OHIO
BRANCH OFFICES
NEW YORK, N. Y., 101 Park Avenue BOSTON, MASS., 301 Allston Avenue, Brookline CHICAGO, ILL., 16 E. Huron Street
PHILADELPHIA, PA. DALLAS, TEX., 2403 So. Harwood Street

Products

DECORATIVE TILE (Dust Pressed and Faience). Also Garden Pottery; Chimney Tops.

Tiles for Every Purpose

In addition to the varieties of tile here shown, THE CAMBRIDGE-WHEATLEY COMPANY produces a large and varied number of complete units for mantels, fire frames, mantel arches, fountains of all types, and similar installations.

Service

Designers are maintained at our New York and Chicago headquarters, as well as at our factories, to assist architects and contractors in planning their tile work.

New Catalogues on Request

Our latest catalogues of tile and hand-fashioned garden pottery will be gladly forwarded upon request. Specification sheets and full information on any specific items of the Cambridge-Wheatley line are always available.

A Bathroom Panel in the Home of John Beretta, Knoxville, Tenn.
Installed by INDESTRUCTIBLE MOSAIC and TILE CO.

The vivid coloring of this bright wall panel brings to this modern, beautiful bathroom a note of gay distinction

Men's Social Room

Hand-fashioned Florentine Faience Tile, with colored inserts, form the floor of the lounging room below. This rough, unglazed tile, in various patterns and sizes, is manufactured by an exclusive firing process which brings out vividly the natural colors of the clay, resulting in shades of unusual charm and beauty.

Such tile has recently been used with much success in many of America's larger homes. Architects appreciate its beauty and its dependable long life.

Pompeian Swimming Pool

A wainscot of brilliant reds, blues, blacks and yellows strikingly carries out the Pompeian decorative motif of this spacious tiled pool, one of the most beautiful in the United States. Note the charming, varied figure inserts in alternate base panels, and the spirited wave-theme bordering the pool itself.

Two Interior Views, West Side Branch Y. M. C. A., New York, N. Y.
DWIGHT JAMES BAUM, Architect; WILLIAM H. JACKSON CO., Tiling Contractors

THE CARLYLE-LABOLD COMPANY

Manufacturers of Clatone Face Brick

IRONTON, OHIO

SCIOTO QUARRY TILE

The tile of permanent satisfaction. Its initial beauty maintains its loveliness throughout the years, and its splendid construction guards against checking, cracking or warping common to ordinary tile. The varieties of color give wide opportunity to cater to every taste.

However, its beauty and lasting quality are not indicative of price. Its first cost, installation and upkeep are very conservative. Its exquisite appearance and continued satisfaction will confirm your buying judgment as the years go by.

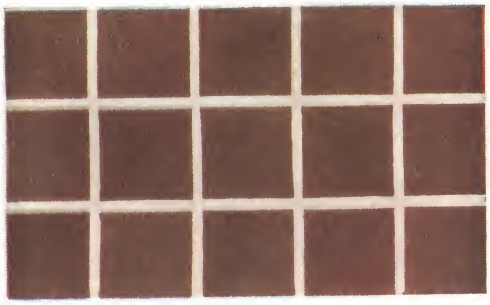
A complete line of all sizes, shades and grades carried in stock to facilitate immediate shipments. If you are planning a floor, court, solarium, garden walk, etc., Scioto Quarry Tile will meet your every expectation—especially for a permanent installation.

IRONTONE

Scioto Irontone is a very attractive shade of grey available from stock in **6x6, 4x4, 6x2 3/4, 2 3/4x2 3/4**, round top cove base, angles, bullnose, bullnose corners, stair treads, and tread corners. This shade is available in select, standard, and commercial qualities.

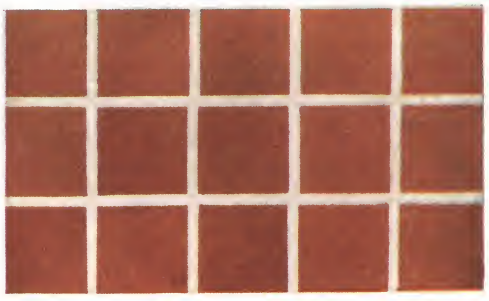
POMPEIAN

Scioto Pompeian is a very distinctive shade of clear buff available from stock in **6x6, 4x4, 6x2 3/4, 2 3/4x2 3/4**, round top cove base, angles, bullnose, bullnose corners, stair treads, and tread corners. This shade is available in select, standard, and commercial qualities.



MECCA

Scioto Mecca is a very attractive shade of plain brown resembling so much the Welch quarries. This shade is available from stock in **6x6, 4x4, 6x2 3/4, 2 3/4x2 3/4**, round top cove base, angles, bullnose, bullnose corners, stair treads, and tread corners. It is also available in select, standard, and commercial qualities.



NAVAJO RED

Scioto plain reds are available in three shades: Navajo, dark; Spanish, medium; and Indian, light. These shades are carried in stock in a complete assortment of sizes ranging from **2 3/4x2 3/4** to **9x9**, inclusive, with all standard trim.

Continued on next page

The panel on the left is made up of a mixture of our Navajo, Spanish and Indian reds, Oriental fireflash and Mecca brown laid in a random pattern using **6x6, 6x2¾** and **2¾x2¾**. Many very attractive patterns can be made by the use of mixtures of these various shades.

SCIOTO
QUARRY TILE

To those who know tile, Scioto Quarry Tile brings a new standard of excellence in materials, manufacturing and handsome appearance. As well as being superior in construction and loveliness it is lighter in weight.

Instead of the old-fashioned kiln with its periodic firings and varied temperatures, the Harrop Tunnel Kiln is used. This guarantees not only unusual heat, but an absolute uniformity that you will appreciate in the finished product.

The effect shown above is secured by the use of our various shades of plain red, Oriental fireflash, Mecca brown, Arabian blend and Irontone grey. The border is made up entirely of our Oriental fireflash.

The shade on the right is our new Arabian blend laid in random pattern using **6x6, 6x2¾** and **2¾x2¾**. This shade is available from stock in **6x6, 6x2¾, 4x4, 2¾x2¾**, round top cove base angles, bullnose, bullnose corners, stair treads and stair tread corners. This shade is also available in elongated hexagon and half hexagon.

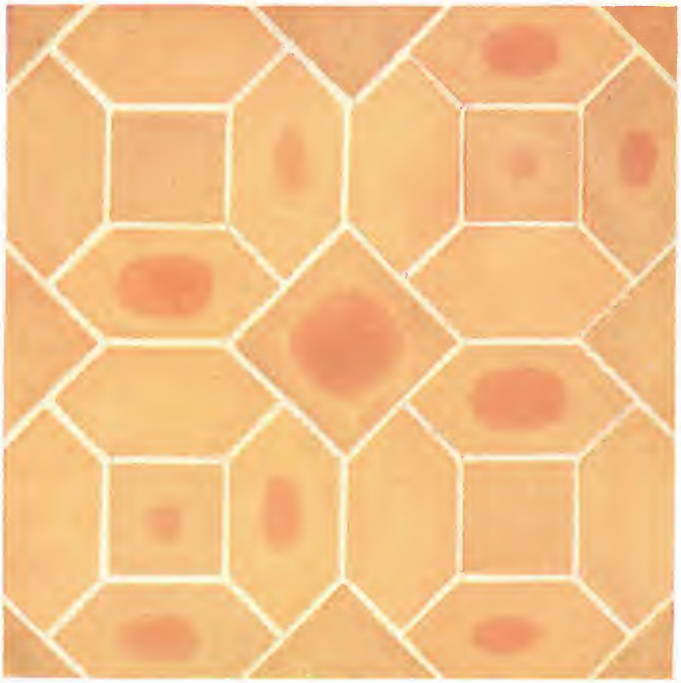
Continued on next page

On the right the elongated hexagon, **8 ¼x4x¾**, in plain reds and fireflashed red Oriental laid with combination pattern using **6x6** in Mecca brown and **4x4** in fireflashed red and plain reds. This is only one of the many patterns in which the elongated hexagon can be used in combination with standard sized tile in various shades to produce some very attractive color effects.

PERMANENTLY BEAUTIFUL

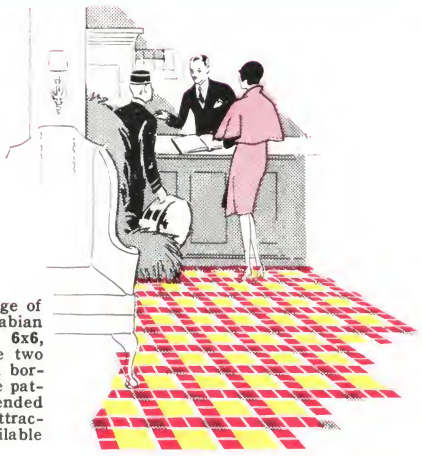
The Carlyle-Labold process is to place a relatively small amount of tile on a car, and then move it slowly through the continuous firing tunnel. This allows heat access to every tile. It means individual attention as compared with ordinary mass production methods.

Tell us what you wish to accomplish. We will be glad to cooperate in the production of special shades. Whether your order is large or small, it will receive prompt and courteous attention.



Above the elongated hexagon in our Arabian blend laid in a pattern using **6x6** and **4x4** with the hexagon. Many other attractive patterns and color effects can be obtained by the use of these hexagon and other shades and sizes of stock tile.

On the left a very attractive range of shades—a combination of the Arabian blend and Irontone grey. The **6x6**, **6x2¾** and **2¾x2¾** sizes in these two shades are used in the field with a border of the Arabian blend. These patterns in the various colors are intended to give only an idea of the many attractive patterns and color ranges available in Scioto Quarry Tile.



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B. MIFFLIN HOOD COMPANY

Manufacturers of Floor Tile

DAISY, TENN.

TELEPHONE OR TELEGRAPH, County 5606, Chattanooga, Tenn.

For Branch Offices, see page on Roof Tile

Product

Hood's Floor Tile.

For our Roof Tile page, see Manufacturers' Index.

Quality

Hood's tile is made from pulverized pottery, mixed with high grade shale.

DATA CHART—FLOOR TILE
Sizes and Thicknesses of Hood's Tile

Square		Rectangle		Triangle	
Size, in.	Thickness, in.	Size, in.	Thickness, in.	Size, in.	Thickness, in.
8 x8	¾ and 2	12x6	1½	8 x8	¾ and 2
6 x6	¾ and 2	8x4	1½	6 x6	¾ and 2
4 x4	½, ¾ and 2	8x3¾	¾	4 x4	¾ and 2
3¾x3¾	¾	6x3	½	3¾x3¾	¾
3 x3	½ and ¾	6x2¾	¾	2¾x2¾	¾
2¾x2¾	¾	6x2¼	1		
2¼x2¼	1	8x2¼	1	End Angles	
1⅝x1⅝	¾	4x2¼	1	8 x3¾	¾
		6-in. hexagon x ¾-in. thickness.		6 x2¾	¾
		8x3¾-in. elongated hexagon in ¾-in. thickness.			

Specials: Bullnose one side, bullnose two sides, roll and square top cove, base, internal and external angles, also wainscot fittings, etc., to match. Also 6x6x1½ bullnose steptreads.

Colors

Hoodbuff Tiles—Include a full range of natural colors from a light buff through intermediate tones of golden buffs, tans and warm grays to an occasional warm brown or extremely dark tan. These colors are obtained from a mixture of clay and shale.

Hoodgray Tiles—Run in a varying range of gray tones and here and there an almost invisible spot of warm tan showing. This comes out just enough to give the floor warmth, but not enough to be noticeable. This color range is suitable for the more formal floors. These colors are obtained from a mixture of clay and shale.

Pyro-Tynt Quarries—Include a full range of natural fireflashed shades in a random range, from slight flashed reds to deep greenish-bronze. The gradation of color and spotting is absolutely at random and no attempt can be made to sort for any particular color effect. These colors are produced from straight shale, and can be used to very good advantage in producing an extreme range of colors, with the lighter buff shades of the Aragon Tile.

Aragon Quarries—Include a range of shades from a light cream buff with pinkish centers and buff edges through the solid pinkish tones, to darker tans and speckled russets, with an occasional purplish-brown tone. These are produced from a mixture of straight shale and terra-cotta clays. An extremely wide range can be effected by a mixture with the Pyro-Tynt Tiles, which will give a range from light cream buffs to dark greenish and purplish bronze.

Regular Reds—*Shade 3*—Medium red tones, varying slightly.

Shade 4—Dark red, as near uniform as possible in quarries.

Grades

Perfected—Ground after firing, on all edges to produce perfect dimensions and straight edges, permitting string line fine joints.

Select—Specially selected and ground on two wire cut ends to produce exact length and straight edges.

Standard—Represents the standard of Hood's manufacture, reasonably true and uniform.

(B)—(Commercial)—A good quality of tile with minor imperfections and defects.

Rubble Random—Tile of odd and irregular shapes possessing exceptional color value resembling autumn foliage. Comes in uniform thickness. Many artistic settings are made with Rubble Random.

Shapes

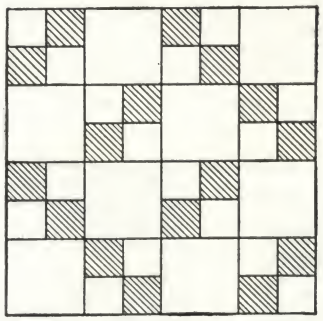
Special shapes, other than stock specials, will be executed in accordance with the architect's designs.

Samples

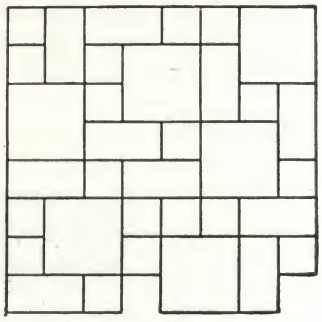
Samples and literature gladly sent on request.

Hood's "Quaramics"

"Quaramics" are mounted on paper sheets of approximately 2 sq. ft. each for shipping and setting. They are furnished in many harmonious and contrasting patterns. They are what is known as a plastic stiff mud tile as distinctive from the dry dust pressed.



Design F-23



Design—Random

They are produced in all the colors as described to the left and are quite different from anything previously on the market.

Note: Special patterns designed by the architect will be mounted and furnished for slight additional cost. Sample boards cheerfully furnished on request.

Sizes—2⅛x2⅛ in., 2⅛x1$\frac{1}{32}$ in., 1$\frac{1}{32}$x1$\frac{1}{32}$ by ¼ in. thick.

Hand Fettled Pavers

Edges rounded by hand giving irregular hand-made effects. Furnished in all colors except uniform red.

Hood's Cla-Slab Garden Blocks

Hand-made in sanded slop-mould, with weathered rocky edges, and surface. Colors are natural burned clay and flashed tones. Especially suitable for slab inserts in grass for stepping stones and garden walks, or for laying with depressed cement joint for terrace and interior slab floors.

Sizes—(1½ in. thick) 5½x5½, 5½x12, 5½x18½, 8¾x12, 12x12 and 12x18½ in. (to use a 1-in. joint when laid in ashlar pattern). We will be glad to make other special sizes to order, if practical.

"Cla-Slab" Garden Blocks

ESTABLISHED 1893

HANLEY COMPANY

Manufacturers of Quarry Tiles for Floors

BRADFORD, PA.

NEW YORK OFFICE: 565 Fifth Avenue

BOSTON OFFICE: 260 Tremont Street

PLANTS: BRADFORD, PA., SUMMERVILLE, PA.

SALES REPRESENTATIVES IN ALL PRINCIPAL CITIES

Products

QUARRY and FLOOR TILES; PROMENADE TILE; PACKING HOUSE FLOOR BRICK.

For our pages on Face Brick, refer to Manufacturers' Index.

TRADE-MARK

Quarry and Floor Tiles

Hanley Flame-tone Colored Tile—Hanley Quarry Tile are being produced in the variety of color depicted below and on next page which has never before been available to the architect. Tile shipped in green blends, brown blends, black blends and fireflashed blends in any sizes desired for patterns.

Hanley Red Quarries are noted for their extreme density and are furnished only in dark shades.

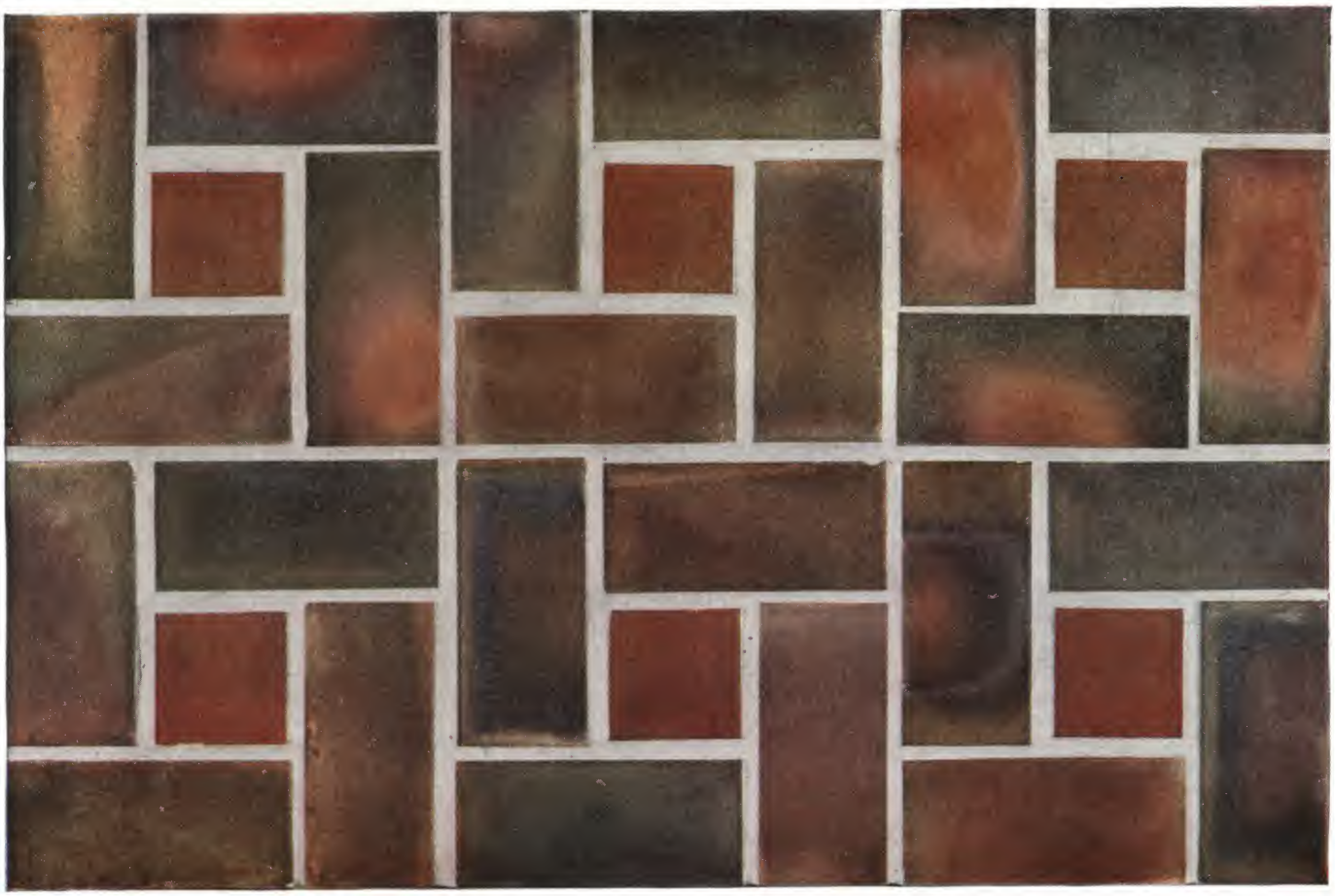
Hanley Promenade Tile

Hanley Promenade Tile are used extensively for roofs and terraces of large buildings.

These tile are available in a range of colors, including russets and fireflashed colors, which blend with the face brick colors of the adjacent exterior walls.

Acid Resisting and Packing House Floor Brick

These specialties are made 8x4x1¼ in. They are extreme in density, and mechanically perfect to resist acids and corrosive materials working into the joints.



Continued on next page

HANLEY HEATHERSTONE QUARRIES

LUDOWICI-CELADON COMPANY

Makers of Imperial Floor Tiles

104 South Michigan Avenue, CHICAGO, ILL.

NEW YORK, N. Y., 565 Fifth Avenue

WASHINGTON, D. C., 738 15th Street, N. W.

FACTORIES

NEW LEXINGTON, OHIO

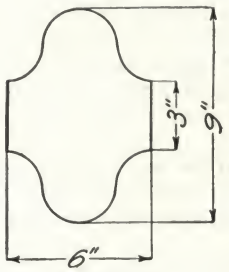
COFFEYVILLE, KAN.

PERU, KAN.

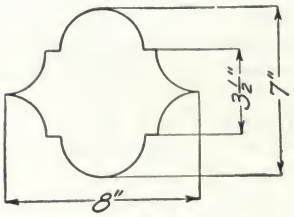
For this page in color, see our cover page under Roofing Tiles

FLOOR TILES

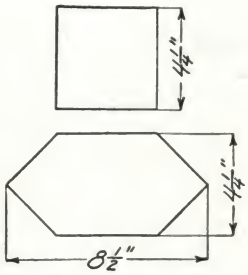
These shapes, in colors and textures originally manufactured for individual work of certain architects from their own designs, are now produced in quantities allowing their more general use. They are moderately priced.



Provence



Valencia



Renaissance

PIECES PER SQUARE FOOT

Based on ⅛" mortar joint.

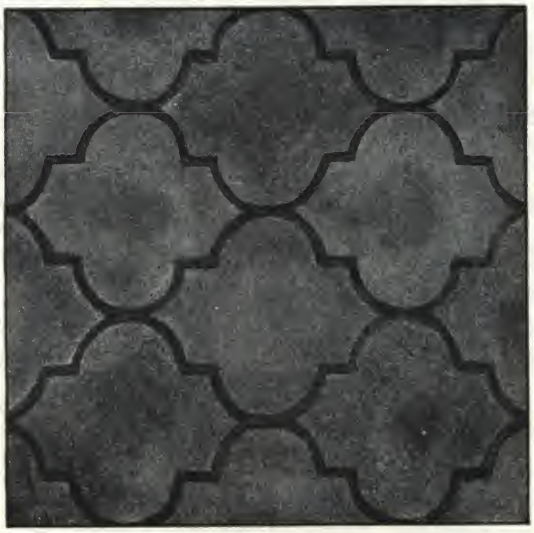
Provence, 3.86

Valencia, 4.28

*Renaissance, squares, 1.88

*Renaissance, hexagons, 3.76

*Based on design showing square surrounded by hexagons.



KRAFTILE COMPANY

High Fired Colored and Decorative Tiles for Walls and Floors with Bathroom Fixtures to Match

MAIN OFFICE AND PLANT

NILES, ALAMEDA COUNTY, CALIF.

BRANCH OFFICES

SAN FRANCISCO, CALIF., 55 New Montgomery Street

CHICAGO, ILL., 567 E. Illinois Street

LOS ANGELES, CALIF., 4963 Sunset Boulevard

EXPORT OFFICE, W. W. Mitchell, Manager, Robert Dollar Building, SAN FRANCISCO, CALIF.

Personnel of Company

Kraftile Company is headed by A. Clay Myers. Participating in the company are J. L. Kraft, J. F. Whitney, C. H. Kraft and E. Ridgway, chairman of the board, president, vice-president and treasurer, respectively, of the Kraft-Phenix Cheese Corporation, and H. E. Leash, president of the International Wood Products Co., a subsidiary of the Kraft-Phenix Cheese Corporation.

HIGH FIRED Kraftile Company

TRADE-MARK

Kraftile Products

High Fired Sized Faience Tile, with handcraft texture and dull semi-mat finish for walls, floors and swimming pools.

High Fired Decorative Faience Tile in Moorish, Spanish, Persian and Tunisian designs.

High Fired Faience Tile in Mosaic Effects with the design groove-outlined for grouting.

Special Opaque Kraftile, for use in public washrooms, basements, kitchens and subways, and wherever the tile is subject to stains from dampness or seepage.

Scum Gutters for swimming pools.

Bathroom Accessories.

Kraftile Cutter.

For Kraft-Enamel Hollow Tile, Structural Tile with a Wall Tile finish, see Manufacturers' Index.

Kraftile High Fired Faience

To understand the superiority of Kraftile it is necessary to explain the difference in manufacturing methods.

The Usual Veneering Process—Most tile is made with an encaustic or "dust" body, dry pressed into shape. This body is fired in the kiln and then withdrawn. After cooling, the glaze is applied and the tile receives a second, quicker burning at a lower temperature. *The glaze is therefore applied by the veneering method.*

The Kraftile Monolithic Method—First of all, to secure a body of great strength the Kraftile manufacturers follow the centuries-old practice of brickmakers. A body of plastic fire clay is made: special high temperature clay that is moulded when wet.

After the excess moisture is removed in a dryer the Kraftile glaze is applied *and the body and the glaze are burned in one long firing at a tremendously high temperature.*

The result is, the glaze penetrates the thousands of tiny pores in the tile body and the single firing creates an absolute and unbreakable bond between the glaze and the body. *This is the Kraftile monolithic method,* responsible for Kraftile's remarkable enduring qualities.

Because of this monolithic method of manufacture Kraftile can be guaranteed against cracking, crazing and spalling, or lifting of the glaze. The glaze cannot lift because it is really a part of the tile itself.

Kraftile's Advantages

The Body—Being made of plastic fire clay, the body has great tensile and compressive strength. It is well known that fire clay has a natural affinity for mortar. When laid up, capillary attraction draws the mortar into the porous Kraftile body and the tile adheres permanently and closely to the wall.

The Enamel or Glaze—is a special formula with the most astonishing resistance to heat, freezing, acid and wear. Tests have shown it capable of withstanding an instant change from freezing to boiling temperature. Muriatic acid, and other acids equally strong, may be poured upon the tile without injury.

Remarkable Resistance to Wear—Imagine an enamel so tough and wear-resistant that it will withstand an abrasive action sufficient to wear down one-half inch of cement as used on sidewalks.

Easy to Keep Clean—Wherever Kraftile is used cleanliness is easy to maintain, since Kraftile is non-absorptive and stainless, and a light cleaning with a damp cloth or mop keeps it immaculate.

Sized to 1/32nd Inch—Kraftile is a *sized* faience tile, made all in "A" size, accurate within 1/32nd of an inch. Kraftile may be laid with a close joint that enhances its beauty and affords no lodging place for dust.

Kraftile naturally lays 4 5/16 in. to the tile. In detailing, this dimension is dependable.

Laid Quickly—Kraftile is made with a beveled edge. In laying, each tile is set tight against the others, the beveled edges leaving a 1/16-in. wedge-shaped space for grouting, at the same time keeping load off the enamel face. The use of strings or pegs is done away with.

Kraftile cuts quickly, a stroke with a glass cutter over the enamel and a tap in the back with a hammer making a clean cut.

These distinctive features of Kraftile permit it to be laid in the wall with a great saving of time and labor.

Kraftile is surfaced back and front, and makes an absolutely true wall and floor, since all warp is taken out of its face and back.

No Interruption to a Kraftile Installation—Since Kraftile is made all in "A" size, and has a simplified trim, the tile contractor has no difficulty in keeping a complete stock. Therefore, the architect, in specifying Kraftile by name, minimizes the chance of a job being interrupted while missing pieces are secured.

Kraftile's Uses

For Floors as Well as Walls—The unusual wear-resistance of Kraftile permits us to recommend it unreservedly for use on floors as well as walls, even under heavy traffic conditions like those encountered in building lobbies. Thus, floors of tile in delicate plain shades or decorative effects harmonizing with the walls, are possible.

For Use Under the Hardest Conditions—Kraftile is recommended for exterior work as well as interiors. Neither the torrid zone nor frigid cold affects it. It is used successfully at the back of ranges, around ovens and inside refrigerator showcases, a severe test of tile's durability. It does not break loose, crack or craze even when installed around pilasters or counters where it is subjected to constant rubbing or kicking.

Used Throughout the Home—For bathrooms, kitchens, floors, rug borders, wainscoting, steps and stair risers, arches, courts, fountains, decorative panels, outdoor and indoor plunges, etc. In all these places Kraftile affords fadeless, lasting beauty that will be unmarred by the years.

Continued on next page

Comparative Wear Tests

Conducted by F. W. Dietrich, Associate Professor of Engineering, Leland Stanford University.

These tests were made on a machine which imitates the wear produced on floors in service. Kraftile faience, red quarry tile, portland cement and marble were placed in the machine to discover how much of the *total thickness* of the other materials would wear through before the Kraftile *enamel* was removed.

Professor Dietrich states, "It can be said that *one-half inch of portland cement* would be abraded under the same conditions that would completely remove the glaze from K-tiles (Kraftile).

"The conclusion is reached that the K-tiles (Kraftile) can be safely recommended as flooring material for pedestrian traffic in hotels, stores and other public buildings, even for heavy traffic, and that they will last as long as *one-quarter inch vitrified (quarry) tile, one-half inch of effective thickness portland cement,* and *nearly three-quarters of an inch of effective thickness of marble.*"

Freezing Tests

Conducted by Hewitt Wilson, Ceramic Engineer with the University of Washington.

These tests were made to ascertain the comparative resistance of Kraftile to temperature changes and also the strength of its body and enamel and of the union between body and enamel.

Thirty pieces of Kraftile chosen at random and thirty pieces of tile of ten other well-known makes were tested by being alternately frozen for five hours and then placed in hot water for thirty minutes.

After twenty-five tests one piece of Kraftile showed a one-half inch crack in the glaze. *All the other pieces of Kraftile were perfect.*

None of the other pieces of competing tile withstood the test. Some crazed after the fifth and sixth freeze. Others showed cracks, spalls and lifting of glaze from body.

The greater strength of the Kraftile body and enamel was clearly demonstrated by these tests.

Plain Colored Kraftile

Kraftile is available in a large range of stock colors.

Stocked in 4¼x4¼-in. size, square or hexagonal, with all necessary bases, caps, angles and trims. *Special sizes, shades and shapes made to order.*

Decorative and Mosaic Kraftile

Kraftile is available in a large number of authentic Spanish, Saracenic and Persian stock designs, for wainscoting, bases, borders, panels, stair risers, inserts. Possessed of the same enduring qualities as plain colored Kraftile it is suitable for exterior as well as interior use, and for floors as well as walls.

Mosaic Kraftile is a special decorative type with the design groove outlined. When the grooves are pointed it gives the effect of old Mosaic.

Kraftile for Plunges

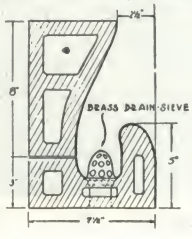
Kraftile's extraordinary durability makes it ideal for both outdoor and indoor plunge work. Its great strength of body and enamel makes it proof against cracking and crazing. It is wear-proof, craze-proof, frost-proof, stainless, and will not fade.

Thus a Kraftile plunge will retain its full beauty many years longer than less durable tile.

Kraftile's handcraft textured, semi-dull mat finish makes a safe stepping surface. Kraftile may also be obtained in a special "non-skid" texture.

Kraftile Special Scum Gutter

Readily cleaned from the rim of the pool and yet it is so protected that a swimmer's foot cannot be caught in the trough. Also made in other shapes and colors to match the tile.



Special Opaque Kraftile

For use in public washrooms, basements and subways, we manufacture a special opaque Kraftile.

Stains, originating in the back of the wall, cannot force their way through the enamel and thus mar the appearance of the tiling. To demonstrate this, saturate back of tile with ink and note that face is not affected in the slightest degree.

Kraftile Fixtures

KRAFTILE COMPANY manufactures a complete line of soap dishes, tumbler holders, hand grips, toilet paper holders, towel bars and strop hooks to match all stock shades and in special shades to order.

Kraft-Enamel Hollow Tile

A structural tile with a wall tile finish. Its body, enamel and manufacturing process are identical with those of Kraftile Faience Tile. It therefore affords in one material both the wall and the finish. One craft, the mason, does the entire job, thus saving time, labor and construction costs.

For partitions, corridors and exterior load bearing and curtain walls.

In a wide range of plain colors (the same as Kraftile Faience) and in decorative design.

For complete data, see Manufacturers' Index.

Kraftile for Export

KRAFTILE COMPANY is particularly well placed to supply its tiles for export. Not only do we offer a stock line of colors, adaptable to the needs of individual countries and markets, but we also are equipped to make special designs of native types.

Packing—Kraftile is carefully packed with sawdust added as a factor of safety, insuring perfect deliveries. Our packing is standardized, 10 square feet being packed in each box. Each box weighs approximately 48 pounds gross and measures ½ cubic foot. This convenient size permits Kraftile to be economically handled even on mule back.

Shipping—The location of our factory at seaboard permits us to make prompt deliveries at lower freight costs than could be obtained otherwise, thus enabling you to buy quicker and cheaper, to carry less stock, and to turn your stock more frequently.

Terms—All prices are f.a.s. San Francisco, export packing included. We allow 2% discount for cash or letter of credit with order. Credit in accordance with your established needs and customs will be allowed if approved by our Credit Department and manager of exports.

Kraftile Cutter

The Kraftile Cutter cuts brick, tile, glass, slate, composition, or marble. Designed and built to meet the exacting requirements of the Kraftile Factory, the Kraftile Cutter has demonstrated its worth under conditions far more severe than any to be met in contract work.

The outstanding feature of the Kraftile Cutter is its precision at high speeds, obtained by mounting the cutting wheel on a separate, belt driven shaft, with a supporting bearing within ½ in. of the wheel itself.

The Kraftile Cutter's light weight makes it easy to transport. And its sturdy ½ hp. motor operates from house current (specify a-c. or d-c. in ordering). By speeding up work, by eliminating tile waste due to inaccurate cutting, and by spending its time on the job and not in the repair shop, the Kraftile Cutter makes room for many an extra profit in handling tile contracts.

MART & LAWTON, INC.

Sole Importers of "Heatherbrown" Welsh Quarries

286 Fifth Avenue
NEW YORK, N. Y.

DEALERS LOCATED IN PRINCIPAL CITIES OF UNITED STATES AND CANADA

Products

HEATHERBROWN WELSH QUARRY TILE.
HEATHERBROWN SHINGLE ROOFING TILE.
HEATHERBROWN CHIMNEY POTS.

HEATHERBROWN
TRADE-MARK

Heatherbrown

HEATHERBROWN Quarries are a rich variegated brown quarry tile, manufactured in Wales from a stratum of clay which contains unusual chemical properties that produce, when fired, the characteristic HEATHERBROWN color. HEATHERBROWN Quarries are not a hard-fired red tile, and none of the ingredients of a red quarry enter into the manufacture of HEATHERBROWN.

The warm soft tones of HEATHERBROWN Quarries harmonize with any scheme of decoration. Their rugged, rustic qualities delight the eye, whether for residential or other uses and lend an air of distinction and individuality.

SAMPLES DISPLAYED WITH ARCHITECT'S SAMPLES CORPORATION NEW YORK, N.Y.

An important feature is that no two tiles are exactly alike in shade, and yet, when an entire space is laid, the various tones of brown blend into one harmonious unit. As a consequence, no two HEATHERBROWN installations are exactly alike, and therein lies their individuality. The ordinary machine-made products, when laid in any fairly large field, become monotonous to the eye, but not so with HEATHERBROWN.

Adaptability

HEATHERBROWN Quarries are extensively used in office buildings, hotels, banks, hospitals, churches, country clubs and, in an ever-increasing measure, are being specified for installation in private estates for porches, entrance halls, dining rooms, billiard rooms, sun parlors, terraces, and for staircase steps and risers, etc.

Substitution

Repeated attempts to substitute for HEATHERBROWN Quarries, the quarries of other manufacturers without the knowledge of the architect, have come to our attention. In order to preclude the possibility of substitution, it is highly desirable that the architect incorporate in his specification the phrase—"HEATHERBROWN Welsh Quarry Tile as Imported by MART & LAWTON, INC., of New York City."

Every genuine HEATHERBROWN Quarry can be identified by the words "HEATHERBROWN Made in Wales," which are stamped in the clay on the back of each tile. Insistence upon this trade-mark will be a safeguard to the architect and owner.

The trade-mark "HEATHERBROWN" is registered in the United States, England and Canada and its use in connection with any other brown quarry tile is prohibited by law.

Sizes

HEATHERBROWN Quarries are carried in a complete range of standard sizes from 12x12 to 4¼x4¼ in. as well as all necessary trimmers such as bases, caps, plinths and corners. Also HEATHERBROWN Brickettes for fireplace linings.

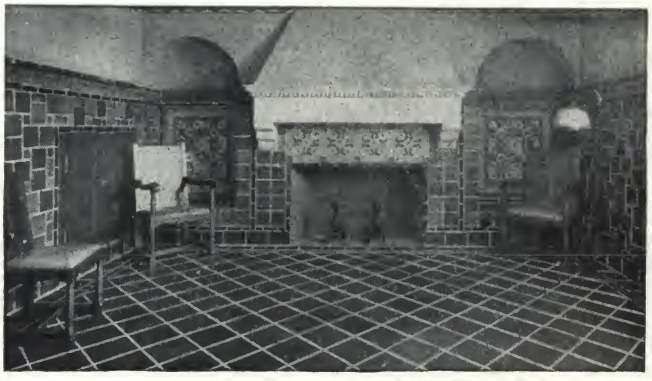
Advantages

(1) No after treatment such as oiling or waxing is required.

(2) We guarantee, that if properly installed, HEATHERBROWN Quarries will withstand exposure to the weather.

(3) The non-slip properties of HEATHERBROWN Quarries provide an element of safety that should not be overlooked.

(4) HEATHERBROWN Quarries are impervious to moisture, stains and dirt which renders them highly desirable for installation in kitchens, laboratories, etc., as any foreign matter may be easily removed by washing.



Dormitory, Phillips Exeter Academy, Exeter, N. H.

Shingle Roofing Tile and Chimney Pots

These, in numerous patterns, can be obtained in the same beautiful HEATHERBROWN shade: Complete information upon request.

Catalogue

A complete catalogue in color, and samples, will be furnished upon request.

THE MOSAIC TILE COMPANY

Real Tiles for All Architectural and Decorative Purposes

Main Office and Factory: ZANESVILLE, OHIO Plant No. 2: MATAWAN, N. J.

NEW YORK OFFICE
327 W. 42nd Street

CHICAGO OFFICE
1336 W. Washington Blvd.

ST. LOUIS OFFICE
2016 Railway Exch. Bldg.

LOS ANGELES OFFICE
2470 Enterprise Street

SAN FRANCISCO OFFICE
568 Seventh Street

MOSAIC

PRODUCTS

(Pages referred to are in this Mosaic Tile Section)

FAIENCE (*pages 2-9*)

For floors and walls, both exterior and interior. Also decorative uses. Plastic made, extremely hard-backed, thoroughly hand-wrought character.

Decorative Faience (*page 2*)

Fountains and Mantels (*page 3*)

Faience Mosaics (*page 8*)—Mosaic sizes in Faience colors.

WALL TILES (*pages 10-13*)

Satin Finish Matts (*pages 10-11*)—Stand next to Faience for fine interior wall treatment. 24 soft pastel colors.

Mozane Enamels (*page 12*)—Highly serviceable, economical, bright glazed tiles for walls.

Decorative Borders (*page 13*)

FLOOR TILES (*pages 10-11, 15, 17-19*)

Vitromat (*pages 10-11*)—Glazed vitreous and semi-vitreous tiles in same colors as Satin Finish Matts.

Ceramic Mosaics (*pages 15-17*)—Wide range of designs, colors and shapes, in several textures. Include Aventine Ceramics, Velvetex Ceramics, Rhombic Designs, Non-Slip Granitex Ceramics.

Flint Floor Tiles (*page 18*)—An unglazed type for severe wear.

Ironstone and Bluestone (*page 19*)—Plastic made, unusually hard and durable, in soft colors, which give rich effects. Sizes up to 12 x 12. Also in small "mosaic" sizes.

Faience Plaque No. 3163. Diameter 18 in.
Reproduced from Tile

BATHROOM ACCESSORIES—All Tile (*page 14*)

SWIMMING POOL DESIGNS (*page 16*)

TRIM TILES (*page 20*)

Mosaic Tiles are in every respect high quality products, made by one of the largest, oldest and most modernly equipped plants in the industry.

Architectural Designing

The design departments in our home and branch offices are familiar with architects' requirements, and will prepare for architects, color sketches and suggestions for effective tile treatments. This service is freely and gladly rendered. Furnish us with blue-prints, specifications or other definite data. We are also prepared to execute faithfully and promptly in tile the architect's own designs.

To Specify Mosaic Tiles

Architects who want to make sure that Mosaic Tiles are used, should include in their specifications some such wording as, "tile work shall be of Mosaic Tiles manufactured by The Mosaic Tile Company, of Zanesville, Ohio." Also ask for a certificate of quality.

We also suggest the short form of the Associated Tile Manufacturers (see their section in Sweet's), which incorporates the Basic Specification for tile work.

Securing Good Installations

Mosaic Tiles are distributed through and installed by reliable tile contractors throughout the country, including leading firms in the trade. Knowing that the selection of good tile contractors is important we will gladly furnish, if desired, names of those who are properly qualified.

Consult Branch Offices

The facilities of our branch offices, listed above, all of which have Mosaic Tile display rooms, are completely at the disposal of architects. Feel free to make use of them at any time. Samples and descriptive booklets supplied on request.

Continued on next page

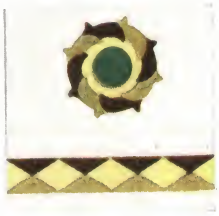
MOSAIC DECORATIVE FAIENCE

6 x 6
Pattern 5015
Decoration 6498

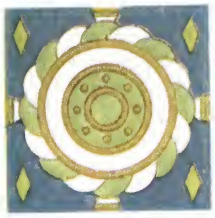
6 x 6
Pattern 5016
Decoration 6499

6 x 6
Pattern 5017
Decoration 6500

6 x 6
Pattern 5018
Decoration 6501



6 x 6
Pattern 5019
Decoration 6502

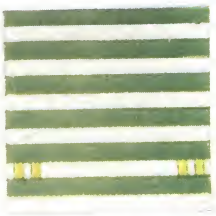


6 x 6
Pattern 5020
Decoration 6503

6 x 6
Pattern 5021
Decoration 6504

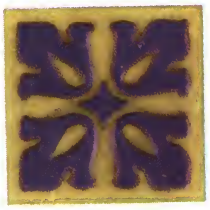
6 x 6
Pattern 5022
Decoration 6505

6 x 6
Pattern 5023
Decoration 6506



6 x 6
Pattern 5024
Decoration 6507

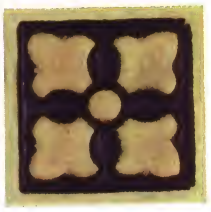
6 x 6
Pattern 3008
Decoration 6496



6 x 6
Pattern 3009
Decoration 6493

6 x 6
Pattern 3083
Decoration 6524

6 x 6
Pattern 4189
Decoration 3052



6 x 6
Pattern 3096
Decoration 2016

6 x 2
P. 4225
D. 6525

6 x 2
P. 4210
D. 5246

6 x 2
P. 4062
D. 2992

6 x 2
P. 4074
D. 5158

6 x 6
Pattern 3092
Decoration 6415

6 x 3
P. 4040
D.1091

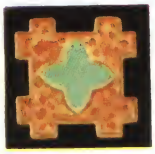
6 x 3
P. 3103
D. 5396

6 x 3
P. 3090
D. 5287

6 x 3
P. 3108
D. 2392

4¼ x 4¼
Patt. 3093
Dec. 2841

4¼ x 4¼
Patt. 3015
Dec. 5043



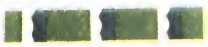
4¼ x 4¼
Patt. 3028
Dec. 6256

4¼ x 4¼
Patt. 3019
Dec. 6526

4¼ x 4¼
Patt.3074
Dec. 2810

4¼ x 4¼
Patt. 3082
Dec. 6258

4¼ x 4¼
Patt. 4226
Dec. 6527



6x1 P. 5025 D. 6508

6x1 P. 5026 D. 6509

6x1¼ P. 4038 D. 4679

6x1¼ P. 4035 D. 892

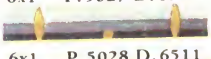
6x1¼ P. 3101 D. 6363

8¾ x 4¼
Patt. 3202
Dec. 4007

8¾ x 8¾
Pattern 3201
Decoration 6428

8¾ x 4¼
Patt. 3203
Dec. 4007

6x1 P. 5027 D. 6510



6x1 P. 5028 D. 6511

6x1¼ P. 4058 D. 1438

6x1¼ P. 4060 D. 832

6x1¼ P. 5005 D. 6426

Reproduced from Tile

Continued on next page

FOUNTAINS AND MANTELS IN MOSAIC FAIENCE TILES

Fountain Design No. F-6889

The colors of the Mosaic Faience Tiles indicated are No. 129 black and No. 650 green. A striking fountain treatment in the contemporary spirit.

Mosaic Faience Tiles are ideally adapted to the creation of outstanding fountains. Their wide range of colors allows any color scheme to be followed. The beauty of the glazes is rich and lasting. The tiles are impervious to moisture, heat and cold. A large variety of other designs are available.

Fountain Design No. F-5591
Floor Design No. F-5592

The Mosaic Faience colors suggested in the fountain are No. 347 peacock blue, No. 26 royal blue, No. 287 and No. 464 green. 6 x 6 and 3 x 3 Mosaic Faience Tiles in the floor, in colors No. 347 blue, No. 287 green and No. 433 dark green.

Mantel Design No. 440

Mantel, 6 ft. wide; height variable to ceiling. Fire opening, 2 ft., 7½ in. wide; 3 ft. high. Top ornamental feature No. 2781. Hood panel No. 3237. Hood moulding No. 2782. Side panels, 6 x 3 tiles, No. 3238. Plain faience tiles, 4¼ x 4¼ in. No. 316 mottled brown, No. 2010 mottled red and other colors.

At right, Mantel Design No. 409

This design can be furnished with fireplace opening in the following widths: 30 in., 36 in., 42 in., and 48 in. The color shown is No. 388 buff in Mosaic Faience, but this mantel is equally appropriate in grays, browns and several other shades.

Baked to extreme hardness by the intense heat of fire itself, Mosaic Faience Tiles are naturally appropriate and practical for mantels and fireplaces. And no material is more beautiful, colorful and lasting. A wealth of Mosaic Mantel Designs are offered, or individual designs will be painstakingly executed.

Continued on next page

TYPICAL MOSAIC FAIENCE FLOOR DESIGNS

Faience Floor Design No. 529

Reproduced from Tile

An interesting example of random floor treatment in green, olive and brown tones. Sizes of tile used in field: 6 x 6, 6 x 3 and 3 x 3 in colors No. 334 and No. 3151. In the border 3 x 3 tiles are used, color No. 316, with decorative insert in pattern No. 3081, decoration No. 2678. Marginal tiles are 6 x 6 in color No. 3151.

Faience Floor Design No. 531

Reproduced from Tile

A monochrome treatment effective for porches, vestibules, sunrooms, conservatories, courtyards, etc. Random field in sizes 6 x 6, 6 x 3 and 3 x 3. Margin of 6 x 3 tiles. Color is No. 2010 red mottled. Oak leaf border is 6 x 3, pattern No. 4026, decoration No. 2365.

Faience Floor Design No. 536

Reproduced from Tile

An effect of charming interest is produced through the use of varied shapes of Mosaic Faience Tiles. The half hexagons are 4¼ x 4¼ with which 4¼ x 4¼ squares are combined. The colors indicated are No. 316 mottled brown, No. 933-B and No. 609-B red. The hexagon shapes provide delightful variation in a Faience tile floor. Pleasing results with an individual note are obtainable, to harmonize with many types of decorative schemes.

Faience Floor Design No. 537

Reproduced from Tile

The possibilities of distinctive and decorative floor treatments are unlimited with Mosaic Faience Tiles, the beauty, artistry and practically everlasting qualities of which make them superb for this purpose. In the design above 6 x 6 tiles in No. 924-B dark blue and 6 x 3 tiles in No. 924-A light blue are used. The decorated tiles are 3 x 3, pattern No. 3031, decoration No. 1607.

Continued on next page

MOSAIC FAIENCE TILES FOR FLOORS AND WALLS

Entrance Hall. Faience Floor Design No. F-5609

Distinctive effects in entrance halls are secured with Mosaic Faience Tiles. The floor at the left, design No. F-5609, shows a random design of Faience tile in sizes 6 x 6, 6 x 3 and 3 x 3, in a mixture of green shades. The border and base are of 6 x 6 decorated Faience, pattern No. 3002, decoration No. 2535. The wall fountain is No. 308.

Character of Mosaic Faience Tiles

Mosaic Faience Tiles are plastic made, with a red or buff body. They are highly glazed in bright and dull finishes and possess the true characteristics of hand-wrought tiles, a fact evidenced in their slight irregularities of shape and size, which accentuate their craftsmanlike quality. They are, therefore, the highest type of tile, aristocrats of the tile world, and as such produce rich treatments both on exteriors and interiors. Mosaic Faience Tiles have also the feature of being extremely hard-backed, which makes them unusually resistant to wear and the effects of time and weather. To specify Mosaic Faience assures you of obtaining genuine Faience tile.

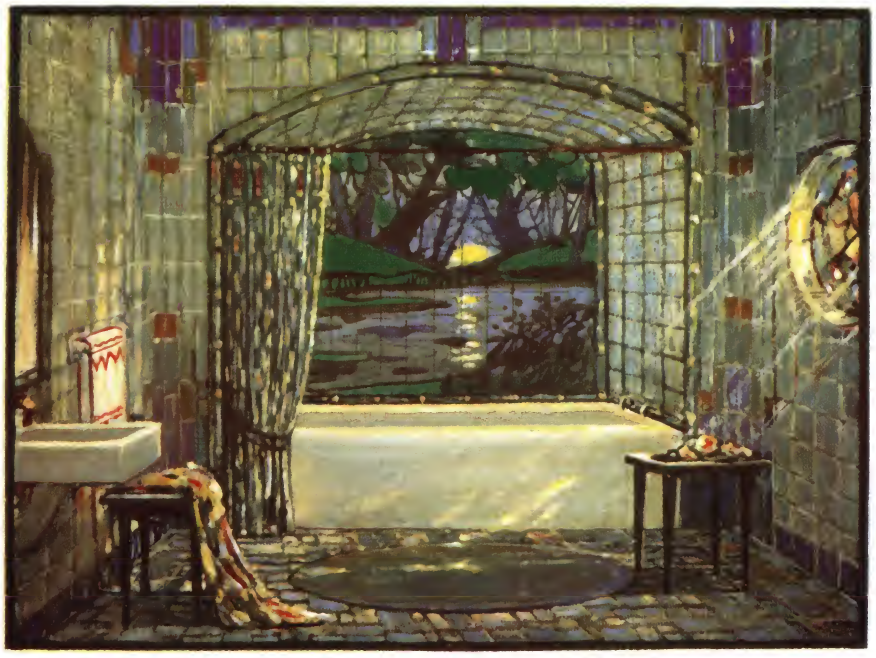
Sizes of Mosaic Faience Tiles

Mosaic Faience Tiles are made in all standard tile sizes, such as the following examples:

6x6	6x4¼	6x3	3x3	4¼x4¼
4¼x2	2x2	9x9	9x6	12 x 6

Special sizes and special shapes can also be furnished in Mosaic Faience.

Bathroom in Mosaic Faience Tiles. Design No. F-5593



Bathroom at Right

Luxurious effects in bathrooms are attainable through the wide scope of artistry afforded by Mosaic Faience Tiles.

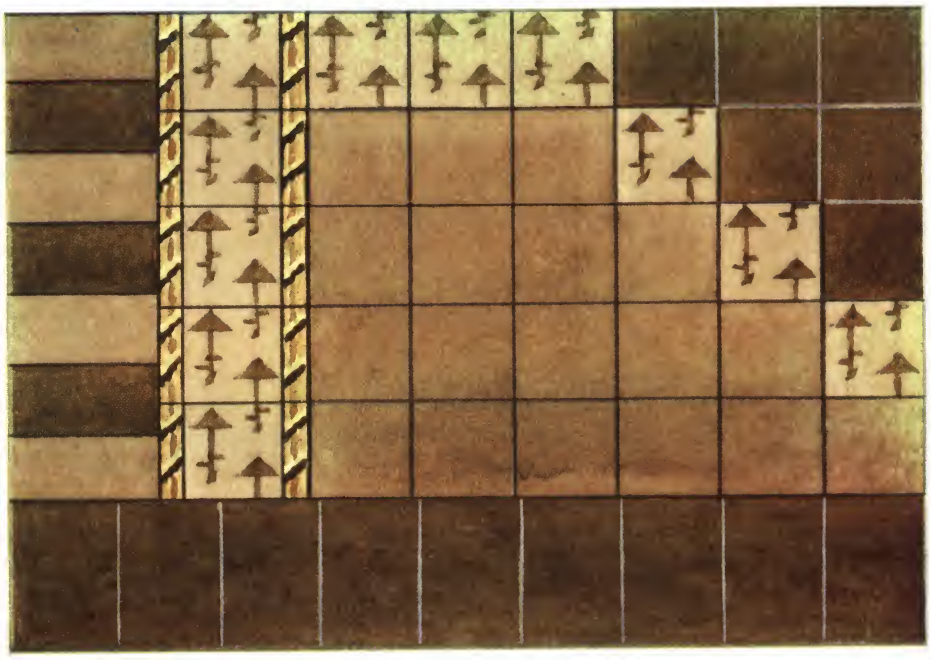
The suggestion in bathroom treatment reproduced here features a decorative scenic panel of Mosaic Faience at the back of the tub recess.

Nos. 391 and 393 mottled green with other shades produce the color scheme of the walls and floor.

Continued on next page

MOSAIC FAIENCE TILES FOR WALLS

In Contemporary Design



No. F-5728
Showing
Decorative Designs
No. 5015 and No. 5026

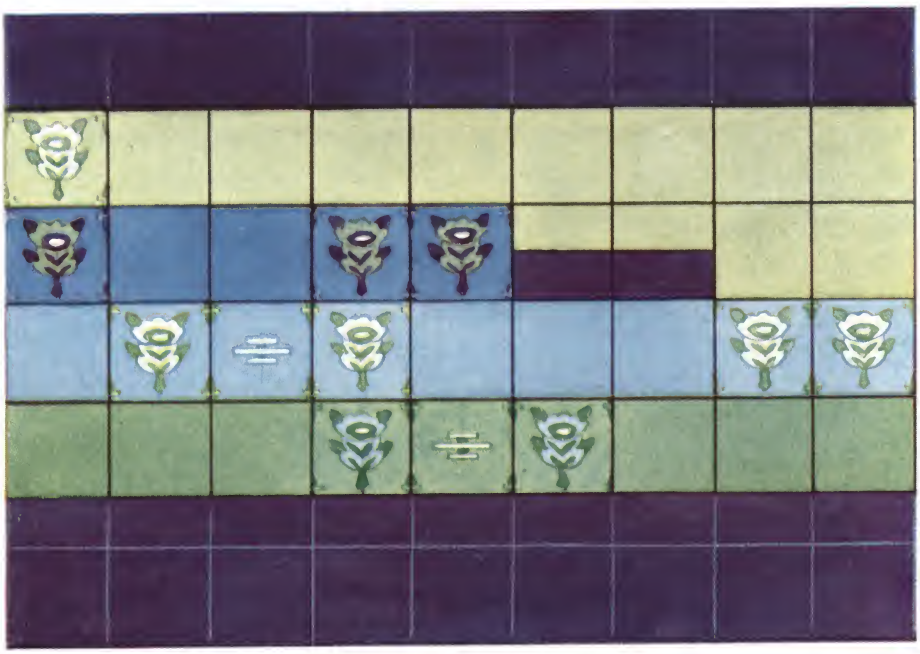
The contemporary treatments in Mosaic Faience Tiles reproduced on this and the next page, illustrate the *flexibility of real tile as a decorative medium.*

Designs in Mosaic Tiles are not limited to any predetermined pattern. The architect, with Mosaic Products, may allow a wide scope for the expression of his own individual ideas.

The possibilities of *variety and originality* in decorative motifs with Mosaic Tiles as a medium are so great that the architect may incorporate these tiles to advantage in practically any period of style he wishes to carry out.

Special designs in Mosaic Faience are faithfully and sympathetically executed by experienced craftsmen. We invite architects to avail themselves of our cooperation in creating distinctive tile treatments.

No. F-5729
Showing
Decorative Designs
No. 5021 and No. 5022

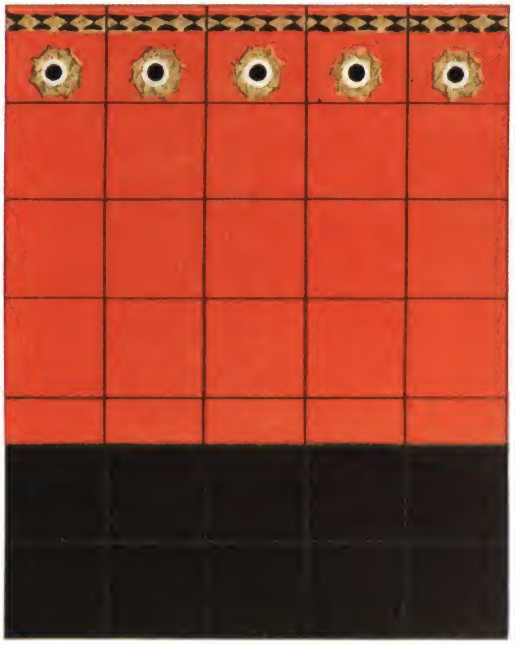


The combinations of color, the manner in which the tile sizes are varied and the arrangement of the decorative tiles and the plain tiles in relation to each other in these designs, indicate wide possibilities in the effective use of Mosaic Faience.

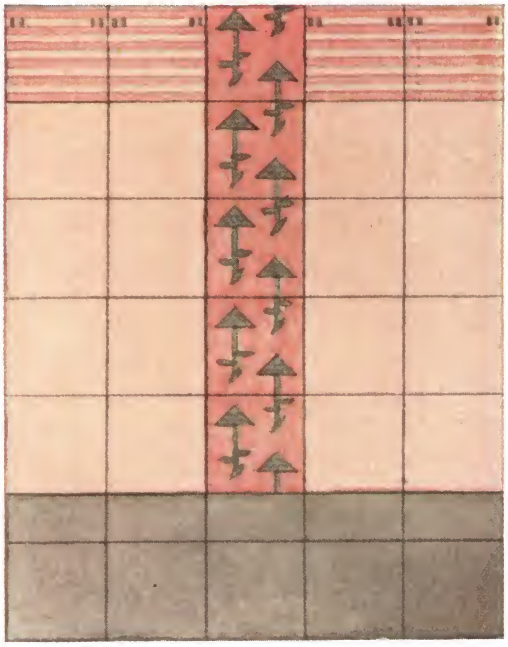
Continued on next page

MOSAIC FAIENCE TILES FOR WALLS

In Contemporary Design

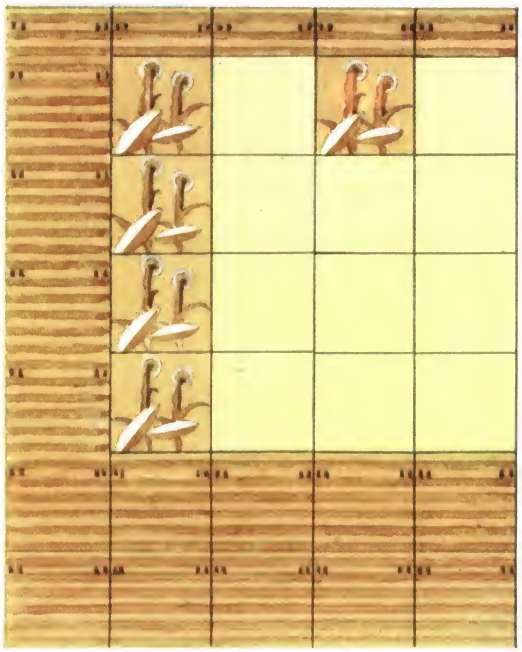


No. F-5730
Showing
Decorative Design
No. 5019



No. F-5731
Showing
Decorative Designs
No. 5015 and No. 5024

These designs in the modern spirit are suggestions which may be utilized to advantage in the decoration of wainscots or walls. In business or commercial application, such as their use for counter fronts in stores, they provide effects that are out of the ordinary. The color combinations possible in such designs have an extremely broad range, due to the large number of colors obtainable in Mosaic Faience.

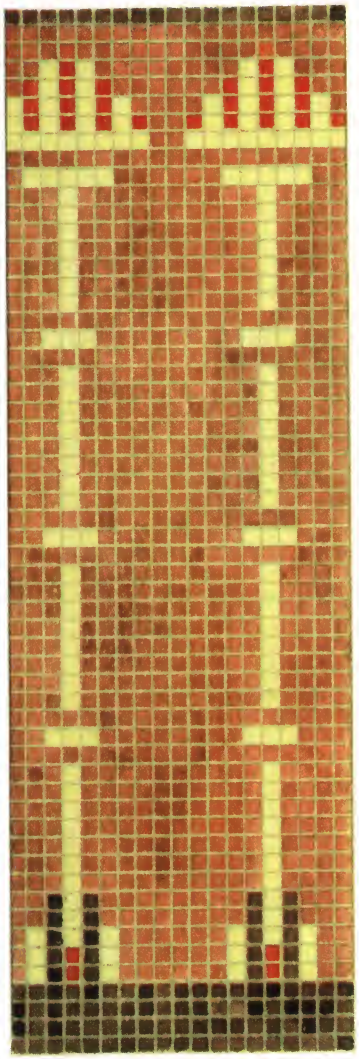


No. F-5732
Showing
Decorative Designs
No. 5023 and No. 5024

No. F-5733
Showing
Decorative Design
No. 5016

Continued on next page

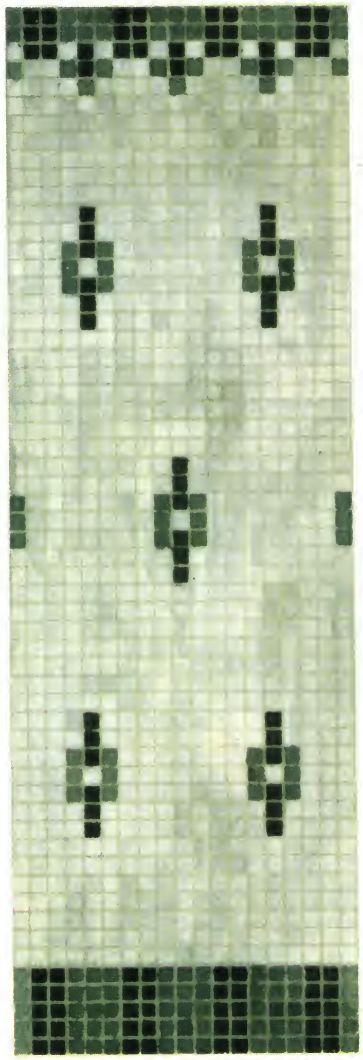
FAIENCE MOSAICS FOR WALLS AND FLOORS



Wainscot Design No. F-5596

Faience Mosaics in size 1 x 1 inches. Colors used are:

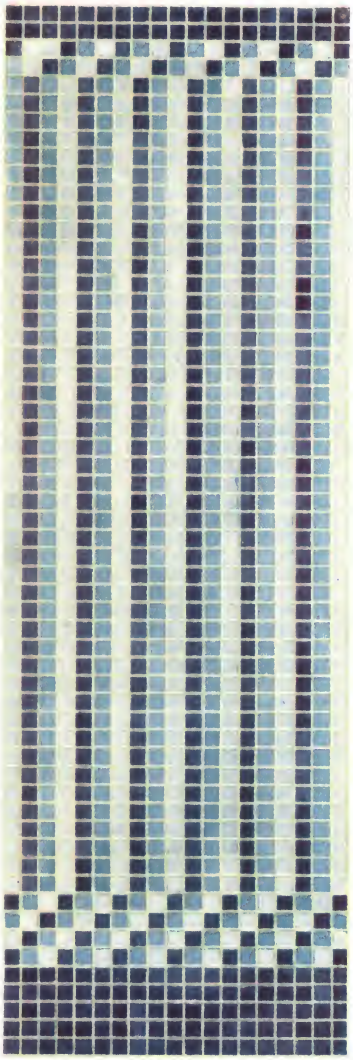
No. 388 buff
No. 316 brown
No. 4001 red
No. 345-B dark brown



Wainscot Design No. F-5597

Faience Mosaics in size 1 x 1 inches. The colors are:

No. 287 green
No. 280 dark green
No. 354 black



Wainscot Design No. F-5598

Faience Mosaics in size 1 x 1 inches. The following colors are indicated:

No. 924-B dark blue
No. 468-E medium blue
No. 281 light blue

Floor Design No. 1832-G

Faience Mosaics in No. 278 primrose yellow, No. 277 yellow and No. 388 ochre.

Floor Design No. 1832-H

Faience Mosaics in No. 287 light cool green, No. 752 green, No. 464 water green and No. 443 cool green.

Floor Design No. 1700-S

Herringbone pattern in 2 x 1 Faience Mosaics. The color is No. 454 medium blue.

Faience Mosaics are made only in small sizes of the same material and with the same characteristics as the larger Faience tiles.

Sizes—2 x 2, 2 x 1 and 1 x 1 only. ⅜ in. thick. Come mounted on paper the same as Ceramic Mosaics.

Colors—Most of the Faience colors may be furnished. See color chart on opposite page. They harmonize ideally with Satin Finish Matt Tiles. (*See pages 10-11*).

Uses—Highly serviceable and effective for wainscots, walls, ceilings, bathroom floors, fountains, swimming pools, store fronts, floor and wall borders, decorative panels and for any surface where glazed, colored tiles are desired.

Continued on next page

COLOR CHART OF MOSAIC FAIENCE TILES

Reproduced from Tile

THE range of colors in which Mosaic Faience Tiles may be obtained is almost unlimited. The chart on this page is a representative selection indicating the wide scope of effects at the command of the architect in working with Mosaic Faience.

All Faience glazes are subject to variation of shades and texture. The beauty of Mosaic Faience Tiles is in large part due to these variations, which give to the tiles a desirable warmth and softness of tone.

These variations, although natural to the process of production, are not great and when tiles of different shades are properly blended, they are in *perfect harmony*.

KEY TO COLOR CHART

COLORS ARE DESIGNATED BY NUMBERS

261	750	411	245
273	334	396	378
2010	3151	754	445
290	965	966	4001
443	247	287	464
752	288	280	347
451	468E	281	337
454	924B	342	339
316	345	345B	354

Continued on next page

MOSAIC TILES FOR WALLS

Satin Finish Matts

Wall in Old Ivory

Character

Mosaic Satin Finish Matt Tiles, as their name implies, have a soft, glare-free, satin-like finish. They are essentially wall tiles, being made of a high quality white biscuit. They should not, therefore, be used for exterior treatments. They are unsurpassed for beautiful yet conservative interior wall treatments.

Sizes

$\frac{3}{8}$ in. thick.

4¼ x 4¼ — 6 x 3 — 6 x 6

4¼ x 2⅛ — 3 x 3

Wall Design at Left

Cap, C-218, 6 x 2 Satin Finish Matt, Col. 0261 Fawn.
Beneath Cap, 4¼ x 4¼ Satin Finish Matt, Col. 0261 Fawn.
Upper Border, 6 x 2 Inlaid Decorated, Patt. 70, Dec. D.
Lower Border, 6 x 1 Inlaid Decorated, Patt. 76, Dec. D.
Field, 4¼ x 4¼, Satin Finish Matt, Col. 0410 Old Ivory.
Above Base, 4¼ x 4¼ Satin Finish Matt, Col. 0261 Fawn.
Base, M-364 Shoe, 4¼ x 5, Satin Finish Matt, Col. 0261 Fawn.

Wall Design at Right

Cap, C-218, 6 x 2 Satin Finish Matt, Col. 0418 Rose Lavender.
Upper Border, 6 x 2 Inlaid Decorated, Patt. 71, Dec. C.
Lower Border, 6 x 1 Inlaid Decorated, Patt. 81, Dec. C.
Field, 4¼ x 4¼, Satin Finish Matt, Col. 0754 Rose Orchid.
Above Base, 4¼ x 4¼ Satin Finish Matt, Col. 0418 Rose Lavender.
Base, M-364 Shoe, 4¼ x 5, Satin Finish Matt, Col. 0418 Rose Lavender.

Orchid Treatment

VITROMAT FLOOR DESIGNS TO MATCH

Vitromat or Semi-Vitromat Floor Tiles are glazed, with a vitreous (or semi-vitreous) body, which makes them wear-proof and water-proof. In the same glazes and colors as Satin Finish Matt Tiles, they harmonize with walls of the latter.

Floor Design at Left. Border, 3 x 3 Vitromat, Col. 0261 Fawn. Field 2 in. hexagons, Vitromat, Col. 0410 Old Ivory.

Floor Design at Right. Border 4¼ x 4¼ Vitromat, Col. 0418 Rose Lavender. Field, 3 x 3 Vitromat, Col. 0754 Rose Orchid.

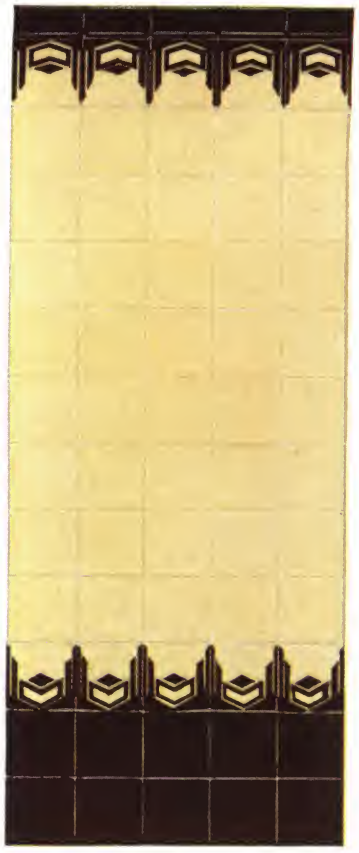
SATIN FINISH MATT COLORS

Reproduced from Tile

Continued on next page

MOSAIC TILES FOR WALLS

Satin Finish Matts



Modern Effect

Colors

Twenty-four pastel colors, as shown in the charts at the bottom of this and the preceding page, are offered in Mosaic Satin Finish Matt Tiles. Some of the colors are exclusive to these tiles. The color variation is held to limits which produce a beautiful wall surface without appearing deliberate or obtrusive.

Uses

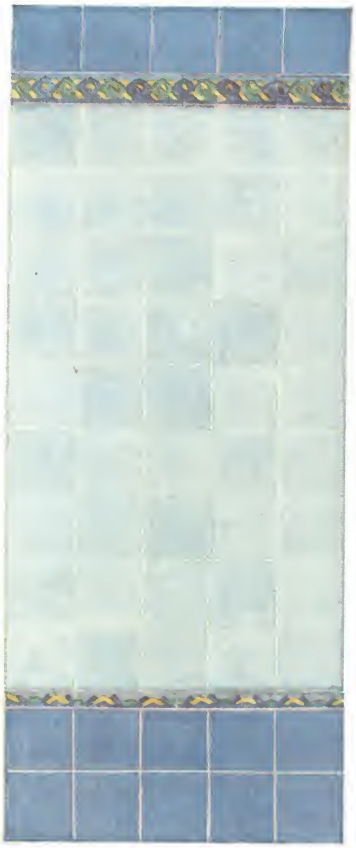
Mosaic Satin Finish Matt Tiles are especially appropriate for wainscots and walls in bathrooms, kitchens, breakfast nooks, hospitals, store interiors, etc. They should not be used on exteriors.

Wall Design at Left

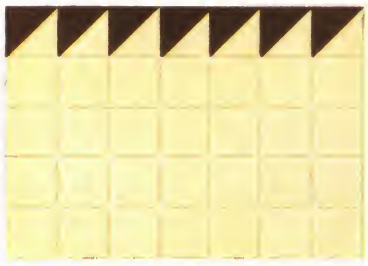
Cap, C-218, 6 x 2 Satin Finish Matt, Col. 0354 Royal Black.
Borders, 4¼ x 4¼ Mozane printed decoration, Patt. 43, Dec.8.
Field, 4¼ x 4¼ Satin Finish Matt, Col. 0463-F Straw.
Above Base, 4¼ x 4¼ Satin Finish Matt, Col. 0354 Royal Black.
Base, M-364 Shoe, 4¼ x 5, Satin Finish Matt, Col. 0354 Royal Black.

Wall Design at Right

Cap, M-400, 4¼ x 4¼ B.N., Satin Finish Matt, Col. 0454 Medium Blue.
Upper Border, 6 x 2 Inlaid Decorated, Patt. 72, Dec. B.
Lower Border, 6 x 1 Inlaid Decorated, Patt. 78, Dec. B.
Field, 4¼ x 4¼ Satin Finish Matt, Col. 0338-A Stippled Blue.
Above Base, 4¼ x 4¼ Satin Finish Matt, Col. 0454 Medium Blue.
Base, M-364 Shoe, 4¼ x 5, Satin Finish Matt, Col. 0454 Medium Blue.



Treatment in Blue

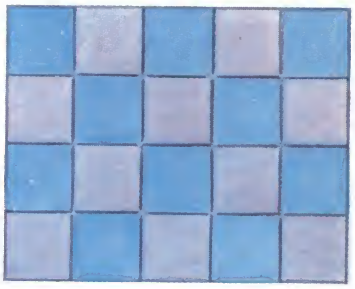


VITROMAT COLORS SAME AS SATIN FINISH

The *colors* of Vitromat and Semi-Vitromat Floor Tiles are the same as those of Satin Finish Wall Tiles, shown below and on page 10. The *sizes* of these tiles are: 3 x 3, 2⅛ x 2⅛, 3 in. Hex., 2 in. Hex., 6 x 3, 4¼ x 4¼ and 6 x 6.

Floor Design at Left. Border, 3 x 3 Diagonals, Vitromat colors 0354 Royal Black and 0463-F Straw. Field, 3 x 3 Vitromat, Col. 0463-F Straw.

Floor Design at Right. Checkerboard Pattern of 4¼ x 4¼ Vitromat Floor Tiles. Colors 0338-A Stippled Blue and 0454 Medium Blue.



SATIN FINISH MATT COLORS

Reproduced from Tile

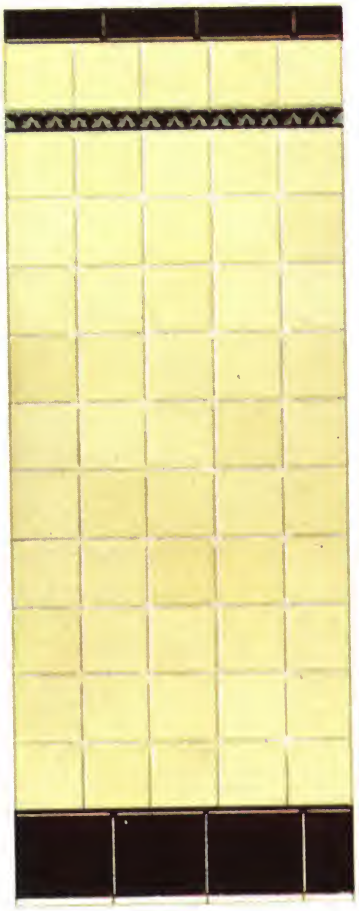
Continued on next page

MOSAIC TILES FOR WALLS

Mozane Enamels

Orchid Treatment

Cap, 6 x 2, C-218, Satin Finish Matt, Col. 0418 Rose Lavender.
Border, 6 x 1 Inlaid Decorated, Patt. 78, Dec. C.
Field, 6 x 3, Mozane Enamel, Col. J-195 Light Orchid.
Base, B-103, 6 x 6, Satin Finish Matt, Col. 0418 Rose Lavender.



Light Canary

Cap, 6 x 2, C-218, Bright Enamel, Col. 027 Egyptian Black.
Border, 6 x 1 Mozane Decorated, Patt. 20, Dec. 11.
Field, 4¼ x 4¼ Mozane Enamel, Col. J-197 Light Canary.
Base, B-103, 6 x 6, Bright Enamel, Col. 027 Egyptian Black.

Light Green

Cap, 6 x 2, C-218, Mozane Enamel, Col. J-167 Willow Green.
Border, 6 x 1 Inlaid Decorated, Patt. 77, Dec. C.
Field, 6 x 3, Mozane Enamel, Col. J-196 Light Green.
Base, B-103, 6 x 6, Mozane Enamel, Col. J-167 Willow Green.

CHARACTER

Mozane Enamel Tiles were developed to supply the demand for a bright glazed wall tile in color. They have a buff clay body peculiarly adapted to such glazes and able to withstand hard service.

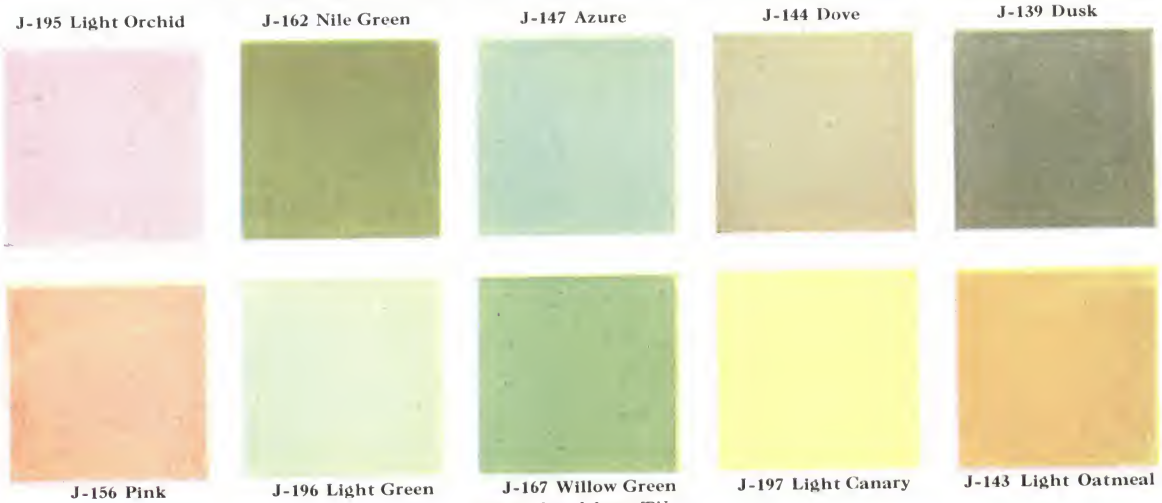
Sizes: ⅜ in. thick 4¼ x 4¼ 6 x 3

USES

Mozane Enamel Tiles offer an attractive variation from white glazed installations. They are practical and serviceable in bathrooms and kitchens of homes, apartment buildings, hotels and institutions, and wherever effectiveness and utility are required at a moderate price.

COLORS

There are ten beautiful colors in the Mozane Enamel group, as shown by chart below.



Reproduced from Tile

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INLAID DECORATED BORDERS

White Wall Body

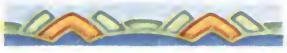
Reproduced from Tile

6 x 2 Patt. 70 Dec. A

6 x 1 Patt. 76 Dec. A

6 x 1 Patt. 77 Dec. A

6 x 2 Patt. 71 Dec. B



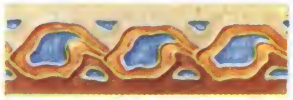
6 x 1 Patt. 78 Dec. B

6 x 1 Patt. 79 Dec. B

6 x 2 Patt. 72 Dec. C

6 x 1 Patt. 80 Dec. C

6 x 1 Patt. 81 Dec. C



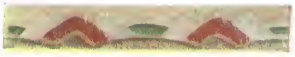
6 x 2 Patt. 73 Dec. D

6 x 1 Patt. 82 Dec. D

6 x 1 Patt. 76 Dec. D

6 x 2 Patt. 71 Dec. E

6 x 1 Patt. 77 Dec. E

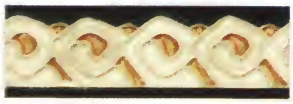


6 x 1 Patt. 78 Dec. E

6 x 2 Patt. 70 Dec. F

6 x 1 Patt. 80 Dec. F

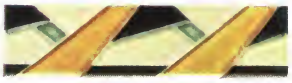
6 x 1 Patt. 82 Dec. F



6 x 2 Patt. 72 Dec. I

6 x 1 Patt. 79 Dec. I

6 x 1 Patt. 81 Dec. H



6 x 1½ Patt. 74 Dec. H

6 x 1½ Patt. 75 Dec. G

6 x 1 Patt 80 Dec. K

MOZANE DECORATED BORDERS

White Wall or Faience Body

Reproduced from Tile

6x1 No. 18 Dec. No. 8

6x1 No. 20 Dec. No. 7

6x1 No. 21 Dec. No. 1

6x1 No. 22 Dec. No. 5

6x1 No. 23 Dec. No. 9

6x1 No. 24 Dec. No 11

6x1 No. 25 Dec. No. 6

6x1 No. 26 Dec. No. 13

6x1½ No. 27 Dec. No. 10

6x1½ No. 28 Dec. No. 12

4¼x4¼ No. 40 Dec. No. 11

4¼x4¼ No. 42 Dec. No. 9

4¼x4¼ No. 43 Dec. No. 8

4¼x4¼ No. 44 Dec. No. 7

6x1½ No. 29 Dec. No. 32

6x1½ No. 30 Dec. No. 7

6x1½ No. 31 Dec. No. 5

6x2 No. 33 Dec. No. 11

6x2 No. 34 Dec. No. 1

6x2 No. 35 Dec. No. 32

6x3 No. 37 Dec. No. 7

Continued on next page

MOSAIC ALL-TILE BATHROOM ACCESSORIES

B. A. 718
4¼ x 4¼
Robe Hook

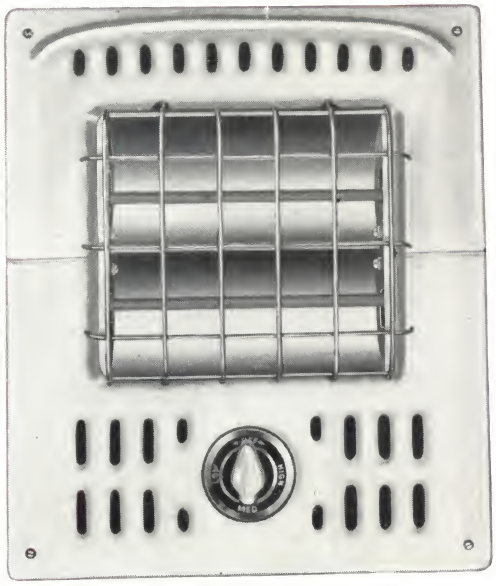
B. A. 717
4¼ x 4¼
Toothbrush Holder

B. A. 730
4¼ x 4¼
Wall Light Bracket

B. A. 727
4¼ x 4¼
Projecting Soap Holder

B. A. 711
6 x 6
Roll Paper Holder

Mosaic All-Tile Bathroom Accessories are made of the same materials and in the same glazes and colors as Mosaic Tiles, and thus *eliminate all uncertainty* in matching the tiles in the walls.



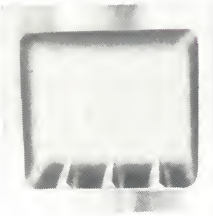
B. A. 750
Mosaic Electric Heater

B. A. 712
6 x 6
Duplex Holder

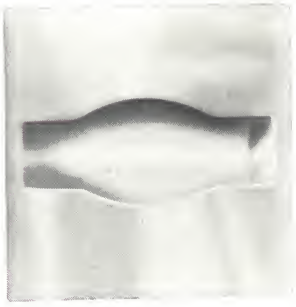
Only a few of the Mosaic Accessories are illustrated. The line is complete, providing an accessory for every requirement. The sizes are the regular tile sizes, enabling them to fit snugly into the jointing of the tile wall.

Square Pyralin Towel Bar
18 in., 24 in., 30 in., 36 in.
B. A. 729—4¼ x 4¼—Towel Bar Brackets (sq. holes).

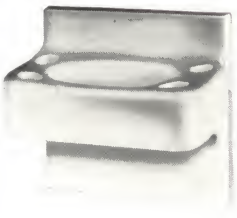
B. A. 733
4⅝ x 3
Single Toggle Switch Plate



B. A. 715
4¼ x 4¼
Recess Soap Holder



B. A. 722
6 x 6
Sheet Paper Holder provided with spring pusher.

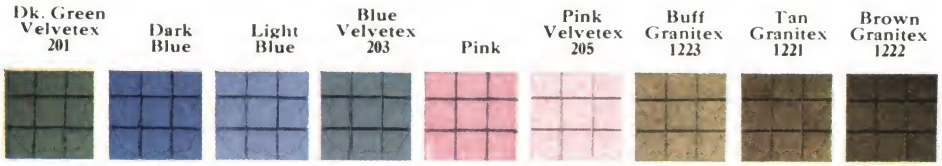


B. A. 742
4¼ x 4¼
Combination Toothbrush and Tumbler Holder

B. A. 751
3 x 3
Towel and Strop Hook

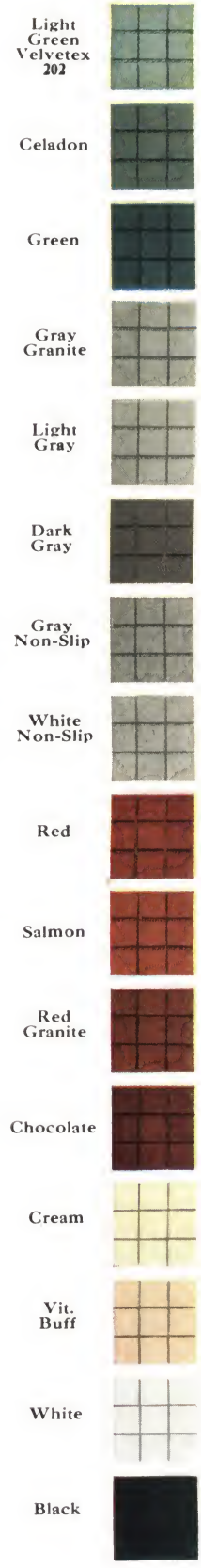
Continued on next page

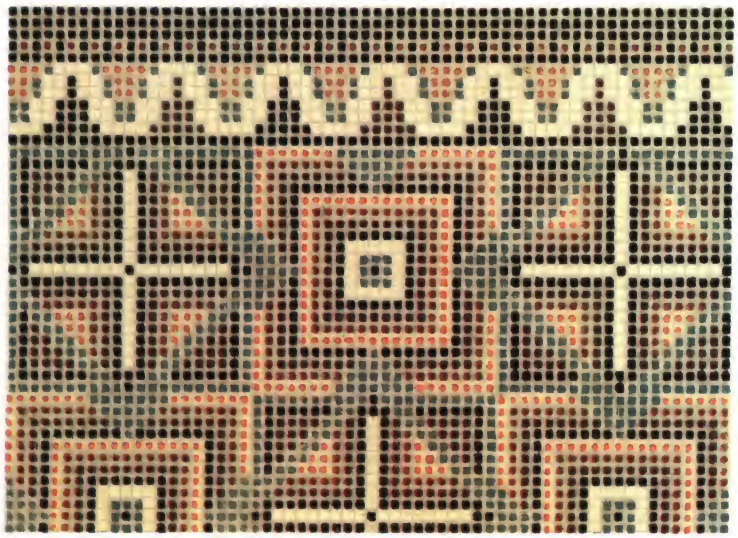
CERAMIC MOSAICS FOR FLOORS



Color Chart

Reproduced from Tile





CERAMIC MOSAIC FLOOR DESIGN
Border No. 1914-A. Body No. 1915-A.

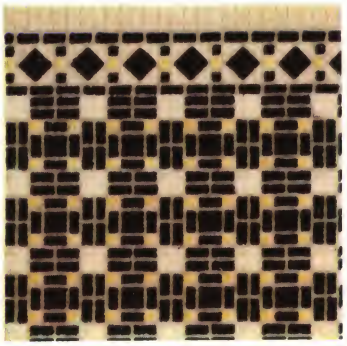
Made up of ¾ in. squares. Colors: Black, Red, Chocolate, Salmon, Green, Vitreous Buff.

Ceramic Mosaics of The Mosaic Tile Company are small unglazed tiles in square, oblong, hexagonal, triangular, rhomboid and diamond shapes, supplied in the colors charted on this page. They are furnished in a great variety of decorative floor patterns, and may also be made up in special designs originated by the architect. Equally appropriate for large and small floor spaces. Mosaic *Aventine Ceramics* reproduce old Roman patterns. *Velvetex Ceramics* are designed particularly for use with walls of Satin Finish Matts. *Granitex Ceramics* are non-slip, with stippled or granite effect (see page 17).

Sizes

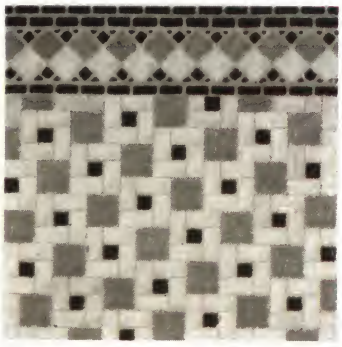
1 9/16 x 1 9/16	1 9/16 x ¾
2 3/16 x 1 1/16	1 1/16 x 1 1/16
½ x ½	1 in. Hex.
11/32 x 11/32	2 3/16 x 2 3/16
¾ x ¾	1 1/16 x ½
1¼ in. Hex.	1 1/16 in. Triangle

1 1/16 x 1/16 Diamonds
2 3/16 x 1 1/16 Rhomboids



Border No. 1853-B
Body No. 1821-L

Sizes: 1 9/16 x ¾, 1 9/16 x 1 9/16, ¾ x ¾. Colors: Vitreous Buff, Black, Straw (0463-F).

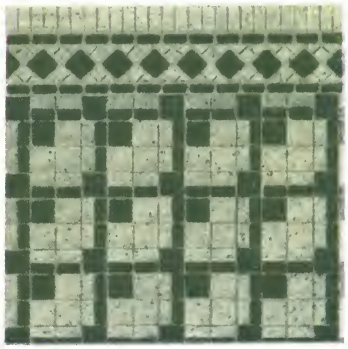


Border No. 1867-B
Body No. 1881-C

Sizes: 2 3/16 x 2 3/16, 2 3/16 x 1 1/16, 1 1/16 x 1 1/16. Colors: Dark Gray, Light Gray, Black.

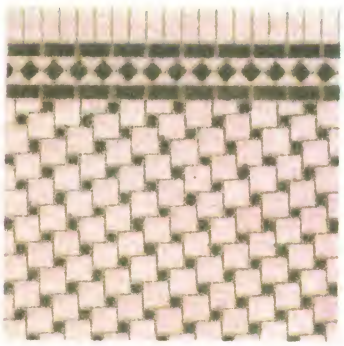
Border No. 1920-A
Body No. 1885-H

Sizes: 2 3/16 x 1 1/16 x 59/64 Rhomboids and 1 1/16 Triangles. Colors: Green and White.



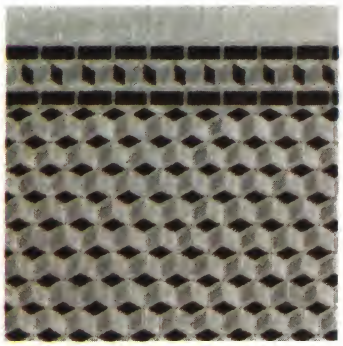
Border No. 1906-C
Body No. 1910-A

Sizes: 1 9/16 x1 9/16, 1 9/16 x ¾, ¾ x ¾. Colors: Green and 202 Light Green Velvetex.



Border No. 1775-I
Body No. 1793-H

Sizes: 1 9/16 x 1 9/16, ¾ x ¾, 1 9/16 x ¾. Colors: 201 Dark Green Velvetex and 205 Pink Velvetex.



Border No. 1927-A
Body No. 1928-A

Sizes: 1 1/16 Diamond, 2 3/16 x 1 1/16 Oblong. Colors: Black, Light Gray, Dark Gray.

Continued on next page

CERAMIC MOSAICS IN SWIMMING POOLS

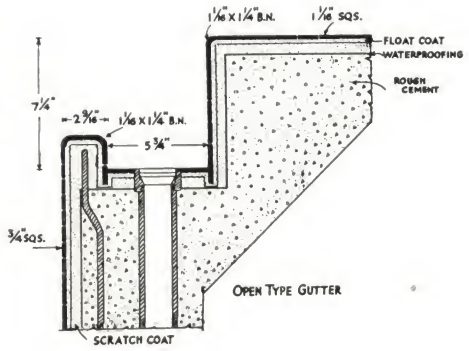
Ceramic Mosaics are a preferred material for swimming pool and natatorium construction on account of the beautiful effects obtainable, sanitary qualities, non-absorbence, imperviousness to wear and economy of upkeep.

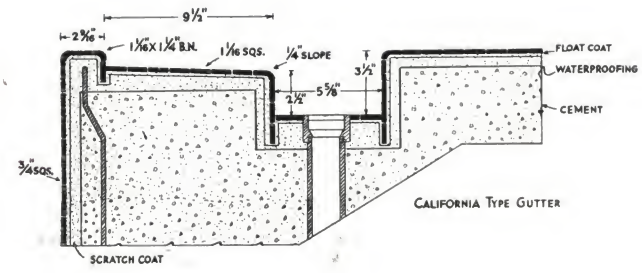
The mounting of Mosaic Tile Ceramics insures even jointing and close fitting of contours and corners. Unglazed ceramics in ¾-in. squares, white, are most widely used for the pool, because of low cost, rapidity of installation and durability.

Colors are generally used for numerals, swimming lines, hand rails, etc., and frequently for the entire field of the pool. *Non-slip Granitex Ceramics are ideal for runways, gutters, stairs, etc.*

Natatorium Design No. F-5594

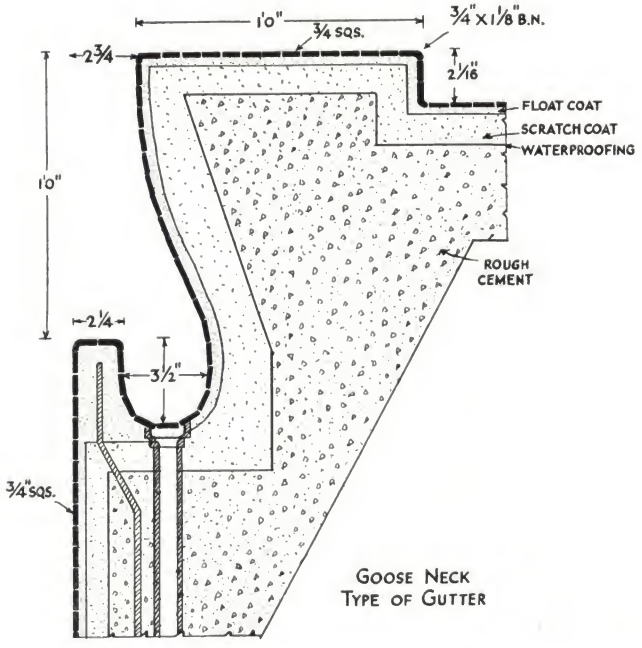
The wainscot is of Granitex Ceramic Mosaics, with glazed and unglazed red and green (design No. 1926-A). Runways tiled with non-slip Granitex (design No. 1925-A). Pool is lined with ¾ in. squares white Ceramic Mosaics (design No. 28276). Glazed and unglazed colored tiles in border. Non-slip Granitex in the gutters.





Outstanding Mosaic Tile Swimming Pools

Keystone Athletic Club, Pittsburgh, Pa.
Irene Kaufmann Settlement, Pittsburgh, Pa.
Kansas City Club, Kansas City, Mo.
Webster Hall, Pittsburgh, Pa.
Pomerene Hall, Ohio State University.
New Y. M. C. A., Dayton, Ohio.
Harvard University Athletic Building.
State Teachers College, Harrisonburg, Va.
Taylor-Allderdice High School, Pittsburgh, Pa.
Kline Residence, St. Louis, Mo.
Nurses' Home, City Hospital, Akron, Ohio.
Y. M. C. A., Jamestown, N. Y.



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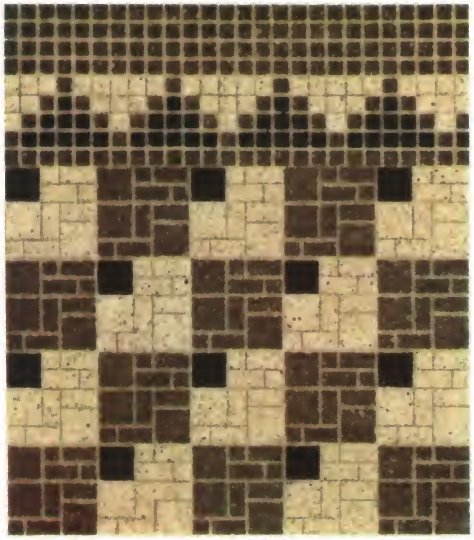
NON-SLIP GRANITEX CERAMIC MOSAICS

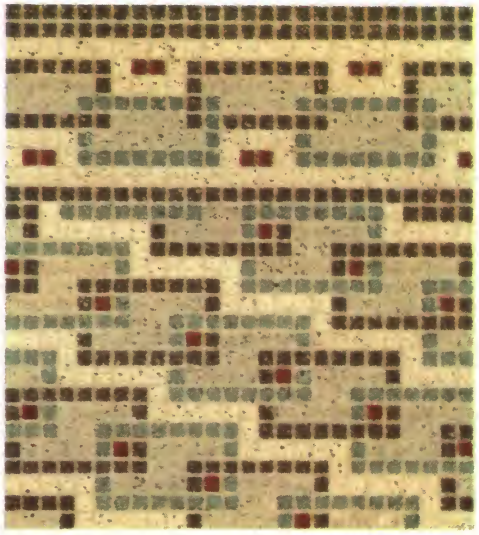


Granitex Floor Design

Border No. 1911-A. Body No. 1912-A.

Sizes: 2 3/16 x 2 3/16, 2 3/16 x 1 1/16, 1 1/16 x 1 1/16.

Colors: Black, 1222 Brown Granitex, 1223 Buff Granitex.



Granitex Floor Design

Border No. 1916-A. Body No. 1917-A.

Sizes: 1 1/16 in. squares.

Colors: 1221 Tan Granitex, 1222 Brown Granitex, 1223 Buff Granitex, 201 Green Velvetex and Red.

Granitex Ceramic Mosaics of The Mosaic Tile Company are an unglazed type of vitreous NON-SLIP floor tiles. They have a stippled or granite effect, a slightly rough "oatmealy" texture, which on account of its attractiveness has achieved for them a wide popularity.

COLORS

Granitex Ceramics are supplied in No. 1221 Tan, No. 1222 Brown and No. 1223 Buff.

SIZES

2 3/16 x 1 1/16 2 3/16 x 2 3/16 1 1/16 x 1 1/16

USES

On account of their NON-SLIP quality, Granitex Ceramics are widely used for runways around swimming pools. They also provide high utility and beauty in bathrooms, lobbies of buildings and floor spaces with heavy traffic. The Granitex colors can be combined with other regular Ceramic colors to produce attractive designs. They are highly effective in random patterns for both floors and walls.

Design No. F-5595

School House Entrance Lobby and Corridor Treatment

WAINSCOT: 4 1/4 x 4 1/4 Satin Finish Matt Tiles, color No. 040 Oatmeal, with Satin Finish Matt base, color No. 0354 Royal Black and Mozane decorated borders.

Top Border, Mozane pattern No. 43 on M-400 B.N. cap. Lower Border, Mozane pattern No. 28. 9 x 9 Faience Tile Grilles, No. 2594.

FLOOR: Ceramic Mosaic Design No. 1924-A with Border No. 1923-A. Size: 1 1/16 x 1 1/16. Colors: Black, 202 Light Green Velvetex, 201 Dark Green Velvetex, Green, Light Gray, Salmon, Cream, Buff, Dark Gray.

STEP TREADS: 6 x 6 Ironstone Nosing, No. 2531.

RISERS: Ceramic Mosaic Tiles, 1 1/16 squares, Black, Light and Dark Gray.

Continued on next page

MOSAIC FLINT FLOOR TILES

Vit. Buff · Cream · White · Celadon · Green · Pink · Red · Chocolate · Red Granite · Salmon · Gray Granite

1222 Paisley Brown · 1223 Paisley Buff · Light Gray · Light Blue

1221 Paisley Tan · Dark Gray

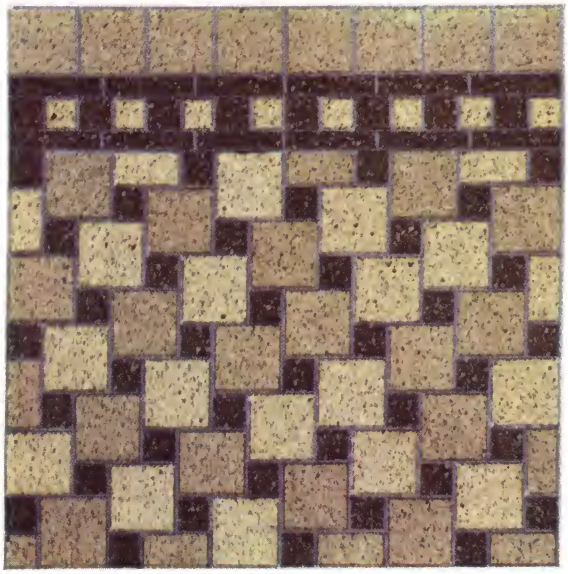
Black · Dark Blue

Reproduced from Tile

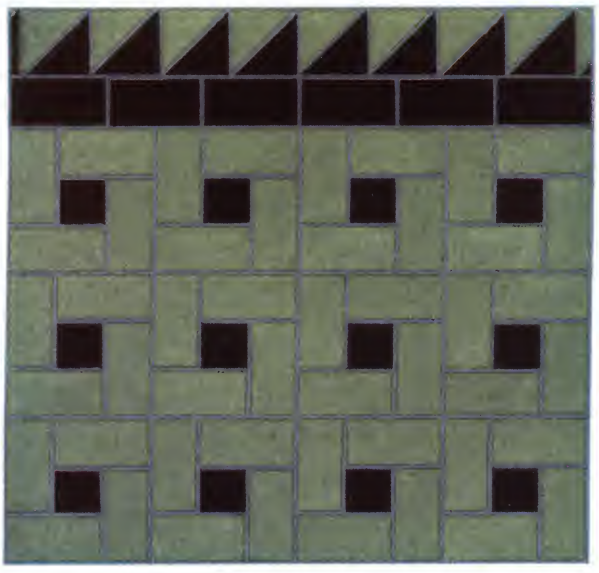
Mosaic Flint Floor Tiles are unglazed and, as implied by their name, are highly resistant to wear and impervious to moisture. In combinations of the colors shown above, they afford most attractive and serviceable floors for hospital corridors and operating rooms, store vestibules, lobbies, power plants, reception halls, kitchens and wherever severe usage is met.

These tiles have square, oblong, hexagonal and octagonal shapes and come in various sizes from 1½ x 1½ to 6 x 6.

Mosaic Flint Floor Tiles in a Pleasing Design. Design No. 28.213
Sizes shown are 6 x 6, 6 x 3 and 3 x 3. The colors are Black, Light Gray and Dark Gray.



Design No. 28.214 Mosaic Hydraulic Floor Tiles, in sizes 4¼ x 4¼, 4¼ x 2⅛, 2⅛ x 2⅛, 6 x 1. Granitex non-slip, colors: No. 1221 Tan, No. 1222 Brown, No. 1223 Buff.



Design No. 28.215 Mosaic Flint and Hydraulic Floor Tiles, in 6 x 3, 3 x 3 and diagonal halves of 4¼ x 4¼. Colors: Celadon and Black.

Continued on next page

MOSAIC IRONSTONE AND BLUESTONE FLOOR TILES

Ironstone Floor Design No. 534

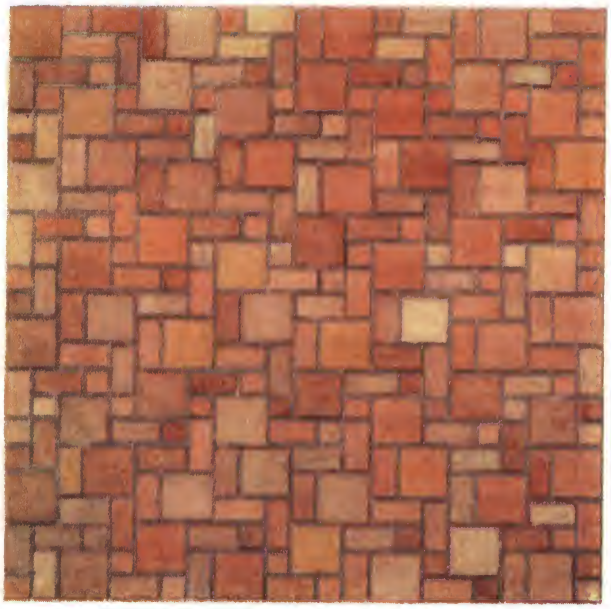
Here is a harmonious blending of various shades of red, tan and buff. The sizes indicated are 6 x 6, 6 x 3 and 3 x 3.

Mosaic Ironstone Tiles are unusually hard, plastic made tiles. Unglazed, they reproduce floors of the true, old-time, craftsmanlike character. The colors in which they come are soft tones of red, brown, tan and buff. They are available in sizes up to 12 x 12, and are recommended for floors in libraries, large living-rooms, billiard-rooms, porches, vestibules and wherever extraordinary durability is required.

Bluestone Floor Design No. 535

A most attractive floor in several shades of blue, green and gray. The illustration shows sizes 6 x 6, 6 x 3 and 3 x 3.

Mosaic Bluestone Tiles have the same characteristics and qualities as are possessed by Mosaic Ironstone Tiles. Due to the fact that they are a superior type of unglazed floor tiles, they are extremely hard and durable and thus are ideal for floors in vestibules, entrances and spaces where permanence and beauty are desired. In soft blue, green and gray shades, charming combinations may be made with the more colorful Faience. Sizes up to 12 x 12.



Ironstone Mosaics, Design No. 1832-I

A random pattern of various reds, tans and buffs. The sizes are 2 x 2, 2 x 1 and 1 x 1.

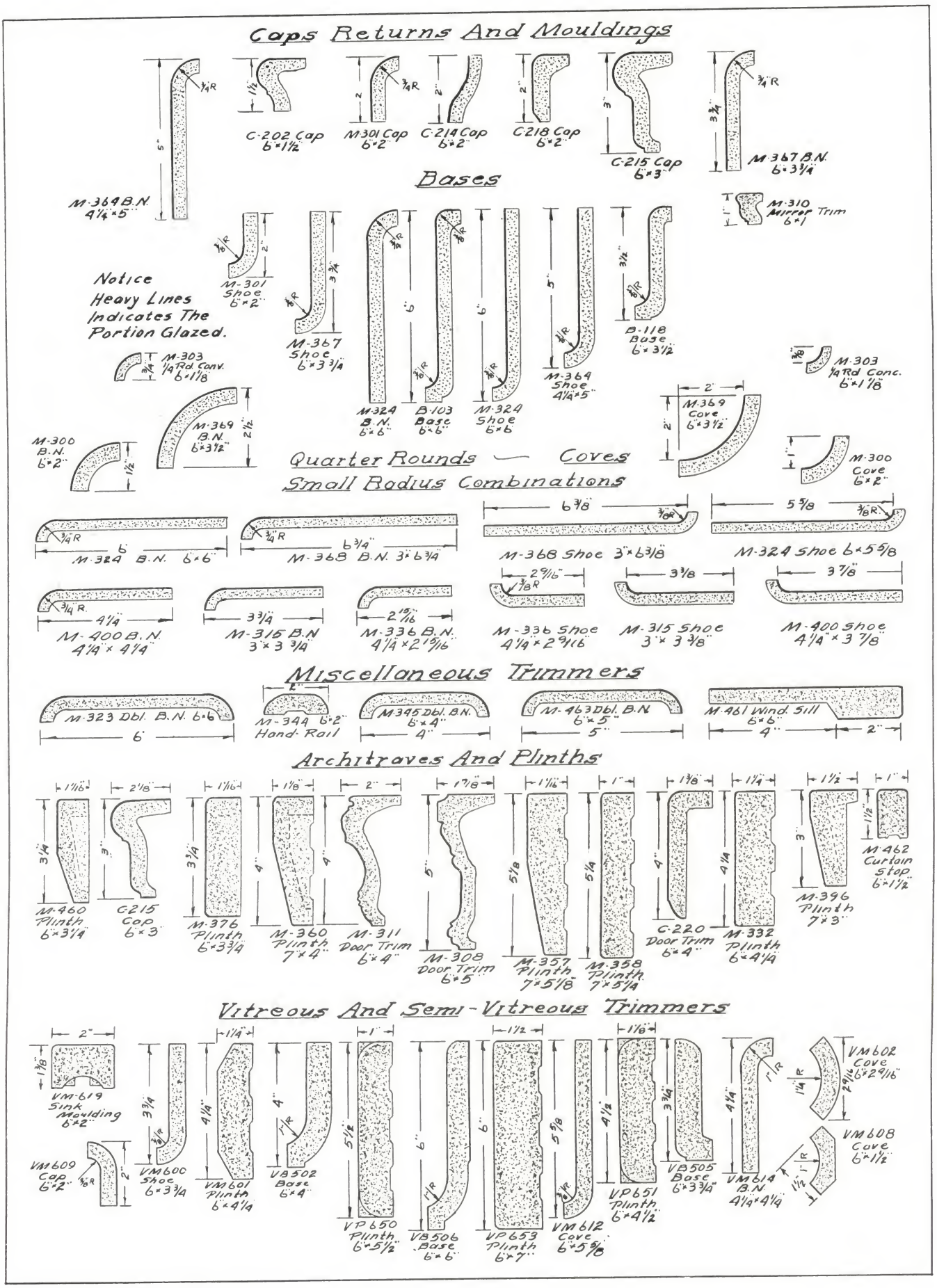
Bluestone Mosaics, Design No. 1832-J

A combination of pleasing blues, greens and grays in the following sizes: 2 x 2, 2 x 1 and 1 x 1.

Ironstone and Bluestone Mosaics are of the same material and have the same characteristics as the larger units of these tiles described above. They are available in the same soft colors—reds, tans, buffs, blues, greens and grays. The sizes in which they are furnished are 2 x 2, 2 x 1 and 1 x 1. They come mounted on paper to be applied like Ceramic Mosaics.

Continued on next page

MOSAIC TRIM TILES



MURRAY TILE COMPANY

INCORPORATED

Manufacturers of Quarry, Promenade and Roofing Tile

CLOVERPORT, KENTUCKY

NEW YORK OFFICE AND STOCK: 656 West 35th Street CHICAGO OFFICE AND STOCK: 1201 South Clark Street

DETROIT OFFICE AND STOCK: 1900 East Jefferson Avenue

Products

MURTICO QUARRY TILE FOR FLOORS AND WAINSCOT; SPECIAL STAIR TREADS AND RISERS; BEVELED THRESHOLD TILE; WINDOW STOOLS AND RETURNS; PLINTH BLOCKS; PROMENADE TILE for flat roofs.

For Roofing Tile see Index of Manufacturers.

Murtico Quarry Tile

Description—Murtico Quarry Tiles are made from high-grade shale burned to high temperatures, resulting in a hard vitreous body. They are impervious to moisture, stains and greases, and have a smooth, unglazed, abrasive resisting surface which is easily kept bright and clean. Being freezeproof, they may be used outside freely where most extreme weather conditions prevail. The following comparative test results bear evidence as to their abrasive and absorptive resisting qualities.

Results of tests on floor coverings made at the Mellon Institute, Pittsburgh, Pa., in 1925, with apparatus producing actual conditions of wear and in accordance with Navy Department's absorption test Specifications 29L1C of Sept. 1, 1916.

	Percentage of Loss Abrasion Test	Percentage of Gain Absorption Test
Vitreous Tiles	4.5	0.0
Semi-vitreous Tiles	8.6	5.1
Terrazzo	16.1	2.6
Portland Cement	16.8	9.6
Marbles	23.3	0.1
Slates	58.2	0.3

Results of tests on Murtico Quarry Tile made in 1930 by R. W. Hunt Company, Testing and Consultation Engineers, Chicago, Ill., in the same manner and with similar apparatus as tests made at the Mellon Institute.

	Percentage of Loss Abrasion Test	Percentage of Gain Absorption Test
Murtico Quarry Tile	3.8	0.45

Colors

Murtico Red—An attractive, vivid red, different from other domestic quarries. The shades are bright and stimulating, imported quarry colors, domestic quarry quality.

Murtico Brown—A true, pleasing brown in seal, chocolate, and licorice shades.

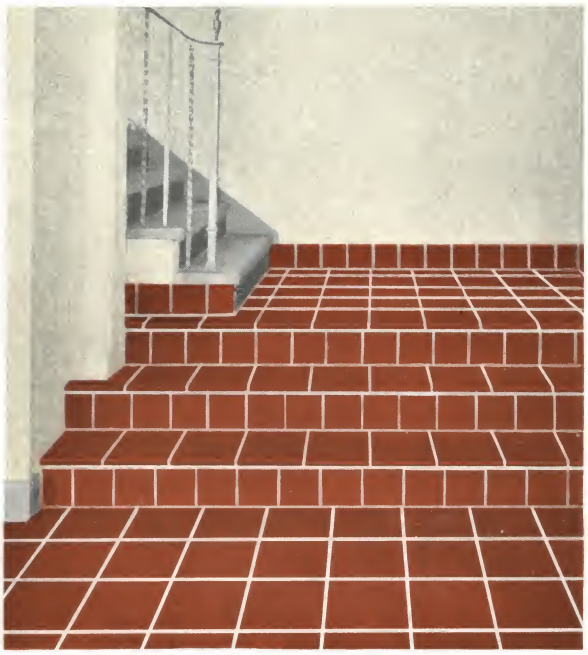
Murtico Buff—A soft creamy shade of even color distribution.

Murtico Gray—A smooth light gray with slight variation in shade.

Murtico Sunburst—Fireflashed tiles, showing several colors in each individual piece, running from light to dark blends of tan, red, gun metal and green.

Murtico Golden Glow—Fireflashed effects of light buff, producing variegated shades of gold, salmon, russet and light brown with allied tints.

High School Lavatory in Murtico Buff and Murtico Gray



Stair Landing and Floor in Murtico Red

Grades

Selects—Selected very carefully, all solid and sound with straight, level and smooth surface, only slight variation in shades and sizes.

Standards—Practically same as Selects, except assorted to size only, not to shade, containing a larger percentage of medium shades.

Commercials—Tile rejected from Select and Standard Grades, defects consisting of slightly chipped edges and slightly rounded ends. Will make first-class roof and very satisfactory floor where first-class tile is not required.

Trimmings and Special Pieces

Wainscot caps, round top base members, square top base members, wainscot angles, bullnose, plinth blocks, elongated hexagons, window stools and stair members are illustrated with dimensions on fourth page.

List of Tile Sizes and Colors are also shown on fourth page.

Promenade Tile

This tile is made in Murtico Red, with grooves on sides for binding joints. It has a smooth surface, is free from cracks and is made in 6″x9″x1″ size; semi-vitrified and impervious to moisture.

Specifications

Quarry tile floors will be required in the following areas: . . . .; color shall be Murtico Red, Brown, Buff, Gray, Sunburst or Golden Glow in the following sizes: . . . ., and shall be laid in Field . . . ., Border . . . ., with . . . .inch joint.

Color of base shall be Murtico Red, Brown, Buff, Gray, Sunburst or Golden Glow in the following sizes: . . . ., shall be coved, and shall have rounded top edge to project ¾″ beyond face of wainscot or plaster above, or else shall have square top edge flush with wainscot or plaster above. Necessary base angles, stops and plinth blocks shall be provided.

Quarry tile wainscot will be required at all partitions, walls, and other fixed vertical surfaces in the following areas: . . . .; color shall be Murtico Red, Brown, Buff, Gray, Sunburst or Golden Glow in the following sizes: . . . ., and shall be laid in Field . . . ., with . . . .joint. Height shall be . . . . feet from the floor and necessary wainscot caps and angles shall be provided.

All quarry tile used shall be Select, Standard or Commercial Grade as manufactured by the Murray Tile Company, Inc., Cloverport, Kentucky.

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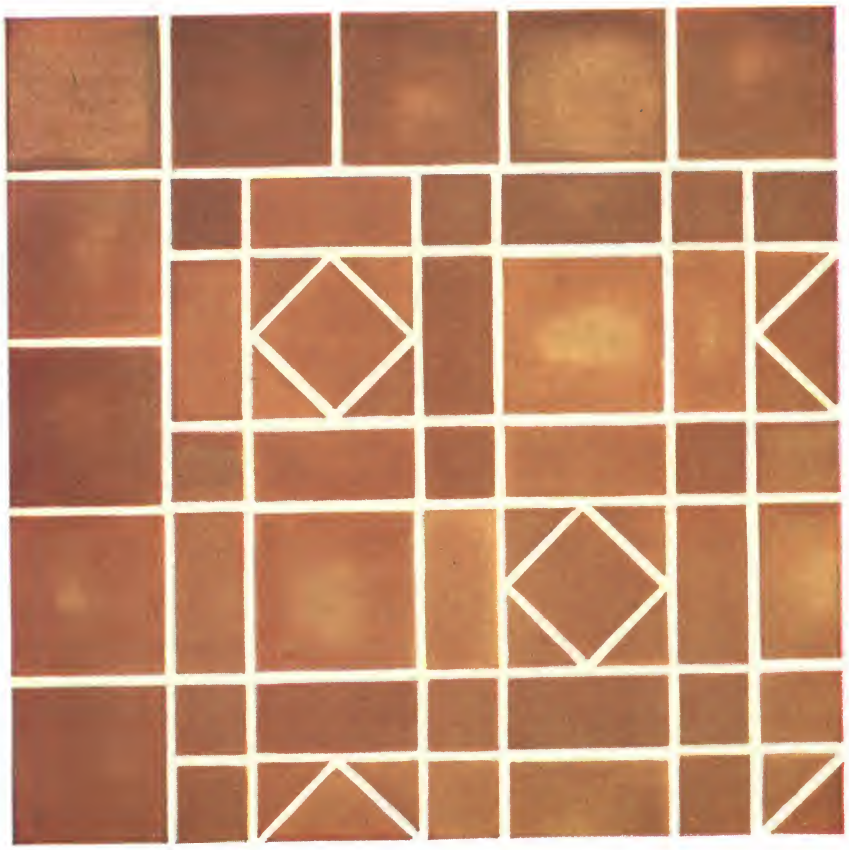


(At left)

Field No. 80

Murtico Golden Glow

2¾″x2¾″ Diagonal Halves
2¾″x2¾″, 2¾″x6″, 4″x4″ and 6″x6″

Border

Murtico Golden Glow

6″x6″

This design is available in all six color ranges

Similar designs:

Field No. 32

2¾″x2¾″, 2¾″x6″ and 6″x6″ in all six color ranges

Field No. 33

2¾″x2¾″ and 6″x6″ in all six color ranges

Border No. 101

4″x4″ Diagonal Halves, 2¾″x6″, 4″x4″ and 6″x6″ in all six color ranges

Border No. 105

4″x4″ Diagonal Halves, 2¾″x2¾″ Diagonal Halves and 4″x4″ in all six color ranges

The color illustrations on this page and the following page represent only a few of the many attractive designs which may be utilized with Murtico Tiles. Many other combinations and sizes are available—straight joints, herringbones, basket weaves and elongated hexagons.

(At right)

Field No. 30

Murtico Sunburst

2¾″x2¾″, 2¾″x6″ and 6″x6″

This design is available in all six color ranges

Similar designs:

Field No. 8

2¾″x2¾″ and 6″x9″ in all six color ranges, with the exception that the 6″x9″ size is made in Murtico Red and Murtico Sunburst only.

Field No. 31

2¾″x2¾″ and 6″x6″ in all six color ranges

Continued on next Page

(At left)

Field

Murtico Golden Glow

6″x6″

Border No. 103

Murtico Sunburst

4″x8¼″ Elongated Hexagons and 2¾″x6″

Murtico Brown

4″x4″ Diagonal Halves

Elongated Hexagons in this design may be either Sunburst or Golden Glow. The other sizes are manufactured in all six color ranges.

Similar designs:

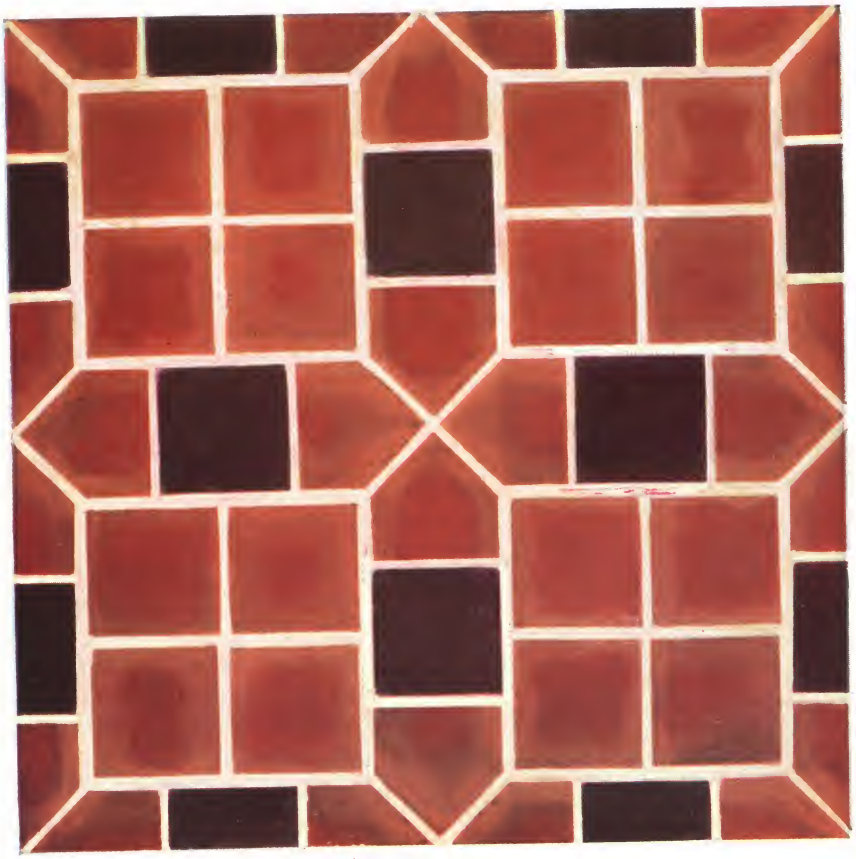
Border No. 102

2¾″x2¾″ in alternate colors (either of the six ranges) and Elongated Hexagon Short Halves in either Murtico Sunburst or Murtico Golden Glow.

Border No. 104

4″x4″ Diagonal Halves and 2¾″x6″ in all six color ranges and Elongated Hexagons and Elongated Hexagon Long Halves in either Murtico Sunburst or Murtico Golden Glow.

To insure proper installation Murtico Tiles are sold only through responsible tile contractors. Catalogues, samples and specification sheets will be furnished architects and dealers on request.



(At right)

Field No. 34

Murtico Sunburst

Elongated Short Halves and 4″x4″

Murtico Brown

4″x4″

Elongated Hexagon Short Halves in this design may be furnished either in Murtico Sunburst or Murtico Golden Glow. The 4″x4″ size is available in all six color ranges.

Similar designs:

Field No. 41

Elongated Hexagons in Murtico Sunburst or Murtico Golden Glow and 4″x4″ in all six color ranges.

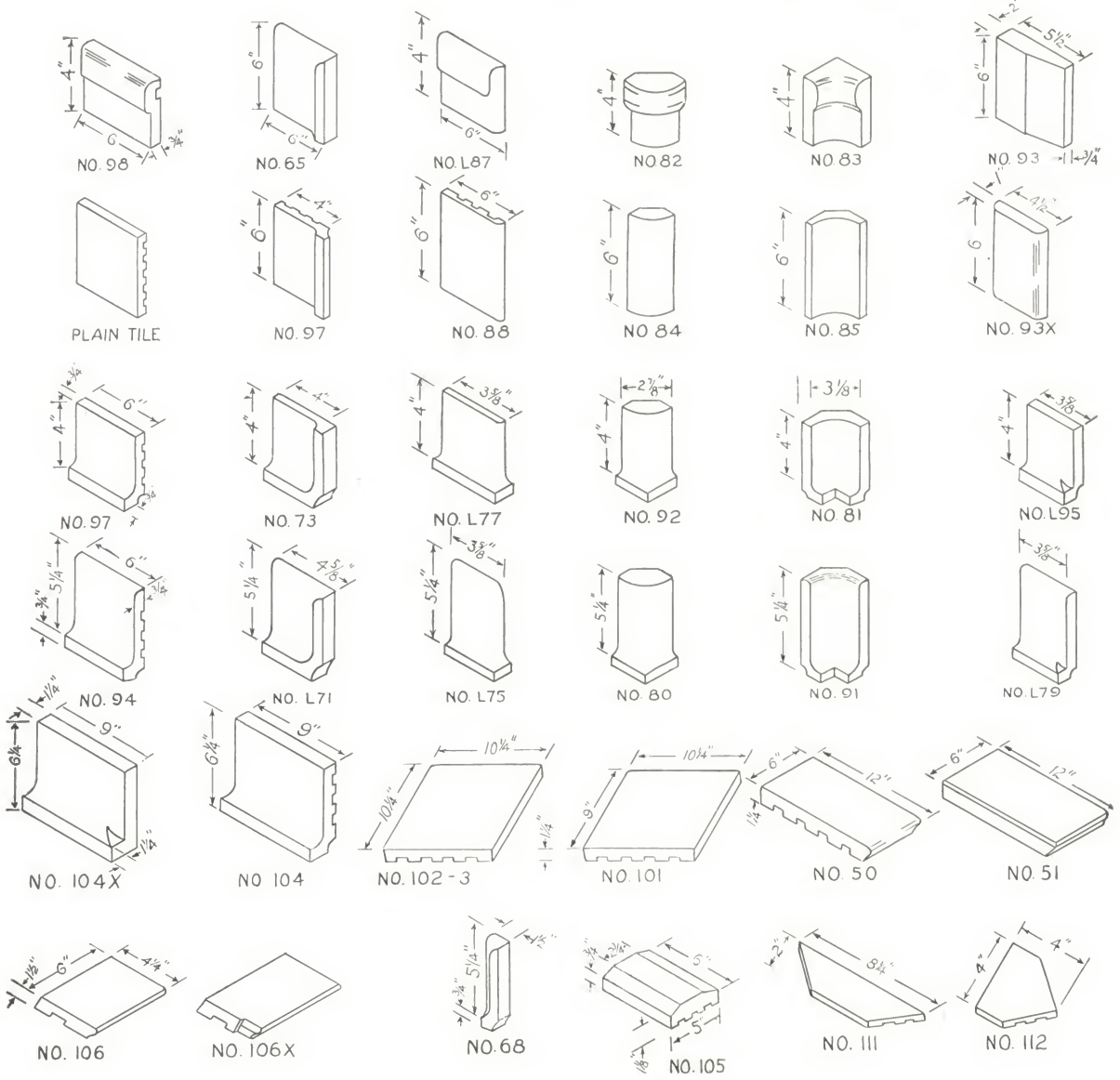
Field No. 42

Elongated Hexagons in Murtico Sunburst and Murtico Golden Glow and 2¾″x2¾″ in all six color ranges.

Field No. 44

Elongated Hexagon Short Halves in either Murtico Sunburst or Murtico Golden Glow.

Continued on next Page



SIZES PLAIN TILE

Size	Thickness
3 x3	½ Red, Brown, Gray, Buff
3 x6	½ Red, Brown, Gray, Buff
4 x4	½ Red, Brown, Gray, Buff, Sunburst, Golden Glow
2¾x2¾	¾ Red, Brown, Gray, Buff, Sunburst, Golden Glow
2¾x6	¾ Red, Brown, Gray, Buff, Sunburst, Golden Glow
4 x4	¾ Red, Brown, Gray, Buff, Sunburst, Golden Glow
6 x6	¾ Red, Brown, Gray, Buff, Sunburst, Golden Glow
4 x8	¾ Red
4½x6	¾ Red, Sunburst
6 x9	¾ Red, Sunburst
8 x8	¾ Red only
9 x9	⅞ Red only
4 x8¼	¾ Elongated Hexagons, Sunburst, Golden Glow

ROUND TOP BASE MEMBERS ¾" RADIUS

No. 94 Round Top Base, sizes, 4¾" high—4" and 6" wide, 6" high—6", 8" and 9" wide
No. L71 Left Internal Angles, Rights No. R70
No. L75 Left External Angles, Rights No. R74
No. L79 Left Stops, Rights No. R78
No. 68 Internal Angles, work either Right or Left
No. 80 External Angles 2¼" Radius
No. 91 Internal Angles 2¼" Radius

SQUARE TOP BASE MEMBERS ¾" RADIUS

No. L95 Left Stop
No. 97 Square Top Base, sizes, 2¼" high—6" wide, 3" high—6" wide, 4¾" high—4" and 6" wide, 6" high—6" and 9" wide
No. 73 Internal Angles, work either Right or Left
No. L77 External Angles, Right No. R76
No. L79 Left Stops, Right No. R78
No. 92 External Angles 2¼" Radius
No. 81 Internal Angles 2¼" Radius

WAINSCOT MEMBERS

For Heavy Cap

No. 98 Wainscot Cap
No. 97 Square Top Base
No. 81 Internal Base Angle
No. 85 Intermediate Internal Angle
No. 83 Internal Cap Angle
No. 92 External Base Angle
No. 84 External Angle
No. 82 External Cap Angle
No. LS7 Wainscot Cap Stop

FOR ¾" BULLNOSE CAP

No. 97 Square Top Base
No. L73 Internal Base Angle
No. 97 Base as Intermediate Internal Angle
No. 65 Internal Cap Angle
No. L77 External Base Angle
6x6 Bullnose as Intermediate External Angles
6x6 Bullnose Corners as External Cap Angles

STAIR MEMBERS

No. 104 Square Top Cove Stair Risers
No. 104X Square Top Cove Stair Risers Stops, Rights and Lefts
No. 101 Stair Tread
No. 102-3 Stair Tread Corners, Rights and Lefts
No. 50 6x12 Stair Tread
No. 51-52 6x6 Stair Tread Corners, Rights and Lefts

OTHER ITEMS

No. 93 Plinth Blocks
No. 93X Plinth, double bullnosed
No. 106 Window Stool
No. 106X Window Stool Returns, Rights and Lefts
No. 105 Threshold Tile
No. 111 Long Halves, Elongated Hexagon Tile
No. 112 Short Halves, Elongated Hexagon Tile
Diagonal Halves in all sizes plain tile
Bullnose Tile in all sizes plain tile
Bullnose Corners in all sizes plain tile

MUELLER MOSAIC COMPANY

Tilemakers

TELEPHONE 3-0866

WORKS AND MAIN OFFICE
TRENTON, N. J.

NEW YORK SHOWROOM: 103 Park Avenue—Telephone, Lexington 0363

TRADE-MARK

Products

FLOOR and WALL TILE; FAIENCE; MOSAICS; FROSTPROOF EXTERIOR TILE; MURAL DECORATIONS.

Mueller Faience and Flemish tile are handmade of plastic clays. This process enables the execution of special designs and shapes without great expense. This material is also positively frostproof and weatherproof and especially appropriate for exterior as well as interior application.

Mueller Flemish Tile

A handmade plastic clay product for extreme traffic, a strong artistic frostproof flooring product furnished with the natural undulations caused by the fire.

Mueller Faience Tile

A handmade plastic clay product with hard burned faience glaze, positively frostproof, flexible in design for architectural work, embossed designs and inlaid motifs of any intricate design.

Exterior Faience Panel

Other Products

Faience Roman Mosaics—A dust pressed faience glazed tile for interiors only.

Norman Flash Mosaics—A characteristic non-slip tile for interiors.

New Developments

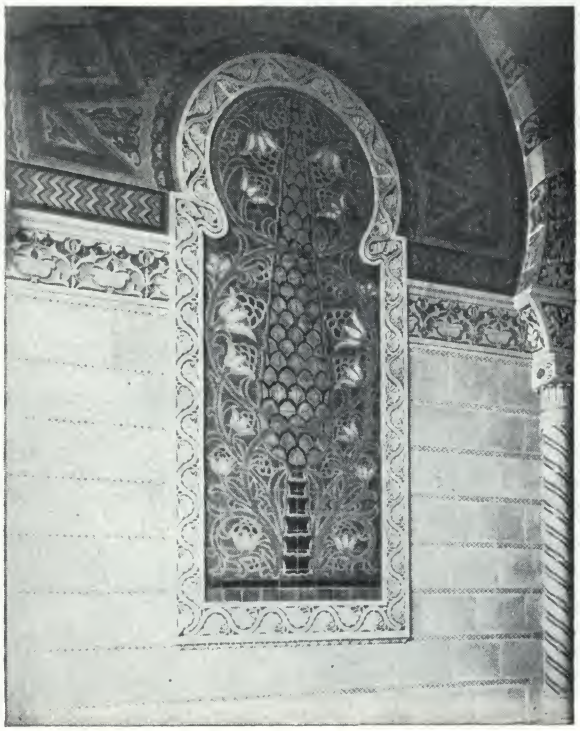
Rusta Tile—Plastic handmade tile with a penetrating faience enamel, sanitary and easy to keep clean.

Boulder Mosaic—A plastic handmade product unglazed or faience, for pools, garden walks, floors, etc.

Catalogues and Sketches

Catalogues and other literature cheerfully mailed upon application.

Polychrome Fountain



Polychrome Faience Panel, Shrine Temple, Trenton, N. J.

NORTON COMPANY

"Norton Floors"—Alundum (Non-slip) Floor and Stair Tiles and Treads

WORCESTER, MASS.

NEW YORK CHICAGO DETROIT PHILADELPHIA CLEVELAND PITTSBURGH HARTFORD HAMILTON, ONTARIO

Products

TILE (Semi-vitreous):
- ALUNDUM FLOOR and STAIR TILE.
- ALUNDUM CERAMIC MOSAIC TILE.

AGGREGATES:
- ALUNDUM AGGREGATES for art marble, terrazzo, cement, asphalt and composition flooring.

NORTON FLOORS
Alundum Tiles, Treads & Aggregates

STANDARD SIZES AND COLORS FLOOR AND STAIR TILE

Floor Tile	Stair Tile
Sizes, in.	Sizes, in.
3x1½x½ 3x3 x½	6x4x½ 6x4x¾
6x3 x½ 6x6 x½	6x6x½ 6x6x¾
6x3 x¾ 6x6 x¾	9x4x¾ 9x6x¾
9x4 x¾ 9x6 x¾	
Special sizes: 6x4, 7x3½, 9x9, 12x12 and 2 in. hexagonal.	Special sizes: 7x7 and 12x12 in.

Colors: brown, buff, gray, blue, white granite and green.

Features

The basic material in all Norton Floors is Alundum abrasive, the extremely hard and extremely tough Norton electric furnace product. To this abrasive and the method of bonding is due the permanently non-slip surface of Norton Floors, a surface whose non-slip feature is not lessened by water or other liquids nor by wear, a surface without grooves or corrugations to cause tripping.

The hardness and toughness of Alundum abrasive gives all Norton Floors extreme resistance to wear. They will stand up indefinitely under the most severe traffic conditions. In fact, the first installation of Alundum Tile has already been in service over fifteen years on the stairs of a New York subway station.

Alundum Stair Tile

Alundum Stair Tile (semi-vitreous) nosings on the long, steep stairways leading to a viaduct. Exposure to the elements does not affect this tile and it assures a non-slip surface in wet weather as well as dry.

Specifications

(1) Furnish and install where shown on plans Semi-vitreous Alundum Stair Tile (state size, thickness, shape and color) as manufactured by NORTON COMPANY, Worcester, Mass.

(2) Furnish and install where shown on plans Semi-vitreous Alundum Floor Tile (state size, thickness, shape and color) as manufactured by NORTON COMPANY, Worcester, Mass.

Alundum Floor Tile

An unusually steep ramp leading from the kitchen to the main dining room of a large metropolitan hotel made practical by Alundum Floor Tile (semi-vitreous). Even spilled liquids from the serving units along the ramp do not affect the safe, sure footing provided by this tile.

Alundum Stair Tile and Floor Tile

Alundum Stair Tile and Floor Tile (semi-vitreous) on all stairways and at all elevator landings in the new 12-story general office building of a prominent railroad. The success of Alundum nosings in a previous building of the railroad led to extended use of the tile in this building.

Continued on next page

"Norton Floors"—Alundum Ceramic Mosaic Tile (Non-slip); Alundum Aggregate for Non-slip Art Marble and Terrazzo

Alundum Ceramic Mosaic Tile

Alundum Ceramic Mosaic Tile in combination with vitreous mosaics is used around lunch and soda counters where water or other liquids cause a slipping hazard and where a non-slipping decorative mosaic floor is desired. Also used around swimming pools, in shower rooms, lavatories and similar places.

SIZES OF ALUNDUM CERAMIC MOSAIC TILE

Sizes	Colors
¾ in. square	Brown, white granite, buff, gray, blue, green
1 1/16 in. square	Brown, white granite, buff, gray, blue, green
1 in. hexagonal	Brown, white granite, buff, gray, blue, green
1¼ in. hexagonal	Brown, white granite, buff, gray, blue, green
1 1/16 x 2¼ in. oblong	Brown, white granite, buff, gray, blue, green
2¼ x 1 1/16 in. nosing	Brown, white granite, buff, gray, blue, green

Alundum Terrazzo Floor

Decorative terrazzo floors in colorful designs made non-slip with Alundum Aggregate. In all stair treads and the main floor of this large telephone exchange Alundum Aggregate was employed to assure walking safety.

Alundum Terrazzo Floor

Decorative "non-slip" terrazzo floors are used around lunch counters and in restaurants where spilled liquids cause a slipping hazard. Alundum Aggregate in this railroad station floor provides safety against slipping.

Precast Alundum Aggregate Treads and Platforms

Precast Alundum Aggregate Treads and Platforms provide permanently safe, sure footing for shoppers in all kinds of stores. Names of licensed manufacturers furnished upon request.

SIZES OF ALUNDUM AGGREGATE

No.	Sizes	Colors
Terrazzo	1/16 to ¼ in.	Brown, gray, buff, cream, green
0	1/28 to ⅛ in.	Brown, gray, buff, cream, green

Specification data on Alundum Aggregate for terrazzo furnished to all responsible terrazzo contractors.

Precast "Non-slip" Art Marble

Precast Non-slip Art Marble, treads and riser cast integral, manufactured by the Chicago Art Marble Company, 2883 Hillock Avenue, Chicago, Ill. Licensed by NORTON COMPANY.

Specification data furnished by Chicago Art Marble Company upon request.

Architects' Specifications

Alundum semi-vitreous tile should be placed under the tile specifications.

Non-slip terrazzo (Alundum Aggregate) installed monolithically should be placed under terrazzo specifications.

Precast Alundum Aggregate products should be placed under the marble work.

Literature and Samples

Literature and samples will be sent on request.

PARDEE MATAWAN TILE CO.

Everything in Tile, Furnishing the Only Bonded Installation

SHOWROOMS

101 Park Avenue
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1600 Walnut Street
PHILADELPHIA

1500 Santa Fe Avenue
LOS ANGELES

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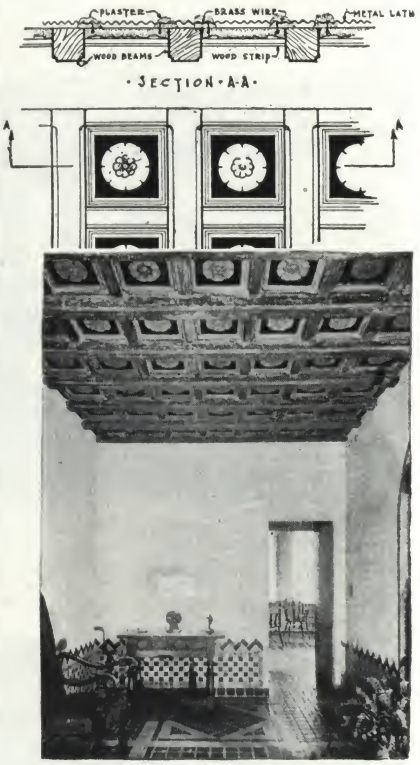
BUFFALO, N. Y. ATLANTA, GA. DALLAS, TEX. PERTH AMBOY, N. J. MATAWAN, N. J.

FACTORIES: PERTH AMBOY, N. J., and MATAWAN, N. J.

Products

White Glazed Wall Tile and Trim.
Satin Finish Wall Tile and Trim.
Satin Finish Floor Tile.
Satin Finish Fixtures.
Pro-cer Strips and Panels.
Bright Glaze Colored Enamels and Fixtures.
Grueby Faience Floor and Wall Tiles (weatherproof).
Grueby Faience Decoratives and Border Pieces (stock patterns).
Grueby Faience Specially Executed Panels.
Grueby Faience Fixtures.
Unglazed Floor Tiles.
Ceramic Mosaic Texture Blends.
Special Flint Tiles for industrial uses.
Royal Delft Faience and Decorative Tiles.
Old Dutch Picture Tiles.
Traceri Tiles (with stock or special designs).
Stane Glazes.
Non-slip Safety Tiles.
Unglazed Ceramic Mosaics.
Glazed Ceramic Mosaics (all sizes including gold and silver).
Garden Tiles.

Pardee Matawan tiles are supplied in a wide range of pleasing colors, designs and textures to suit every individual taste.



A Pleasing and Unusual Ceiling Treatment with 12x12-in. Faience Tiles

The Pardee Matawan exclusive screening and high firing process insures enduring beauty and everlasting satisfaction.

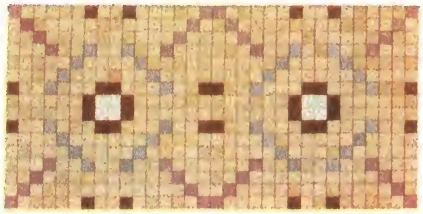
MATAWAN Pardee Tiles CERAMICS

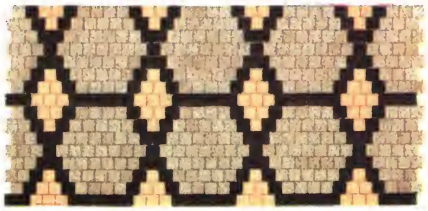
PARDEE MATAWAN TILES

MATAWAN Pardee Tiles CERAMICS MATAWAN Pardee Tiles CERAMICS

Whatever You Need in Tile

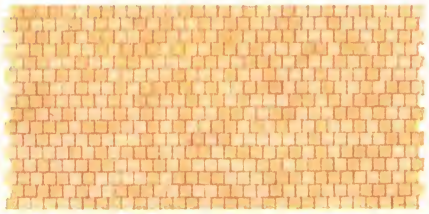
T–2704
Textures–520
500–510
560–580
Aberdeen Blend

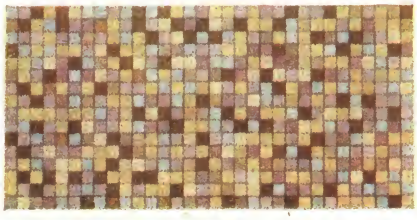




T–2810
Texture–580
Dark Buff
Black

T–2805
Light Buff
Dark Buff
Random





T–2705
Textures
500–530
510–580
520
Aberdeen Blend
Random

CERAMIC MOSAIC

A few designs are shown above. They give an indication of the interesting combinations possible from the forty-seven different colors including gold, silver and vermilion.

GRUEBY FAIENCE

Some of the possibilities of Grueby faience—the most celebrated faience in America—are shown in the illustration on the left, as well as a few Grueby decoratives. Specifications of this installation—

Floor—Grueby colors No. 211 and No. 227, 4 x 4 diagonal halves.

Border—Grueby colors No. 212, No. 218 and No. 227, with inserts No. 473 in colors No. 212 and No. 211.

Risers—Grueby colors No. 51, 6 x 6 with inserts No. 653, No. 654, No. 655 and No. 668.

Treads—Grueby color No. 227, 6 x 6.

Wainscot—A—Grueby colors No. 51 and No. 227, 6 x 4 diamonds.

Wainscot—B—Grueby colors No. 211 and No. 212, 6 x 4 diamonds.

Ceiling Plaques—Grueby Rosettes, colors No. 51 and No. 227, 12 x 12.

SERVICE TO ARCHITECTS

Our special art and design departments for Architects are always at your disposal for suggestions and color sketches, without cost or obligation.

Pardee Matawan Exclusive Screening and High Firing Processes Insure Enduring Beauty and Everlasting Satisfaction.

MATAWAN Pardee Tiles CERAMICS

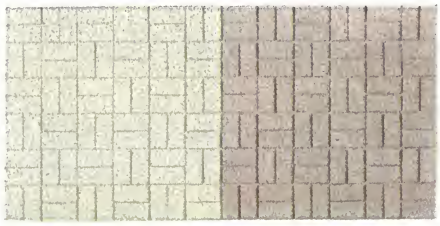
Continued on next page

PARDEE MATAWAN TILES

MATAWAN Pardee Tiles CERAMICS MATAWAN Pardee Tiles CERAMICS

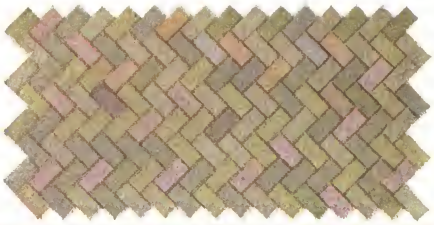
The Only Bonded Tile Installation

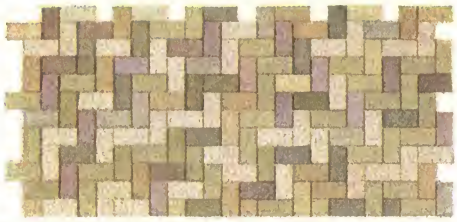
T–801
Textures
510–560



T–803
Textures
510–530

T–900
Texture
Aberdeen
Blend





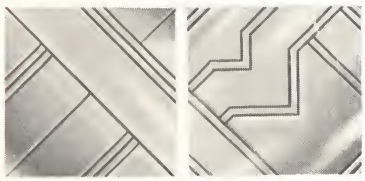
T–1005
Textures
520–580
Aberdeen
Blend
Random

ABOVE A FEW OF OUR CERAMICS

Being the largest manufacturers of ceramics we are in a position to give exceptional service to architects in installations for swimming pools, dairies, baths, clubs, showrooms, institutions, etc. Subtle colors and blends for walls as well as floors.

A MODERN BATH IN TRACERI TILES

The illustration on the left shows our new patented Traceri Wall Tile in blue and green. Many interesting and unusual designs can be worked out in this pleasing yet relatively inexpensive tile.



SAMPLES OF TRACERI TILES

COMPLIMENTARY PORTFOLIO FOR ARCHITECTS

Send today for a copy of our new tile portfolio in color, or refer to your A. I. A. File 23.

SEE ASSOCIATED TILE MANUFACTURERS CATALOGUE IN THIS EDITION

For standard shapes, sizes and uses of Pardee Matawan Tiles, see Associated Tile Manufacturers' catalogue filed in this 1931 Edition of SWEETS ARCHITECTURAL CATALOGUES.

MATAWAN Pardee Tiles CERAMICS

THE NATIONAL TILE COMPANY

(INCORPORATED)

40 Years in Business, Financial Rating over $1,000,000 High

Member of The Associated Tile Manufacturers

Manufacturers of White and Colored Glazed Wall Tile and Trimmers

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ANDERSON, INDIANA

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LOS ANGELES, CAL. -	- 2465 Porter Steet
CHICAGO. ILL. - -	228 North LaSalle Street
INDIANAPOLIS, IND. - -	57 East Maple Road
ST. LOUIS, MO. -	1946 Railway Exchange Building
SAN FRANCISCO, CAL. - -	670 Third Street

NATIONAL TILE TRADE MARK REG U.S. PAT OFF

PRODUCTS

COLORED GLAZED WALL TILE in Matt Finish (500 Line) and Bright Finish (800 Line).

We furnish bathroom accessories to match our Wall Tiles. Also plain strips in Bright and Matt Finish, all colors, in sizes 6″ x ½″, 6″ x ¾″, 6″ x 1″ and 6″ x 1½″.

CERAMIC MOSAIC Vitreous, Glazed and Unglazed; Semi-Vitreous, unglazed.

ART AND DESIGN DEPARTMENT

This Department is maintained for the benefit of Architects and Tile Contractors.

We welcome inquiries concerning tiles and their application and will gladly furnish detailed drawings or colored sketches of our own creation, or will develope designs from Architects or Dealers suggestions.

SERVICE

The National Tile Company is very favorably situated to supply products on short notice.

Catalogs, samples, etc. will be furnished to Architects and Dealers on request.

National Tiles are sold only through capable and responsible Tile Contractors.

NATIONAL SPECIALTIES

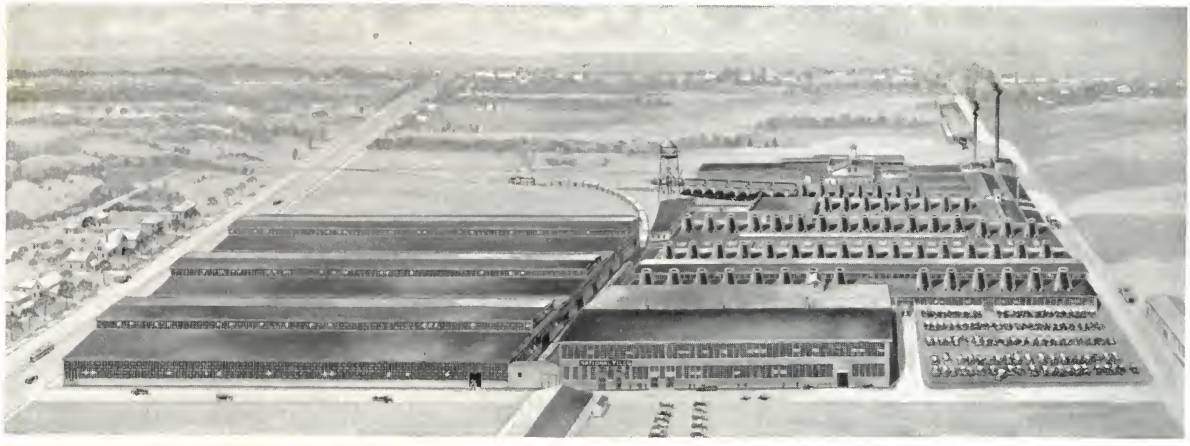
National Black in Bright, Matt or Persian Finish.

National Persian Matts (900 Line)

National Vari-tone Mats (400 Line)

National Vitreous Floor Tiles in 2″ and 3″ Hexagons, 2⅛″x2⅛″ and 3″x3″ Squares.

National Glazed Floor Tiles, Bright and Matt, on No. 200 Body in 2″, 3″, 3¾″ Hexagons, 2⅛″ x 2⅛″, 3″ x 3″ and 4¼″ x 4¼″ Squares.



Plant of The National Tile Company, Anderson, Indiana

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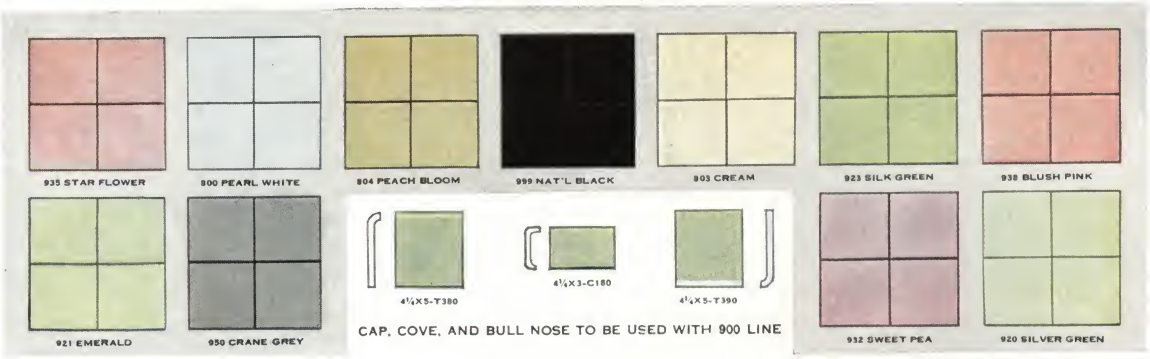
WALL TILE
PERSIAN MATTS (900 Line)



MATT FINISH
(500 Line)

PERSIAN MATTS
(900 Line)

National's Persian Matts are very soft, delicate, pleasing colors and express individual taste and personality.

These charming colors are applied to a hard body and are suitable for floors as well as walls

MATT FINISH
(500 Line)

The panel at the left shows twelve of National's popular matt glaze colors.

The warmth of color tones and delicate shadings of these beautiful dull finish glazes afford the opportunity to achieve a great variety of pleasing effects of singular beauty and dignity.

These colors, when applied to our No. 200 body, are used as floor tile to match the walls.

BRIGHT GLAZE
(800 Line)

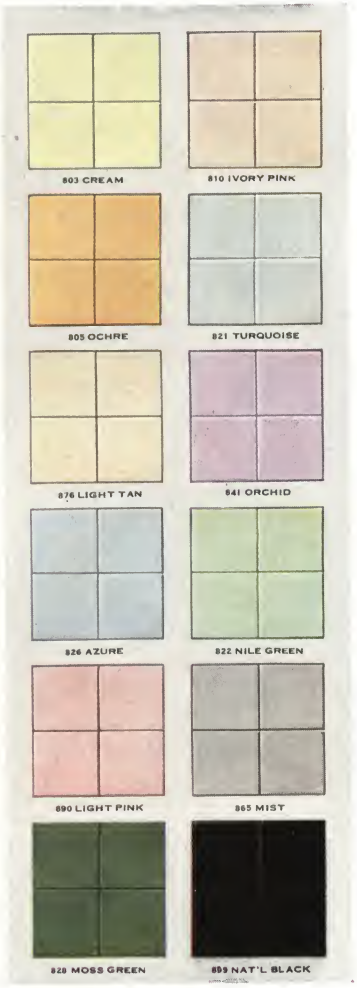
Twelve of National's bright glaze colors are shown in the panel at the right. This range of colors affords unlimited opportunity for artistic expression and has great beauty as well as brightness and immaculate cleanliness.

These colors, when applied to our No. 200 body, are used as floor tile to match the walls.

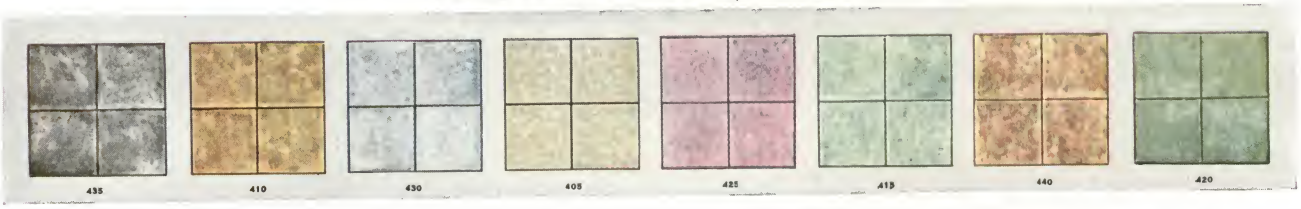
VARI-TONE MATTS
(400 Line)

Below is illustrated National's New Vari-Tone Matts. These colors are on regular white body and with their mottled appearance offer interesting possibilities for unusual color treatments of rare beauty.

BRIGHT FINISH
(800 Line)



VARI-TONE MATTS (400 Line)



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FLOOR TILE

BORDER DESIGNS

W-5000

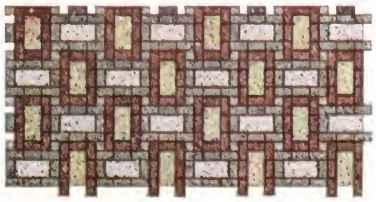
1x1 GRANITE 26
1x½ GRANITE 28
½x½ GRANITES 25-26

1x1 GRANITES 25-26-28
1x½ GRANITE 27
½x½ GRANITE 27

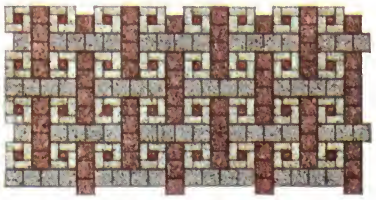
W-5002

FIELD DESIGNS

W-5001



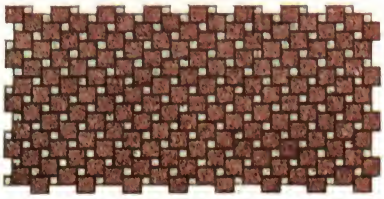
2x1 GRANITE 28—WHITE GRANITE
1x½ GRANITES 25-26
½x½ GRANITE 27



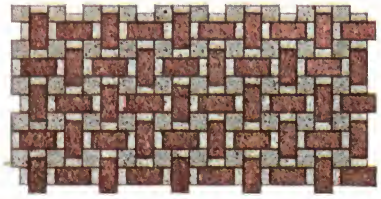
1x1 GRANITES 25-26
1x½ GRANITE 28
½x½ GRANITE 26

W-5003

W-5005



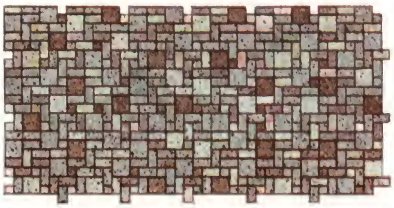
1x1 GRANITE 26
½x½ GRANITE 28



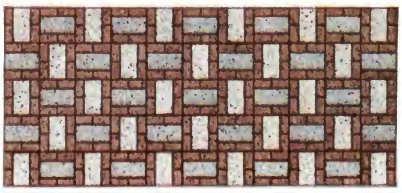
2x1 GRANITE 26
1x1 GRANITE 25
1x½ GRANITE 28

W-5007

W-5009



1x1 GRANITES 25-26-28
1x½ GRANITES 25-26-28
½x½ GRANITES 25-26-28

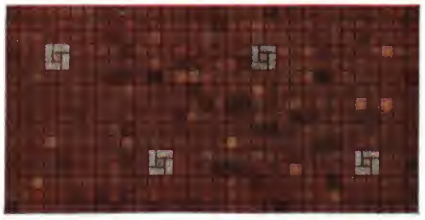


2x1 GRANITES 24-27
1x½ GRANITE 26

W-5011

W-5013

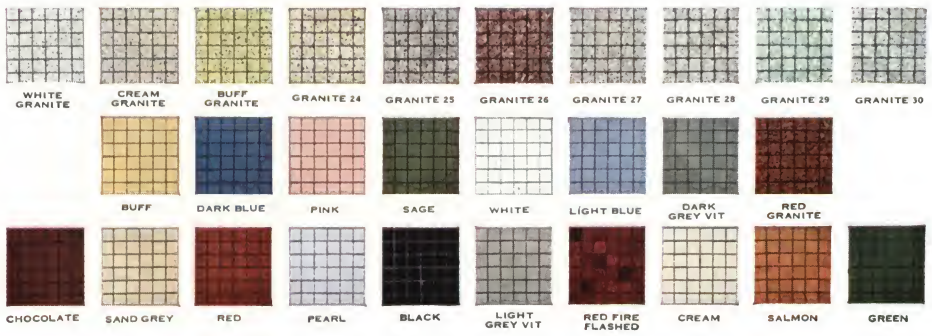
1½x¾ BASKET WEAVE
RED FIRE FLASHED



¾x¾ RED FIRE FLASHED
1x½ GRANITE 26
½x½ GRANITE 26

W-5015

FULL COLOR RANGE OF NATIONAL CERAMIC FLOOR TILE



Continued on next page

Specifications for the Charming Bath Room

Illustrated at the Right

Ceiling Cove 4¼″x5″ T-330 Color National Black No. 899.
Ceiling 4¼″x4¼″ Color Cream No. 803.
Walls 4¼″x4¼″ Color Orchid No. 841.
Base 4¼″x5″ T-330 Color National Black No. 899.
Floor Pattern
C-739 Wicker Weave
2″x1″ White Unglazed
½″x½″ Black Unglazed

Specifications for the Attractive Bath Room

At the Left

Cap 4¼″x2″ C-102½ Color Moss Green No. 829.
Strip 6″x½″ Color Moss Green No. 829.
Walls 4¼″x4¼″ Nile Green No. 822.
Base 4¼″x4¾″ B-209 Color Moss Green No. 829.
Floor 2⅛″x2⅛″ Color Nile Green No. 822 and Pink No. 890 on No. 200 Body.

GLAZED FLOOR TILE

CAPS

6x2 A-4210

6x1½ C-101

6x2 C-102

6x3 C-107

6x2 T-300

6x3¾ T-302

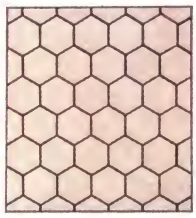
4¼x5 T-305

6x6 T-306

6x4¾ T-346

3¾″ HEX 504 PEACH

2″ HEX. 890 LIGHT PINK


2″ HEX. 810 IVORY PINK

3¾″ HEX. 822 NILE GREEN

4¼x4¼ 529
LAUREL GREEN

GLAZED FLOOR TILE

2″ Hex., 3″ Hex., 3¾″ Hex., 2⅛″x2⅛″, 3″ x 3″ and 4¼″ squares are finished in any of our regular bright glaze colors (800 Line) or matt glaze colors (500 Line) on hard body.

National Persian Matts are also used for floor tile.

4¼x4¼ 506
GOLDEN TAN

CERAMIC MOSAIC

NATIONAL CERAMIC MOSAIC TILES are made in the following sizes—⅜″ x ⅜″, ½″ x ½″, ¾″ x ¾″, $1\frac{1}{32}$″ x $1\frac{1}{32}$″ and 1½″ x 1½″ Squares, 1″ Hexagons and 1¼″ Hexagons, 1″ x ½″, 1½″ x ¾″ and 2″x 1″.

These Tiles are made in the colors shown at bottom of the preceding page. They can also be glazed with our Bright Glaze (800 Line) or Matt Glaze (500 Line) on No. 200 Body.

TILE TRIMMERS

The illustration shows some of National's most popular glazed tile trimmers including caps, bases and plinths. These trim tiles are finished in white glaze, bright glaze (800 Line) or in matt glaze (500 Line).

PLINTHS

¼ ROUND

6x1¼ T-319

7x5 T-311

7x3¼ T-312

7x4 T-313

COVE

6x1¼ T-317

BASES

6x2 B-208

6x3¾ T-329

4¼x5 T-330

4¼x4¾ B-209

6x6 T-331

6x6 B-202

6x6 B-203

6x4 T-340

ROBERTSON ART TILE CO.

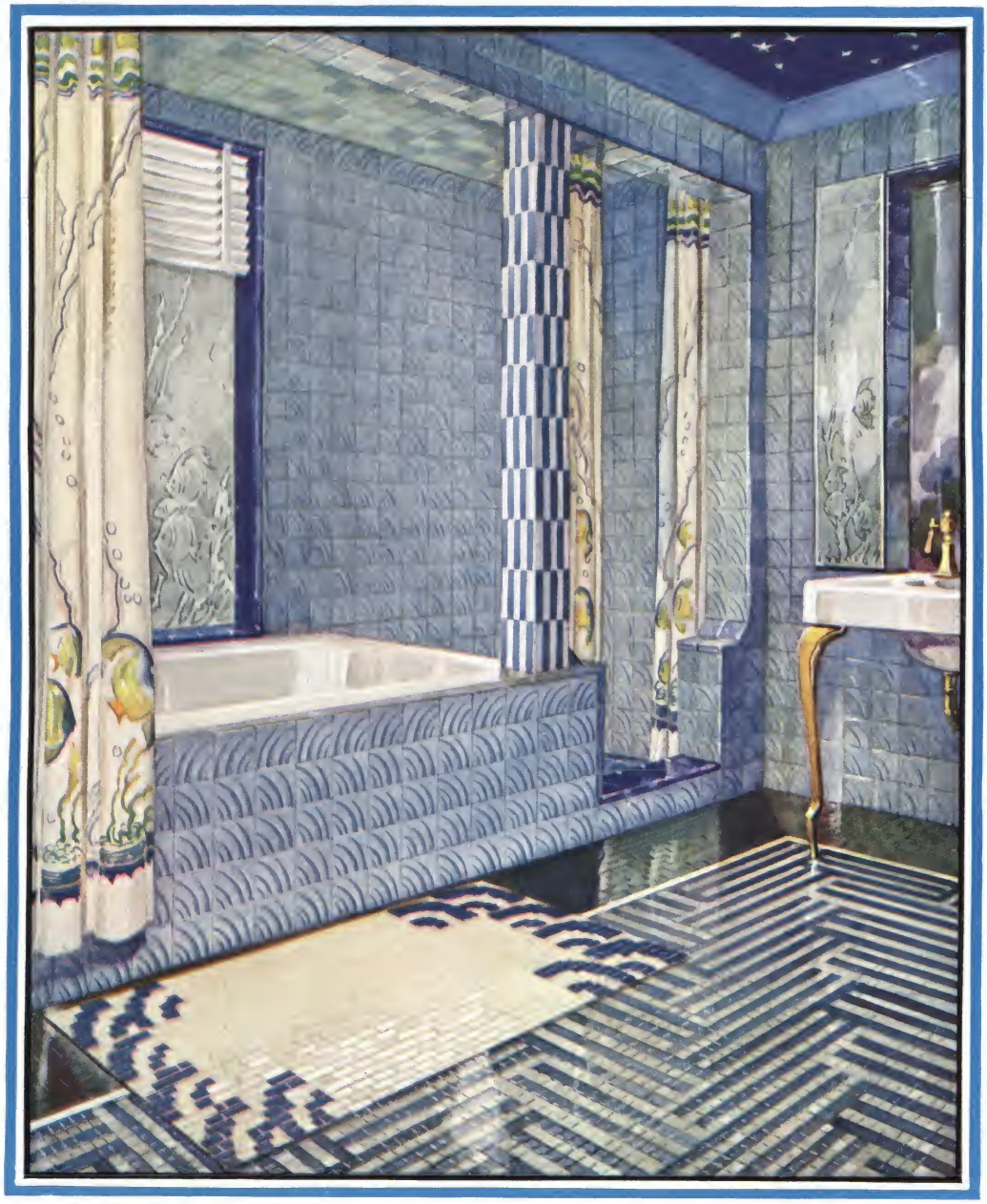
TRENTON, N. J.

BRANCH OFFICES

NEW YORK, N. Y., 101 Park Avenue | CHICAGO, ILL., 20 W. Austin Avenue | DETROIT, MICH., 206 E. Grand River Avenue

PRODUCTS

Manufacturers of White Wall Tile, Matt and Bright Enamels, Chromatex Mosaic, Ceramic Mosaic, Decorative Tile, Trimmers and the exclusive innovations—Planatile, Incised Planatile and Flormatex Matt Glazed Floor Tile.



PLANATILE CHROMATEX FLORMATEX

Planatile is the newest innovation in wall tiles. The two series, surface designs and incised designs, in a beautiful range of colors, two types of glazed finish and new proportions, offer unusual opportunity for the architect to achieve distinctive decorative effect, heretofore impossible with ordinary color wall tile.

Chromatex is a development of ceramic floor tile in new colors, additional sizes and a new textured surface. It may be used not only for floors but for walls where color and design are sought in first quality material at a price comparable to that of second quality white glazed wall tile.

Flormatex is the newest floor tile for bathrooms or any other rooms in which wear is not excessive, and for use in walls and wainscots. A hard, vitreous tile with matt glazed surface to harmonize with the Planatile color range. Available in a new series of sizes and shapes.

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ROBERTSON PLANATILE—*Incised Designs*

Fig. No. 1

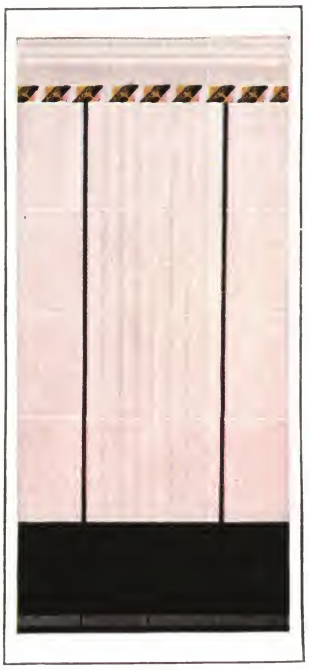


Fig. No. 2

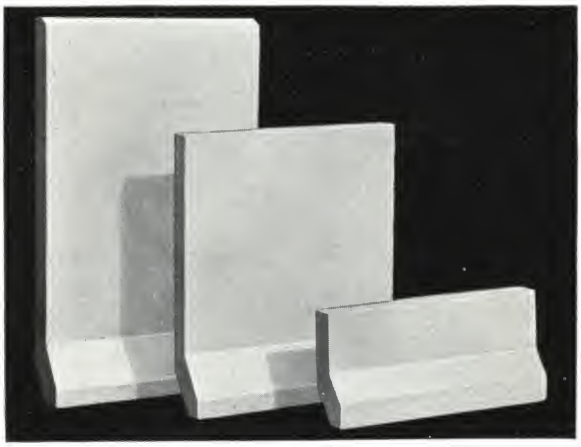
Planatile Wainscots *{Above}*

Fig. No. 1—Shows a single pattern formed by a field of Reed Stripe Planatile (6¾x4¼ in.) in light blue with decorative border No. 3 (6x3 in.). The buttress base is a deeper shade of blue. The set-back cap (6x3 in.) matches the blue field.

Fig. No. 2—An interesting variation with a field of alternating panels of Angle-Stripe Planatile and plain tile (6¾x4¼ in.) separated by a plain black stripe (3x¼ in.). The buttress base is also black, while the set-back cap is the same shade as the field. Decorative border No. 7 (6x1 in.) is orchid, of a slightly deeper hue.

Planatile Buttress Base *{Below}*

Buttress Base—Standard tile bases with their ¾-in. curve have not been re-designed for a generation and have little to recommend them—except that they were an improvement on a right-angle plane between the two planes of the base. Now this Robertson innovation is an improvement on the older types both in appearance and efficiency. The 45-degree plane between the right angle planes is more harmonious and far easier to clean than the quarter circle.



Robertson Buttress Bases

6¾x4¼ in. 4¼x4¼ in. 1¾x4¼ in.

An Entirely New Idea in Tile

Incised designs which permit the color of the tile to become an inseparable part of the design by the controlled gradation of the color tones. Thus a single color in an incised design may flow smoothly from the most delicate tint to a full strong tone where the depth of the design permits.

The incised designs were originated by our Art Director. Each has an interesting origin. Each is a decorative unit which inspires new and original combinations to secure new decorative effects.

One of the most interesting of Robertson Incised Planatile features is the freshness of proportion—the new size which departs from conventional tile sizes. In addition to the regulation 4¼x4¼ in. it is made in the new 5 ½x3 ½ in. size.

Angle Stripe, Ripple Wave and Reed Stripe Planatile — not incised — are made in a new

Incised Planatile Wainscots *{Below}*

Fig. No. 3—An attractive pattern incorporating 4¼x4¼ in. plain tile with 4¼x4¼ in. Planatile, incised design, "Airport." The color is light tan. The buttress base, of the same proportion, is two shades darker. Decorative Border P.B. No. 3 is also tan of an intermediate tone. The set-back cap matches the field.

Fig. No. 4—Another type of divided panel, consisting of single vertical rows of "Spray and Ripple" Incised Planatile and double rows of plain tile, separated by black strips (3x¼ in.). The buttress base is black, while the decorative border No. 1 is of a deeper shade of pink. The set-back cap matches the field. The rows of plain tile may be increased to produce an effect suitable to the proportions of the room.

Fig. No. 3

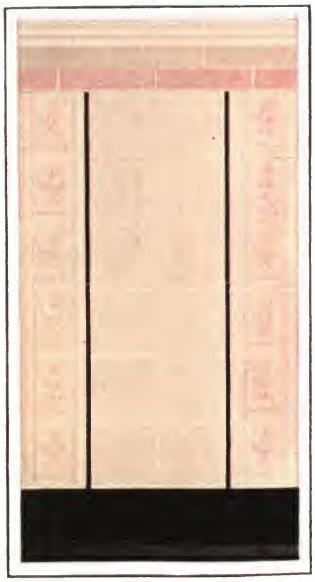


Fig. No. 4

Continued on next page

Provide Unlimited Decorative Opportunities

size—6¾x4¼ in. The Fold Stripe design comes in the 6x6 in. size.

The range of colors available in both Robertson Planatile and Incised Planatile is so varied and constantly expanding that it cannot be completely illustrated here. Samples of Planatile or Incised Planatile will be sent on request.

There are two types of finish which distinguish Robertson Planatile: bright and semi-matt finish, with a satin sheen . . . neither reflective nor dull.

Co-operation with Architects and Designers

Architects will find additional information and illustrated literature available on many specific uses for Robertson Planatile, Chromatex and Flormatex. Our art and designing department will gladly co-operate in developing new and unusual effects and in adapting these new products to individual requirements.

Planatile and Incised Planatile *{Below}*

Fig. No. 5—A field of cool gray, Ripple Wave design Planatile (6¾x4¼ in.) with a black buttress base of the same size. The set-back cap is the same gray as the field (6x3 in.), while an appealing bit of color is added by the decorative border No. 5.

Fig. No. 6—An unusual all-over pattern resulting from the Planatile incised design, "The Flash." The color is orange. The black buttress base and set-back cap add a strong contrasting note, while the decorative border No. 7 relieves the severity of harsh lines.

Fig. No. 5

Fig. No. 6

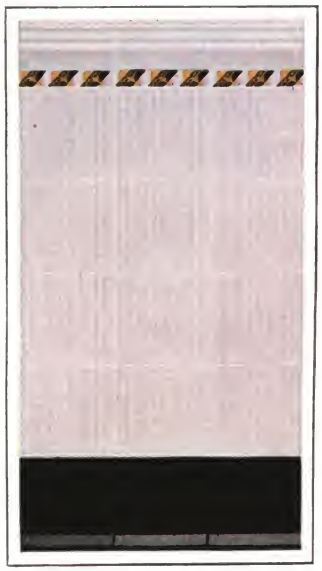


Fig. No. 7

Fig. No. 8

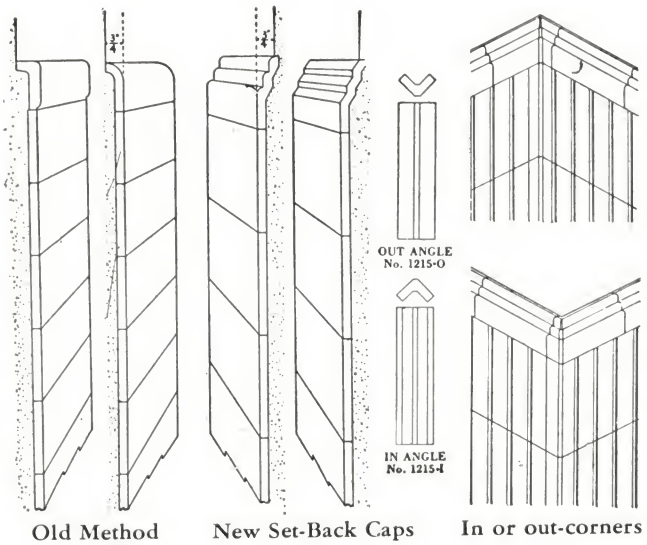
Planatile and Incised Planatile *{Above}*

Fig. No. 7—Planatile Fold Stripe, in dark orchid, forms the field. The 6x6 in. size is notable because of the different appearance which it provides. Set-back cap and decorative border are of the same orchid tint, while the buttress base, also 6x6 in., is black.

Fig. No. 8—Here is a combination arrangement of plain tile with the incised designs "Spray" and "Leaf Ripple," forming in effect an interlocking border. The field border and set-back cap and buttress base are in contrasting tones of tan.

Planatile Set-back Caps *{Below}*

Set-Back Caps—How to connect the plane of a tile wainscot and the plane of the wall above the wainscot? The old method left much to be desired in appearance and in cleanly maintenance. Robertson Caps, the new method, make a more satisfactory terminal to the tile area, are much easier to keep clean at the joint with the finished plaster wall, and are quite in keeping with the current trend of design in set-back architecture.



Old Method New Set-Back Caps In or out-corners

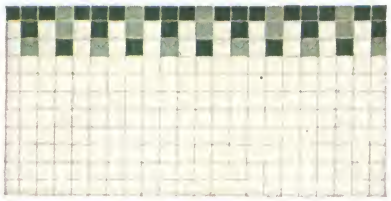
Continued on next page

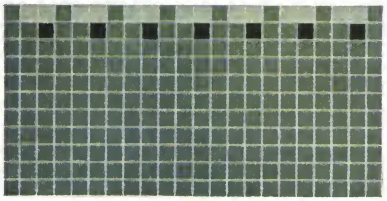
ROBERTSON CHROMATEX AND FLORMATEX

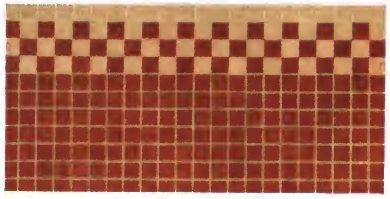
CHROMATEX
THE COLOR SUBSTITUTE FOR WHITE GLAZED TILE

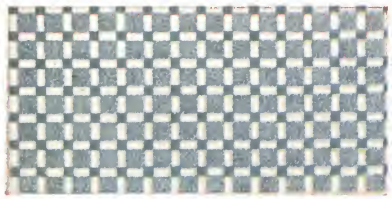
The development of Chromatex Mosaic had its origin in the desire to provide not only color but polychromy at a cost which would be comparable to any known grade of plain white glazed tile. An almost endless variety of colors with variable textures inspires unlimited patterns and blends.

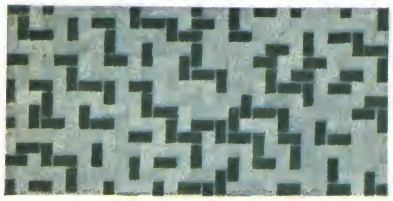
The two most effective sizes are 1x1 in. and 2x1 in., although Chromatex is also made in ½ in. square and ½x1 in. It is practical to use one size alone or two or more sizes in combination for unusual effects.









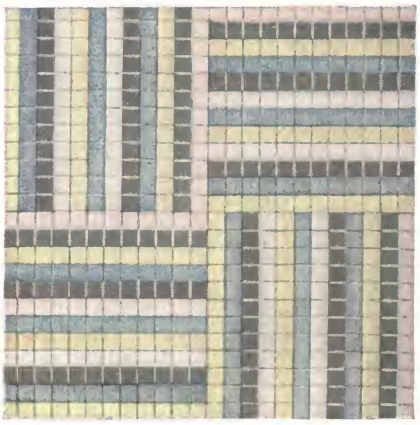


Interlocking borders and floor and wall fields in Chromatex are shown on this page in their true colors. These samples indicate the extreme flexibility of design made possible by the color, texture and size range of this new ceramic tile. The wainscot panel on the right is used in the men's washrooms of the Chrysler Building, New York.

Chromatex is especially adapted for long wearing floors, outside work and swimming pools, where a hard, vitreous, non-slip tile is required, and owing to the color and texture variation, architects are finding Chromatex a welcome color substitute for white glazed wall tile at no greater cost.

FLORMATEX
Matt Glazed Floor Tile

In answer to a demand for floor tiles to harmonize with Planatile and plain color glazed wall tile, Robertson presents Flormatex, the new matt glazed floor tile. A hard, vitreous body with durable matt glaze in a beautiful range of colors, Flormatex is ideally suited for floors of bathrooms or any room in which the wear is not excessive. Also, an innovation for wainscots and walls, because of the wide variety of sizes—2⅛x2⅛ in., 4¼x4¼ in., 3x3 in., 2x1 in., 3x1½ in., 4¼x2⅛ in. and 2 in. hexagon.



Architects will find great latitude for the creation of interesting effects in the use of these three new Robertson Art Tiles—Planatile, Chromatex and Flormatex.

WILLIAM H. REVIS, INC.

35 West 25th Street, NEW YORK, N. Y.

REPRESENTATIVES

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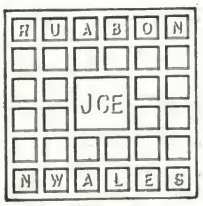
EASTERN AGENTS FOR THE FOLLOWING

THE CALIFORNIA ART TILE CORPORATION
NEMADJI TILE & POTTERY CO.
THE S. A. WELLER CO.
CARLYLE LABOLD CO.

Products

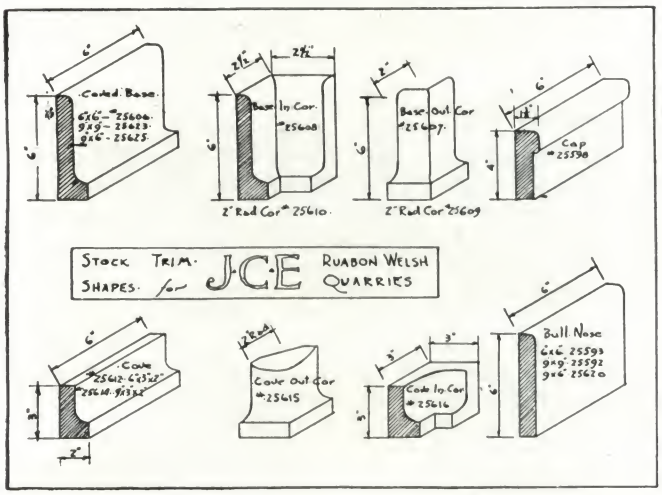
J. C. Edwards Welsh Quarries.
Welshbrown Quarries.
Sinzig Flint Tiles.
Revis Oatmeal Glazes.

J. C. Edwards Welsh Quarries



All JCE tiles are die-stamped on the back as above

These are the handmade quarries manufactured uninterruptedly for over eighty years by J. C. Edwards (Ruabon) Ltd. at Ruabon, North Wales. The celebrated cherry red color is prized and known all over the world and is peculiar to Ruabon clay. These quarries are individually pressed in hand presses and are true to size and shape. For this reason they are particularly easy and economical to lay and retain their original appearance with an absolute minimum of care. J. C. Edwards Welsh Quarries are readily recognized by the die-stamped back and can be quickly obtained through all established tile contractors. Stocks are carried in the usual tile sizes in the principal ports of the United States and Canada.



Welshbrown Quarries

Possess all the excellent features of the Ruabon Red but are made in mingled shades varying from golden brown to a deep purplish brown. A floor of these quarries will not only last for all time, but is rich in color and blends with almost any color scheme. They are unobtrusive in effect and are untiring and welcome to the eye after a lifetime of daily association. For hardness and general utility Welshbrown Quarries are unsurpassed, as is evidenced by a recent test made by one of the largest research laboratories in the United States which awarded them first place among all the standard tiles tested.

Uses—Particularly recommended for use on floors of private residences, schools, public buildings, etc., because of the easily cleaned surface and pleasing texture; and for industrial buildings, because of the extreme hardness and the ability to withstand oil, acid and excessive use. Also used for ships' galleys, companionways, kitchens, etc.

Colors—The colors of these tiles go entirely through them and are not merely surface colors. They are natural colors of the blended clays without the admixture of any coloring matter. All colors are obtainable in non-slip paneled pavers.

Sizes—Made in many shapes and sizes, the most popular in present day use being 6x6 and 9x9 in.

When Specifying—Specify Welshbrown Quarries in size and color selected.

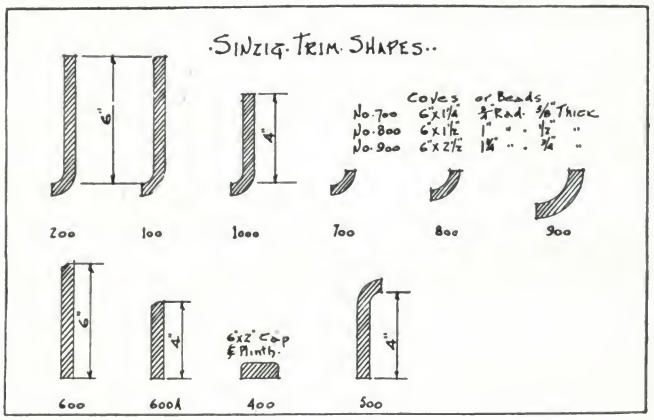
Sinzig Flint Tiles

Sinzig Flint Tiles are extremely dense and hard. They are impervious to dampness or grease. They withstand frost, are acidproof, and their perfect surface requires very little cleaning. Sinzig Tiles are produced also with rough surface, namely, pebbled, grooved and paneled, where non-slip floors are desired.

Uses—Recommended particularly for vestibules, porches, kitchens, power stations, engine houses, bakeries, dairies, operating rooms and chemical laboratories. They are also used for wall covering under various conditions where the requirements are more severe than can be met by the use of glazed tiles.

Sizes—All colors are made in 2, 3, 4, 6, 8 and 10-in. squares, and in 2, 4 and 6-in. hexagons.

Details and Samples—Complete details and samples of trimmers upon request.



Revis Oatmeal Glazes

Revis No. 5000—A golden blend introduced to provide the effect of color with the economy of transparent glaze. The beauty of this tile is in the color of the natural clay revealed through the transparent glaze, which accentuates the shadings caused by variations of heat.

Sizes—Furnished in 4x4 and 6x6-in. sizes, together with all necessary trimmers.

Revis No. 2005—A grayish opaque glaze. This tile is unique and is prized not only for perfection of color, glaze and form, but because of the indefinite misty mottle which approaches a cloudiness.

Sizes—These tiles are furnished in 4x4 and 6x6-in. sizes, together with all necessary trimmers.

THE ROOKWOOD POTTERY COMPANY

TELEPHONE
CANAL 6135, 6136

CINCINNATI, OHIO

Products

"ROOKWOOD" MAT GLAZED ARCHITECTURAL FAIENCE; MAT GLAZED, ENAMEL GLAZED and UNGLAZED FLOOR and WALL TILE; DECORATED TILE; GARDEN POTTERY and ORNAMENTS; POTTERY.

It has always been the purpose of Rookwood to devote itself to the more difficult problems of ceramics. It began as far back as 1880. An experience actually extending over fifty years has established a very unusual mastery of the technique involved in the making of pottery and tile, particularly for artistic uses. It is these technical resources which Rookwood gives to the architect who wishes to do fine and unusual things in tiles for the decoration of buildings.

Rookwood is not a factory highly organized for large commercial output. It is rather a studio dominated by the interest of its artists in the working out of projects for their decorative possibilities. Architects who are using Rookwood know the resources of its extremely wide color palette, almost unlimited in scope, and at the same time the quality of tone harmony that exists in its thick glazes which possess great luminosity. And the durability of these glazes has been proven by the severest rubbing tests and, better still, by long years of hard service in floors and walls.

Quality

Rookwood furnishes tile in one quality only. It is exceptionally fine in character and necessarily uncommercial. Consequently, where this is wanted, a direct specification of Rookwood is the means of securing it.

Rookwood Glazes

The charm of Rookwood glazes lies largely in their remarkable richness of texture and the subtlety of variation. However, where comparative uniformity is desired, this is possible at Rookwood in unusual degree because of the command there of the technique of manufacture.

Facilities

Complete architectural and pottery plants that possess technical resources acquired through fifty years of actually continued experience in the making of all sorts of faience bodies and innumerable colored glazes.

The plants are thoroughly equipped to execute designs of architects and of decorators, or special designs by Rookwood decorators skilled in the ceramic arts.

Special Service

When desired, assistance is given to architects in the adaptation of our materials to their designs; for purposes of appropriation, tentative estimates of cost are prepared; complete setting plans and color studies are available where the installation warrants; measurements in architects' blue prints are closely adhered to.

THE ROOKWOOD POTTERY COMPANY makes no contracts for installation, but furnishes its material through responsible tile contractors.

Illustrations of our tile work furnished upon application.

Illustration

The following picture shows the use of Rookwood tile adapted to the architect's design. This installation has been generally recognized as a most important and exacting piece of plain tile work. Every unit in this complicated structural problem was got out from architect's blue prints to fit definite requirements, and the whole was assembled without the slightest discrepancy.

The color scheme ranges in alternating field masses, from bright blues and greens at the top down through six lighter transitions of these colors to the bottom. Orange, ivory, yellow and vermillion red carry out the architect's design motif.

We reproduce here particularly this piece of work because of comments passed upon it by architects and tile men to the effect that it was typically "a job for Rookwood" which had the exceptional technical resources needed in its execution.

Rookwood Registered Trade-mark

The registered trade-mark shown below is pressed into the clay of every tile and vase made at Rookwood.

TRADE-MARK

Continued on next page

Union Trust Building, Detroit, Mich.
SMITH, HINCHMAN & GRYLLS, Architects

THE S. A. WELLER COMPANY

Weller Pottery—Tile Division

TELEPHONE
MAIN 264

ZANESVILLE, OHIO

EASTERN REPRESENTATIVE, WILLIAM H. REVIS, INC., 35 West 25th Street, NEW YORK, N. Y.

WELLER POTTERY

By Hand-makers of Pottery
Since 1872

Products

TILE and POTTERY:

Weller "Paintings in Tile"; High Fired Plain Flat Glazed Faience Tiles; Inlay and Modeled Ornamental Tiles; Mantel Designs; Mantel Shelves; Fireplace Arches; Grille Tiles; Fountain Designs; Bathroom Accessories; Garden Pottery in Graystone; Garden Accessories; Pottery of all kinds.

Resources

Sixty years of ceramic research give to the Weller Potteries unusual resources. Any design possible to ceramic arts—in addition, any design possible to oil painting, is possible to Weller Art Tiles.

Made to Order

Practically all Weller Art Tiles are made to order at the architect's or contractor's specifications, with sketches he furnishes, or with sketches made by Weller artists in clear understanding of the beauty feasible with tile, and of the architect's particular needs. This means that installations with Weller Tiles are without duplication. Each is the only one of its kind.

Quality

Weller Tiles are hand made, hand painted, hand glazed. They are singularly rich in effect—obviously beautiful as building media. There is unlimited variety of technique. There are high fired luminous glazes. There are colors ranging from the sheerly intensive "H" series, incisive and vehement in tone, for floors, large shops, theaters; to the "L" series of refreshing pastels for bathrooms and fireplaces; and the "S" series, embracing brilliant reds and special colors.

Practicability

Naturally, Weller Tiles are wrought in a grade of tile worthy of the care expended upon them. They are eminently practicable. They have the strong body essential for permanent installations; are exceptionally hard, but not brittle. They absorb adequately for close adhesion, but are not porous. They can be cut sharply, cleanly, for shaping around fixtures.

Weller Tiles are made in standard sizes with an unusual uniformity of dimension. Whatever compositions are desired, there will be no need to juggle with joints. Because of the beauty of the tiles, complicated compositions are not essential to obtain notable results.

Weller Art Tiles will outlast almost any other portion of the building. They are frost, wear, and acid proof. Their high glaze permits an easy keeping of immaculacy. Their colors do not fade. The subtle gradations of tone used in the tile paintings do not lessen through wear or weather; they are fired permanently into the glaze. Faience tiles, bathroom and kitchen accessories—all are in the full range of glazes, permitting completely harmonious installations.

Paintings in Tile

Some of the most unusual of Weller Tiles are the panels. A few are illustrated on the following page. They have light and brilliancy usually associated only with canvases painted in oil. Strong in pictorial appeal, with a velvet softness in color contrasts, tile paintings are a paradoxical contradiction to the smooth cold glaze of tile. Note the three-dimensional quality; the refreshing freedom; the strength and subtlety of light and shadow.

Weller uses two processes. "Silvertone," with the soft full tones of modern water color. And "Hudson," with the warmth and luminosity of oil paintings. Each tile painting is an original free-hand painting. No decalcomania or stencil is used.

Fadeless paintings in durable tile, combined harmoniously with hand painted, pure decorative tiles, make for arrestingly beautiful installations.

Illustrated also are Inca tiles, authentic copies of Inca stone carving. These and "Paintings in Tile" show the two extremes of Weller technique—from designs of prehistoric origin to new departures in tilecraft.

Services

The Weller Potteries will supply detailed working drawings to contractors—sketches and estimates in line with the installations they have in mind. All material is sold only through reliable tile contractors. The Weller Potteries do not contract for installations. Free tile pamphlets are constantly available—and there are always new ones.

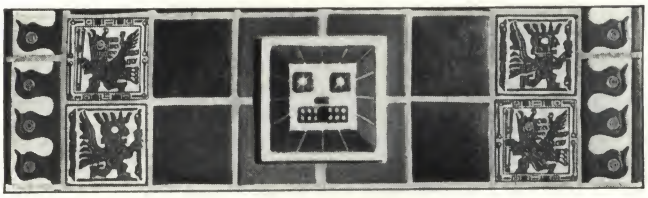
Specifications

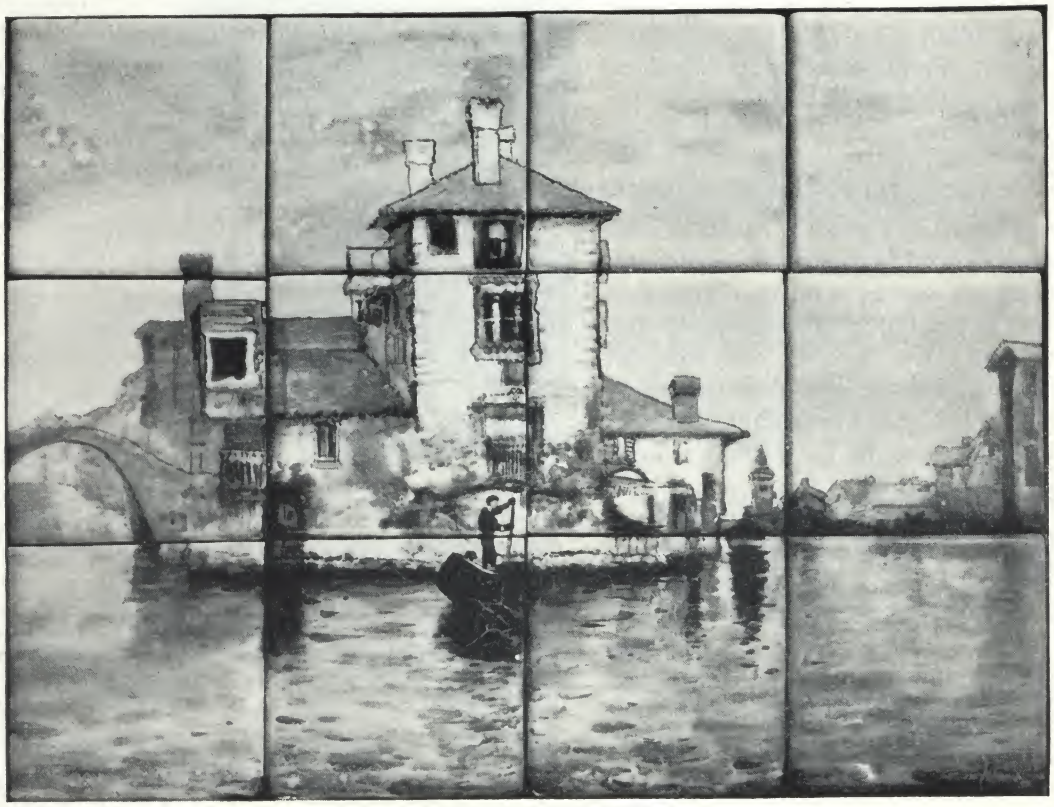
The following spaces shall be in Weller Art Tiles according to their designs and layouts approved by the architect. (List.)

Continued on next page

PAINTINGS IN TILE

"Paintings in Tile"—Each tile painting is the original free-hand painting.





ROSSMAN CORPORATION

Manufacturers of Tiles and Faience

160 East 56th Street
NEW YORK, N. Y.

CHICAGO, ILL., 918 W. Washington Boulevard

SAN FRANCISCO, CALIF., 49 Geary Street

Rossman Tile and Faience Products

Floor Tiles
Unglazed:
- Plastic Tiles
- Ceramic Mosaic
- Semi-vitreous
- Vitreous

Glazed:
- Matt Glazed
- Semi-matt glazed
- Bright Glazed

Faience
- Decorative Panels
- Repeat Patterns
- Relief Designs
- Fountains
- Entarsia
- Flat Units
- Trimmers
- Mouldings
- Inserts
- Grilles

Decorative Tiles
- Tunisian
- Spanish
- Dutch

- Wainscots
- Garden Pieces
- Fountains
- Handmade Pieces
- Panels
- Art Units

Wall Tiles
Unglazed:
- Plastic Tiles
- Semi-vitreous
- Vitreous

Glazed:
- Matt Glazed
- Semi-matt Glazed (Satinets)
- Bright Glazed (Britones)

Extent of Products

The extent of Rossman manufacture fulfills the slogan "Everything in Tiles." Products can be furnished for all installations, from those of the usual commercial type to those requiring special design.

An extensive selection of colors is produced in a gradual range in each of the various materials. Stock supplies are carried in many of the products at the different division offices as well as at the factories. The range of flat tile units of each product is supplemented by a corresponding range of trimmer patterns to facilitate design and installation.

Samples of the different products will be submitted upon request. When desired, a Rossman representative will call at the convenience of the architect.

Other than the familiar Spanish, Tunisian and Dutch tiles and designs, numerous art unit pieces from other countries are carried for those who seek these unusual bits for their decorative and historical value. These represent odd pieces of handwork and many of them are definitely antique designs.

Service to Architects

A display room is maintained at each office where samples and models of installed tiles are exhibited. Also, a staff of designers is at each office for the benefit of the architect. Suggestions, sketches and co-operation are cheerfully offered, personally and without obligation.

Color sketches will be made from blue prints or developed from suggestions offered by the architect.

A department is maintained especially for the purpose of aiding the architect to develop special and unusual designs.

For additional information, data and profile drawings of different trim shapes, see the Associated Tile Manufacturers' insert in this catalogue.

Catalogues

Catalogues, folders and printed matter giving full color illustrations (plates made direct from the tiles), color charts and technical data will be mailed when requested. When writing for any of the above, please mention the products in which you are interested.

THE SPARTA CERAMIC COMPANY

Manufacturers of SPARTAN CERAMICS

5005 EUCLID AVENUE CLEVELAND, OHIO

Members Associated Tile Manufacturers

DISTRICT SALES OFFICES

NEW YORK, N. Y., 101 Park Avenue
BOSTON, MASS., 101 Park Avenue, N. Y. C.
JACKSONVILLE, FLA., 1365 Edgewood Avenue
PHILADELPHIA, PA., 2401 Chestnut Street
CHICAGO, ILL., 2500 South Western Avenue
MT. VERNON, OHIO, Telephone Building
NORTH HOLLYWOOD, CALIF., 2627 Ensign Ave.
NEW ORLEANS, LA., 824 Carondelet Street
ST. LOUIS, MO., 1377 Arcade Building

Product

SPARTAN CERAMICS.

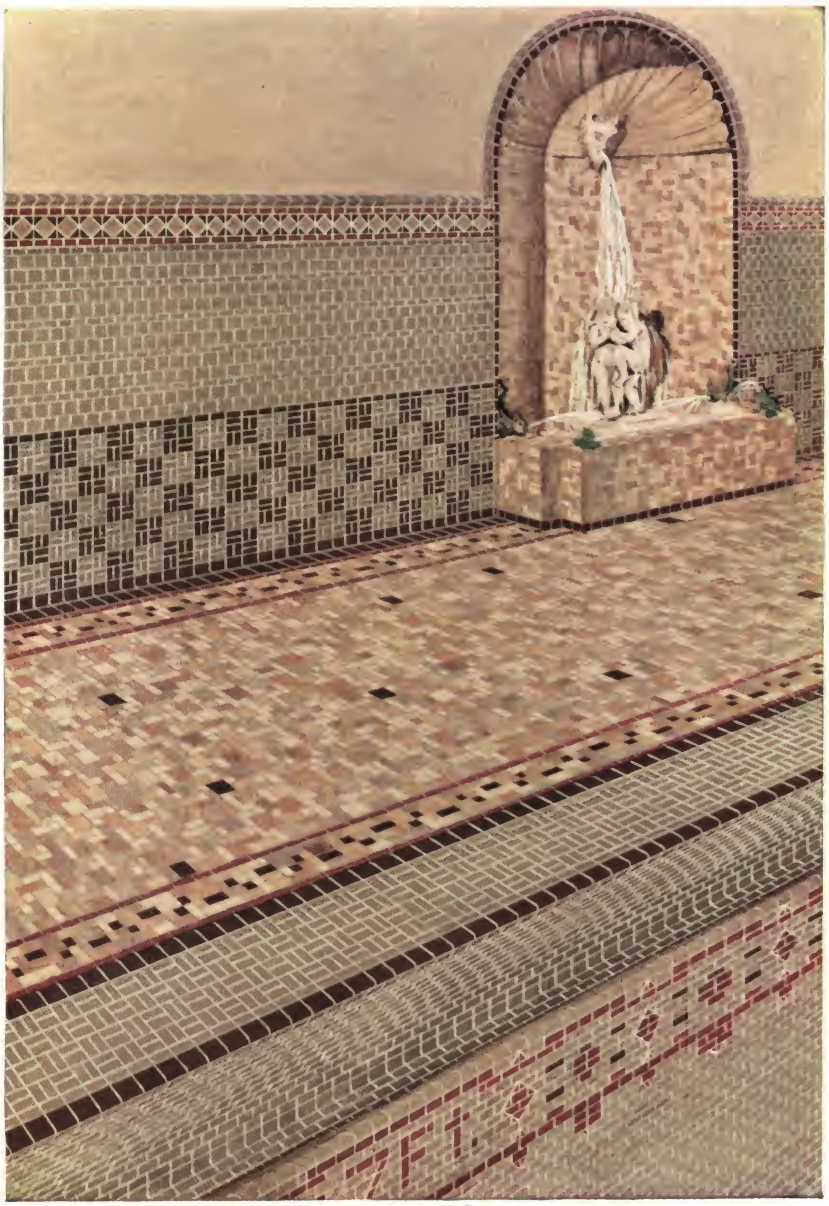
Texture

A vitreous flint mosaic tile. Made from pure shales, with slight variations in their outlines, surfaces and shadings—presenting a mosaic of soft, harmonious warmth of color, and the effect of a woven texture.

Size, 1x1, 2x1, 2x2 and 2x4. All tiles are $\frac{5}{16}$″ thick.

Color

Spartan Red — Spartan Grey — Spartan Brown — Spartan Black — Spartan Golden Pheasant — Spartan Moki — Spartan Green — and Spartan Blue. Selected to reasonably uniform shades or furnished in random shades as desired.



Quality

Wearproof, fireproof, dirtproof, immune to destructive elements. Impervious to grease and grime.

Dirt and ordinary stains can be readily wiped off the surface of the tiles.

Economy

The original cost of Spartan Ceramic Tiles is practically the last. The need of repairs, redecoration or replacement is eliminated. Spartan Ceramics will outlast the home or building in which they are installed.

Uses

For sanitary, durable and economical construction of floors, wainscotings, fireplaces, swimming pools, stairways, showers, belt courses and panels, or wherever a bit of color or decorative effect is desired.

Service

Catalogs, samples and specification sheets will be furnished on request.

Special color sketches and detailed working drawings are also supplied as suggestions to prospective users.

Sold Only Through Contractors

Believing that only through the services of skilled craftsmen can tile be installed properly, Spartan Ceramics are sold only by the most capable and responsible tile contractors.

Spartan Ceramics meet all the requirements for the modern swimming pool.

Color Plate No. 1

Continued on next page

General

Spartan Ceramics lend themselves readily to the architectural design of any period. The accompanying illustrations show an installation in the elaborate, colorful Spanish style and another in the more simple but cheerful atmosphere of the present day.

With the many colors, sizes and shapes of Spartan Ceramics, it is possible to create the desired effects and add an individual touch to the floors and walls of every type of building. The architect will find that they satisfy the most discriminating home-owner when used in baths, kitchens, breakfast and sun rooms. In public buildings they are particularly suitable for entrance lobbies, stairways, swimming pools, toilet and showers.

Color Plate No. 2

Specification

The following single paragraph should be incorporated in the Architect's Specification on Tile Work.

Furnish all materials and labor necessary for the completion of the tile work. The Basic Specification for Tile-work, Second Edition, 1924, or last edition, as issued by the Associated Tile Manufacturers, 220 Graybar Bldg., New York, N. Y., in so far as any portion is applicable to this building, is hereby made a part of this specification and of the contract. (See Associated Tile Manufacturers pages in Sweet's Catalogue.)

Color Plate No. 3

ESTABLISHED 1877

UNITED STATES ENCAUSTIC TILE WORKS

Member of Associated Tile Manufacturers

Manufacturers of Everything in Floor and Wall Tiles

FACTORY AND MAIN OFFICE

INDIANAPOLIS, INDIANA

SALES OFFICES

New York, N. Y., 103 Park Avenue — Chicago, Illinois, 319 Monroe Building — Los Angeles, Calif., Stilwell Hotel

PRODUCTS

WHITE WALL TILES, with trim, WHITE and COLORED CERAMICS, SEMI-VITREOUS FLOOR TILES, WHITE and COLORED BATHROOM ACCESSORIES, BRIGHT ENAMELED TILES—all colors. U. S. PYROMATTES, U. S. MATTE FINISH—see illustration below, and U. S. PYROFLASH—see illustration on next page.

U. S. MATTE FINISH

APPLICATION—U. S. MATTE FINISH is not only suitable for bathroom treatments but is more especially adapted for larger installations such as school corridors and public buildings.

CHARACTERISTICS—Highly fired clay tiles, glazed with either single-tone (U. S. VELLUMS—a semi-bright glaze) or two-tone glazes (dull finish). These glazes are suitable for either floors or walls and are impervious to dirt and grease.

BODIES—U. S. MATTE FINISH can be glazed upon White, Buff, Salmon or Red bodies. White body is suitable for most wall installations, Buff and Salmon bodies for floors, and Red body must be used for all exterior treatments because of its frost and moisture-proof character.

PYROFLASH (Unglazed)

APPLICATION—PYROFLASH is recommended for use in hotel lobbies, theatre foyers, grill rooms, automobile showrooms, walkways and wainscots surrounding swimming pools, coffee shops, stair treads, corridors of public buildings or any place where the floor is subjected to hard usage.

CHARACTERISTICS—Highly fired clay tiles, beautifully flame-flashed, blended shades, slightly round-edged, therefore, non-slip. Non-absorbent, mounted on paper, therefore economically laid. May be obtained with a square edge treatment if desired. Furnished in select quality only.

COLORS—Produced in salmon, red and greystone.

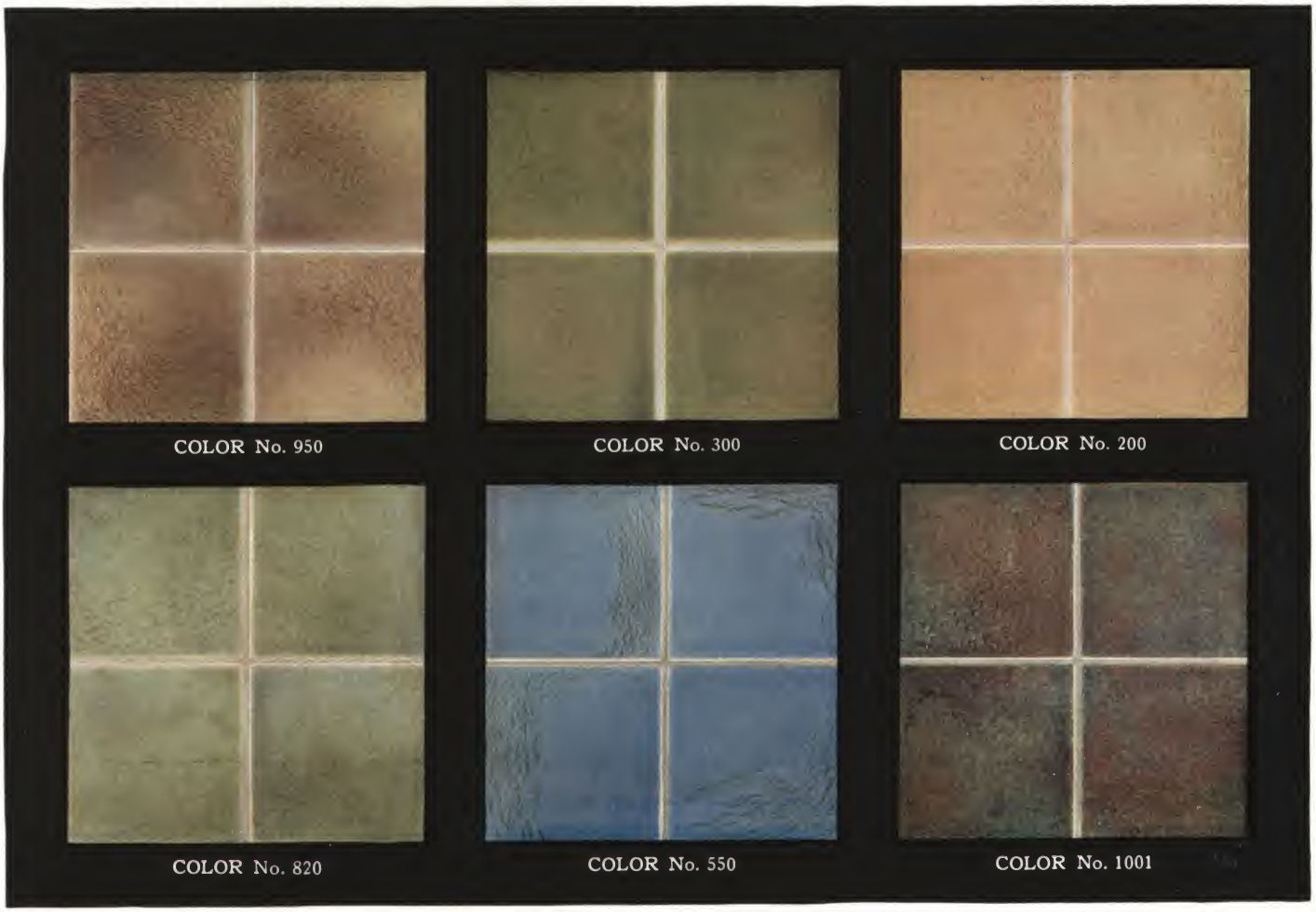
SIZES—2 x 2 in., 2 x 1 in., 1 x 1 in., and 2 in. pentagons, with halves, diagonals and combination coves and beads.

SERVICE TO ARCHITECTS

Our art department, composed of expert designers and skilled draughtsmen will gladly work up lay-outs or colored sketches at the request of the architect.

A few representative colors and patterns of U. S. MATTE FINISH and PYROFLASH are shown in the colored plates below and on the page following. Our complete colored catalogue showing all patterns will be sent on request. We can also supply samples and sketches.

U. S. MATTE FINISH » » For Floors, For Walls

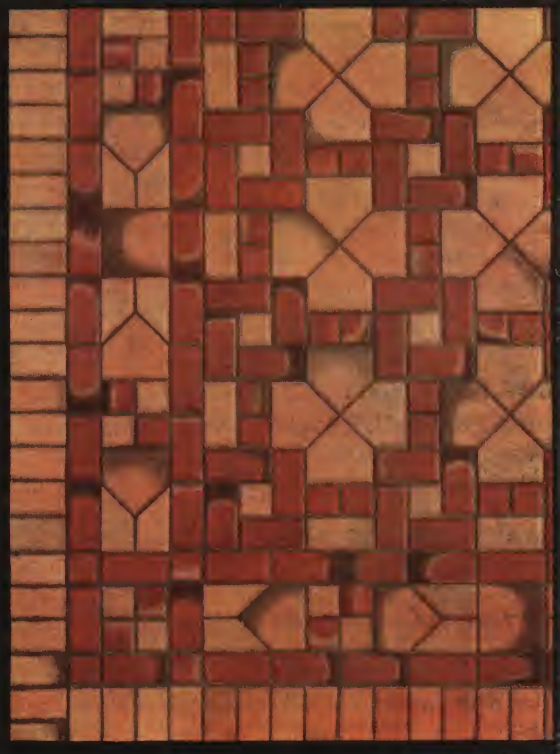


Continued on Next Page

PYROFLASH » » A Round Edged Unglazed Tile

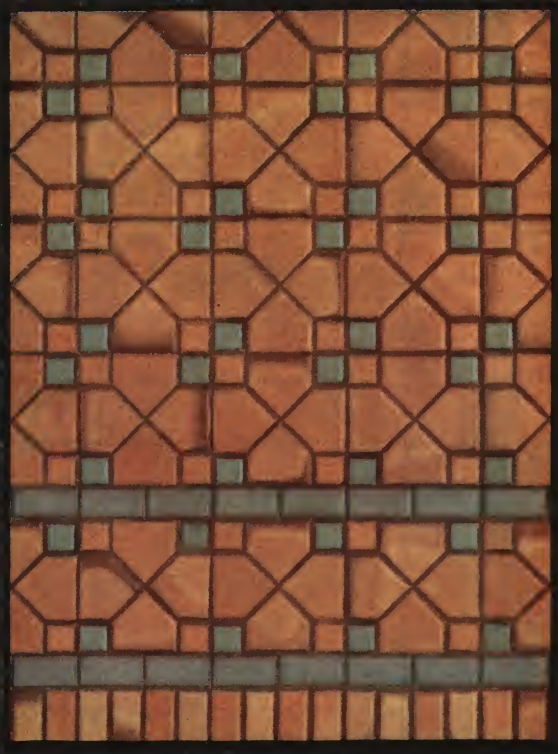
BODY 1005A
Colors:
Salmon Pyroflash
Olive Green

BORDER 115A
Sizes:
2"x2" 2"x1" 1"x1"
1" Diagonals



BODY 1013A
Colors:
Salmon and Red Pyroflash

BORDER 113A
Sizes:
Brickpoints, Points
2"x2 2"x1" 1"x1"



BODY 1011A
Colors:
Salmon Pyroflash
Olive Green

BORDER 111A
Sizes:
Brickpoints
2"x1" 1"x1"

BODY 1017A
Colors:
Red Pyroflash
Black

BORDER 115B
Sizes:
2"x2" 2"x1" 1"x1"
1" Diagonals

UNITED STATES QUARRY TILE CO.

Manufacturers of Romany Tiles for Floors and Walls

PARKERSBURG, W. VA.

FACTORIES: PARKERSBURG, W. VA., EAST SPARTA, OHIO

BRANCH OFFICES

NEW YORK, N. Y., Room 508, 101 Park Avenue
CHICAGO, ILL., 1524 Southwestern Avenue
PHILADELPHIA, PA., 2401 Chestnut Street
ST. LOUIS, MO., 1618 Arcade Building
CLEVELAND, OHIO, 5005 Euclid Avenue
NEW ORLEANS, LA., 824 Carondelet Street
JACKSONVILLE, FLA., 1365 Edgewood Avenue
MT. VERNON, OHIO, Telephone Building
NORTH HOLLYWOOD, CALIF., 5627 Ensign Avenue

Member of Associated Tile Manufacturers

Products

FLOOR and WALL TILES; QUARRY or PROMENADE TILES with Base, Cap, Angles, Stair Treads, etc.; MATT, SEMI-MATT and BRIGHT GLAZED TILES; and GLAZED QUARRY TILES together with all necessary Base, Wainscot Cap, Angles, etc.

ROMANY TILES
TRADE-MARK

Also Tile Bathroom Accessories.

ROMANY QUARRY TILES

Composition

Romany Quarry Tiles are made from the highest grade shales and are burned to vitrification resulting in tiles of the utmost durability. This has been proved by the large use of Romany Quarries on the floors and walls of railway depots, schools, etc., where permanence is an outstanding requisite.

Low Absorption

In baths, kitchens and other places where, for sanitary reasons, absolute cleanliness is essential, a flooring of low absorption should be installed. Where moisture cannot enter, germs, bacteria and other foreign matter will remain on the surface and may be removed with ease.

Romany Tiles are impervious to moisture, stains and dirt. They have withstood the test required by the United States Government, viz., "An application of nitric acid and 15% of sodium nitrate solution."

Resists Abrasion

As an indication of the resistance to abrasion from constant use under heavy foot traffic, Romany Tiles were subjected to rigorous tests under the direction of the Navy Department in competition with other materials. The results of this test are as follows:

Percentage of Loss in Abrasion Test

Romany Tiles	6.5
Terrazzo	16.1
Portland Cement	16.8
Marble	23.3
Wood	33.8
Linoleum	72.9

The lower the abrasive loss, the greater the resistance to wear. Interpreted in every-day use, this means that these tiles retain their bright, fresh appearance unmarred through years of the most exacting service.

Surface Finish

The flint-hard, abrasion resisting surface of Romany Tiles produces a dustless surface which is the acme of cleanliness. Furthermore, since no cracks or crevices can appear, these tiles are outstanding in their ease of cleaning. An occasional application of a damp cloth keeps the surface bright, clean and beautiful.

Colors

Romany Tiles are manufactured in the following colors: Rainbow, Redflash, Grey, Red and Brown. (See complete description below.)

Romany Rainbow—Romany Rainbow colors range from light buff through tan and orange to dark brown, and there is a pleasing variation of color over the face of each tile. They may be selected, if preferred, in "Dark Range," "Light Range," or "Full Range," combining both. This is a matter of personal taste or may be dictated by the location under consideration.

Romany Redflash—Romany Redflash Tiles are supplied in a full range of colors from deep red to brown and gunmetal on a red background. There is a distinct variation in shading over the face of the tiles. The full beauty of the blending of these colors can be seen from an ample assortment of samples.

Evangelical Deaconess Hospital, Cleveland, Ohio
A. E. SKEEL, Architect
ADDISON-BRANNING CO., Tile Contractors

Public Auditorium, Cleveland, Ohio
J. HAROLD MACDOWELL, Architect
BROCKMAN-NAROVEC CO., Tile Contractors

Continued on next page

Romany Grey—Romany Grey Tiles are extensively used both alone and in combination with other Romany colors. There is a beautiful warmth to the appearance of these tiles which is not usually associated with this color.

Romany Red—Romany Red Tiles are a deep rich red in color. Used alone or in combination with other Romany Tiles, the Romany Reds make a most beautiful and tasteful floor and wainscot.

Romany Brown—Romany Brown Tiles are of a soft, pleasant, almost chocolate color, which blends admirably with all the other Romany colors. Romany Browns are used alone or in combination with other Romany Tiles as the application and personal taste may dictate.

Grades

Romany Improved Tiles are supplied in three different grades. The materials and manufacturing methods are the same for all grades, but the difference between the grades is as follows:

Romany Improved Select—These tiles are sound and solid in every particular. They are approximately level, square and true and so accurately sized that they may be laid with "string joints." They are assorted to shade. (See preceding page for shade assortments of Romany Rainbow and Romany Redflash.)

Romany Improved Standard—Same as Select, assorted to size but not to shade.

Romany Seconds—These tiles are those rejected from other grades. The imperfections consist of slightly broken corners and chipped edges. There are no cracks running into the tiles. They are not selected with as much care as to level surface and regular lines, but will make a good roof, or a satisfactory floor where first-class tiles are not required. Selected to size and shade.

Cost

No other floor and wall surfacing material offers more practical durability, beauty and upkeep economy at anything near the low price at which Romany Quarry Tiles are offered.

Samples

Samples of Romany Tiles will be sent free of charge, prepaid, upon request.

Sold Only Through Tile Contractors

As only high grade workmanship will produce satisfactory results in the use of tiles, Romany Tiles are sold only through tile contractors.

Specification for Romany Quarry Tiles

(For specifications on Romany Glazed Wall Tiles, see page 7.)

Furnish all materials and labor necessary for the completion of the tile work.

The Basic Specification for Tilework, Second Edition, 1924 (or last edition) as issued by the Associated Tile Manufacturers, New York, N. Y., in so far as any portion is applicable to this building, is hereby made a part of this specification and of the contract.

Tile Floors—Will be required in the following rooms and areas (list rooms).

The tiles shall be laid in accordance with Field Pattern No. .... to be composed of (state sizes) tiles in Romany (Rainbow), (Redflash), (Red), (Grey), (Brown) color and Border Pattern No. .... in Romany (Rainbow), (Redflash), (Red), (Grey), (Brown) color.

Tile for base shall be Cove Base Tile No. ...., with necessary angles, stops and plinths in Romany (Rainbow), (Redflash), (Red), (Grey), (Brown) color.

All tiles to be Romany Quarry Tiles, Select Improved Grade, as manufactured by United States Quarry Tile Co., Parkersburg, W. Va.

Tile Wainscot—Shall be provided at all partition walls and other fixed vertical surfaces in the following rooms and areas. (List rooms in which tile wainscoting will be required.) Tile wainscoting to be approximately .... ft. .... in. high above finished floor level and to be composed of tiles laid (Broken Joint), (Straight), (Or in Pattern No. ....) in Romany (Rainbow), (Redflash), (Red), (Grey), (Brown) color. Finish wainscoting with Tile Cap No. .... in Romany (Rainbow), (Redflash), (Red), (Grey), (Brown) color with all necessary angles and stops. Bullnose tiles with ¾ in. radius to be used at all external corners and around all openings not cased.

Information on Colors and Shapes in Which Romany Quarry Tiles Are Made

The standard shapes, colors and sizes of Romany Quarry Tiles are shown in the table below:

SHAPES, COLORS, SIZES

Shapes	Colors	Sizes, in.		
Square and Rectangular	Red, Grey, Brown, Rainbow, Redflash	1 x1 x ¾ 1¾ x1¾ x ¾ 2¾ x2¾ x ½	2¾ x2¾ x ¾ 1¾ x4 x ¾ 2¾ x6 x ½ 2¾ x6 x ¾	4x4x ½ 4x4x ¾ 6x6x ¾
	Red only	6x9x ¾ 8x8x ⅞	9x 9x ⅞ 6x12x1¼	12x12x1¼
Elongated Hexagon	Red, Grey, Brown, Rainbow, Redflash	4x8¼ x ¾ See second page following		
Diagonal Halves	Red, Grey, Brown, Rainbow, Redflash	2¾ x2¾ x ½ 2¾ x2¾ x ¾	4x4x ½ 4x4x ¾	6x6x ¾
	Red only	8x8	9x9	12x12
Bullnose	Red, Grey, Brown, Rainbow, Redflash	2¾ x2¾ x ½ 2¾ x2¾ x ¾	2¾ x6x ½ 2¾ x6x ¾	4x4x ½ 4x4x ¾ 6x6x ¾
	Red only	6x9	8x8 9x9	12x12
Cove Base, Wainscot Cap, Angles, Stops, Plinths, Threshold Tiles	Red, Grey, Brown, Rainbow, Redflash	See two following pages		
	Red only	9x9 Special Cove Base		
Stair Treads	Red, Grey, Brown, Rainbow, Redflash	6x6x1¼		
	Red, Grey, Brown	6x12x1¼ 12x12x1¼		
Special Stair Treads or Window Stools	Red, Grey, Brown, Rainbow, Redflash	See second page following		
Brickettes	Rainbow Redflash	2¼ x8x ¾		

Berston Field House, Flint, Mich.
Flint Tile and Fireplace Co., Tile Contractors

Holy Family School, Price Hill, Cincinnati, Ohio
Kunz and Beck, Architects
Martina Mosaic and Tile Co., Tile Contractors

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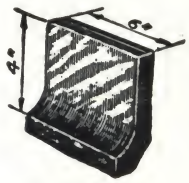
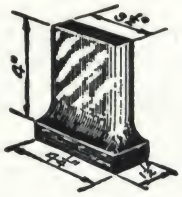
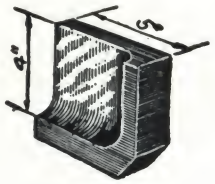


Cove Base No. 1-B
Also made 9 in. long



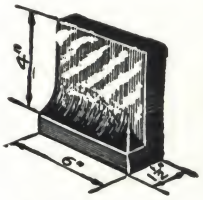
Cove Base Angle
External No. 2
Right



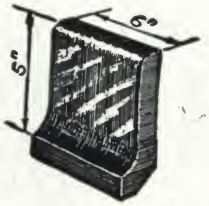
Cove Base Angle
Internal No. 3
Right

Cove Base Angle
External No. 4
2-in. radius on face

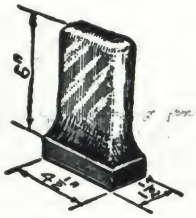
Cove Base Angle
Internal No. 5
2-in. radius on face



Left Door Stop for
Cove Base No. 1

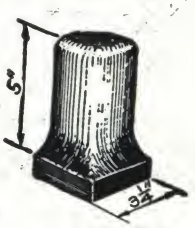


Cove Base No. 11-B
Also made 9 in. long

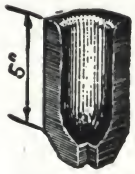


Cove Base Angle
External No. 12
Right

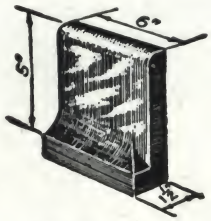
Cove Base Angle
Internal No. 13
Right



Cove Base Angle
External No. 14
2½-in. radius on face

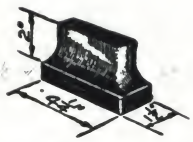


Cove Base Angle
Internal No. 15
1½-in. radius on face

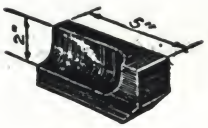


Left Door Stop for
Cove Base No. 11

Cove Base No. 31-B
Also made 9 in. long

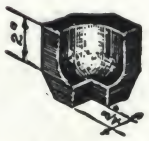


Cove Base Angle
External No. 32
Right

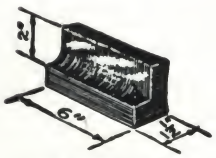


Cove Base Angle
Internal No. 33
Right

Cove Base Angle
External No. 34
2-in. radius on face

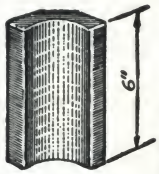


Cove Base Angle
Internal No. 35
2-in. radius on face

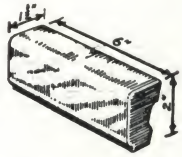


Left Door Stop for
Cove Base No. 31

Wainscot Corner
External No. 6-B

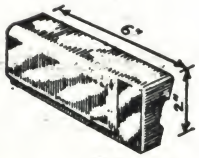


Wainscot Corner
Internal No. 7-B

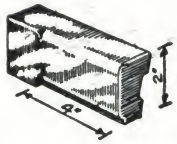


Wainscot Cap No. 501-B
Also made 4 in. long

Wainscot Cap Angle External
No. 541-D. Also made 6 in. long
¾ in. Radius at Corner
Right Shown



Wainscot Cap Stop No.
571-B. Also made 4 in. long
Left Shown



Wainscot Cap Angle
Internal No. 511-D
Also made 6 in. long
Square Corners
Left Shown

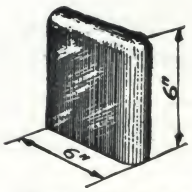
Wainscot Cap Angle
Internal No. 551
2 in. Radius

Wainscot Cap Angle
External No. 561
2 in. Radius

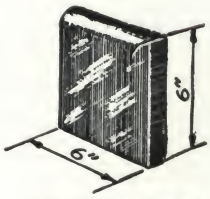
Wainscot Cap
Down Angle No. 591

Wainscot Cap Up Angle
No. 581

Bullnose Tile
Made in various sizes

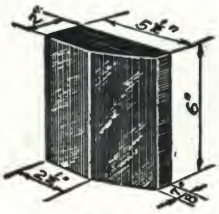


External Base Angles
for Bullnose Tiles



Internal Base Angles
for Bullnose Tiles

Flat Plinth

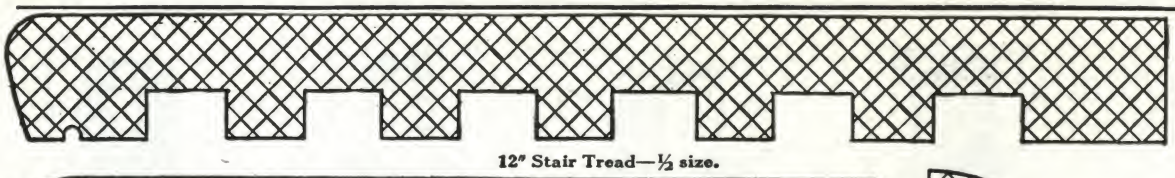


Beveled Plinth

Threshold Tile

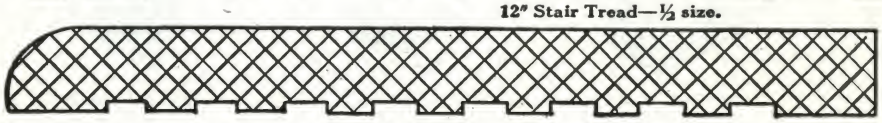
Specimens of Romany Quarry Tile Trimmings

Continued on next page

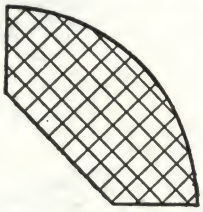


12" Stair Tread—½ size.

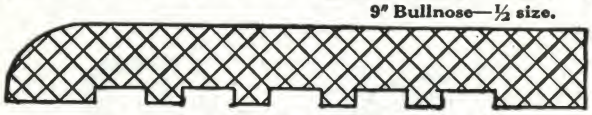
Wainscot Cap
No. 501—½ size.



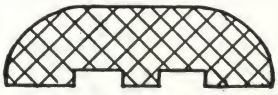
9" Bullnose—½ size.



Wainscot
Corner External
No. 6—½ size.



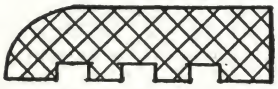
6" Bullnose—½ size.



2¾" Double Bullnose—½ size.

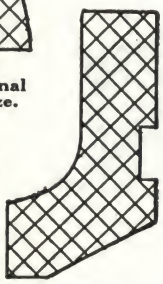
4" Bullnose—½ size.

4" Double Bullnose—½ size.

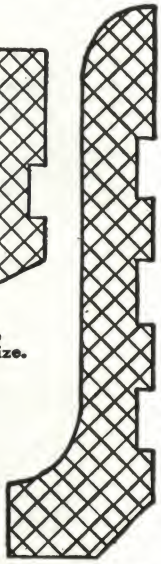


2¾" Bullnose—½ size.

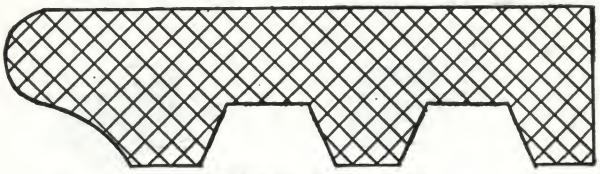
6" Double Bullnose—½ size.



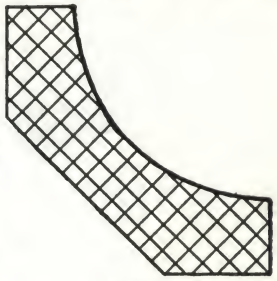
Cove Base
No. 31—½ size.



Cove Base No. 11—½ size.

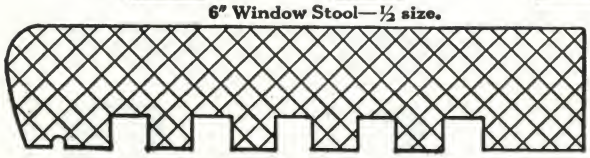


6" Window Stool—½ size.

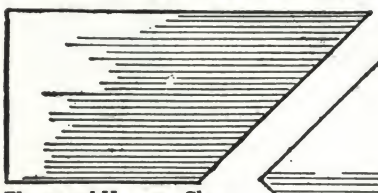


Wainscot Corner
Internal No. 7—½ size.

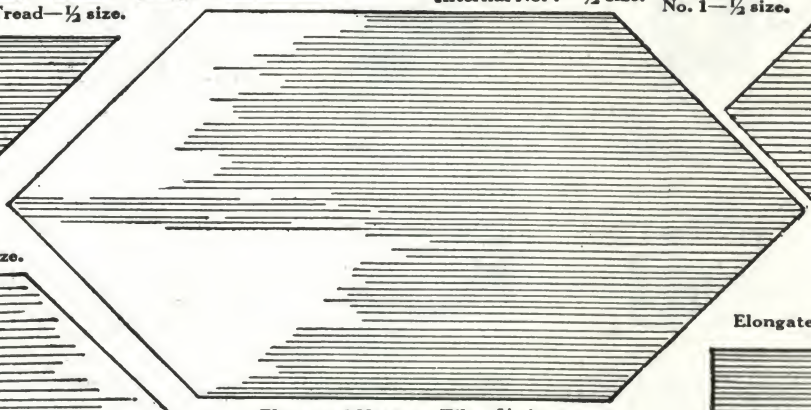
Cove Base
No. 1—½ size.



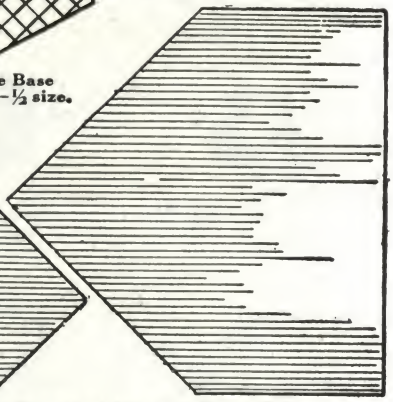
6" Stair Tread—½ size.



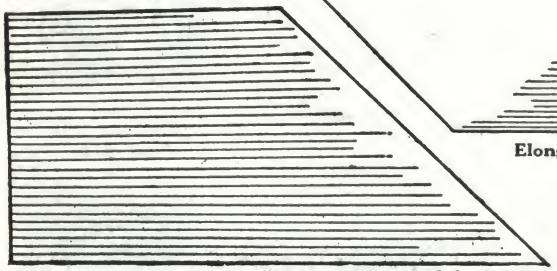
Elongated Hexagon Short
Half Split. Made in rights
and lefts, left shown—½ size.



Elongated Hexagon Tile—½ size.

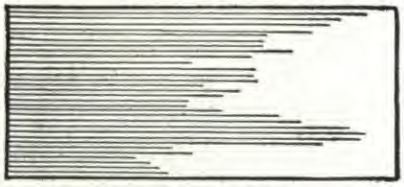


Elongated Hexagon Short Half—½ size.

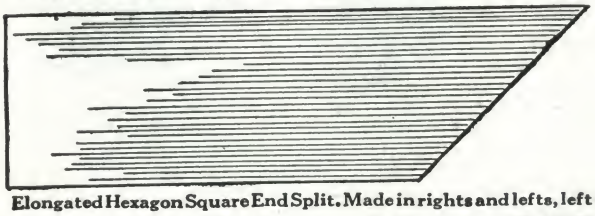


Elongated Hexagon Diagonal. Made in rights and lefts, left shown—½ size.

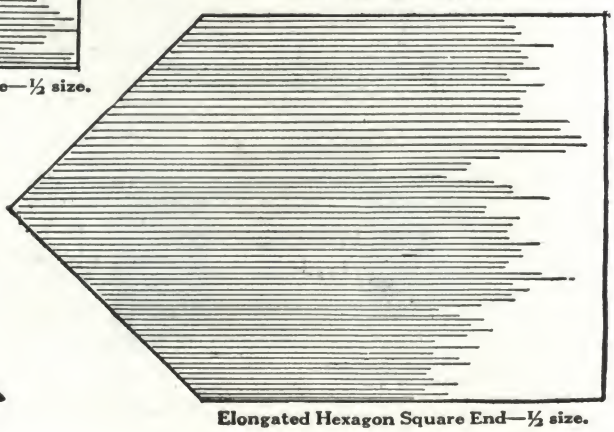
1¾" x 1¾" Tile—½ size.



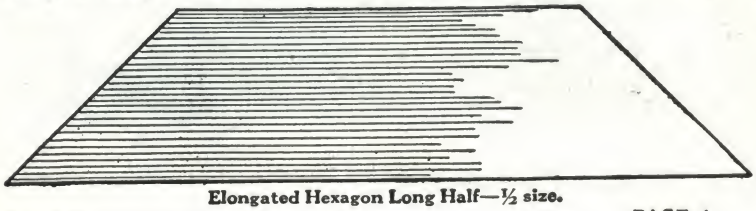
1¾" x 4" Tile—½ size.



Elongated Hexagon Square End Split. Made in rights and lefts, left shown—½ size.



Elongated Hexagon Square End—½ size.



Elongated Hexagon Long Half—½ size.

Continued on next page

Residence near Cleveland, Ohio. A. E. Skeel, Architect. Associated Tile Contractors of Cleveland, Tile Contractors.

Left, Good Samaritan Hospital, Cincinnati. Gustave Drach, Architect. Cassini Mosaic and Tile Co., Tile Contractors.

Right, United States Government Bldg., Rio De Janeiro. Frank L. Packard, Columbus, Ohio, Architect.

Union Pacific Railway Station, Nampa, Idaho. Gilbert S. Underwood, Architect. Elias Morris and Sons Co., Salt Lake City, Tile Contractors.

Aronomink Country Club, Philadelphia. Charles B. Keen, Architect. Wesley Sloan, Tile Contractor.

Amphitheatre, Maternity Hospital, Cleveland. Abram Garfield, Architect. Wadsworth-Addison Co., Tile Contractors.

Continued on next page

ROMANY GLAZED TILES

Romany Matt, Semi-Matt and Bright Glazed Wall Tiles

Romany Glazed Wall Tiles represent a decided forward step in the manufacture of this type of tile. The biscuit or body of the tile is so compounded that its coefficient of expansion and contraction is practically identical with that of the glaze coating. Due to this fact and the extremely high temperatures at which the tiles are fired, an unusually durable tile is produced.

Surface Finish

Romany Glazed Wall Tiles have a smooth, hard surface and a depth of coloring which is most attractive.

Due to the smooth, even surface, cleaning is a simple operation. Repeated cleaning has no effect on the surface or coloring of the tile. The tiles are unaffected by strong cleaning solutions.

Applications

The delicate colors of Romany Glazed Wall Tiles make them particularly adaptable for the home and apartment.

They are also appropriate for commercial and public buildings as well, being used in restaurants, flower shops, beauty parlors, display rooms, rest rooms, hallways, lavatories and similar applications. The colored

ROMANY MATT GLAZED WALL TILES

On Buff Body

342—Ivory

382—Peach

384—Cinnamon

386—Orange

314—Green

316—Green

322—Blue

324—Blue

SIZES, IN.

Wall Tiles	6x6	6x3	4¼x4¼	3x3	6x1	6x½
Floor Tiles	3x3x$\frac{7}{16}$		3-in. hex. x $\frac{7}{16}$		2-in. hex. x $\frac{7}{16}$	

ROMANY SEMI-MATT GLAZED WALL TILES

On Buff Body

232—Orchid

234—Orchid

212—Green

214—Green

Grenadine Red

258—Black

222—Blue

224—Blue

SIZES, IN.

Wall Tiles	6x6	6x3	4¼x4¼	3x3	6x1	6x½
Floor Tiles	3x3x$\frac{7}{16}$		3-in. hex. x $\frac{7}{16}$		2-in. hex. x $\frac{7}{16}$	

Continued on next page

tiles are especially desirable where a cheerful, sunny effect is wanted.

The Bright Glaze Buff Wall Tiles are of particular interest to industrial users.

This color is adaptable to all types of commercial uses, especially when used with a trim of Bright Glaze Black Tiles.

Specifications

For specifications for Romany Glazed Wall Tiles, see the complete specifications of the Associated Tile Manufacturers, New York, N. Y.

Samples

Samples of Romany Glazed Wall Tiles will be sent free of charge, prepaid, upon request.

Tile Fixtures

A complete line of tile bathroom fixtures to harmonize with Romany Glazed Wall Tiles is available.

Romany Glazed Quarry Tiles for Floors and Walls

This is a new line of frostproof tiles, made by the application of hard, high fired glazes to a dense red quarry tile body. Made in ten pleasing colors and shades and are suitable for interior and exterior work.

They are particularly appropriate for living rooms, dining rooms, sun rooms, vestibules, porches, mantels, store fronts and similar applications.

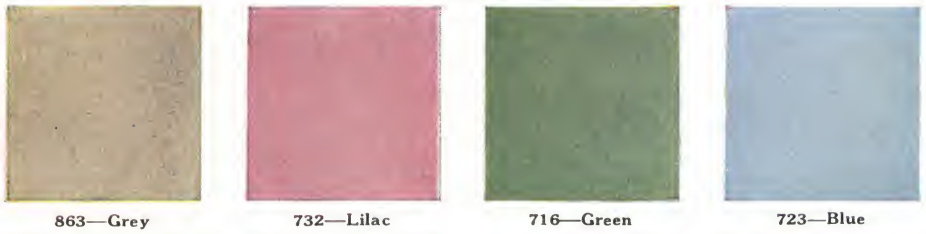
Wall Tile Trim

A line of wall tile trim similar to that shown in pages of Associated Tile Manufacturers in this issue is made. We use the Association numbers.

See our page 3 for line of trim furnished with glazed quarry tiles.

ROMANY BRIGHT GLAZED WALL TILE

On Buff Body



863—Grey | 732—Lilac | 716—Green | 723—Blue

743—Buff | 745—Buff | 845—Buff | 759—Black

SIZES, IN.

Wall Tiles	6x6	6x3	4¼ x4¼	3x3	6x1	6x½

ROMANY GLAZED QUARRY TILES FOR FLOORS AND WALLS

On Red Body

443—Tan | 447—Brown | 487—Amber | 414—Green | 418—Green

426—Blue | 428—Blue | 464—Grey | 458—Black | 559—Bright Black

SIZES, IN.

9 x9 x⅞ 4 x4 x¾ 2¾ x2¾ x½	8x8 x⅞ 4x4 x½ 4x1¾ x¾	6 x9 x¾ 2¾ x6 x¾ 1¾ x1¾ x¾	6 x6x¾ 2¾ x6x½ 1 x1x¾	4 x8¼ x¾ hex. 2¾ x2¾ x¾

For details of Glazed Quarry Tile Trim, see our page 3.

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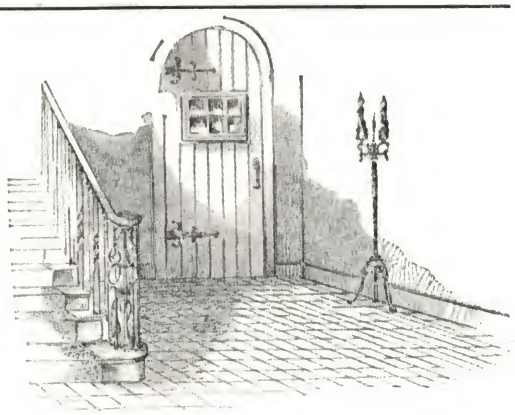


An entrance hallway done in Romany Tiles reflects an atmosphere of true hospitality.

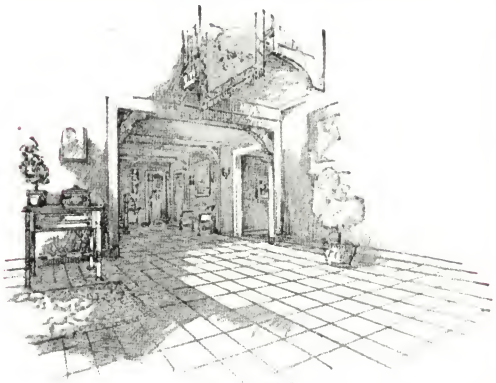
Field No. 1500 (at Left)
Border No. 2511

Romany Field Pattern No. 1500 composed of Romany Rainbow 6x6-in., 2¾x6-in. and 2¾x2¾-in. tiles.
Romany Border Pattern No. 2511 composed of Romany Rainbow and Romany Brown Tiles, 6x6-in., 2¾x6-in. and 2¾-in. Diagonal Halves.

Specify Colors Desired

Field No. 1646 (at Right)
Border No. 2558

Romany Field Pattern No. 1646 composed of Romany Rainbow and Redflash Tiles 1¾x1¾-in. and Elongated Hexagon Short Halves.
Romany Border Pattern No. 2558 composed of Romany Rainbow and Redflash Tiles 1¾x4-in., 2¾x2¾-in. and Elongated Hexagon Square Ends.



Colorful tiles add ever-fresh charm to the modern home.

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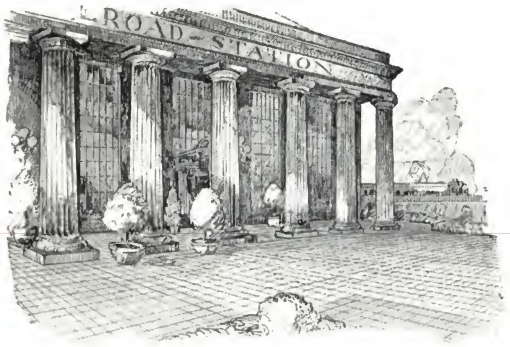


Romany Quarry Tiles can be used either for exteriors or interiors.

Field No. 1531 (at Left)
Border No. 2502

Romany Field Pattern No. 1531 composed of Romany Rainbow 2¾x2¾-in., 4x4-in., 6x6-in. and Elongated Hexagons.

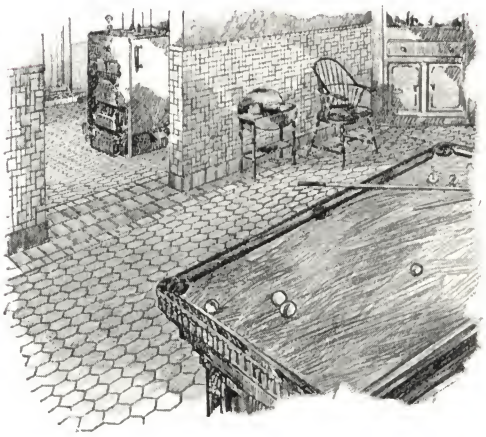
Romany Border Pattern No. 2502 composed of 2¾x6-in. Romany Brown Tiles and 6x6-in. Romany Rainbow Tiles.

Specify Colors Desired

Field No. 1540 (at Right)
Border No. 2552

Romany Field Pattern No. 1540 composed of Romany Rainbow Elongated Hexagon Short Halves.

Romany Border Pattern No. 2552 composed of Romany Rainbow and Romany Brown 2¾x2¾-in., 2¾x6-in., 6x6-in. and Elongated Hexagons.



A basement recreation room with floors and wall of Romany Tiles is an asset to any home.

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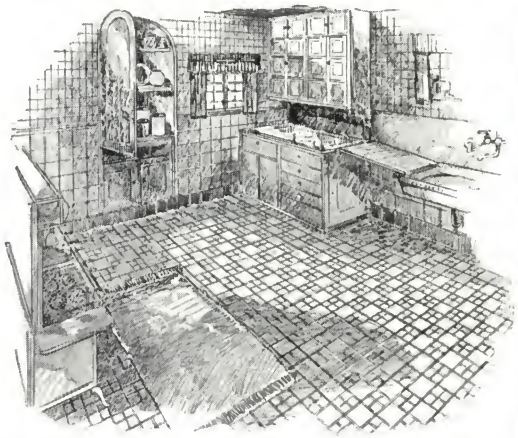


Continual scrubbing is not necessary to keep a kitchen floor of Romany Tiles spic and span.

Field No. 1522 (at Right)
Border No. 2520

Romany Field Pattern No. 1522 composed of Romany Grey 2¾x6-in. and Romany Red 1-in. dots.

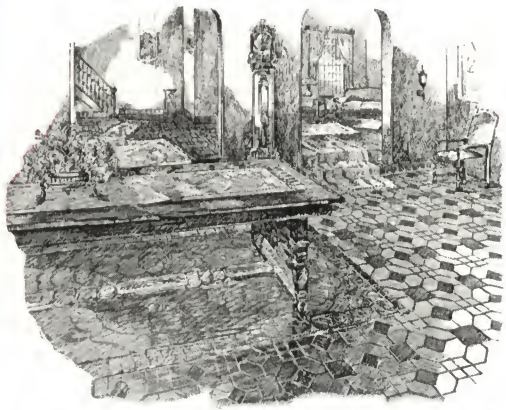
Romany Border Pattern No. 2520 composed of Romany Red and Grey 2¾x2¾-in., 2¾x6-in. and 4x4-in. tiles.

Specify Colors Desired

Field No. 1622 (at Left)
Border No. 2574

Romany Field Pattern No. 1622 composed of Romany Grey and Romany Redflash Elongated Hexagons and 4-in. Diagonal Halves.

Romany Border Pattern No. 2574 composed of Romany Grey and Romany Redflash 2¾x2¾-in. tiles and 2¾-in. and 4-in. Diagonal Halves.



There is a wealth of warmth and beauty in a living room done in Romany Tiles.

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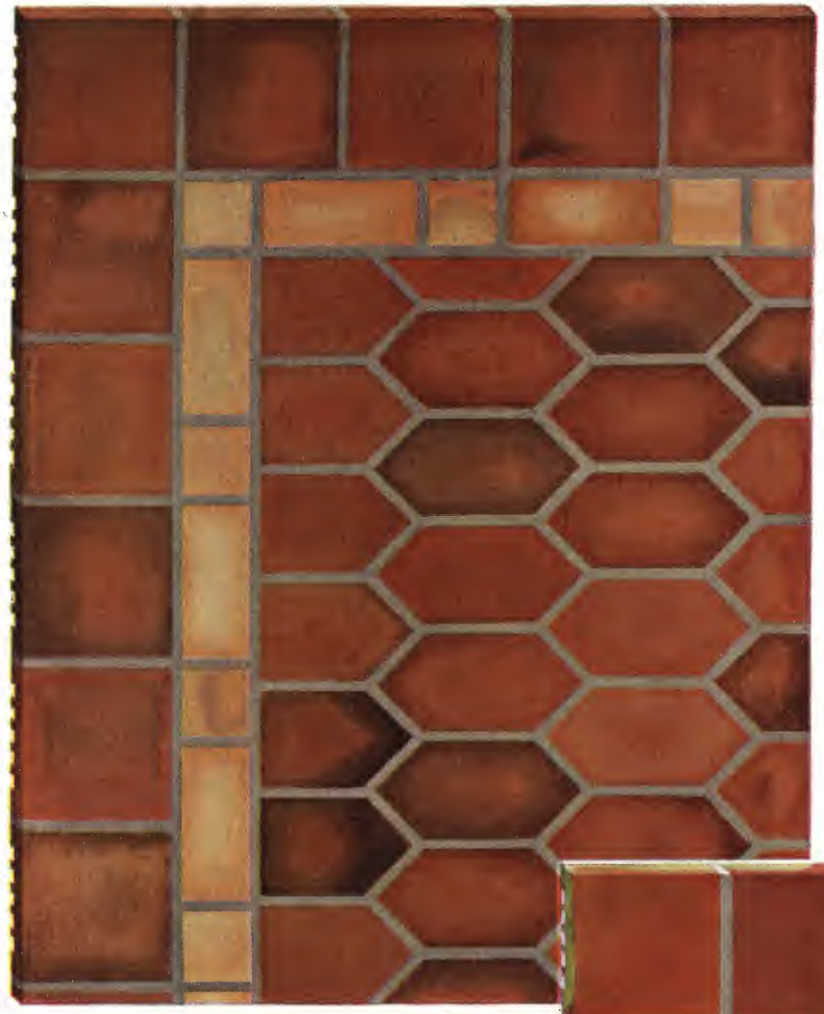

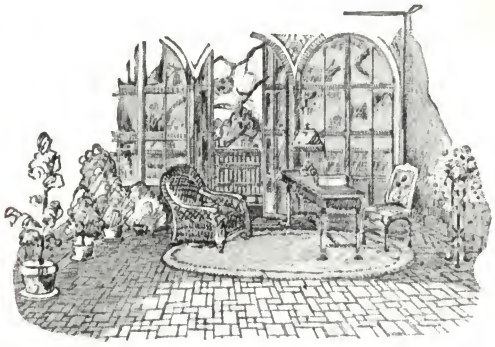

A floor of Romany Tiles invariably creates an air of cordial hospitality.

Field No. 1538 (at Left)
Border No. 2535

Romany Field Pattern No. 1538 composed of Romany Redflash Elongated Hexagon Tiles.

Romany Border Pattern No. 2535 composed of Romany Rainbow 2¾x2¾-in., 2¾x6-in. and Romany Redflash 6x6-in. tiles.

Specify Colors Desired

Field No. 1504 (at Right)
Border No. 2513

Romany Field Pattern No. 1504 composed of Romany variegated Red 2¾x2¾-in. and 6x6-in. tiles.

Romany Border Pattern No. 2513 composed of Romany variegated Red 2¾x2¾-in. and 6x6-in. tiles.

The bright tones of Romany Tiles give a lasting impression of discriminating taste.

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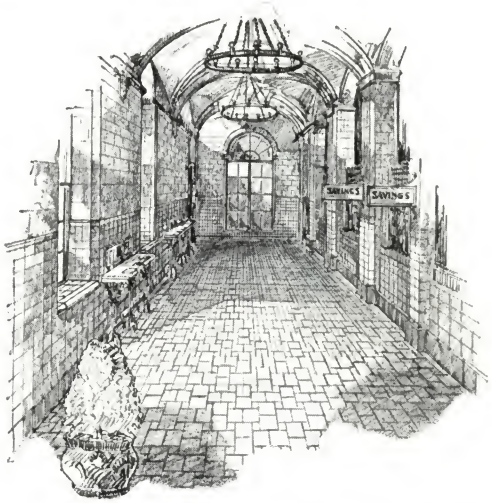
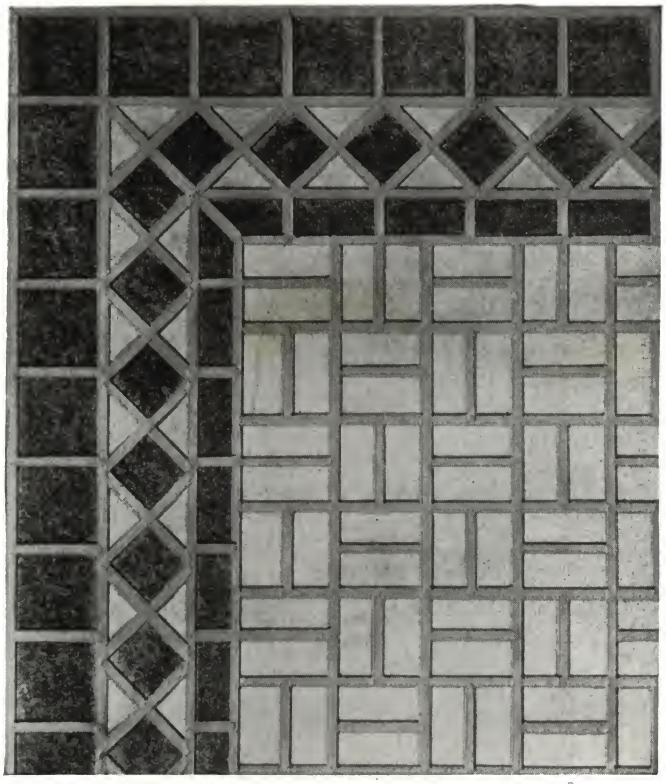


Romany Tiles lend warmth, friendliness and cheer to any banking institution.

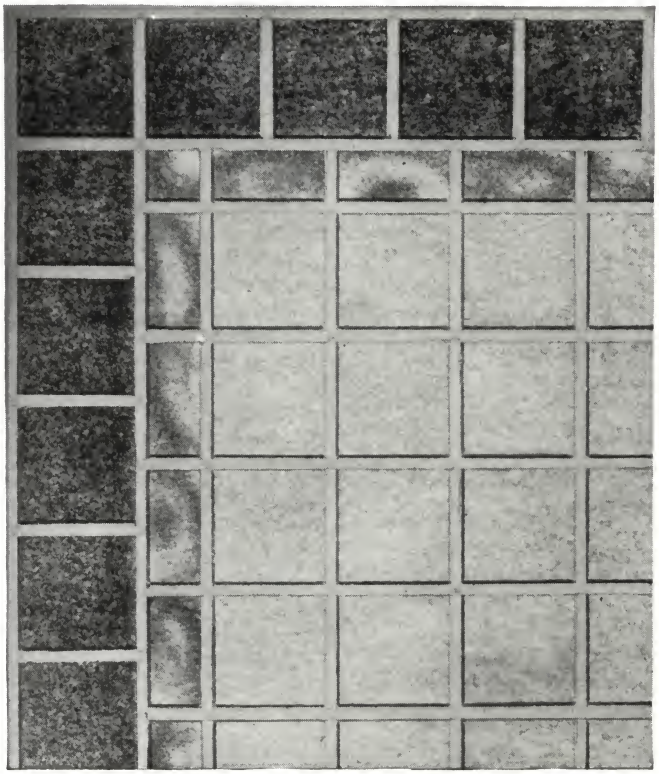
Romany tile patterns illustrated in this catalogue represent a few of the many attractive designs in which these tiles can be laid. Due to the many different sizes, shapes and colors in which Romany Tiles are manufactured, an almost limitless variety of designs can be worked out. Our pattern service is furnished free of charge and is available through your tile contractor.

Specify Colors Desired



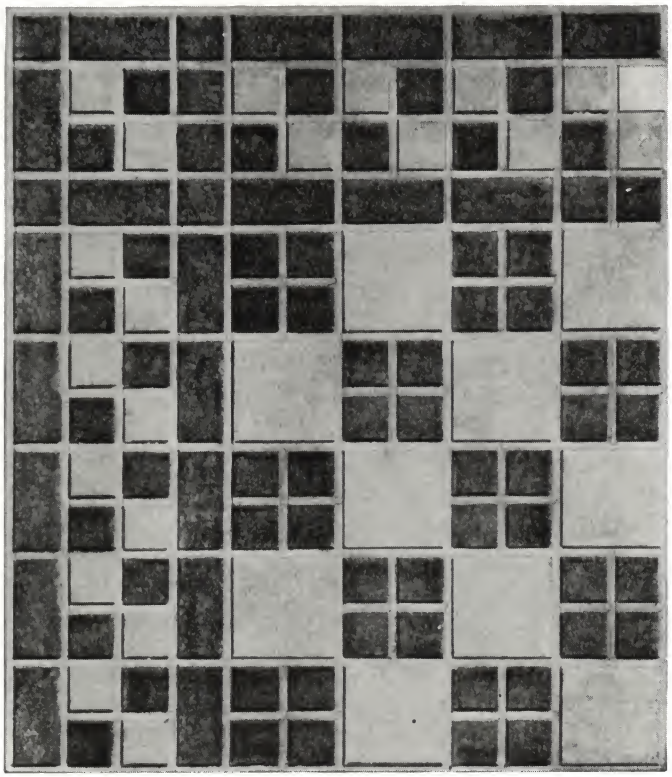
Field No. 1619 Border No. 2578
(Also Field No. 1657, Border No. 2564)

Romany Field Pattern No. 1619 composed of 1¾x4 Tiles.
Romany Border Pattern No. 2578 composed of 4x4, 1¾x4 and 2¾x2¾ Tiles.
Romany Field Pattern No. 1657 composed of 2¾x6 Tiles.
Romany Border Pattern No. 2564 composed of 4x4, 2¾x6 and 6x6 Tiles.



Field No. 1503 Border No. 2502
(Also Fields No. 1572, 1573, 1574, 1575 and 1662. Border No. 2563)

Romany Field Pattern No. 1503 composed of 6x6 Tiles.
Romany Field Pattern No. 1572 composed of 2¾x2¾ Tiles.
Romany Field Pattern No. 1573 composed of 4x4 Tiles.
Romany Field Pattern No. 1574 composed of 9x9 Tiles.
Romany Field Pattern No. 1575 composed of 12x12 Tiles.
Romany Field Pattern No. 1662 composed of 8x8 Tiles.
Romany Border Pattern No. 2502, 6x6 and 2¾x6 Tiles.
Romany Border Pattern No. 2563, 4x4 and 1¾x4 Tiles.



Field No. 1529 Border No. 2514
(Also Field No. 1655, Border No. 2562)

Romany Field Pattern No. 1529, 2¾x2¾ and 6x6 Tiles.
Romany Border Pattern No. 2514, 2¾x2¾ and 2¾x6 Tiles.
Romany Field Pattern No. 1655, 1¾x1¾ and 4x4 Tiles.
Romany Border Pattern No. 2562, 1¾x1¾ and 1¾x4 Tiles.

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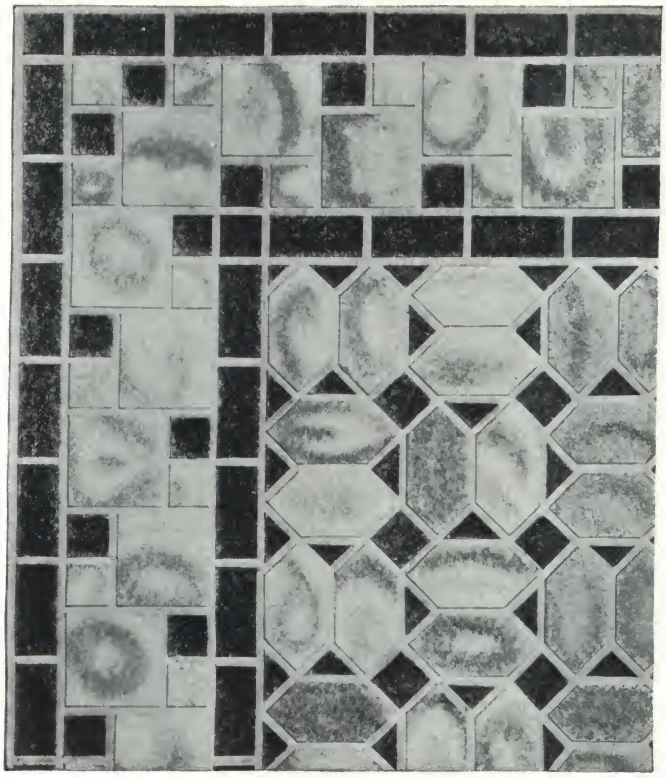
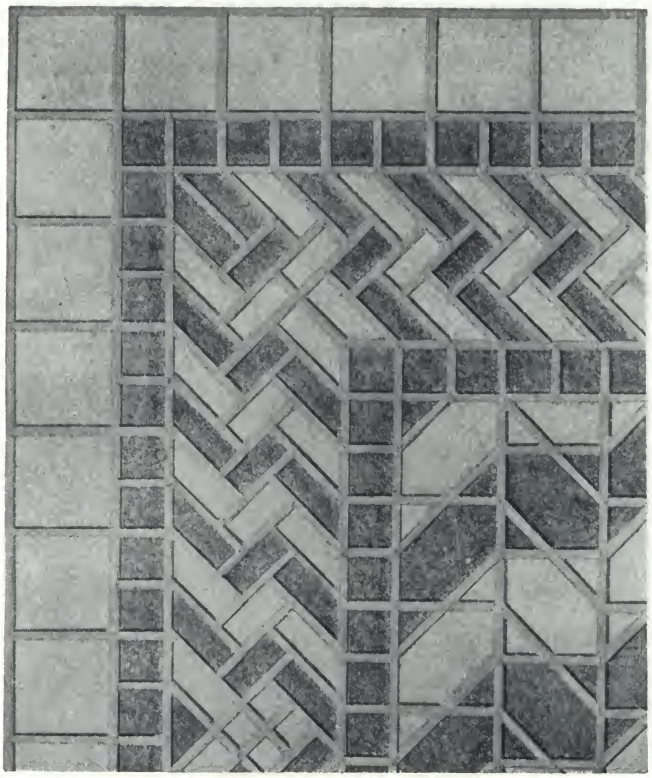


Field No. 1543 **Border No. 2541**

Romany Field Pattern No. 1543 composed of 2¾x2¾, Elongated Hexagons and 2¾" Diagonal Halves.
Romany Border Pattern No. 2541 composed of 2¾x2¾, 2¾x6 and 6x6 Tiles.

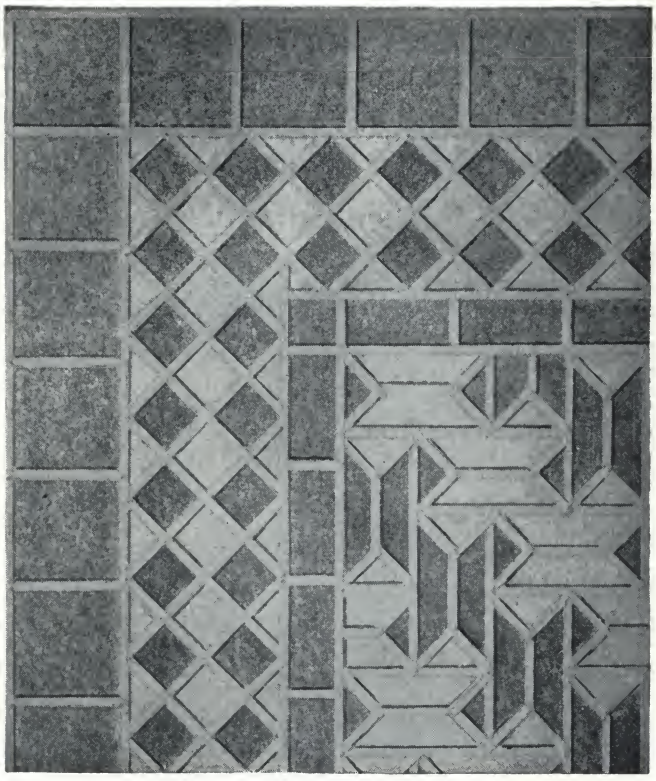
Colorful, attractive—a kitchen with floors and walls of Romany Tiles is a pleasant place to work.

Specify Colors Desired



Field No. 1633 **Border No. 2568**

Romany Field Pattern No. 1633 composed of 2¾" Diagonal Halves and Elongated Hexagons.
Romany Border Pattern No. 2568 composed of 2¾x2¾, 1¾x4 and Elongated Hexagon Square End Splits.



Field No. 1604 **Border No. 2508**

Romany Field Pattern No. 1604 composed of 2¾" Diagonal Halves and Elongated Hexagon Long Halves.
Romany Border Pattern No. 2508 composed of 2¾x2¾, 2¾x6 and 6x6 Tiles.

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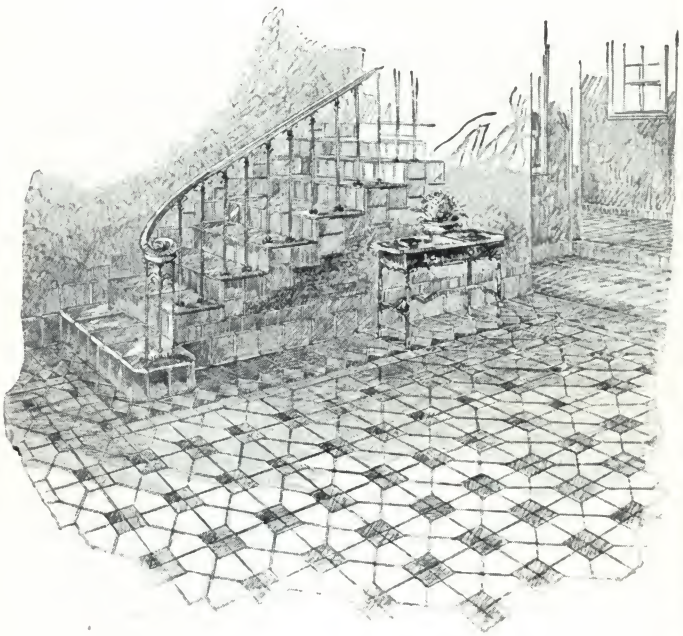
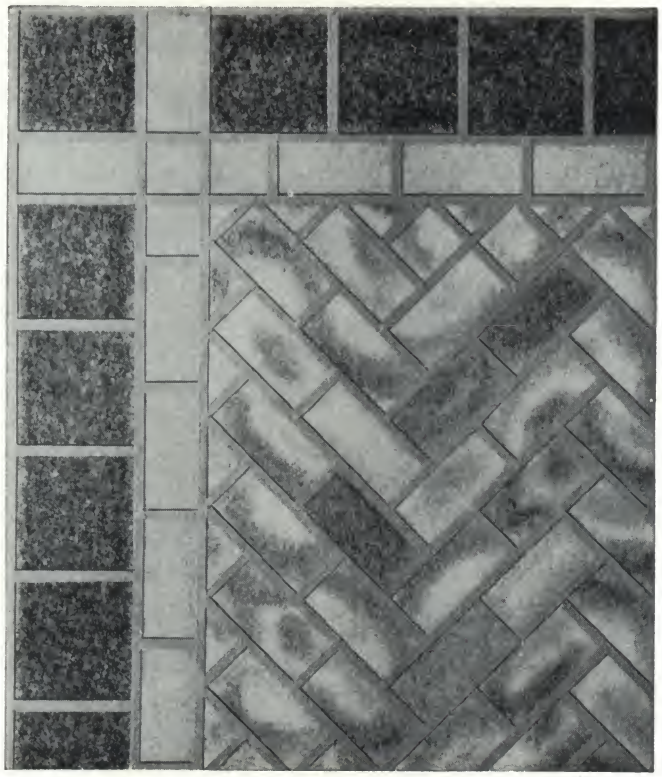


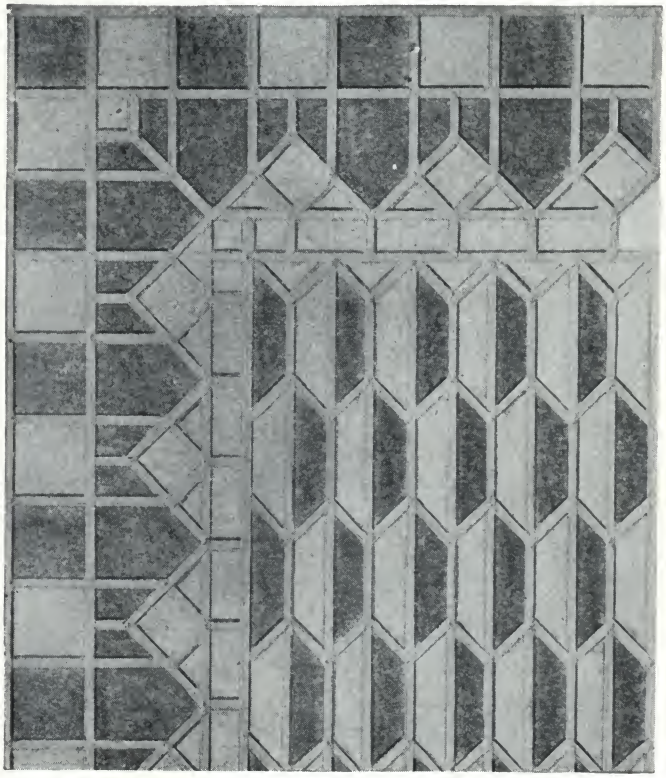
The charm of Romany Tiles is no passing beauty. It will outlast the building itself.

Specify Colors Desired



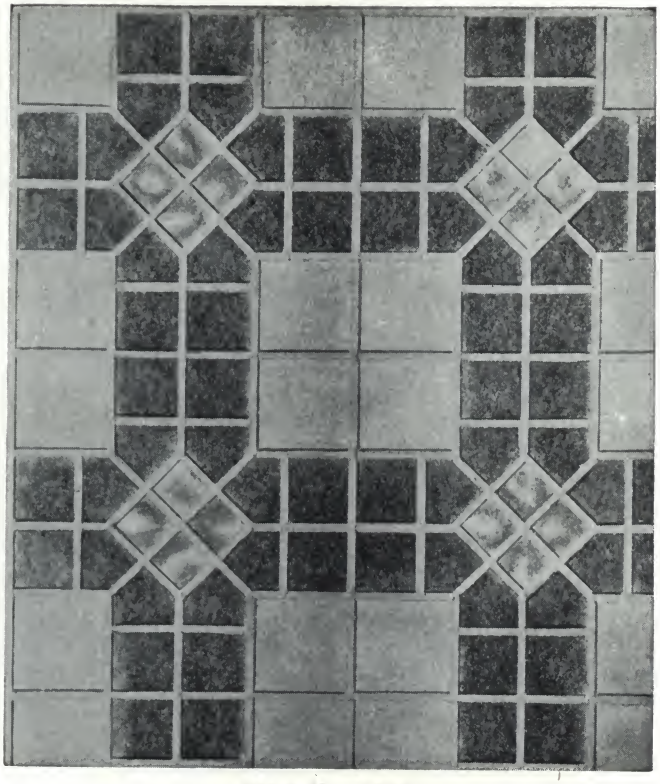
Field No. 1507 **Border No. 2516**

Romany Field Pattern No. 1507 composed of 2¾x6 Tiles.
Romany Border Pattern No. 2516 composed of 2¾x6 and 6x6 Tiles.



Field No. 1548 **Border No. 2565**

Romany Field Pattern No. 1548 composed of Elongated Hexagon Long Halves.
Romany Border Pattern No. 2565 composed of 1¾x4, 4x4, 2¾x2¾, Elongated Hexagon Square Ends and Elongated Hexagon Short Halves Split.



Field No. 1592

Romany Field Pattern No. 1592 composed of 2¾x2¾, 4x4, 6x6 and Elongated Hexagon Short Halves.

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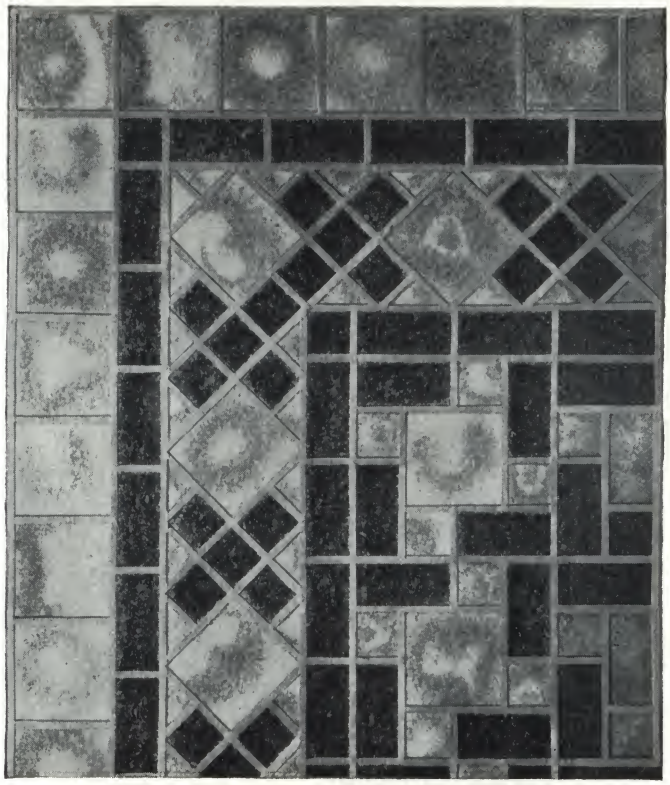
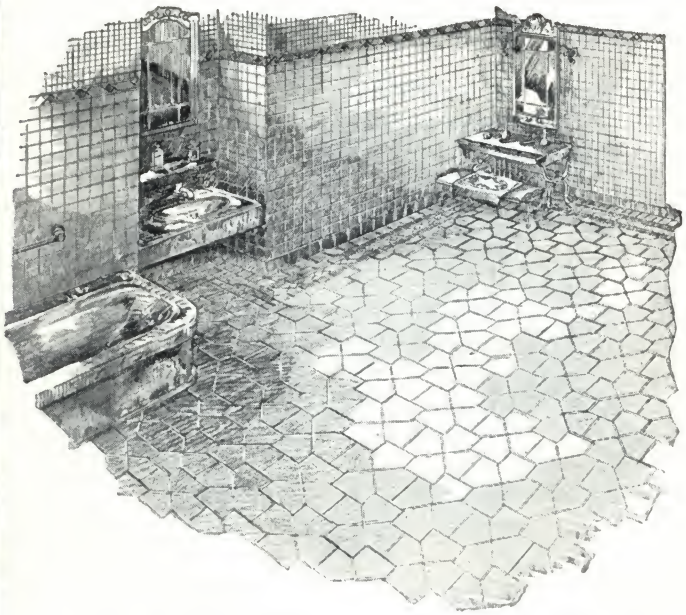


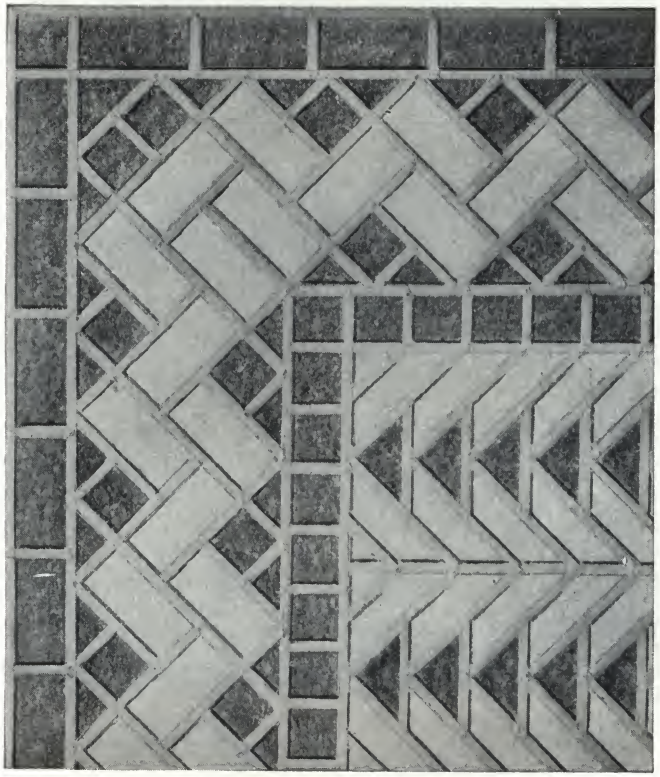
Field No. 1521 **Border No. 2524**
(Also Field No. 1666)

Romany Field Pattern No. 1521 composed of 2¾x2¾, 2¾x6, and 6x6 Tiles.
Romany Border Pattern No. 2524 composed of 2¾x2¾, 2¾x6 and 6x6 Tiles.
Romany Field Pattern No. 1666 composed of 1¾x1¾, 1¾x4 and 4x4 Tiles.



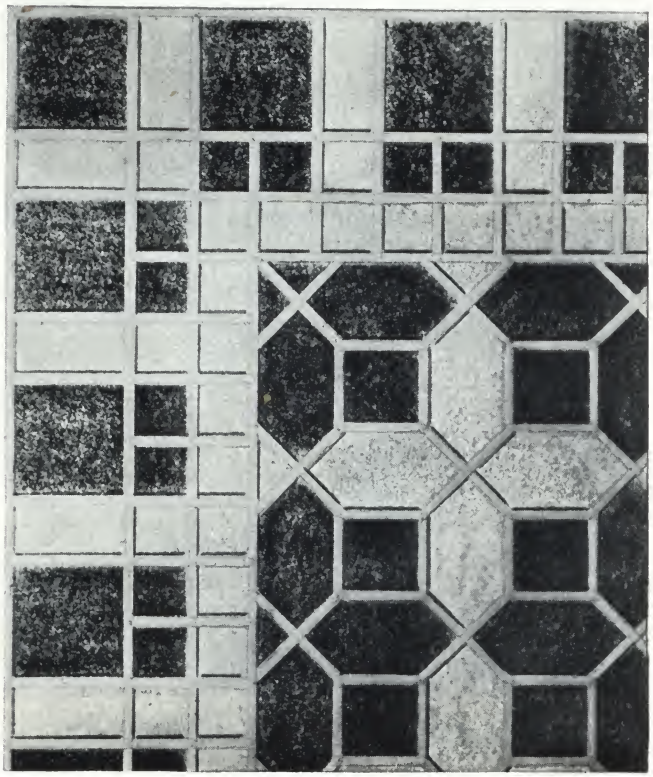
Color is the first prerequisite of the modern bath. Romany Tiles supply this demand plus cleanliness and durability.

Specify Colors Desired



Field No. 1607 **Border No. 2527**

Romany Field Pattern No. 1607 composed of 4" Diagonal Halves and Elongated Hexagon Long Halves.
Romany Border Pattern No. 2527 composed of 2¾x2¾ and 2¾x6 Tiles.



Field No. 1541 **Border No. 2538**

Romany Field Pattern No. 1541 composed of Elongated Hexagons and 4x4 Tiles.
Romany Border No. 2538 composed of 6x6, 2¾x6 and 2¾x2¾ Tiles.

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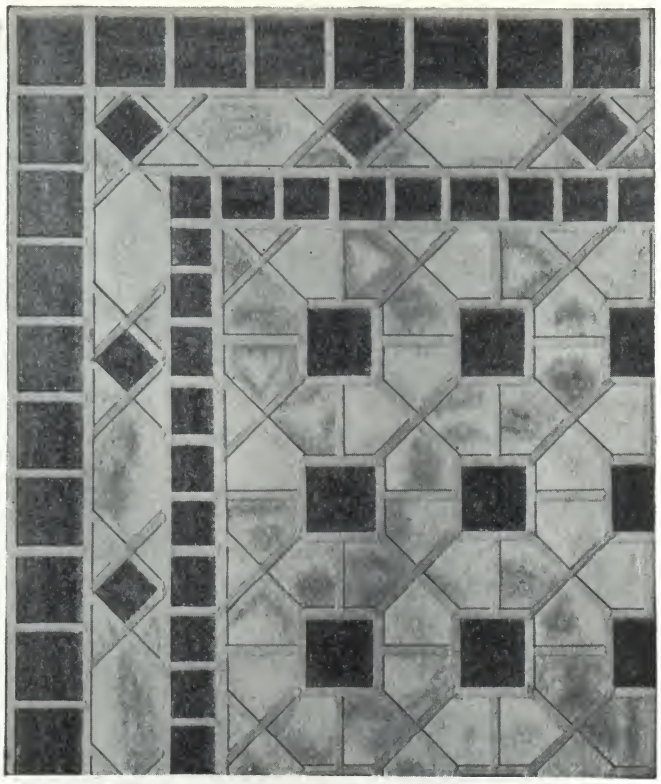
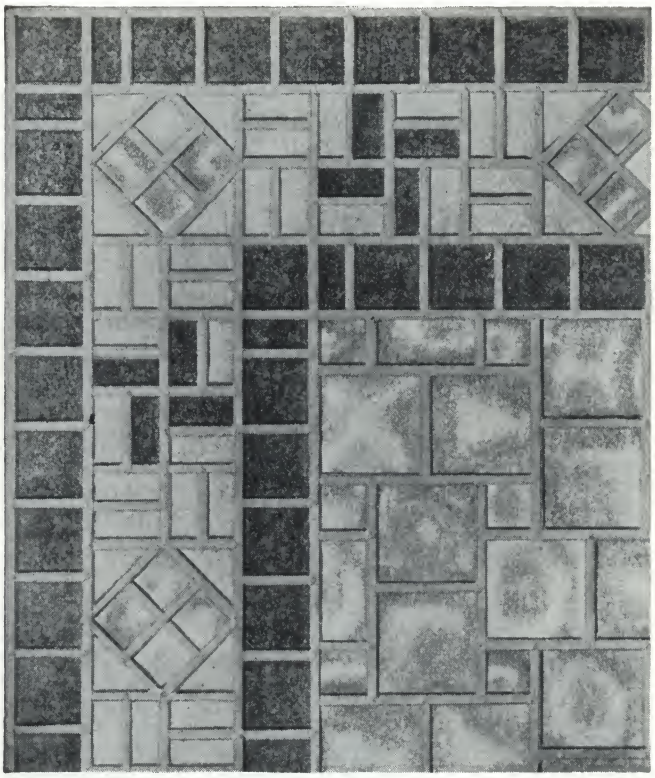
Romany Tiles offer the architect a versatile media for the working out of distinctive and attractive entrances.

Specify Colors Desired



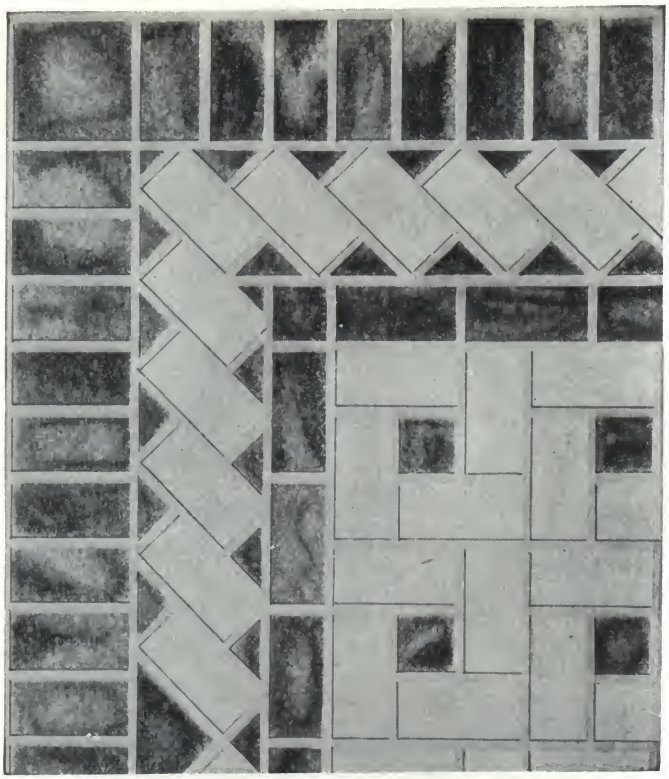
Field No. 1586 **Border No. 2550**

Romany Field Pattern No. 1586 composed of 4x4 Tiles and Elongated Hexagon Short Halves.
Romany Border Pattern No. 2550 composed of 2¾x2¾ and 4x4 Tiles and Elongated Hexagons.



Field No. 1519 **Border No. 2560**
(Also Field No. 1665)

Romany Field Pattern No. 1519 composed of 2¾x2¾ and 6x6 Tiles.
Romany Border Pattern No. 2560 composed of 1¾x4, 4x4 and 2¾x2¾ Tiles.
Romany Field Pattern No. 1665 composed of 1¾x1¾ and 4x4 Tiles.



Field No. 1518 **Border No. 2523**
(Also Field No. 1656)

Romany Field Pattern No. 1518 composed of 2¾x2¾ and 2¾x6 Tiles.
Romany Border Pattern No. 2523 composed of 2¾x6 and 2¾" Diagonal Halves.
Romany Field Pattern No. 1656 composed of 1¾x1¾ and 1¾x4 Tiles.

AMERICAN KERAMENT CORPORATION

101 Park Avenue, NEW YORK, N. Y.

Products

GLAZED WALL TILES in standard sizes from 4¼x 4¼ in. to 8x16 in. in an unlimited range of solid and blended colors and plain or textured surfaces, together with trim and Ornamental Plaques for Exterior and Interior use.

For Kerament Decorative and Structural Units of any size or shape made to architects' specifications, comparable to the highest grade terra cotta, see Manufacturers' Index.

A New Medium for Architectural Color

Kerament combines the strength and permanence of concrete with the brilliance and durability of glazed colors hitherto obtainable only in fired materials and expensive natural stones. European architects and builders, by actual experience for more than ten years, have adopted it as a superior color medium for interior and exterior facings.

Although manufactured in this country for only one year, Kerament has already won the approval of scores of leading architects and builders as a material which, by its attractive appearance and low cost, opens up a wide field for the development of architectural color effects.

Colored Store Fronts and Facades in Kerament Standard Units Are Permanent and Inexpensive

The Kerament Process

The Kerament process is a patented one permitting the glazing by natural cold means without baking, casting, polishing or artificial finishing of any sort, and without the use of magnesite. The glazes, being cementitious in nature, are an integral part of the concrete base, are free of objectionable crazing and cracking, and increase in hardness from year to year.

Colors and Surfaces

Kerament is unlimited in color range and available in plain colors as well as in novel and attractive mottled and polychrome designs. The surfaces also offer the widest variety of moulded, waved and ridged textures with no extra cost for special colors or surfaces. The colors used are the most inert mineral pigments known to science and are guaranteed against fading in any exposures.

Kerament in Tile Form

Kerament tiles are produced in the following standard sizes—4¼x 4¼x¼ in., 6x3x⅜ in., 6x6x⅜ in., 6x12x⅝ in., 12x12x¾ in. and 8x16x⅞ in., as well as caps, bases and trim.

Kerament in Special Pieces

Special sizes and shapes from detail drawings are made accurately in sizes up to 4 ft. in length, in any color or texture desired, at a very considerable saving over comparable materials.

Store Fronts and Facades

Kerament is made in standard shapes and designs especially adapted for the creation of colorful store fronts and facades. By these standard pieces striking and attractive architectural designs can be produced at a cost approximately that of face brick. Booklet of practical designs and construction details sent upon request.

Kerament Costs

Material—Kerament Products average 50% lower cost than comparable materials. In tile form Kerament in any color is sold at prices considerably lower than the cheapest grade of fire glazed units. Comparable in appearance with faience products, Kerament costs less than a third as much. Special pieces are produced at costs 50% or more below those of terra cotta. cast stone or natural stone units.

Labor—American tile setters consistently show greater production with Kerament as compared with ceramic tiles, due to the complete freedom from warping, distortion and irregular sizing, as well as to the superior binding qualities of the concrete base, and even the larger sizes can be set in close joints. Kerament erection requires no special tools, mixes or handling.

Continued on next page

Performance

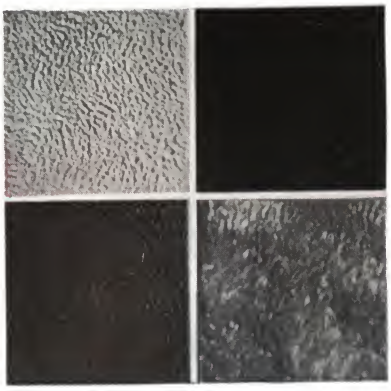
Kerament is now being widely used and specified by American architects for store fronts, building facades, extrance halls, corridor wainscots, kitchens, bathrooms and bases in apartment houses, banks, office buildings, hotels, clubs, restaurants, barber shops, filling stations, etc.

Kerament is manufactured in Germany, France, Sweden, Czecho-Slovakia, Spain and other countries, and ten years of increasing use in every type of public and private building has uemonstrated its permanence, economy and decorative possibilities. In all of these countries Kerament has been adopted as a standard building material, making possible hitherto unobtainable architectural results at anything like comparable prices.

Kerament was awarded the first gold medal at the Barcelona Exposition where it was extensively used in the permanent buildings of the exposition which will later become a Government University.

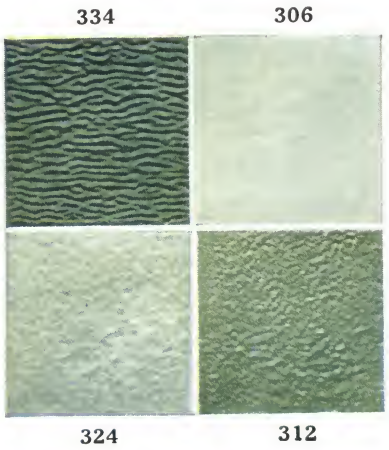
Unlimited Range of Colors and Textures

The colors and textures snown on this page are only a few of the unlimited color effects and combinations possible in Kerament. These colors and scores of others are carried in all sizes up to 12x12 in. All colors are quoted at the same low price.



Special Colors at No Extra Cost

For architects seeking unusual color effects, we will submit samples direct from color sketches. Special colors in standard sizes are produced to order at no additional cost.



JOHNS-MANVILLE

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292 Madison Avenue, NEW YORK

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Products

WALL TILE.

Also packings for all purposes; Refractory Cements; Waterproofings and Dampproofings; Asbestos Ebony; Asbestos and Rag-felt Roll Roofings; Special Rotproof Roofs.

JOHNS-MANVILLE JM PRODUCTS

For the following, see manufacturer's index: Insulating Board; Tile Flooring; Celite for Concrete and Mortar; Transite Corrugated Asbestos; Transite Flat; Asbestos Wall Board; Home Insulation; Built-up Roofing; Asbestos Shingles; Asphalt Shingles; Pipe Covering and Insulation.

JOHNS-MANVILLE ASBESTOS WALL TILE

The Material

J-M Asbestos Wall Tile is a strong, rigid sheet of asbestos fibre and Portland cement, grooved in 4 in. squares to give the effect of individual units, the entire surface including grooves being finished with high-grade lacquer enamel applied in a number of coats in white, ivory, light green and light blue colors. Prior to lacquering, the sheets are impregnated with a waterproofing agent and sanded to provide a perfect finish for the lacquer enamel. This material is also procurable, on special order, without the tile joint marking.

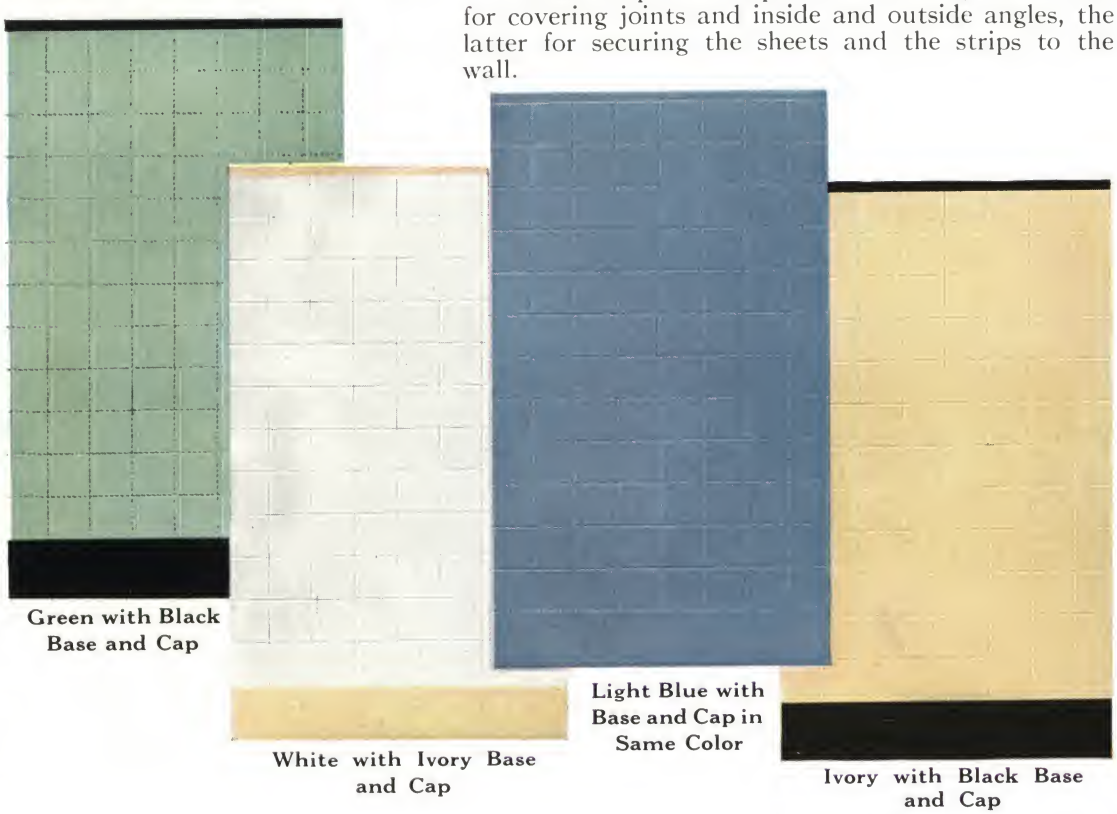
Asbestos Wall Tile is colorful, durable, sanitary and waterproof. It can be kept clean with a minimum of effort. Dirt remains on the surface where it can be easily washed off. Due to the large size sheets it can be quickly and economically installed either in new construction or in redecorating existing construction. With Asbestos Wall Tile the carpenter or anyone familiar with the use of a saw and hammer can do the entire job from start to finish. It is readily cut with a saw or drilled.

This material is not considered as a substitute for glazed ceramic tile. For example, with J-M Asbestos Wall Tile there is complete freedom from the maintenance costs involved in replacements when small units are used. This material will not crack or craze.

Accessories

J-M Asbestos Wall Tile is held in place at the bottom by J-M Asbestos Base, made of the same material as the tile, measuring ½ x 6 in., rabbeted to receive the tile sheets. It is held at the top by J-M Asbestos Cap, also made of the same material, measuring ½ x 1⅛ in., which is also rabbeted to receive the tile sheets.

Brass strips and clips are furnished, the former for covering joints and inside and outside angles, the latter for securing the sheets and the strips to the wall.



Green with Black Base and Cap

White with Ivory Base and Cap

Light Blue with Base and Cap in Same Color

Ivory with Black Base and Cap

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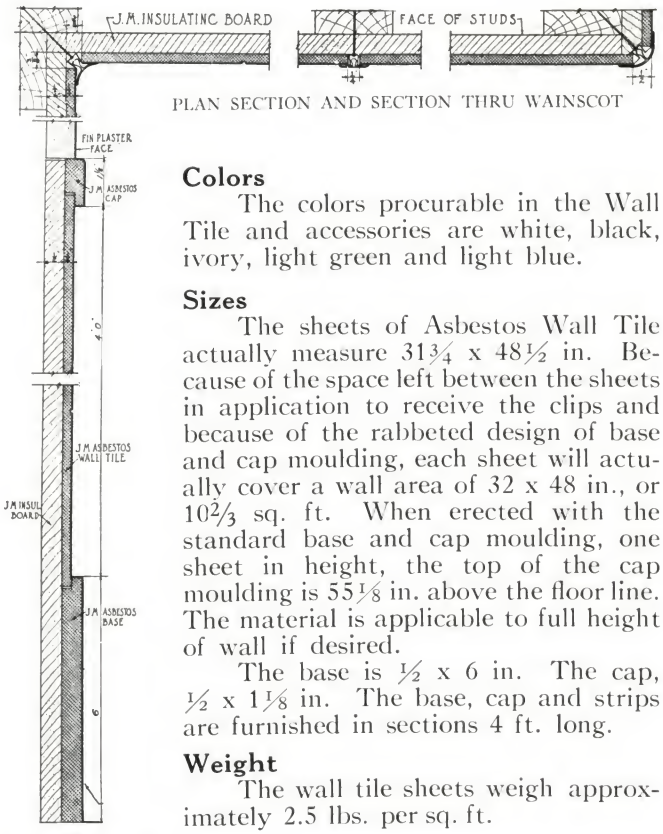


PLAN SECTION AND SECTION THRU WAINSCOT

Colors

The colors procurable in the Wall Tile and accessories are white, black, ivory, light green and light blue.

Sizes

The sheets of Asbestos Wall Tile actually measure 31¾ x 48½ in. Because of the space left between the sheets in application to receive the clips and because of the rabbeted design of base and cap moulding, each sheet will actually cover a wall area of 32 x 48 in., or 10⅔ sq. ft. When erected with the standard base and cap moulding, one sheet in height, the top of the cap moulding is 55⅛ in. above the floor line. The material is applicable to full height of wall if desired.

The base is ½ x 6 in. The cap, ½ x 1⅛ in. The base, cap and strips are furnished in sections 4 ft. long.

Weight

The wall tile sheets weigh approximately 2.5 lbs. per sq. ft.

Application

Special preparation such as metal lath and plaster is unnecessary. As a base for the tile sheets in new construction, it is recommended, that J-M Insulating Board be nailed directly to the studding. The sheets are held at the top and bottom by the rabbeted base and cap, these being secured by finishing or casing nails driven through the face, countersunk, puttied and touched up with lacquer provided for that purpose.

The sheets are spaced with vertical joints open. The clips are inserted into these spaces on 6 in. centers, and secured to the studding with nails. These clips hold the tile and provide a channel into which the joint strips are sprung and held in place. The joints at inside and outside corners are similarly formed.

Horizontal joints between tile sheets, where the treatment is more than ordinary wainscot height, may be formed in the same manner as described for vertical joints or the joint may be formed without using the clips and strips, leaving a 1/16 in. space between the sheets to be filled with putty and touched up with the lacquer. In this case each sheet is held in place by a finishing nail driven through a tile joint marking at the center of the sheet adjoining the joint, countersunk, puttied and touched up with lacquer.

In fireproof construction and in redecorating existing surfaces, the same method of application is employed, suitable wood grounds being installed where required.

Service

The Architectural Service Department of Johns-Manville will be glad to assist with information and advice in regard to contemplated applications and the furnishings of desired samples, estimates of cost, etc.

We will send on request special catalogue matter giving full instructions for erecting the material.

Nailing the base is the first step of application

The snap-in covering strip is here shown being snapped firmly into place to cover joints

SHORT FORM SPECIFICATION FOR FURNISHING AND APPLYING JOHNS-MANVILLE ASBESTOS WALL TILE

(As the furnishing and applying of this material is generally made a part of the carpentry specifications, the following has been prepared to be so included.)

Note: The following information relates to work allied with the application of the Wall Tile and should be provided for in the specifications for the work involved:

Studs shall be spaced at 16″ centers and so located as to allow the erection of the sheets of Wall Tile with the least amount of cutting and to the most symmetrical arrangement. Studs or grounds shall be provided at all points where the nailing of the clips or other nailing is to be done. Grounds shall be provided, to which bath room accessory fittings, etc., are to be secured.

In fireproof construction grounds shall be set to receive all nailing.

The Contractor shall furnish and install Johns-Manville Asbestos Wall Tile to .....
(State in detail surfaces to be covered)
Johns-Manville Asbestos Base and Cap, joint covering strips, and other standard accessories required in erecting the tile shall be included.

Height—The Wall Tile shall be erected to a height of.....
.....
(State height or preferably "as shown on drawings")

Color—The Wall Tile shall be ....., the joint
(State color)
strips....., the base and cap.....
(State color) (State color)

Insulating Board Backing—(omit if not to be used) Johns-Manville Insulating Board shall be installed as a backing over which the Wall Tile shall be erected.

Installation—The Wall Tile and accessories shall be installed in strict conformity with the printed instructions of the manufacturer.

Note—If this Contractor is to include the erection of the bath room accessory fittings such as towel bars, etc., so state, including a list of such fittings.

AMBLER ASBESTOS SHINGLE & SHEATHING CO.

Ambler Asbestos Waltile and Ambler Linabestos Board

AMBLER, PA.

BRANCH OFFICES

BOSTON, MASS. CHICAGO, ILL. DETROIT, MICH. NEW YORK, N. Y. PITTSBURGH, PA. WASHINGTON, D. C.
BUFFALO, N. Y. CLEVELAND, OHIO MINNEAPOLIS, MINN. PHILADELPHIA, PA. ST. LOUIS, MO. WILKES-BARRE, PA.

WESTERN DISTRIBUTOR: Farrington Engineering Co., Los Angeles, Calif.

DIRECT SHIPMENTS MADE FROM OUR FACTORIES AT AMBLER, PA., OR ST. LOUIS, MO.

Products

Ambler Asbestos Waltile; Ambler Asbestos Lumber, for general exterior and interior fireproof construction; Ambler Linabestos (Asbestos) Board for fireproof sheathing, ceilings and sidewalls.

For our pages on Ambler Asbestos Shingles, Ambler Corrugated Roofing and Siding, Ambler Ebonized Asbestos Lumber and Asbestos Fireproof Sectional School Buildings, see Manufacturers' Index.

Ambler Asbestos Waltile

A fireproof sheet material finished in colors and ready for immediate application to old walls as well as new. Sheets 32x48 in., $\frac{3}{16}$ in. thick, with a permanent, decorated glossy surface.

A Kitchen Wainscoted with Waltile

Waltile may be had in the following colors: white, smoke, black, pink, cream, apple green, and Nankin blue. It is scored 4x4 in. for tile effects. Waltile can be cut to fit any wall surface. In new houses it is nailed directly to the studding, saving lath and plaster.

It may be applied to old plaster walls by using a compound furnished by the manufacturer.

Waltile is recommended for bathrooms, kitchens, dinettes, halls, professional offices, lavatories, pantries, etc. It is fireproof, verminproof and easy to clean. Cap, intermediate band and base mouldings also furnished.

Ambler Asbestos Lumber

Ambler Asbestos Lumber is a fireproof sheet material made of selected asbestos fibre and portland cement.

Standard size sheets 36x48, 42x48 and 42x96 in., thicknesses from $\frac{1}{8}$ to 4 in. The 48x96 in. supplied in $\frac{3}{16}$, $\frac{1}{4}$, $\frac{3}{8}$ and $\frac{1}{2}$-in. thicknesses only. Special sizes will be cut and furnished by the factory at a nominal charge.

Fireproof Bathhouses—Ambler Asbestos lumber is well suited to building fireproof bathhouses at the shore or pleasure resorts, using the 48x96x$\frac{3}{8}$ in. or $\frac{1}{2}$ in. thick sheets for backs, sides and roofs of the houses.

Bathhouses made of this material are sanitary, fireproof, impervious to moisture and not easily destroyed.

Our Engineering Department is at your service without obligation.

Underwriters' Approval—Ambler Asbestos Lumber is listed by the Underwriters' Laboratories, Inc., and bears a standard "fire" rating. It can not burn.

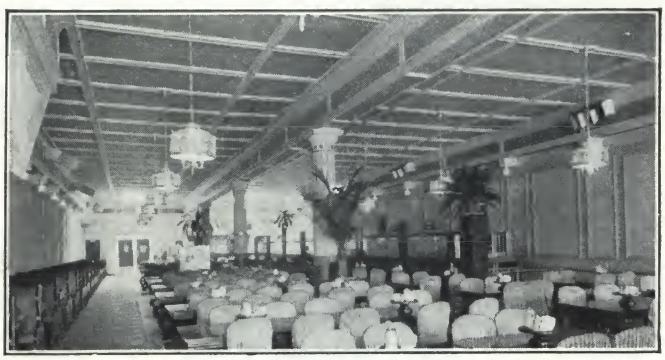
Interior Uses—Ambler Asbestos Lumber is used extensively for interior fireproof and sanitary lining in bathrooms, kitchens, closets, gymnasiums, storerooms, elevator shafts, stairways, dry kilns, laboratories, paint and oil rooms, refrigerator rooms, smokehouses, moving picture booths, garages, locker rooms, and in a multitude of places where it is desired to form a fireproof, rotproof, sanitary lining that is waterproof and immune to vermin.

Ambler Linabestos Board

Ambler Linabestos Board, made $\frac{3}{16}$ and $\frac{1}{4}$ in. thick in sheets 48x48 in., is less expensive than Ambler Asbestos Lumber, and is recommended for all interior or exterior sheathing where a flameproof, fire resisting board is required.

A special process produces sheets of uniform thickness, even texture and density, maximum strength and minimum shrinkage.

Ambler Linabestos Board is also furnished in press indented 4x4-in. blocks, straight joints, or 3x6-in. brick, broken joints. Can be painted or enameled to represent tile.



A Cafeteria in Which Ambler Linabestos Has Been Used on Sidewalls and Ceiling

ASBESTOS LIMITED INC.

Manufacturers of "Newtile"—Asbestos Tiling in Sheet Form

8 West 40th Street
NEW YORK, N. Y.

WORKS: MILLINGTON, N. J., U. S. A.; LACHINE, CANADA; GENOA, ITALY

Product

"NEWTILE"—Asbestos Tiling in sheet form.

For "Newmarble" asbestos "marble" in sheet form, see Manufacturers' Index.

"Newtile"

"Newtile" lends itself to the embellishment of whatever surfaces would ordinarily be considered suitable for tiling. Its gleaming beauty, its waterproof, fireproof and long-wearing qualities make it an eminently satisfactory product, particularly where economy is desirable. Wherever walls can be tiled—in every home or business building—architects and builders are specifying the use of "Newtile" for smart ceramic effects.

The "Newtile" base is a strong, rigid sheet of asbestos. This is finished with a hard, highly polished surface closely resembling ceramic tile. Scoring at 4-in. intervals perfectly reproduces the effect of 4-in. square tiles even to the appearance of natural mortar joints.

The surface of "Newtile" is non-absorbent and repels dirt so completely that an occasional wiping with a damp cloth or washing with soap and water will restore its original brilliant lustre at once.

How Furnished

"Newtile" is furnished in sheets, base and cap, in the following sizes:

Sheets: 32x48 in., $\frac{3}{16}$ in. thick.
Base: 4 in. wide by 48 in. long, $\frac{3}{8}$ in. thick.
Cap: 2 in. wide by 48 in. long, $\frac{3}{8}$ in. thick.

A Typical "Newtile" Bathroom

Colors

"Newtile" is furnished in four pastel shades—white, green, blue and cream. These colors were selected for their ability to blend with practically any color scheme. "Newtile" base and cap are also made in solid black.

Installation

Cutting—"Newtile" sheets are best cut with a $\frac{1}{8}$ in. carborundum wheel or a hack saw. However, they can be scored deeply front and back with a sharp instrument and broken cleanly and evenly. The cut edge must be worked with a flat file for close fitting. Any cutting or mitering of the base and cap can be done with a hack saw, filing the cut smooth for tight fitting.

Installing—*New Brick, Plaster or Masonry Surfaces*— Walls should be furred at 16 in. intervals before attempting to apply "Newtile." It is essential that masonry or plaster upon which furring is attached or imbedded be dry and set before attaching "Newtile." Unless this precaution is observed any warping in the furring or studs will result in like distortion of the "Newtile" sheets.

Old Plastered Walls—It is advisable, where plaster is applied directly to the masonry, to furr so that the furring strips will be flush with the plaster. In order to do this the plaster should be removed at proper intervals to receive the necessary strips.

Note: Where it is not possible to use furring strips the use of "Newtile" *Plastic Compound* is recommended.

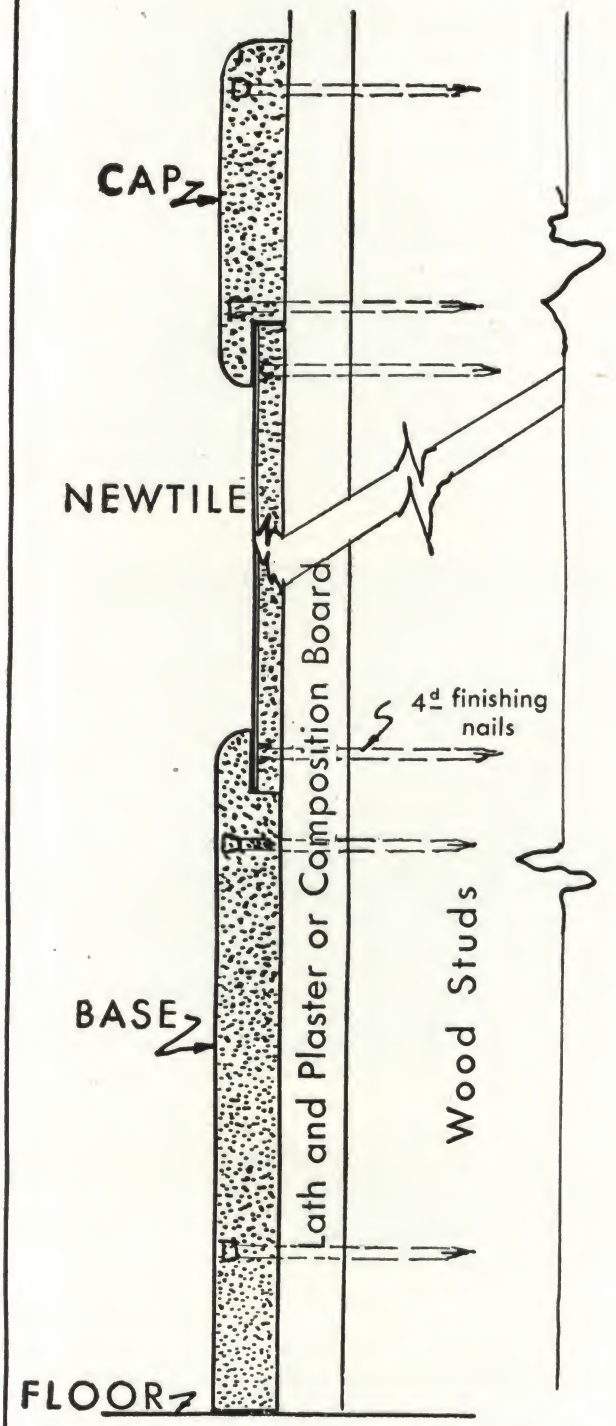
The first step after final inspection to insure a smooth, square and plumb-free wall, is to set the base in place. The scoring (on 8 in. centers) should be in line with the scoring on the "Newtile" sheets. Base should be set level and plumb shimming the floor where needed. If the plaster does not reach the floor it is advisable to fasten a 3 or 4 in. wood nailer strip flush with the base of the plaster surface, nailing it to the stud at the floor line. A hole is then drilled through the "Newtile" base with a No. 49 twist drill and the base attached to the studding with four-penny finishing nails, which should be driven about $\frac{1}{8}$ in. of being tight, allowing space for slipping the "Newtile" sheets into the slot of the base.

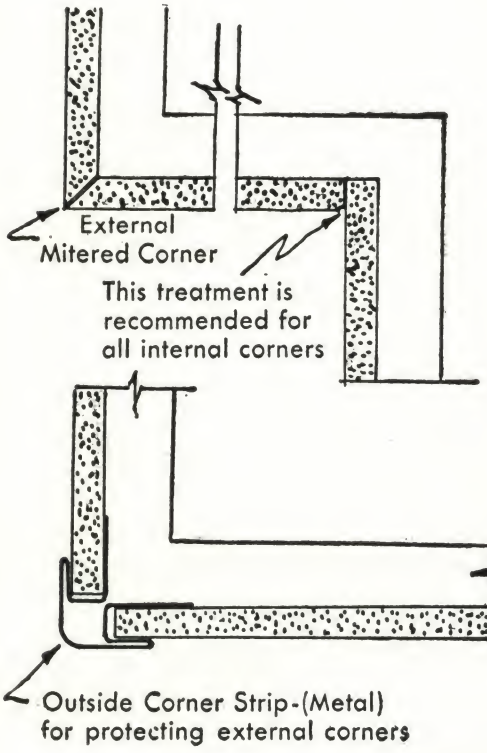
The "Newtile" sheets are now fitted to the entire surface, finishing one wall at a time. The top edge of the sheet with 4 in. base will be 53¼ in. from the finished floor. The "Newtile" sheets are then nailed, through the scoring, at occasional intervals, to the studding or furring strips. Sheets should be tightly pressed together to avoid any gaps that might reveal the joints. "Newtile" *Joint Filler* will waterproof the joints if applied along the slots of the base and cap moulding and between the sheets.

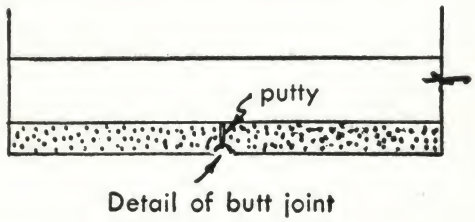
Twist drill, finishing nails and "Newtile" Filler are included in each case of "Newtile."

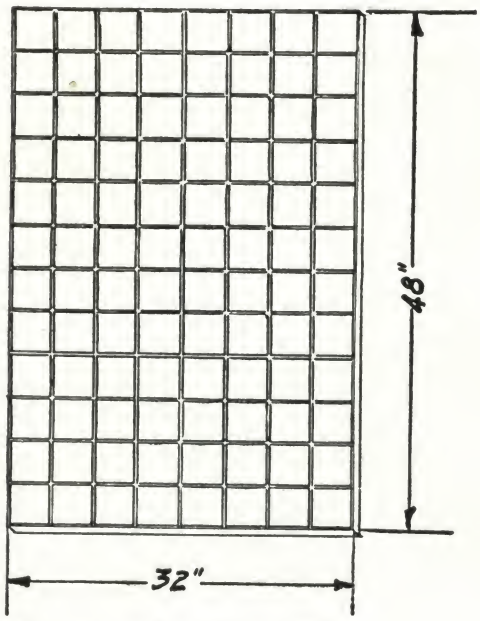
A Kitchen Finished with "Newtile"

Continued on next page









Detail No. 1 shows how Newtile sheets may be mitered for outside corners—or, if preferred, corner bars as shown in *Detail No. 2* of metal finished to match the sheets may be procured from the manufacturer.

The inside corner joint shown in *Detail No. 1* provides a satisfactory inside corner, and this treatment is our recommendation for all inside corner work.

Detail No. 3 shows how vertical and horizontal butt joints are made.

"NEWTILE" INSTALLATION DETAILS

LUXOR TILE COMPANY

SALES AND GENERAL OFFICE
HIBBING, MINN.

FACTORY: PENGILLY, MINN.

Product

HYDRAULICALLY PRESSED CEMENT TILE in the following types:

Pattern
Solid Color
Multi-colored
Non-slip
Acid-resisting
Stair Treads
Cove Base

General Description

Luxor floor tile is a cement product made under tremendous pressure in specially designed hydraulic tile presses. Such tile have been manufactured and used for centuries in Europe. In Cuba, Mexico and Latin American countries it has been extensively manufactured and almost universally used for as long a time. Manufacture in this country dates back nearly twenty-five years.

Characteristics

Among the many qualities which commend Luxor to the use of architects and owners are:

(1) Wide Color Range—Luxor is produced in about two hundred shades of permanent non-fading colors. Few, if any, materials afford a greater variety of color combinations, either in pattern or solid color tile.

(2) Uniformity of Size—Every piece of Luxor is of uniform size and thickness, with sharp even edges and corners and smooth plane surfaces free from warpage. These qualities permit laying with close joint and insure a level floor surface.

(3) Long Life—Abrasion tests show that Luxor surpasses all but one other hard flooring material in wearing qualities. This other material is much more expensive. It is reported that cement tile floors laid more than a century ago are still in use and in good condition in European countries.

(4) Sanitary Qualities—Luxor has a smooth, non-absorbent surface impervious to stains, and in consequence is very easily cleaned with plain soap and water. The frequent scouring required by many tile floors is eliminated where Luxor is used. Wide joints are not required. These facts greatly enhance the sanitary qualities of Luxor.

(5) Beauty—The natural beauty of Luxor floors, due to the smooth surface of the tile and the extraordinary color combinations possible, not only is permanent, but this beauty increases with wear. Luxor acquires a sheen or a polish from traffic abrasion, which becomes more pronounced with the passage of time. Instead of wearing off, its beauty "wears on." In spite of the smoothness of Luxor, it is not slippery.

(6) Low Cost—When compared with other quality floors, Luxor is not an expensive product. Comparative maintenance and upkeep considered, it is one of the cheapest flooring materials available.

Adaptability

Luxor is well adapted to use in stores, apartments, hotels, clubs, theatres, hospitals, schools, office buildings, courthouses and other public and commercial buildings. It finds many uses in the better class of private residences. While essentially a floor tile, Luxor is suitable and has been used for wainscot work and for decorative exterior panels and inserts. Due to the wide range of shades possible in Luxor, it lends itself very effectively to the modernistic treatment now so popular in certain classes of buildings.

Service

Stocks of black and white and standard solid color tiles, such as green, red, brown, buff and gray are constantly maintained at our factory, as well as considerable quantities of multi-colored and pattern tile. This insures prompt delivery on rush work. Special colors and designs can be produced to order with a minimum of delay. Catalogues and our special architects' folder are available and will be gladly mailed on request. Our service department would be pleased to co-operate with architects in working out floor designs to meet any particular requirements.

TYPES AND SIZES

Types

Pattern Tile—These tile are produced in a wide range of stock patterns, the design being moulded into the face of the tile to a depth of approximately ¼ in., by the use of brass patterns set into the tile moulds. The various colors are poured into the proper sections of the pattern by hand, the pattern removed, the back added and the entire mass pressed. Tile are then cured for a period of thirty days by special curing processes.

Solid Color Tile—The process of manufacture is the same as indicated above for pattern tile, except that the upper or wearing surface is all of one solid color.

Multi-colored Tile—By special processes several different colors are introduced and blended in the surface of the tile, producing unique and attractive effects in any color scheme desired.

Non-slip Tile—For outside floor surfaces, such as terraces, walks, store entrances and the like, we recommend Luxor non-slip tile. The surface of this tile contains particles of abrasive material rendering the area covered safe, regardless of weather conditions.

Non-slip Luxor tile is available in solid colors or multi-colored.

Acid-resisting Tile—This tile contains a special chemical which protects it from attack by acids. It is especially recommended for use in creamery floors where a mild acid is constantly present. This chemical treatment is not confined to the surface, it permeates the entire tile.

Non-slip Stair Treads—These treads are made in our regular non-slip surface and with round nosing. They are furnished in solid colors or multi-colored.

Cove Base—Cove base in 6x8 in. (6 in. high and 8 in. long) is made in solid or multi-colors to match regular floor tile. Both square and round nose top is manufactured with corners as required.

Sizes

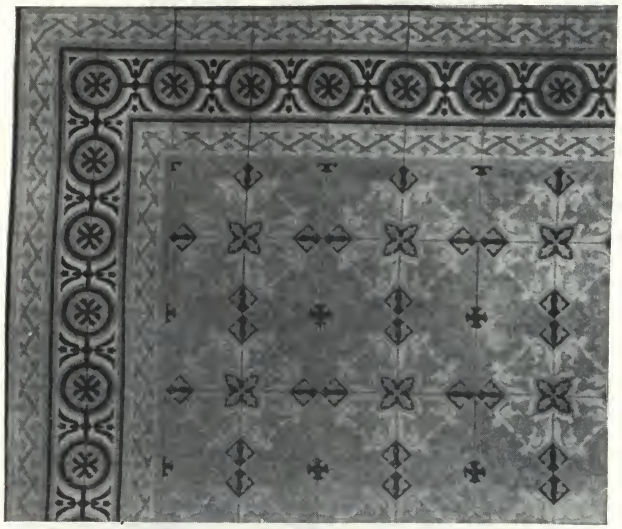
Pattern tile—8x8x¾ in.

Solid color, multi-colored, non-slip and acid-resisting tile, 4x4x¾ in., 4x8x¾ in., 8x8x¾ in. and 12x12x1 in.

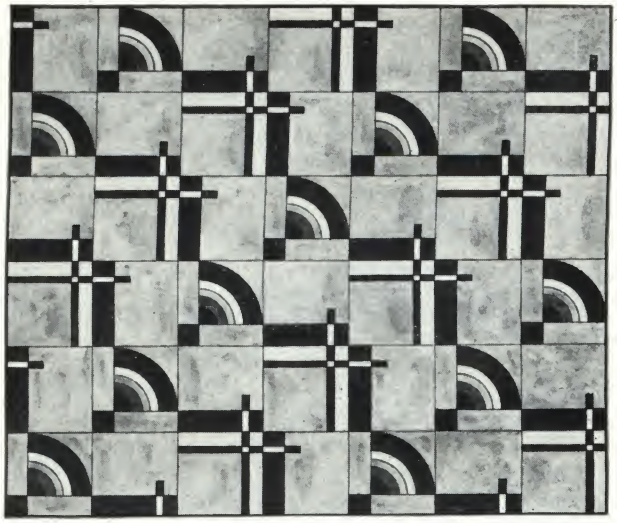
Stair treads—12x12 in.

Cove base—6x8x¾ in. with 1-in. cove.

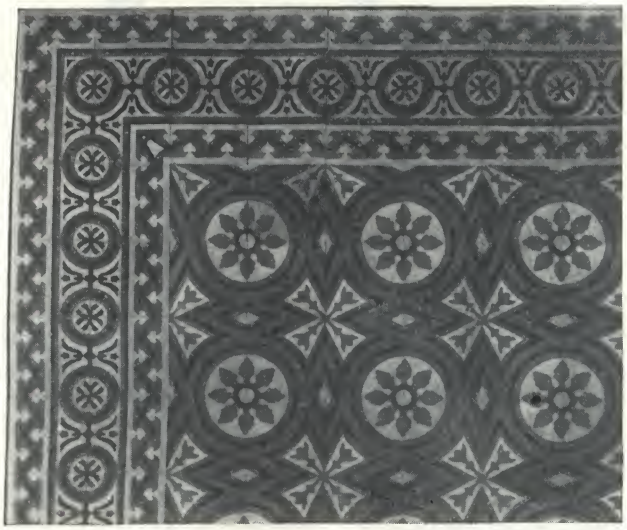
Continued on next page



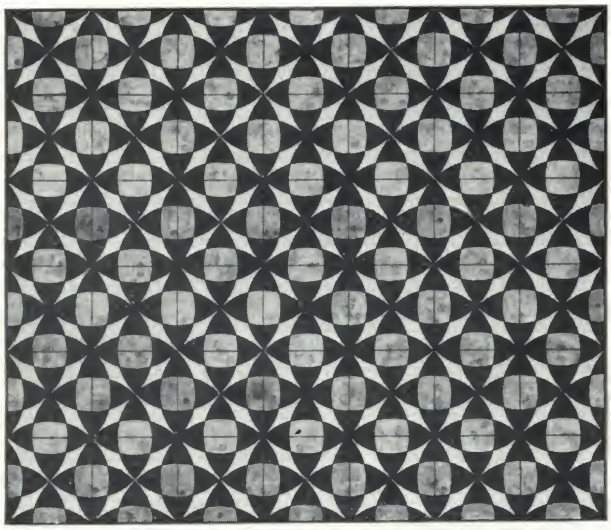
BORDER B-101 FIELD 101



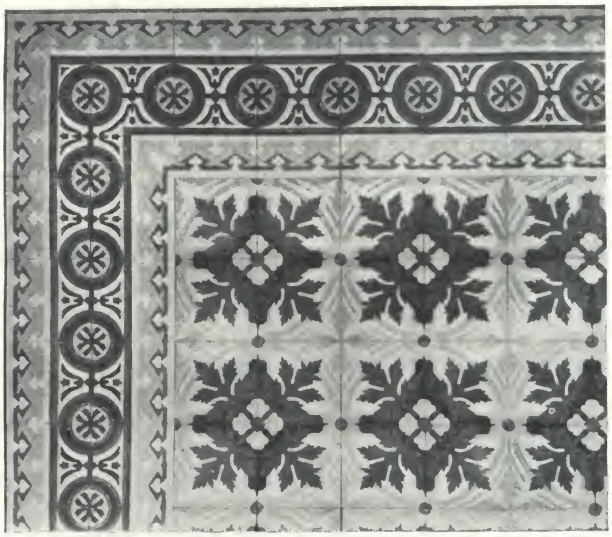
PATTERN M-1



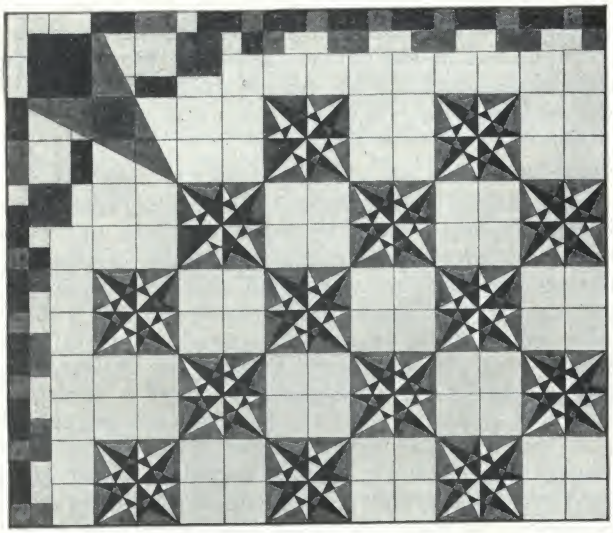
BORDER B-101 FIELD 104



PATTERN 115



BORDER B-101 FIELD 105
Optional Wide Color Range



BORDER: FOUR SHADES, SOLID COLORS
FIELD: PATTERN 118 AND SOLID COLORS

A FEW STANDARD LUXOR TILE PATTERNS

NATIONAL FLOOR TILE COMPANY, INC.

MAIN OFFICE AND FACTORY

MOBILE, ALA.

Products

HYDRAULICALLY PRESSED CEMENT TILE in the following distinct types:

Adamantile.
Diamantile.
Artile.
Embossed Tile—in many colors.
Abrasive Non-slip Tile.
Cove Base.
Wall Tile and Trim.

History and General Description

This tile is a high grade, artistic, cement floor tile which has been in use in Europe for centuries, and for many years in Cuba and South America almost to the exclusion of other types of flooring materials. It was first introduced and manufactured in the United States by this company over 20 years ago. The tiles first laid in this country retain still their original brightness of color, showing practically no signs of wear.

"Artile"—

This is the trade-name of the tile in designs and colors, some of the designs being shown in halftone on the following page. There are hundreds of stock designs in colors, but to suit individual requirements any changes can be made in colors or combinations.

"Adamantile"—

Is the trade-name of our tile in solid colors when no design or combination of colors is desired. The process of manufacture is the same as that of "Artile."

"Diamantile"—

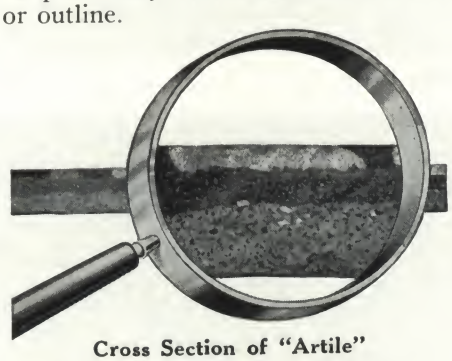
Is the name of a type of tile made exclusively by us. It is produced by the same process as "Artile" and "Adamantile," with the exception that a fine aggregate is incorporated in the surface, giving a very beautiful flecked appearance. This tile is made both in solid colors and designs.

Manufacture

Each one of the types of tile manufactured by us is handcraft, being made by skilled artisans under the direction of an expert Spanish tilewright. All of the materials used in the making of this tile are of the finest standardized quality that can be obtained, many of the colors being imported especially for our use. The proper mixture is poured through the patterns into highly polished steel moulds and subjected to hydraulic pressure of 4500 lb. to the sq. in., thus insuring perfection of outline, uniformity of size, density and compactness. The tiles are then seasoned in water for a short time and are later cured atmospherically for a given period in order to secure the correct tensile and compression strength. These tiles are not burned or baked, and are in no way an imitation or copy of any other type of tile, the same process of manufacture being followed as has been done for centuries in Europe.

Structure of the Tile

The illustration below shows a cross section of our tile which is about ¾ in. thick. The upper layer shows the depth to which the color is moulded into the tile; the center layer is the filler; and the lower layer the backing. It will be seen that the color is deep enough to insure a practically everlasting surface with no loss of color or outline.



Cross Section of "Artile"

Sizes

"Artile" is made in sizes 8x8 and 6x6 in. "Adamantile" and "Diamantile" can be supplied in sizes 12x12, 8x8, 6x8, 6x6, 4x8, 4x4, and 3x6 in. Cove base can be supplied in sizes 6x6 and 6x8 in. with either square or round top finish, and with necessary inside or outside corners. Wainscot caps and other necessary trim can be furnished in sizes required.

Colors and Designs

"Artile" can be produced in either stock patterns and colors, or varied to suit any color scheme or individual taste. Special patterns will be made up if desired. "Adamantile" in solid colors can be furnished in either our standard stock colors or made in practically any shade or tone of color as may be required. "Diamantile," which shows the flecked surface and is subjected to a polishing process, can be supplied in any solid color and also in any of the designs.

It can be readily seen that the flexibility of colors or patterns is almost unlimited, and that it is possible with our tile to carry out almost any architectural or decorative thought or scheme.

Facilities and Co-operative Service

Large stocks of standard colors and designs are constantly maintained, thereby guaranteeing prompt execution of orders. Special shades and new designs can be produced on short notice. Literature, catalogues, samples, and a list of some of those architects who have been and are specifying our tile will be furnished interested architects upon application.

We maintain at our factory, in charge of an experienced architect, an Architectural Service Bureau, and it will be our pleasure to always render complete cooperation to architects and designers as desired.

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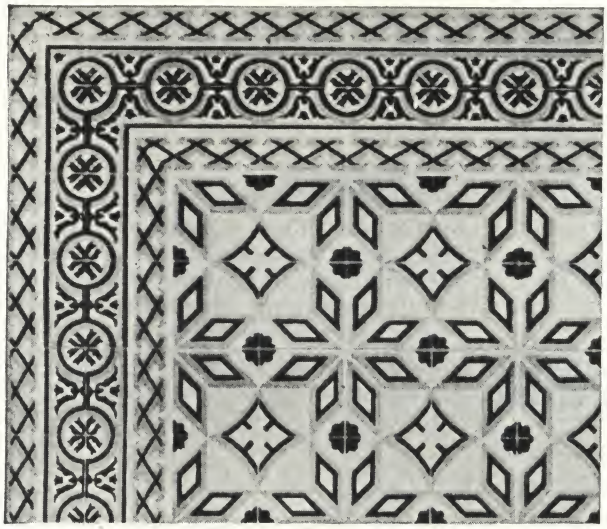
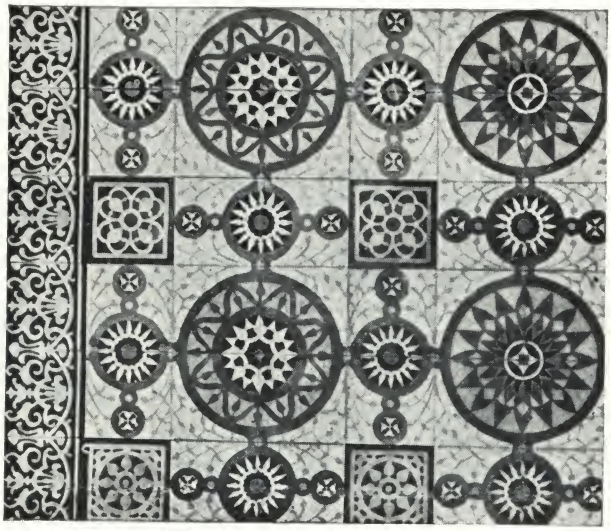
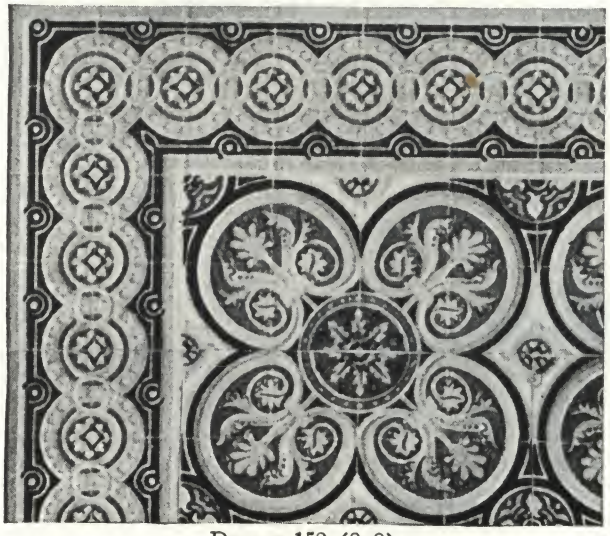


DESIGN 154 (8x8)



BAPTISTRY DESIGN (8x8)



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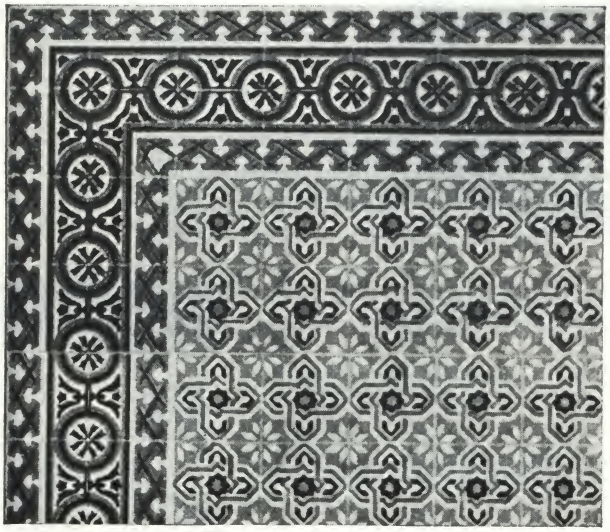
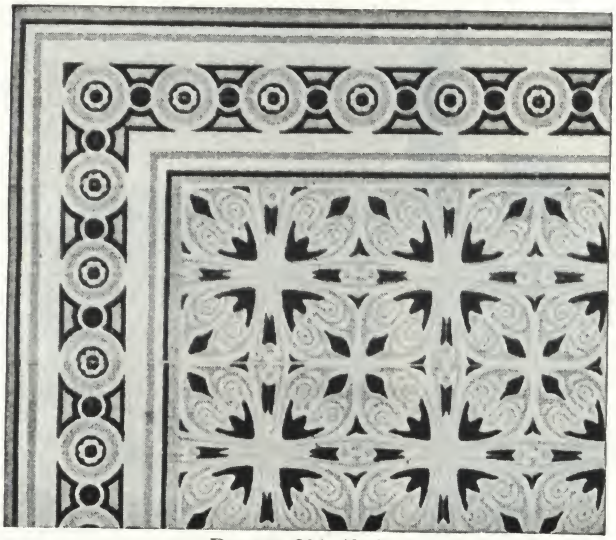
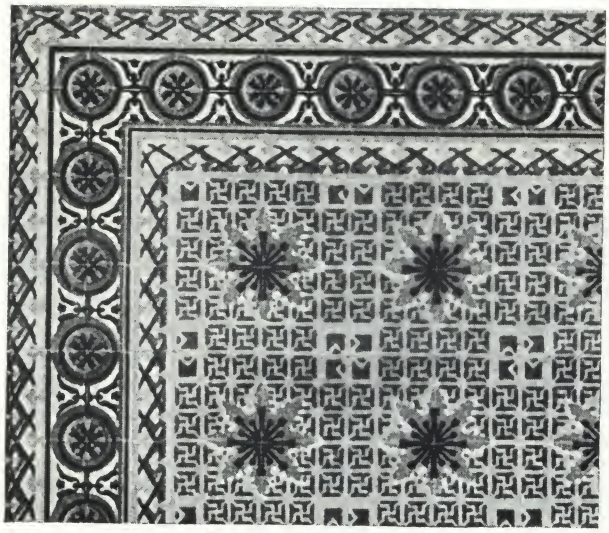


DESIGN 141 (8x8)



DESIGN 234 (8x8)



DESIGN 157 (8x8)

NATIONAL FLOOR TILE CO., INC.	A FEW STANDARD "ARTILE" DESIGNS	PLATE 1

PORCELAIN TILE COMPANY

The Porstelain System of Standard Wall Tiling

TELEPHONE
CENTRAL 0096

Builders Building, La Salle Street and Wacker Drive
CHICAGO, ILL.

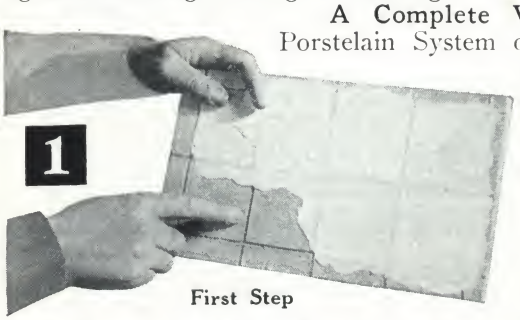
PLANT
ST. LOUIS, MO.

Porstelain System of Standard Wall Tiling

The component parts consist of vitreous enameled steel tiles made in standard face dimensions and flanged in such manner as to fit into a supporting, self-locating insulating base by means of a special cement, so that a strong, lasting handsome porcelain surfaced tile wall results. It provides a ceramic surface with the physical properties of steel insuring it against checking, crazing or cracking.

System of Standard Wall Tiling

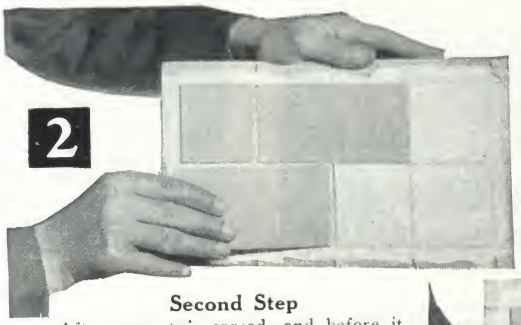
A Complete Wall — The Porstelain System of Standard Wall Tiling is not merely a wall surfacing finish. It is a complete insulated wall with less than one-third the weight of a clay tile wall. When installed, it forms an unbroken, permanent, lasting porcelain surface that will not crack or chip, or whose surface units will not become loose.



First Step

In Applying Porstelain Wall Tile

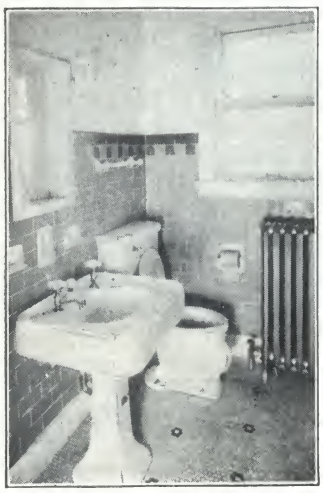
Install foundation sheet. This baseboard is then covered with a troweled coat of Porstelain cement which fills the grooves



Second Step

After cement is spread, and before it hardens, apply Porstelain tiles by the simple process of setting them into the cement filled grooves of the insulating base

Porstelain Tile — Porstelain tiles used in the Porstelain System of Standard Wall Tiling differ from all other conventional forms of wall tiles in that they are pressed out of sheet steel (resembling shallow oblong pans) and coated with a hard indestructible, chinalike surface finish of porcelain enamel identical to that used on ceramic tile. Porstelain tiles are made in the standard commercial sizes in which wall tile is available, and in a variety of colors. All the popular colors in vogue at present can be had in Porstelain tile. Each tile is a separate unit and is set individually, being self-locating on a grooved base.

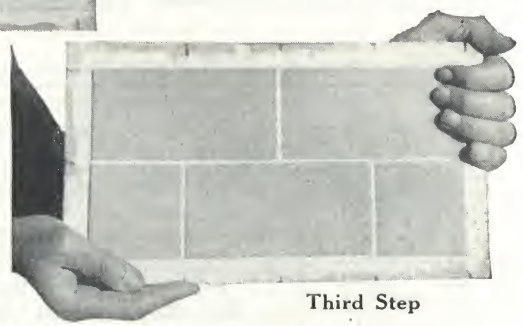


Applications — Porstelain tile walls are suitable and appropriate for installation wherever other types of tile walls are used. For bathrooms, kitchens, stair-halls, restaurants, gymnasiums, school buildings, subways, churches, filling stations, meat markets, theatres, stores, depots and similar types of buildings, Porstelain is unsurpassed.

Porstelain Insulating Base—The base which holds Porstelain tile is insulating board in units 4x5 ft. in size, grooved in squares to receive the flanges of the tiles. The base is applied directly to the studding or hollow tile in new construction. In remodeling old rooms, it is attached directly to the existing walls. Neither new nor old work requires additional reinforcing of any kind. The grooves receive the flanges of the tile after the board has been covered with Porstelain cement, and because of them the tiles are self-locating.

Porstelain Cement—Porstelain cement is used for setting Porstelain tile into the Porstelain insulating base. It is a special plastic adhering cement which does not shrink in drying and which holds the Porstelain tiles tightly and permanently in place. After the tiles have been inserted into the grooves forming the surface of the wall, the Porstelain cement is used for pointing up all of the joints, thus making the wall tight and impervious to the infiltration of moisture and dirt.

The Finished Wall—The demand of architects, contractors, builders, and owners for better, more satisfactory tiled walls, is fully met by the Porstelain System of Standard Wall Tiling. The Porstelain wall presents a beautiful porcelain surface in true opaque, gleaming white, or any popular color including black. The finished wall of Porstelain wall tiling is sanitary, easy to clean, moisture-proof, and unaffected by heat or sudden temperature changes. The individual tiles will not crack, craze, check or break and the porcelain surface is everlasting.



Third Step

Showing a Finished Slab of Porstelain Wall Tile

The small section illustrated comprises the foundation sheet or insulating base covered with cement into which the tiles have been inserted, making a finished Porstelain System of Standard Wall Tile which is indestructible, sanitary and beautiful

Service—Descriptive literature will be sent architects and builders on request, and specific questions will be fully answered. Photographs of characteristic installations will be furnished to architects who are interested.

UNITED STATES GYPSUM COMPANY

GENERAL OFFICES
300 West Adams Street, CHICAGO, ILL.

For Sales Offices, see Sweet's Manufacturers' Index for U.S.G. Catalogue on Gypsum Lathing and Plaster Products

CHROMITE—COLORFUL LUSTROUS SHEET TILE

Description

Chromite is made of non-corrosive metal sheets, on one surface of which is applied a lustrous enamel tile finish, and into which is impressed the tile design. Because of the character of the surface, and the manner in which it is applied, Chromite does not chip or scale. A sample bent between the hands demonstrates that the finish does not crack until the tough metal itself is broken. The lightness and strength of the sheets make the application extremely simple. Any competent painter or paper hanger can make an excellent Chromite installation. The sheets are applied to walls and ceilings with Chromite Adhesive, a waterproof, putty-like mixture furnished ready for use.

Chromite can be applied over plaster, gypsum wallboard, painted surfaces, etc. So flexible are the sheets, despite their strength, that they can be bent or moulded to conform to the contours of practically any surface, without damage to the tile finish.

Where uneven size pieces of Chromite are needed at corners, fixtures, etc., or to form a special pattern, the Chromite sheets can be accurately cut to size with a pair of stout shears.

Chromite is inexpensive. The first cost, compared to the cost of other decorative tile materials, is surprisingly low.

Colors

Chromite is made in five (5) standard colors: orchid, green, blue, canary yellow and orange—each two-toned. Chromite may also be obtained in ivory white and black. Flat strips, Chair Rails and Diamond Borders are made in all standard colors.

Use

Chromite is admirably adapted in residences to bathrooms, breakfast nooks, pantries, etc. In hotel and apartment corridors, lobbies, stores and similar places where a high degree of beauty, durability and sanitation are desirable Chromite finds favor.

In existing buildings unsightly cracked and soiled walls, whether of Keene's cement or plaster, painted, calcimined or papered, may be covered with Chromite, assuring warm color, charming design, and a sanitary, wearproof surface.

Durability

Chromite's extremely hard surface retains its lustrous finish for years. The tiles do not discolor or craze—they are virtually impervious to wear.

The ease with which Chromite is washed clean when soiled is one of its outstanding features. A damp cloth usually is sufficient to remove dirt accumulations.

Redecoration is eliminated. There is no upkeep cost. When accidentally damaged, new Chromite, identical in color, may be obtained and the repairs quickly and inexpensively made.

Sizes

Chromite Sheets—Approximately 16x24 in. (24, 4x4-in. tiles).

Chromite Accessories—

Flat strips ½ in. wide x 24 in. long. Diamond Border, 1⅜ in. wide x 24 in. long. Diamond Border, 2⅜ in. wide x 24 in. long. Chair Rail (channel), 1 in. wide x ¼ in. deep x 24 in. long. Chair Rail (channel), 2½ in. wide x ⅜ in. deep x 24 in. long.

Packages

Chromite Sheets—Packed in tight wooden cases, 81 sheets to a case, totaling 216 sq. ft. Two colors can be shipped to a case. Cases will not be broken.

Chromite Accessories—Packed approximately 52 linear ft. to a case. Colors of accessories may be assorted. Only whole cases are shipped.

Chromite Adhesive—Packed in one (1) gallon cans, six (6) cans to the case; also in three (3) gallon and five (5) gallon cans with lug tops. One (1) gallon of cement is sufficient for approximately 100 sq. ft. of Chromite.

SPECIFICATIONS—SHORT FORM

(1) Work Included

The following areas shall be finished in Chromite in accordance with the detail drawings indicating areas, design and color.

Note: Here list and locate, indicating also the position of Chair Rail, Flat Strips, Diamond Borders, etc.

(2) Preparation of Surfaces

Walls *(and ceilings)* shall be smooth and straight, and shall be thoroughly primed to stop suction and permitted to dry before Chromite is applied.

Note: Decorated or wallpapered surfaces must be prepared as per directions of the manufacturer. Rough or sand float finishes must be sanded smooth and primed.

(3) Application

Apply Chromite *(Chair Rail) (Flat Strips) (Diamond Borders)* as per directions of the UNITED STATES GYPSUM COMPANY, which directions are hereby made a part of these specifications.

Applying Adhesive to Chromite

Applying the First Chromite Sheet

Fitting Chromite Around Fixtures

STANDARD WALL COVERING CO., INC.

Manufacturers and Contractors
1819-1831 North Ninth Street, PHILADELPHIA, PA.

Products

MONOTILE—A One Piece Sheet of Tile for bathrooms, and kitchens.

Mouldings, Beads, Filler and Accessory Materials.

TILE IN SHEETS
MONOTILE
ONE PIECE ON EACH WALL
NOT A METAL OR CEMENT

(TRADE-MARK REG. U.S. PAT. OFF.)
Established 1909
Originators of One Piece Tile

What is Monotile?

Monotile is a densely compressed chemical fibre panel ⅛ in. thick. It has a factory-finish, porcelain-like surface and comes to you ready for installation. It is made in large sections—One Piece to a wall—with deeply embedded mortar lines which give it a clay tile appearance.

Due to its tough, rubber-like surface, it is not affected by sudden or extreme temperature changes. It never needs refinishing. Just an occasional washing with warm water and ivory soap is all that is required to maintain its original beauty as a wall covering. (In fact, ammonia, muriatic acid, etc., will not harm its durable surface.)

Monotile answers the question of what shall be done to banish the drab appearance of the bathroom, kitchen, hallway, restaurant, meat market—and a thousand and one other places.

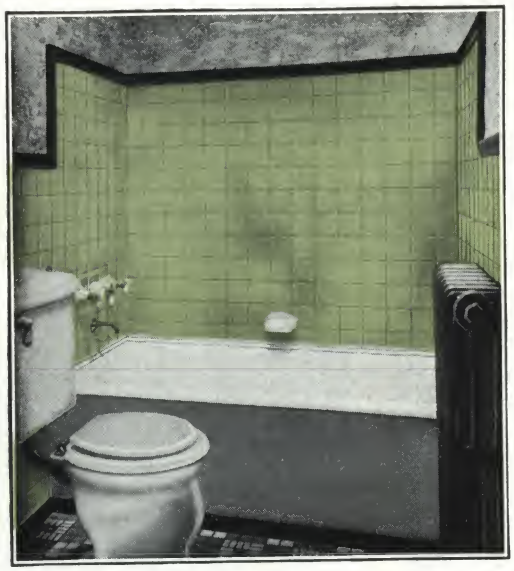
Here—in Monotile—is to be found rich beauty at low cost combined in a One Piece sheet of tile panel.

For New or Old Walls

Monotile can be applied satisfactorily over old or new plastered walls or woodwork without inconvenience or the additional expense of tearing out the walls or rearranging the plumbing fixtures.

Nailing is done at uniform intervals through the mortar lines, the nails countersunk and then covered with our cement filler. This neatly hides the method of erection, yet secures each section firmly to the wall. This assurance cannot be had where materials are pasted, glued or laid in cement.

Our improved method of erecting Monotile, by nailing through plaster and lath to studding, not depending upon quality of plaster or white coat, insures a permanent job.



Monotile can be placed on any smooth wall of white or brown coat, sheetrock or wood sheathing.

The settling of walls, or cracking of plaster, cannot loosen Monotile because it is One Piece, and has specially protected inside and outside corners.

Advantages of Monotile

One Piece to the wall, and, consequently, nothing to fall out because of this One Piece feature.

Light in weight and easy to handle.

Installed by any carpenter in one day without fuss or dirt.

Installed without necessity of drilling holes for nails. Cut Monotile with a saw or a big knife and nail as you do with wood.

Monotile is non-metallic and does not rely for support, when installed, upon the condition of the plaster or upon the efficiency of a cement or putty to hold it in place.

No joints or seams, therefore, no hiding places for roaches and water bugs.

Permanent surface. Clean it with a damp cloth as you do a china dish.

Over 60,000 installations of One Piece tile in Philadelphia alone by the manufacturer.

MONOTILE is, without question, a most practical and least expensive material serving the purpose intended for a One Piece tile in large panels.

Produces the luxurious effect expected of infinitely more costly materials.

Sizes and Colors

Colors:
White, green and ivory.
Sizes:
4x 8 ft.
4x10 ft.
4x12 ft.

Tile design
4x4 in.

Moldings and Accessories

All necessary beads and moldings required to make a neat and finished installation are manufactured and supplied by the company. The various styles and shapes are illustrated below and in plate No. 30. Cap and base moldings are of wood and heavily coated six times before finish is applied at the mill. Beads are of white metal and will not rust. Pleasing effects may be secured by using beads in colors contrasting to that of the wall tile.

Beads shown on plate No. 30 are made in all tile colors, but shades may vary from tile shades.

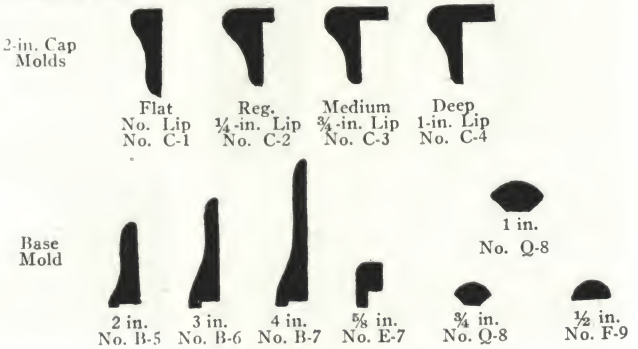


PLATE No. 40
Moldings in Black or White Only

Continued on next page

Instructions for Erecting Monotile

Where tile panels are to be placed above baseboard or washboard, the ogee molding is carefully removed, and replaced after panels are erected. Our base molding is rarely used on top of baseboard.

If walls are lined with wood wainscot, place tile panels directly on same, using our deep lipped cap molding C-3 or C-4 at top to cover wood wainscoting (discard old top molding). (See plate No. 30.)

Tile panels *must not* rest on the floor. Keep all sections clear at least ½ to 1 in. above floor. (See B-5 in plate No. 30) Do not piece or patch walls—use one solid section on each wall.

When a shower is used over a built-in tub and it is desired to install tile panels 48 in. above the top of the tub "stepped down" to 48 in. from the baseboard or the floor line, the "break" or "step-down" is made at the edge of the tub about 2 ft. 4 in. out from the back line of the tub. Where this "break" is made, use our special connecting bead, No. C-5, where the two panels come together. Use built-in tub beads No. T-3 at point where tile fits down to the edge of the built-in tub.

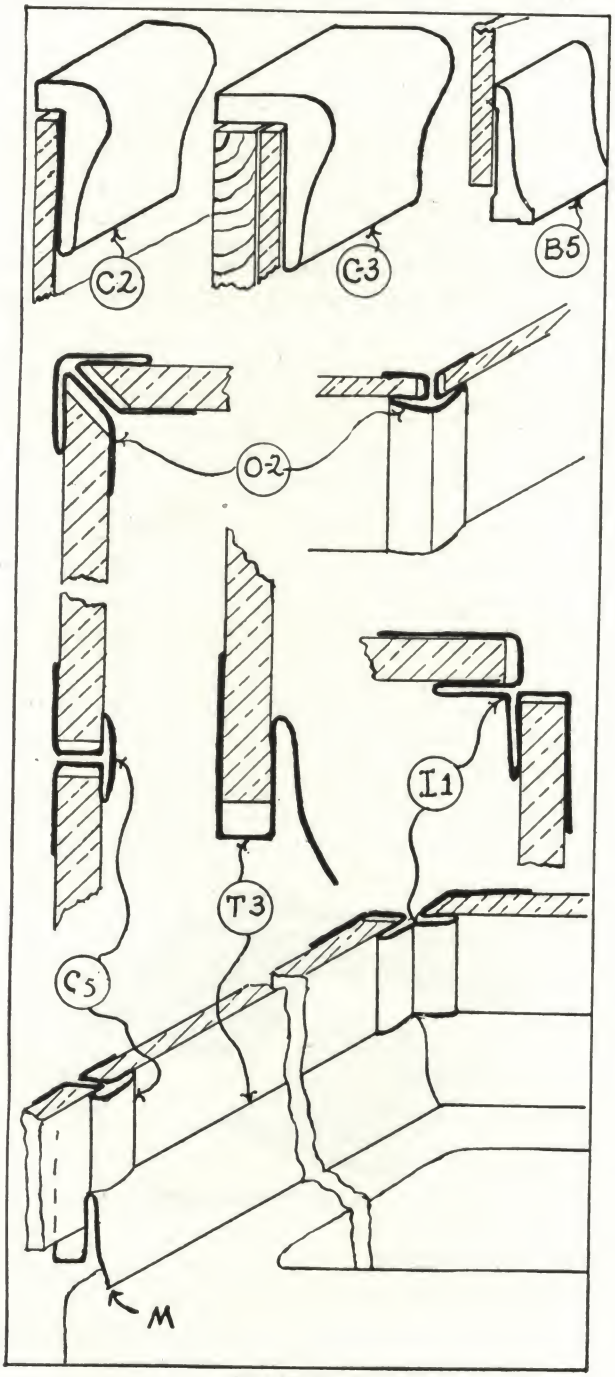


PLATE No. 30

Tub Beads, No. T-3, are used where tile panels are to be placed over built-in tubs. These beads provide a flange or water-shed to direct water into tub and prevent water leaking between tile and tub. (Tubs have a tendency to settle, no matter what wall surface is used.) A channel ⅝-in. deep is provided into which panel is deeply seated and set in waterproof filler. *Write for more detailed instructions.*

Use mortar lines for leveling, and nail wherever necessary (through lath and plaster) at tile intersections, nailing them every third or fourth tile from top of panel to bottom (along the line of the studding). Always nail in tile markings, and never through center of the tile blocks.

Do not butt panels without using connection beads (C-5). Use either inside expansion corner beads (I-1) or outside corner beads (O-2) at every corner. See plate No. 30.

Description of Plate No. 30

Connection bead (C-5) is used where end panels over tub and floor panels meet, usually about 3 in. from front edges of tub.

Trim can be rabbeted or grooved so as to overlap panel ⅛ to ¼ in. Tile can also be butted against trim.

When panels are installed over wood wainscoting that is flush with trim and where a raw edge would show—use E-7, Plate No. 40.

Measurement should be made from extreme left end of wall to point furtherest under lip of lipped tub or to point where floor panel will meet panel over tub.

Panels manufactured by the Standard Wall Covering Co., Inc., can be erected over plaster, celotex, sheetrock, wood furring or wood wainscoting. It is not necessary to remove paper, paint or lincrusta.

The tub bead (T-3) must always be used when panels are installed over any built-in tub. The slot, into which tile fits, should be filled about one-half with waterproofing filler in order to make a watertight job. The tub bead will, in most instances, take care of settlement of tub. Write for detailed instructions.

Cap Molding (C-2) in white or black is 2-in. bullnose with ¼-in. lip and 6 ft. or 12 ft. long. Cap Molding (C-3 with ¾-in. lip and C-4 with 1-in. lip) are intended for use when panels are installed over wood wainscoting. (See plate No. 30 at top.) Cap Molding (C-1 without lip) is used to hide joint when panels are installed from floor line to ceiling.

Base Molding (B-5) in black or white is 2-in. wide. B-6 is 3-in. and B-7 is 4-in. wide, and are used to gain height in the erection of the tile. The maximum height that can be gained with 48-in. material and 3-in. base molding is about 51 in. and with 4-in. base, 52 in.

Be sure to order at one time sufficient material for your job, because no manufacturer can guarantee shades of color from one shipment to another.

A step-up over a tub is used to protect the upper wall where a shower is used. See bathroom picture.

When Tub Bead No. T-3 is installed, the practice is to cut front of bead on a mitre cut (see M at bottom of No. 30 plate) and then bend this pointed section back so as to close open end shown in plate. The finish at both ends of the tub will then be round.

Wide coverage on Inside Corner Expansion Bead (I-1) and Outside Corner Bead (O-2) makes it impossible for these corners to open. (See plate No. 30.)

Notice that B-5, or B-6 or B-7 (Base Molding) fits down tightly to the floor, but that panels are always installed ½ to 1 in. above the floor line. (See plate No. 30.)

Notice ⅝-in. groove or slot in T-3 (Tub Bead) into which panels are fitted. This makes an absolutely watertight job around the tub.

Cap and base moldings are wood, and heavily coated six times before finish is applied in the mill.

Special instructions for erecting our tile panels from floor line to ceiling are furnished upon request.

Beads are white metal and will not rust.

FLOOR ACCESSORIES CO., INC.

Recessed Floor Bar

GENERAL OFFICE
KANSAS CITY, MO.

AGENTS IN PRINCIPAL CITIES

Product

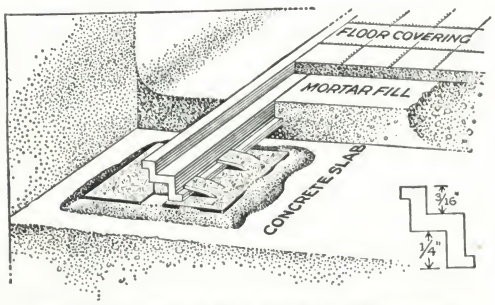
RECESSED FLOOR BAR.

For Ankortite Floor Joiners, Floor Clips, Buck Anchors, Shelf Angle Fixtures, Hanger Fixtures, Standard Brass Thresholds, and Tackless Carpet Strips, see Manufacturers' Index.

Recessed Floor Bar

The recessed floor bar is an anchored bar extensively used where an offset is provided for linoleum, rubber tile or other applied flooring where it joins concrete, terrazzo, tile or other material in public buildings, schoolrooms, hospitals; in corridors, around elevator mats at floor landings, etc.

When linoleum, rubber tile or composition flooring is used in rooms and corridors the most attractive, economical, sanitary and practical installation is obtained by



Recessed Floor Bar Detail (Patented)

extending a cement or terrazzo border, either with cove or square base, a few inches from the wall and using the recessed floor bar to form the offset for receiving the applied covering. This makes a perfect abutment of the two materials, leaving no opportunity for the collection of germs or dirt and at the same time making an ornamental border for the finished floor.

Advantages

The drawing above illustrates the following advantages:

(1) This bar forms the offset for receiving the applied floor covering.

(2) It makes a close, perfect abutment of the two floor materials on the same level, with an ornamental polished brass or white metal strip in evidence.

(3) Gives a straight binding edge to which to cut and fit the applied covering.

(4) Protects the outside border material and inside floor covering against crumbling or chipping.

(5) Makes a smooth, level base for the covering that brings its surface even with the top of the bar and outside border.

(6) Serves also as a dividing bar between the two fills, preventing cracks from the inside field extending into the border material.

(7) Top of bar serves as a screed for finishing border material to proper level.

(8) Shoulder of bar is also a screed for striking off the inside fill.

(9) A mortar fill of any thickness may be used by placing cement pads or a ridge on the floor slab to raise the bar to the required height.

(10) Base plates threaded on from ends and spaced on 2-ft. centers support the bar in an upright position, and give it secure anchorage and perfect alignment.

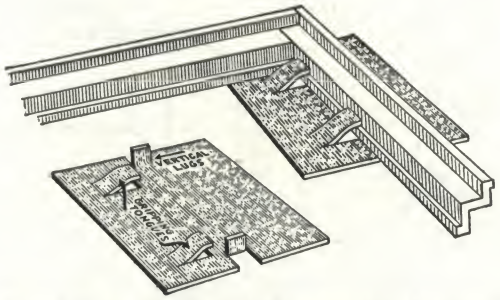
The recessed brass binding bar is reversible and accommodates flooring either $\frac{1}{4}$-in. or $\frac{3}{16}$-in. in thickness.

Prices

The recessed floor bar is made in extruded brass or chromium alloy white metal. Price per lineal foot in lengths of 9 ft. or cut to specified lengths, including necessary quantity of base anchors:

	White Metal	Brass
1 to 100 ft.	$0.23	$0.30
101 to 500 ft.	.20	.27
501 to 1000 ft.	.18	.25
1001 ft. and over	.13	.20

The recessed brass binding bar is not an added cost to the building considering its service in protecting the border material from chipping or crumbling, the protective binding it gives to the applied covering, the labor it saves in providing a smooth offset of uniform depth, and also the time saved in laying the applied material by having a straight edge for trimming.



Base Plates for Support, Alignment and Anchorage

Typical Specification

(Recommended under Terrazzo or Finished Cement Work.)

At edges of (terrazzo) (cement) borders joining ..... flooring, place recessed floor bars as manufactured by FLOOR ACCESSORIES CO., INC., Kansas City, Mo. Bars are to be (extruded brass) (chromium alloy white metal), set with galvanized base anchors as per manufacturer's directions. Finish outside border flush with top of bar and strike off inside fill flush with shoulder of bar.

TERRAZZO SPECIFICATIONS

AS ADOPTED BY

THE NATIONAL TERRAZZO AND MOSAIC ASSOCIATION

MAIN OFFICES

809 St. Paul Avenue, MILWAUKEE, WIS.

THE ASSOCIATION

Its membership covers the United States and Canada.

Its object is the promotion of the best methods and results in Terrazzo and Roman, Venetian, Byzantine, and Cosmati Mosaics.

Membership in the National Terrazzo and Mosaic Association is an assurance to both the Architect and Contractor of the highest type of work in the art.

The names of members in your locality may be obtained from the Secretary-treasurer, Mr. U. F. Durner, at the main offices.

SPECIFICATIONS

For the convenience of the "specification writer," THE NATIONAL TERRAZZO AND MOSAIC ASSOCIATION has prepared the following specification for terrazzo and mosaics:

Specification for Terrazzo Work

Cinder Concrete—Where cinder concrete foundation is used, the cinders shall be clean of dust and mixed in the proportion of six (6) parts cinder, one (1) part sand, and one (1) part Portland cement.

The cinder concrete foundation shall be brought to within one and one-half (1½) inches of the finished floor level—not less. Before terrazzo contractor installs his setting bed, he must see that the concrete foundation is thoroughly cleaned of plaster droppings, wood chips, and other debris.

The surface of the concrete foundation is to be wet down to lay the dust and insure cohesion.

Pebble or Crushed Rock Concrete—Where pebble or crushed rock concrete is specified, the top of the concrete should be kept at least three (3) inches below the finished floor level.

Over the concrete, spread a bed of dry sand one-half (½) inch in thickness and protect this with a layer of single ply tar paper.

Setting Bed—The setting bed for terrazzo in both cases, to consist of Portland cement one (1) part, and sharp screened sand four (4) parts brought to within three-quarters (¾) of an inch of the finished level.

Brass Strips—Into the setting bed, while still in a semi-plastic state, install brass strips having proper bonding features and with extended projections at side punched out at the proper depth to insure the thickness of terrazzo specified, of B & S Gauge No. ( ) in panels or designs as called for in specifications or as shown on drawings.

Terrazzo—The terrazzo topping to be not less than three-quarters (¾) of an inch in thickness and shall be of marble aggregates of colors to be selected by the architect.

The aggregate to be composed of such proportions of No. 1, 2, 3 sizes as shall hereafter be determined, samples of which shall be made, in duplicate, for approval by the architect.

Method—The terrazzo aggregate shall be in the proportions of two hundred pounds of marble to one hundred pounds of Portland cement, mixed dry, and water afterward added to make the mix plastic but not too wet. This must be mixed thoroughly, allowed to stand thirty minutes and then remixed.

Installation—The mix shall then be placed in the spaces formed by the brass dividing strips and rolled into a compact mass by means of heavy stone or metal rollers untill all the superfluous cement and water is extracted, after which it must be hand troweled to an even surface, disclosing the lines of the brass strips on a level with the terrazzo filling.

The finished result to show approximately eighty-five (85) per cent of marble aggregate.

Surfacing—When, in the the judgment of the terrazzo contractor, the floors have set sufficiently hard, they shall be machine rubbed, using No. 24 carborundum grit stones for the initial rubbing, after which a light grouting of pure Portland cement shall be applied to the surface, filling all voids, and allowed to remain until the time of final cleaning.

Cleaning—Floors shall have the grouting coat removed by machine, using a No. 80 carborundum grit after which they must be washed thoroughly and left in condition acceptable to the architects.

Special Treatment—Terrazzo floors shall, immediately before the building is occupied, receive a second cleaning and given a color fixing emulsion treatment.

Warning—The use of acids in the cleaning of terrazzo floors is strictly prohibited.

Washing powders containing alkali should on no account be used in the maintenance of these floors. Use only such cleaning materials as have been approved by THE NATIONAL TERRAZZO AND MOSAIC ASSOCIATION.

Anti-Slip Floors—Ramped or other surfaces in Terrazzo Floors, so specified, are to be made anti-slip by the addition of "Norton's Alundum Aggregate," or its equal.

For heavy duty floors, the proportion shall be eight (8) pounds of such aggregate to each square yard and for light traffic floors, six (6) pounds to the square yard, superficial area.

Terrazo Base—Where shown on plans or specified, provide a base ( ) inches in height to be coved at floor to ( ) radius, the top to project one-quarter (¼) inch beyond the line of the finished plaster.

Note: If base is required without projection at top, specify to be set flush with finished plaster.

Where flush base is specified or shown, same shall have a metal base bead set to a straight and true line to form finish between terrazzo base and plaster above.

Base beads shall be of B&S No. ( ) gauge brass.

Base shall be divided into lengths of approximately 4 ft. 0 in. linear, using metal base dividers of B&S No. ( ) gauge.

Foundations for base shall be of brick or terra cotta, and if of wood or metal studding the contractor for metal lath shall install a metal lath or wire foundation upon which the terrazzo contractor will spread his setting bed.

The surfacing and finishing of terrazzo base shall be done in all respects as described above for terrazzo floors.

Where base is specified to project beyond the face of the finished plaster, wood guide strips are to be furnished and set by others.

Specifications should state whether terrazzo plinth blocks are required and whether moulded or plain.

Terrazzo Stairs Plastic Work—Where terrazzo stairs are shown or specified to be built upon a concrete slab, the concrete contractor shall form the rough concrete slab so as to allow two (2) inches from the top of rough concrete to the top of finished terrazzo tread, and one and one-quarter (1¼) inches from face of rough concrete riser to face of finished terrazzo riser.

The rough concrete for stringers and curbs shall be so placed by the concrete contractor, as to allow one and one-quarter (1¼) inches for the scratch coat and finished terrazzo.

Where steel stairs are installed and are to be finished with terrazzo, same are to be covered with metal lath securely anchored to steel sub-stair by the lathing contractor allowing for terrazzo from two inches to three inches on the tread, and one and one-half (1½) inches on the riser. Platforms to be treated in same manner, allowing not less than three (3) inches for terrazzo and setting bed.

Continued on next page

On pan type of stair where treads only are to be of terrazzo, two and a half (2½) inches shall be allowed for terrazzo and setting bed.

Pan treads must be reinforced with No. 18-gauge one-inch galvanized mesh. Thickness of terrazzo topping shall be three-quarters (¾) of an inch.

Terrazzo Treads Precast Work—Treads of stairs shall be precast, reinforced with one-quarter (¼) inch steel rods, two rods to each tread, bed rubbed, grouted and set in Portland cement mortar.

Treads shall be ( ) inches thick with plain (or moulded?) nosings.

Terrazzo Riser Precast Work—Risers of stairs shall be precast, reinforced with one-quarter (¼) inch steel rods as specified for treads. They shall be one (1) inch in thickness, bed rubbed, grouted and set in Portland cement mortar.

All precast work shall be manufactured and dry cured before delivery to building for installation.

Anti-Slip Work—Treads, platforms and landings to be made anti-slip by mixing Norton's alundum aggregate with the terrazzo, forty (40) per cent of alundum, sixty (60) per cent of terrazzo. Alundum chips shall be of color to blend with terrazzo.

Terrazzo Partitions—Metal lath construction to be provided by metal lath contractor as follows: Erect forms of metal studding, placed not over twelve (12) inches center to center, and securely fastened at corners, at walls, and over openings, and well bedded into floor. This framing to be covered with expanded metal lath galvanized.

Plaster contractor to apply to the metal lath a scratch coat of one (1) part Portland cement and two (2) parts screened sand.

Upon foundation thus prepared, the terrazzo contractor shall apply his screed coat to within ⅜-inch of finish, upon which, the day following, he shall install the terrazzo finish.

The finished thickness of partitions not to exceed 2½ inches.

Terrazzo partitions shall be machine rubbed and brought to a smooth hone finish.

Terrazzo Wainscots—Plasterer contractor shall prepare with a plumb scratch coat of Portland cement and sand, all surfaces to be finished with terrazzo.

Where wall surfaces are of an absorbent material, the plasterer shall use waterproof cement or compound with the sand for the scratch coat.

The terrazzo screed and finish shall be applied in the same manner as specified for terrazzo partitions.

Terrazzo wainscot shall finish flush with plaster above or projecting ( ) inch beyond same as shown by plans. Terrazzo wainscots shall be machine rubbed and brought to a smooth hone finish.

Note: As the prices of Terrazzo aggregates vary materially, it is essential for estimating purposes that kinds of marbles required be specified.

Mosaics

Marble mosaic shall be prepared in the approved pattern, glued to paper or for inlay work cut to proper shape; set on a prepared bed of one (1) part Portland cement and four (4) parts clean sharp sand.

Care must be taken that adjoining sections be accurately fitted together, to the end that the finished product shall present an unbroken and perfect appearance.

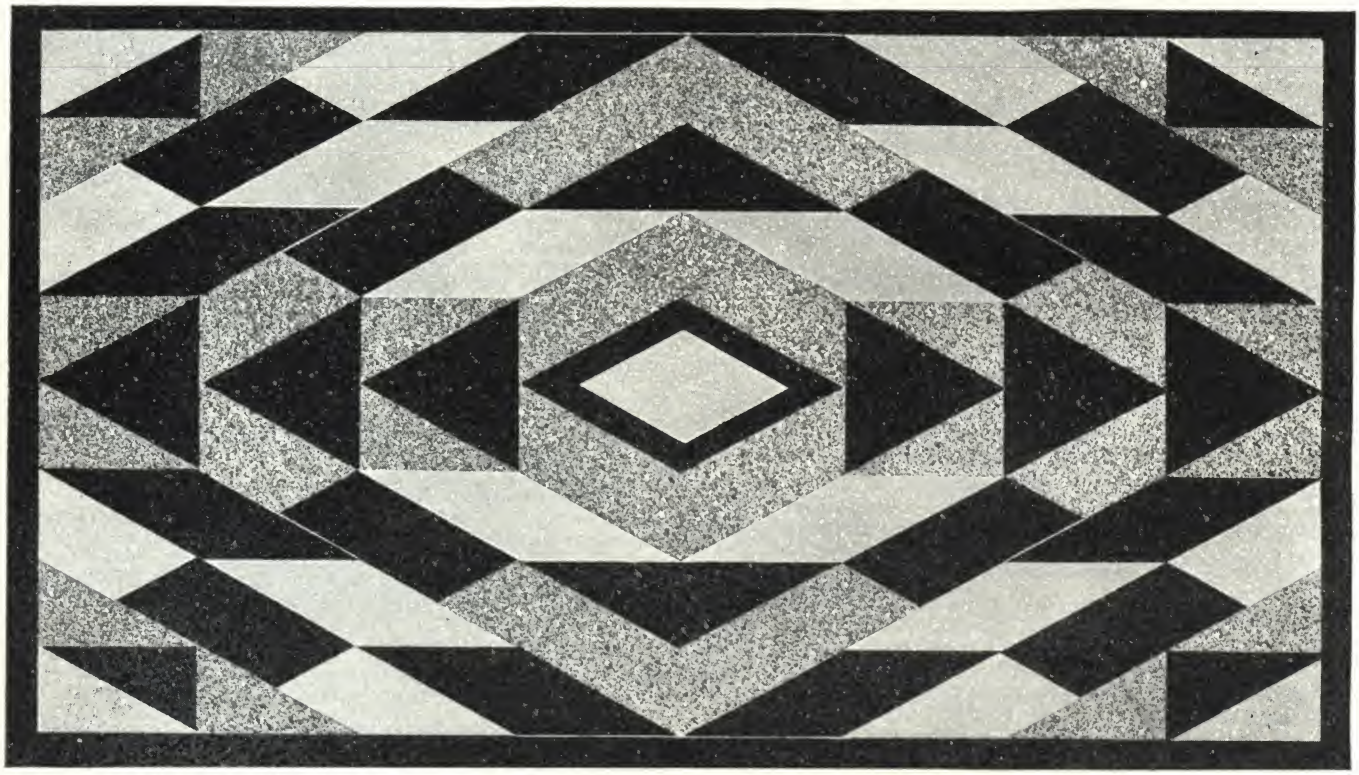
After setting has taken place, remove the paper, grout with a mastic of pure cement to which a small proportion of lime putty has been added, rub down by machine, or hand rubbers as requirements dictate; No. 40 grit shall be used for the initial rubbing and No. 80 grit for the final rubbnig.

Foundations for marble mosaics shall be brought by mason contractor to within 1½ or 2-inches of the finished floor level according to the thickness of the marble tesserae selected.

Enamel mosaic shall be prepared on paper in a similar manner to that of marble mosaic and shall be set on a foundation composed of a mixture of one (1) part Portland cement, two (2) parts lime putty, and three (3) parts clean sharp sand.

Foundations for enamel mosaic work shall be of a good quality mixture of Portland cement and screened sand applied to surfaces and given a fine cross scratch by plaster contractor who shall leave a uniform thickness of three-quarters (¾) of an inch to receive the mosaic work.

All mosaic work shall be well grouted; enamel mosaic shall be left natural and marble mosaic shall be rubbed and finished to match approved samples.



Modernistic (Classic) Type Terrazzo Floor Design

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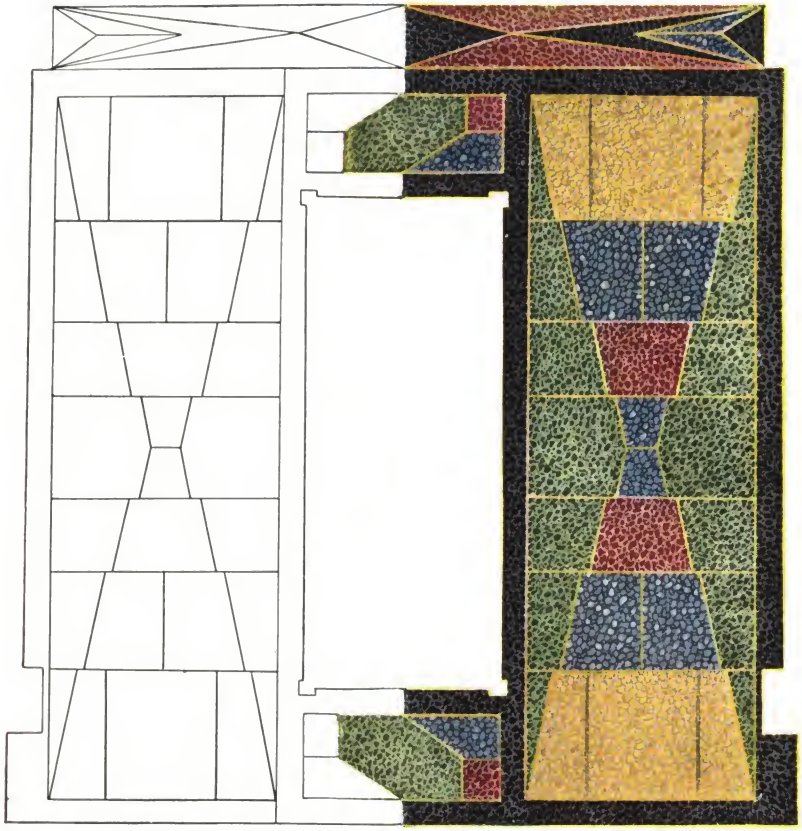
Cosmati Mosaic Borders



Modernistic Type Terrazzo Floor Design

Modernistic Type Terrazzo Floor Designs

We show herewith a few of the many designs available for modernistic floor work.

The service of the Association is at all times available to architects everywhere.

Modernistic Type Terrazzo Floor Design

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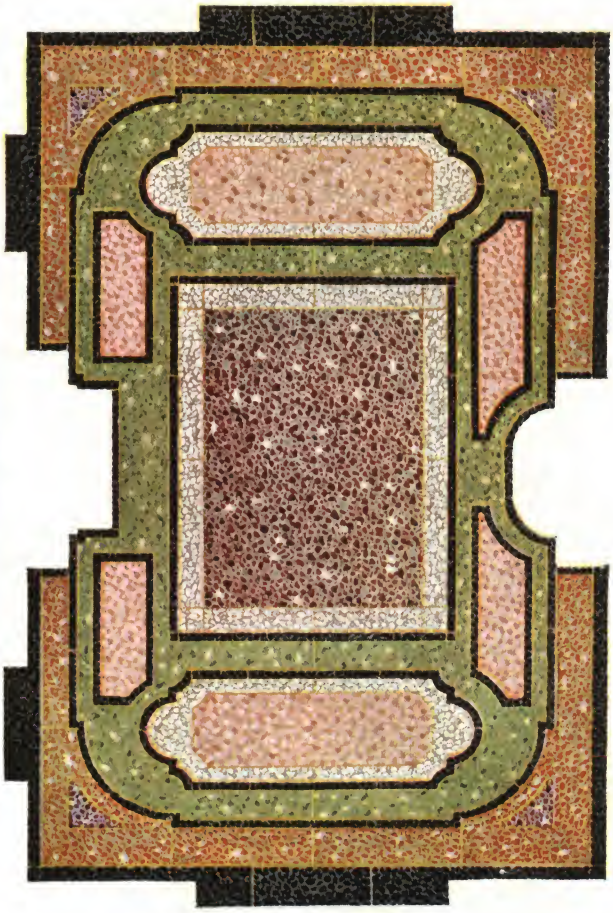
Angel's Head in Venetian Enamel and Gold Mosaic



Solarium Floor in New York Apartment Showing Terrazzo Treatment

Modernistic Type Terrazzo Floor Design

DE PAOLI DEL TURCO FOSCATO CORPORATION

SUCCESSORS TO

DE PAOLI COMPANY, INC. L. DEL TURCO & BROS., INC. V. FOSCATO, INC.

Terrazzo, Mosaic and Tile Contractors

527 West 45th Street, NEW YORK, N. Y.

BRANCH OFFICES AND PLANTS

LONG ISLAND CITY, N. Y. HARRISON, N. J.

Products

TERRAZZO WORK; PRECAST ALUNDUM AGGREGATE TREADS and TILE; MARBLE MOSAIC FLOORS; VENETIAN GLASS and GOLD MOSAICS; TILE WORK.

The Company

Our company is a combination of three of the largest and best known concerns in the industry. This enables us to handle efficiently the largest jobs.

We have in our employ men of outstanding ability in the industry, with practical experience and technical knowledge.

Our direct contact with marble quarries enables up to supply a variety of colors to suit any decorative scheme.

TERRAZZO

Best Practice in Laying Terrazzo Floors

The best practice in laying terrazzo floors is to separate them from the structural slab with a bed of dry sand and a sheet of strong paper rather than to bond them to the structural slab. Thus cracks originating in the concrete floor slab will not show at the surface but stop at the sand bed.

Fig. 1 shows the minimum thickness required for such a terrazzo floor. Where the thickness is more than 3 in. gravel or cinders can be added to the sand in the underbed.

Where the space is less than 3 in. it is preferable to bond the terrazzo to the concrete under it, because a thin terrazzo floor separated from the structural slab may become defective. In this case the concrete must be cleaned and wetted before applying the underbed to insure a proper bond.

Joints Formed with Brass Dividers

We form the joints in the terrazzo with brass dividing strips. Our dividers are correctly designed so that if a crack occurs it will run unnoticed along the strip. No. 20 B & S gauge is the standard thickness but we use thicker strips when certain decorative effects are to be obtained. White metals are also sometimes used instead of brass.

The most effective method of preventing or localizing cracks is to run continuous joints the entire length and width of the room parallel with the walls and columns (Fig. 2), exercising care that joints occur over beams and girders, and dividing the surface in sections of not more than 16 sq. ft.

Two Year Guarantee Against Cracking

Terrazzo floors laid by us in accordance with our specifications are guaranteed for two years against cracks.

Terrazzo Base and Plinth Blocks

Terrazzo base is either precast and finished with suitable machinery at the shop and installed at the job the same as marble, or it is applied plastic on the job. Precast base has a better finish than the base run at the job and it costs about 50% more. Plinth blocks are always precast and delivered at the building in a finished state.

Specifications for Terrazzo Floors

All work to be laid in accordance with specifications of DE PAOLI DEL TURCO FOSCATO CORP. Marble granule shall be of colors as selected. Cement (if white cement state) to be colored if required. Submit samples.

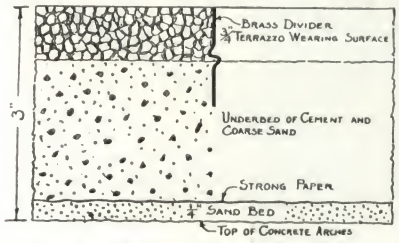


Fig. 1. Section of Terrazzo Floor

Terrazzo Floor, National Title & Guarantee Co., Brooklyn, N. Y.

Over the concrete, specified elsewhere, lay a bed of dry sand ¼ in. thick, and cover the sand with strong paper equal to Sisalkraft. Lay the underbed composed of cement and coarse sand 1 to 4, and level off to exactly ¾ in. below the finish floor. Form borders and patterns (or squares) as shown on plans (if these are not detailed state here the size of the squares desired) by embedding in the mortar approved brass dividers (state gauge or thickness), set with their top level with the finished floor.

The dividers must be of a type that will divide the floor effectively and provide adequate anchorage so that they remain permanently embedded into it. When the underbed has hardened sufficiently to withstand rolling, spread the terrazzo aggregate ¾ in. thick composed of two parts of marble granule and one part Portland cement. Roll and trowel in the best manner.

After the terrazzo has set grind the surface with abrasive stones, using electric machines, and by hand where the machines do not reach. Leave the surface smooth and free from holes. Clean thoroughly, when so directed, and deliver the work in perfect condition.

Specifications for Terrazzo Base and Plinth Blocks

Plastic Base—Terrazzo base shall be .... in. high coved at junction with the floor and rounded at the top. It shall be set ¼ in. beyond the face of the plaster (or flush with the plaster). Colors to be as selected. The base shall be run at the building integral with the terrazzo border. It shall be jointed about every 5 ft. 0 in. with vertical brass strips. The base shall be rubbed and finished smooth, and washed at completion.

Precast Base—Furnish and install a terrazzo base .... in. high, coved at floor and rounded at top.

The base shall be precast, finished at shop, and delivered at the building ready to be installed. It shall be cast in lengths of about 5 ft. 0 in. properly reinforced.

The base shall be anchored to the walls in a substantial manner. Point up the joints neatly and wash thoroughly at completion.

Plinth Blocks—Of the same terrazzo material shall be provided under all door trim wherever terrazzo base occurs.

Samples—Shall be submitted to the architect before proceeding with the work.

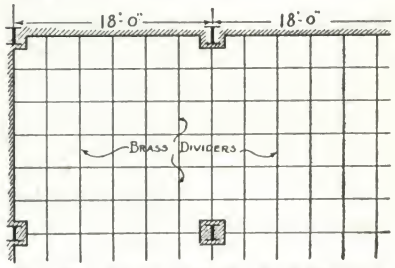


Fig. 2. Correct Method of Placing Metal Floor Dividers

Continued on next page

PRECAST ALUNDUM AGGREGATE TREADS AND TILE (ART MARBLE)

Licensed by the Norton Company

We are licensed by the Norton Company to make their well known Precast Alundum Aggregate Treads. These treads combine good appearance with non-slip-periness in a manner unsurpassed by any other material.

Alundum Aggregate Treads

Alundum aggregate treads are made of a mixture of three parts of granulated marble and two parts of Alundum aggregate, bonded with cement and reinforced with steel rods. The proportion of Alundum and marble can vary, but the above will answer the requirements in nearly all cases.

The treads and platforms are precast and finished at the shop with suitable machinery and installed at the building by marble setters in the same way as marble.

Where Used—Alundum aggregate treads are used in schools, hospitals, hotels, office buildings, public buildings, apartment houses and wherever a safe tread with pleasing appearance is required.

Durable—Alundum abrasive is produced by the vitrifying process. It is a hard tough substance and our Alundum aggregate treads will outlast marble four times.

Colors—Made in various colors and with the help of marble granule and cement, any desired tone can be obtained.

Beautiful combinations can be worked out using Alundum aggregate treads with marble risers and strings.

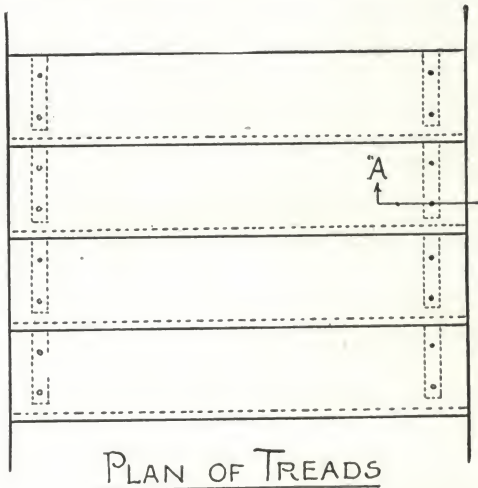
The Dovetail-anchor Method of Fastening Precast Treads

We have devised a practical and effective method of securing precast treads to steel stairs. The tendency of all cementitious products to contract and warp in the setting process frequently results in loosening of the tread. This difficulty is now eliminated absolutely by the use of our *Dovetail-anchor Method.*

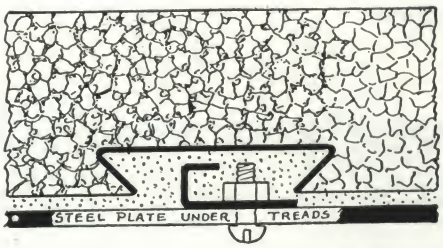
This method consists of placing a metal dovetail groove across the bottom of the tread at each end. Corresponding metal anchors are bolted to the steel sub-tread. When the tread is installed the dovetail grooves are filled with mortar and the tread set so that the anchors fit within the grooves. As the mortar sets the tread becomes permanently fastened to the steel plate and cannot become loose. (*Note:* The drilling of the holes for the bolts in the steel sub-tread should be specified under the iron work.)

Alundum Aggregate Tile

We also manufacture Alundum aggregate tile in 12x12, 9x9 and 6x6 ft. sizes to be used for stair platforms, for store entrances, ramps and landings and wherever a slip-proof floor is required.



PLAN OF TREADS



SECTION THRU "A A"

Method of Fastening Precast Alundum Aggregate Treads by the Dovetail-anchor Method

Specifications

Note: Trade Jurisdiction—Precast Alundum Aggregate Treads and Tile are installed by marble setters and should be specified under "Marble Work."

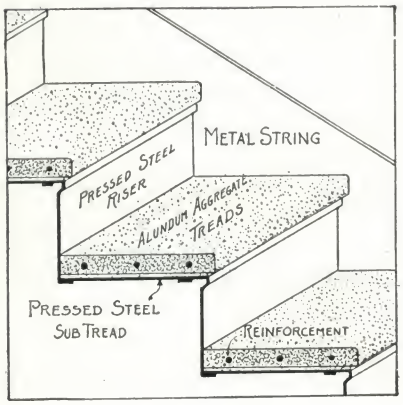
Furnish and set where shown on drawings, precast Alundum Aggregate treads and platforms, using two parts of Alundum aggregate to three parts of marble granule. Submit samples and shop drawings.

Treads shall be ..... thick with nosing as detailed. Top treads of same width as the others, shall be used at floor levels and at intermediate platforms. Platforms shall have Alundum aggregate tiles (state size) of same material as treads.

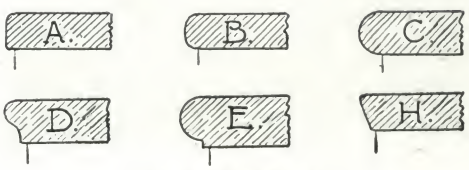
All precast Alundum aggregate materials shall be manufactured by a licensee of the Norton Company in strict accordance with the specifications of the Norton Company.

All treads shall be installed in cement mortar and those treads occurring on steel stairs shall be anchored to the steel subtread using the Dovetail anchor method of the De Paoli Del Turco Foscato Corp., 527 West 45th Street, New York, N. Y. All Alundum aggregate tiles shall be imbedded in cement mortar.

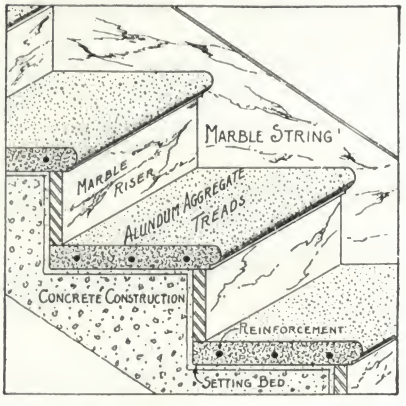
All joints must be pointed up neatly, and the whole delivered at completion in perfect condition.



STEEL CONSTRUCTION WITH ALUNDUM AGGREGATE TREADS



Types of Nosings



CONCRETE CONSTRUCTION WITH ALUNDUM AGGREGATE TREADS AND MARBLE RISERS & STRING

Continued on next page

MARBLE MOSAICS

The Beauty of Mosaic Floors

We are equipped to execute all kinds of mosaic floors—either from architects' details or from our artists' original creations. We specialize in Sectile mosaic, the floor of unsurpassed beauty that the Cosmati family of mosaicists of the 13th century developed to greatest heights and spread its use all over the Christian world.

Many Notable Installations

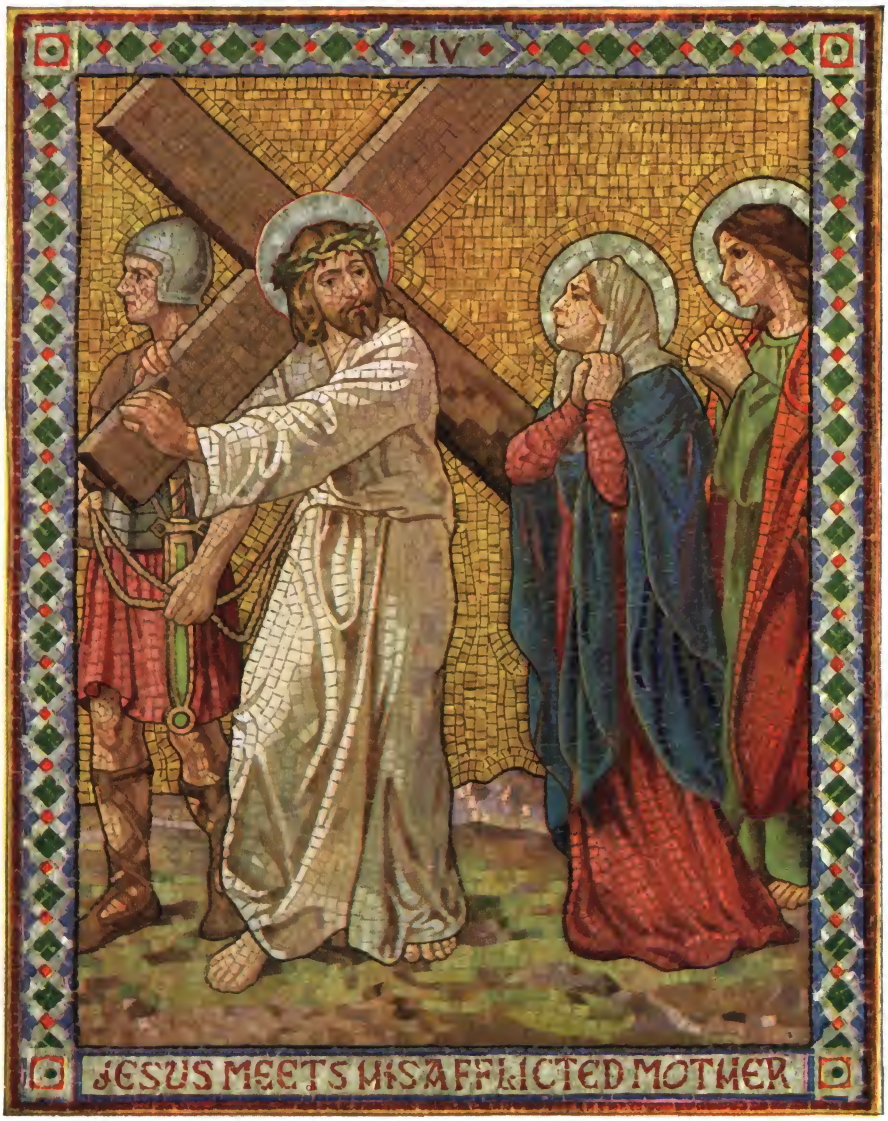
The floor and walls of the Bowery Savings Bank; the Church of St. Bartholomew, and the Williamsburg Savings Bank, all of New York; as well as that of the Baltimore Trust Company and the Nebraska State Capitol are only a few of our mosaic floor installations which are generally considered as unusual and outstanding examples of this beautiful art.

Pompeian Mosaic, Metropolitan Museum of Art, New York, N. Y.

Cosmati Mosaic, Bowery Savings Bank, New York, N. Y.

VENETIAN GLASS AND GOLD MOSAICS (SMALTO)

Our studios are equipped to produce glass mosaic work which is comparable with the best ever produced. We have with us Venetian artists who are acknowledged masters of mosaic technique — men who have a background of long experience in the European ateliers.



Station of the Cross, Venetian Enamel and Gold Mosaics, Cathedral of the Immaculate Conception, Portland, Me.

We can produce quality work at lower cost than the imported mosaic with the additional advantage that clients can visit our studios in New York and supervise the work while it is in process of execution which, as a rule, is impractical when the work is done abroad.

Continued on next page

TILING

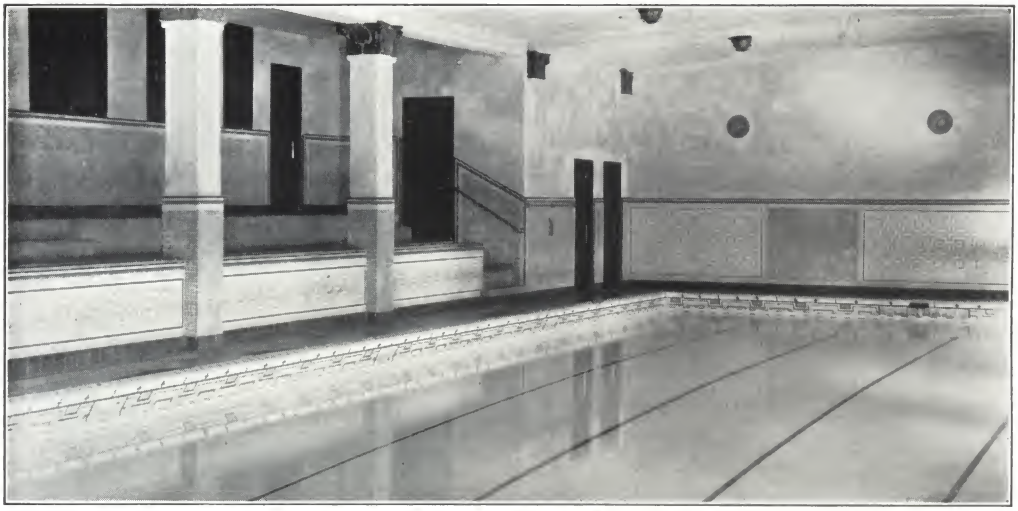
Our close contact with all the leading tile manufacturers enables us to place at the disposal of our clients the widest choice and the very best material produced either in this country or abroad.

A capable Designing Department is maintained to co-operate with architects and owners in the development of distinctive tile designs for every requirement. We are prepared to render sketches and make recommendations based on a diversified experience in this field. Our tiling work is strictly in accordance with the Basic Specifications as issued by the Associated Tile Manufacturers, New York, N. Y.

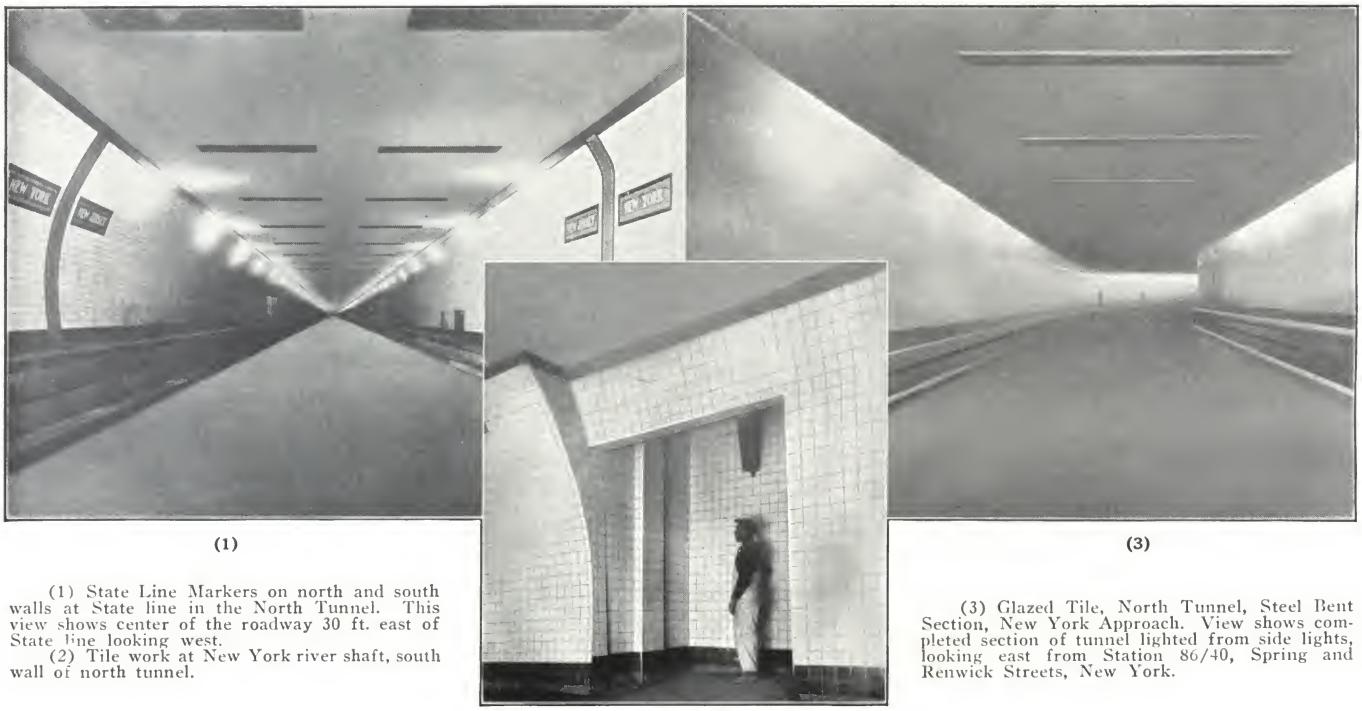
Many of the most beautiful and best known swimming pools are the work of this company.

We specialize in and solicit the opportunity to quote on large jobs where good quality is the main consideration.

Elevator Lobby, New Jersey Bell Telephone Co., Newark, N. J.



Swimming Pool, Y. M. C. A., Montclair, N. J.



(1)

(1) State Line Markers on north and south walls at State line in the North Tunnel. This view shows center of the roadway 30 ft. east of State line looking west.

(2) Tile work at New York river shaft, south wall of north tunnel.

(2)

(3)

(3) Glazed Tile, North Tunnel, Steel Bent Section, New York Approach. View shows completed section of tunnel lighted from side lights, looking east from Station 86/40, Spring and Renwick Streets, New York.

The Holland Tunnel Connecting New York with New Jersey, the Largest Tiling Job in the Country Installed by Us Four Years Ago

Many unusual obstacles were encountered and difficulties overcome. Although subject to the most adverse atmospheric conditions and constant traffic vibration, *not a single tile has loosened*

T. M. C. LOCKSTRIPS

FOR TERRAZZO, COMPOSITION, LINOLEUM AND CEMENT FLOORS

LOCKSTRIP MANUFACTURING CORPORATION

36-09 Vernon Boulevard, LONG ISLAND CITY, N. Y.

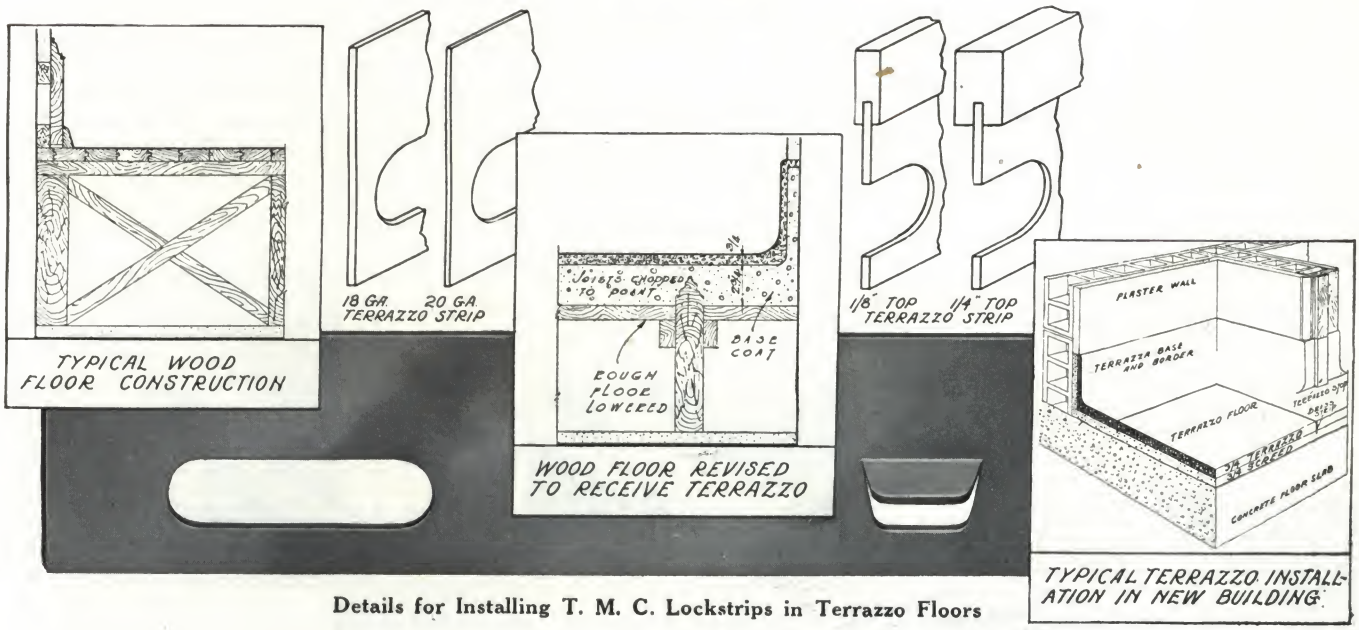
Products

T. M. C. LOCKSTRIPS (patented brass dividing strips) for terrazzo, marble, composition, linoleum and cement floors, base and wainscots and plaster base grounds.

TRADE-MARK

Distribution

Any contractor can obtain T. M. C. Lockstrips direct from our factory or through the warehouses of the Chase Brass & Copper Co.



Details for Installing T. M. C. Lockstrips in Terrazzo Floors

TEN GOOD REASONS WHY ARCHITECTS OF REPUTE SPECIFY T. M. C. LOCKSTRIPS FOR TERRAZZO AND CEMENT FLOORS

(1) Prevent cracks in surface of floor.
(2) Insure uniform thickness of terrazzo aggregate.
(3) Stay accurately in position.
(4) Free from waves or curvature.
(5) Permit execution of intricate designs and patterns.
(6) Equally as efficient for terrazzo cove base and wainscoting as for terrazzo floors.
(7) There is a size and type for every individual taste and need.
(8) Cement strips are scientifically designed for *cement* work.
(9) Protected by valid patents.
(10) Guaranteed by a reputable manufacturer.

(1) T. M. C. Lockstrips Prevent Cracks

The slotted openings or locks, in T. M. C. Terrazzo Floor Strips form an intentional weak spot in the underbed. If cracks occur through expansion and contraction, they will localize at these weak spots and not travel to the surface of the floor.

(2) They Insure Uniform Thickness of Aggregate

The wings on T. M. C. Lockstrips provide an accurate measuring gage for a uniform thickness of aggregate. With T. M. C. Lockstrips architects can be assured of getting exactly ½, ⅝ or ¾ inch of surface coating as called for in their specifications. Without these T. M. C. "wings," you have no assurance that the strip has not been pushed down too deep into the underbed with proportionately less aggregate in the top coat. An aggregate that is too thin cannot be rolled or compressed to a proper density, consequently it will not wear satisfactorily, and has a much greater tendency to crack. Under no circumstances, do we recommend a thickness of aggregate less than ⅝ inch and in most cases ¾ inch is better.

Continued on next page

TEN GOOD REASONS WHY ARCHITECTS OF REPUTE SPECIFY T. M. C. LOCKSTRIPS FOR TERRAZZO AND CEMENT FLOORS (Continued)

(3) They Cannot Be Pushed Out of Position

T. M. C. patented wings also provide a sure means of setting strips straight horizontally and true vertically. The long slot holes and the half round openings under the wings, provide the means for a perfect bond between the strip and cement underbed. The strips cannot be pushed out of line in rolling the terrazzo aggregate, nor can they be further depressed if in spots the underbed should happen to be of a poor mixture.

(4) T. M. C. Lockstrips Are Free from Waves or Curvature

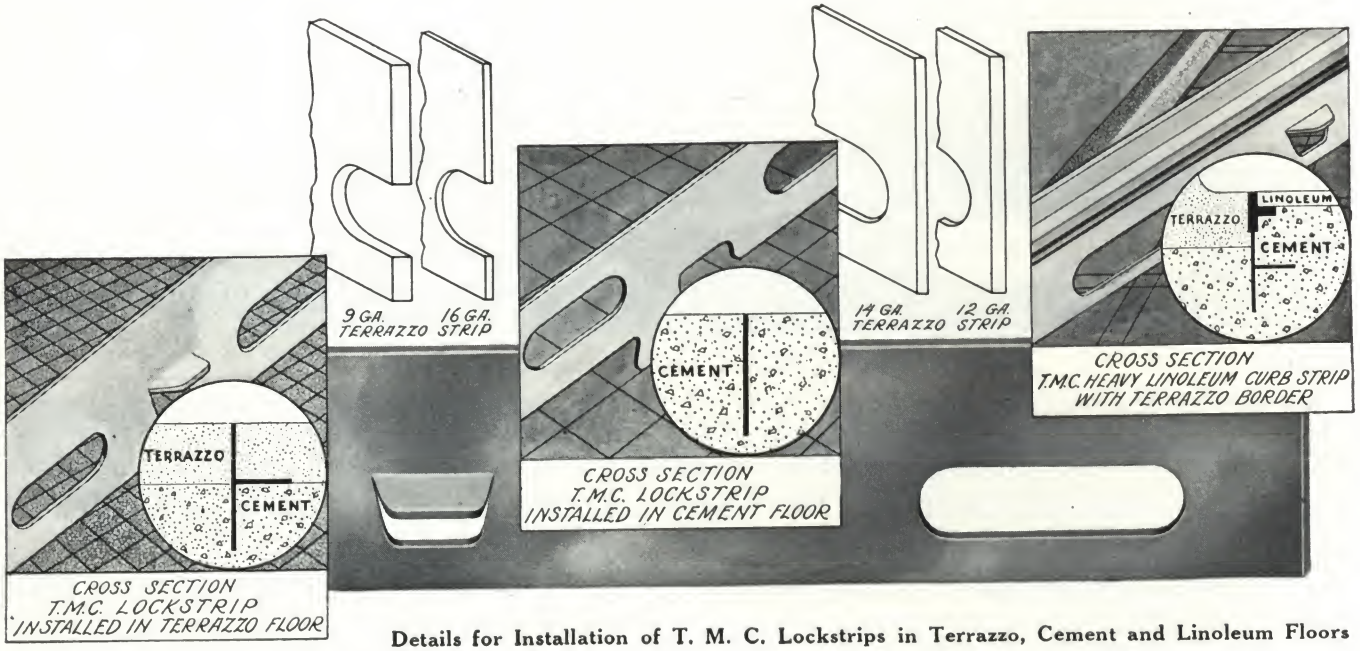
Superior quality of metal combined with specially designed presses for punching out the slots and wings, insures T. M. C. Lockstrip being perfectly straight and free from waves or curvature.

(8) T. M. C. Cement Lockstrips

T. M. C. Lockstrips for cement floors and sidewalks meet with the hearty approval of architects, contractors and owners. They eliminate entirely the dirt and filth catching creases in old style cement floors. With T. M. C. Lockstrips a cement floor or sidewalk in one or two colors, can be laid as smooth and clean as a ballroom floor. This type of cement floor is ideal for outside porches on suburban and country residences.

(9) Protected by Patents

T. M. C. Lockstrips are fully protected by letters patent issued by the United States Patent Office and repeatedly upheld by court decisions.



Details for Installation of T. M. C. Lockstrips in Terrazzo, Cement and Linoleum Floors

(5) Intricate Designs and Patterns

By reason of their flexibility T. M. C. Lockstrips may be worked into designs and patterns that are most intricate and complicated. With T. M. C. Lockstrips, college and state seals, portraits and symbolic figures have been executed in terrazzo with perfect success.

(6) Cove Bases and Wainscoting

Satisfactory terrazzo wainscoting and cove bases are easily executed with T. M. C. strips.

(7) Range of Sizes and Types

In addition to a wide range of widths and thicknesses for straight terrazzo and cement work, T. M. C. Lockstrips are also made for composition floors and for combinations of linoleum and terrazzo, or cement.

(10) Guaranteed

If strip of obscure or unknown origin is installed in a floor and later failures or defects appear in the completed job, it is most unsatisfactory to have the contractor fall back on the plea that the trouble must have been caused by the strips. As a matter of fact sometimes it is the strip, but if it was made by an obscure manufacturer or perhaps its origin totally unknown, a reasonable adjustment of the trouble is impossible.

The Lockstrip Manufacturing Corporation stands squarely back of every foot of genuine T. M. C. Lockstrip. Look for the trade mark.

Continued on next page

WHERE T. M. C. LOCKSTRIPS ARE USED AND TYPES BEST SUITED TO INDIVIDUAL APPLICATIONS

T. M. C. Lockstrip for Terrazzo

T. M. C. Lockstrips are made in a variety of thicknesses to meet individual preferences of architects and owners. The size and type in most general demand is plain brass T. M. C. Lockstrip, 1¼ in. wide, 20B&S gage thick, for ⅝-in. terrazzo finish. Five other thicknesses from 20 gage to ¼-in. are also available (see illustrations).

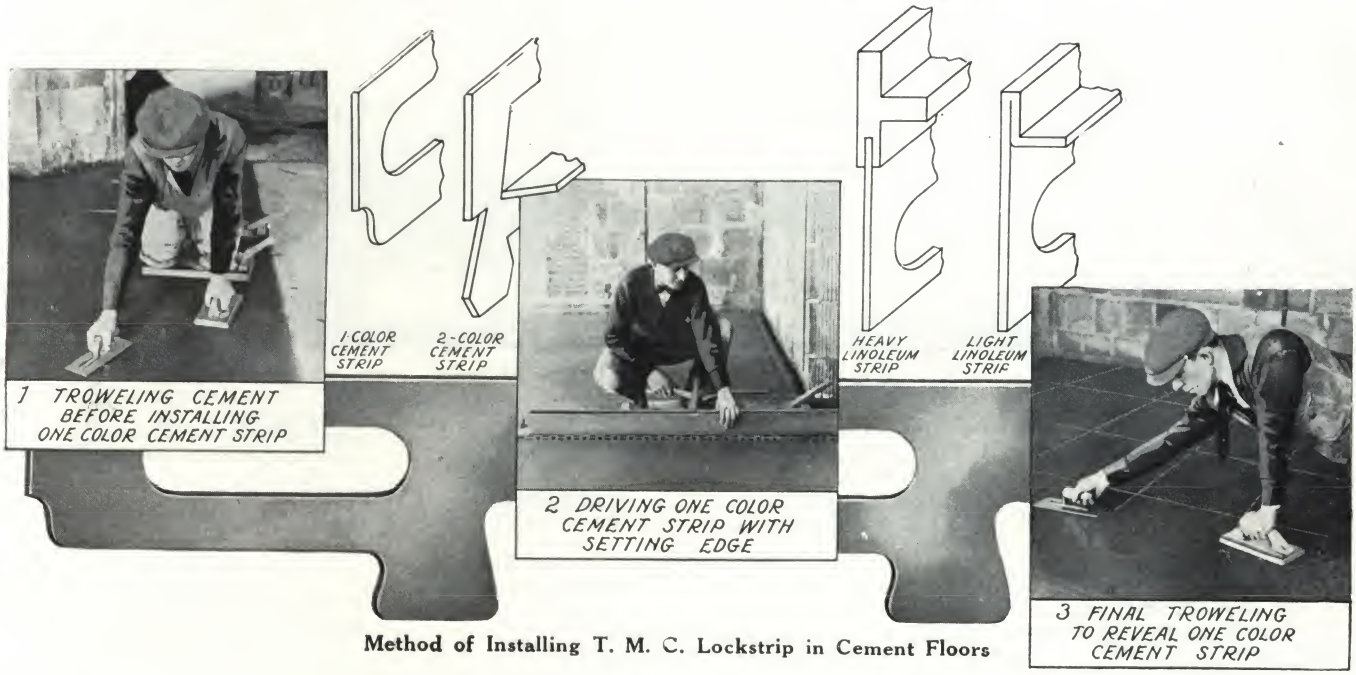
By means of an ingenious manufacturing operation, T. M. C. Lockstrip is produced with a ⅛ or ¼-in. thickness on top, with an 18B&S gage base. This reduces the weight of metal required and cuts down on the cost proportionately. This patented method of manufacture also permits assembling brass strips with nickel silver tops, a feature of vital importance where expensive exposed metal is desired yet where cost is a factor.

factories, industrial plants, loading platforms, railroad stations and warehouses. Also for outside porches and sidewalks. This type of floor construction is particularly desirable in food manufacturing plants and other places where sanitary conditions are imperative.

Lockstrip Curb for Linoleum and Rubber Tile

A necessary detail for the proper laying of linoleum or rubber tile to a terrazzo border or cove base, in hospitals, hotels, clubs, churches and office buildings.

Establishes a definite level for the cement underbed and correct sinkage for the linoleum. Made in light gage metal for cement border and in heavy outline for terrazzo borders.



Method of Installing T. M. C. Lockstrip in Cement Floors

Standard T. M. C. Lockstrips are eminently suitable for terrazzo floors, cove bases, borders and wainscoting, in banks, hotels, public buildings, hospitals and institutions.

T. M. C. Cement Strips

T. M. C. Cement Strips (Lockstrip type) are ideal for cement floors, in uniform or alternating colors, in

T. M. C. Cove Base Strips

Scientifically designed strips for the proper construction of a cove base in hospitals, hotels, theatres, etc. These T. M. C. strips embody the same "locking" principle as in straight terrazzo strips. All cracks are localized beneath the surface. Uniform and accurate thickness of terrazzo aggregate is assured through the use of these strips.

Continued on next page

WHERE T. M. C. LOCKSTRIPS ARE USED AND TYPES BEST SUITED TO INDIVIDUAL APPLICATIONS

T. M. C. Lockstrip for Composition Floors

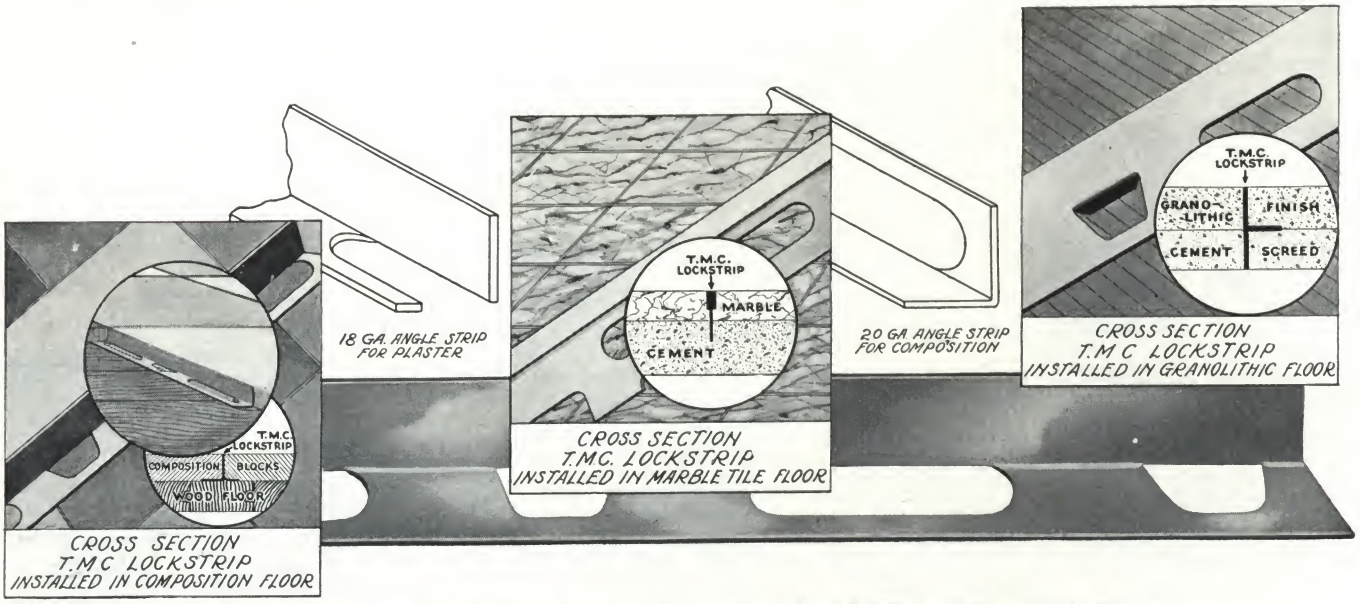
A specially designed angle strip ideally suited to floors of composition blocks in department stores, schools, hospitals and hotels.

T. M. C. Lockstrip for Marble Tile Floors

Used in office buildings, banks, theatres and hotels for dividing lines or joints in marble tile floors. Available in brass or nickel silver. Gives the floor a most attractive and artistic appearance. Wears down with the marble and prevents spalled or broken edges. Also forms an anchorage at the side which prevents loosening of the tile.

T. M. C. Lockstrip for Heavy Duty Granolithic Floors

Forms a floor armoring which prevents chipping and wear by impact of hard truck wheels, and sliding heavy objects directly on the floor surface. The advantage of brass over steel for this type of floor is that the brass will wear down uniformly with the granolithic finish, thus obviating depressions or cupping, which occurs where a harder metal such as steel is employed.



Method of Installing T. M. C. Lockstrip in Composition, Marble Tile and Granolithic Floors

SUGGESTED FORM OF SPECIFICATIONS

For Terrazzo Strips

As indicated on plans or separately specified, all terrazzo work shall be divided into panels, borders and designs, with T. M. C. Lockstrips as manufactured by the Lockstrip Manufacturing Corporation. All strips shall be of brass, ... wide over all; .... inch (or gage) thick at top; .... gage at bottom; for .... inch thickness of terrazzo aggregate.

For Composition Floors

All composition floors shall be divided into panels of sizes indicated on plans or called for in specifications with T. M. C. Lockstrip angles size .... in., No. .... B.&S. gage brass as manufactured and sold by the Lockstrip Manufacturing Corporation, 36-09 Vernon Boulevard, Long Island City, N. Y.

For Cement Strips

As indicated on plans or separately specified, all cement floors shall be divided into panels with T. M. C. Brass Cement Lockstrips as manufactured by the Lockstrip Manufacturing Corporation. Strips shall be .... wide over all; .... gage (or inch) thick at top; .... gage at bottom.

For Marble Tile Floors

All marble tile floors specified or indicated on plans shall have the joints formed with T. M. C. Lockstrip Type "C," .... in. thick top, No. .... B.&S. gage brass or nickel, as manufactured and sold by the Lockstrip Manufacturing Corporation, 36-09 Vernon Boulevard, Long Island City, N. Y.

Continued on next page

CONVENTION HALL
ATLANTIC CITY, N.J.

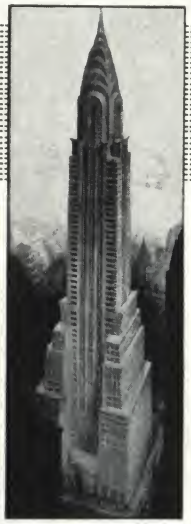
CENTRAL PASSENGER STATION
BUFFALO, N.Y.

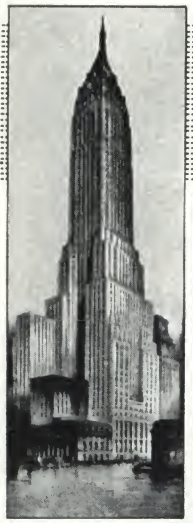
IRVINE MEMORIAL AUDITORIUM
UNIV. OF PA. PHILA., PA.

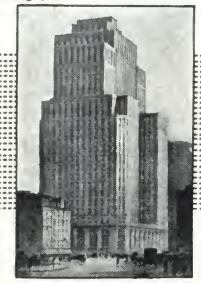
MERCHANDISE MART
CHICAGO, ILL.

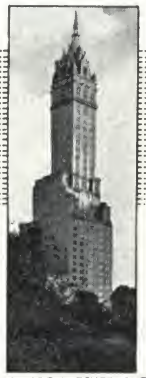
THE RITZ TOWER
NEW YORK, N.Y.

CONSOLIDATED GAS CO.
NEW YORK, N.Y.

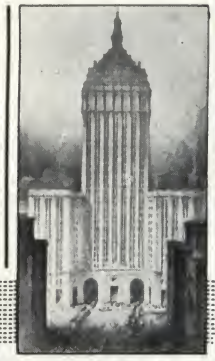

CHRYSLER BUILDING
NEW YORK, N.Y.


BANK OF MANHATTAN BLDG.
NEW YORK, N.Y.


GENERAL MOTORS BUILDING
NEW YORK, N.Y.


THE SHERRY-NETHERLAND
NEW YORK, N.Y.

THE NATIONAL SAVING BANK
ALBANY, N.Y.


NEW YORK CENTRAL BUILDING
NEW YORK, N.Y.

T·M·C LOCKSTRIP INSTALLATIONS

EQUITABLE TRUST COMPANY
NEW YORK, N.Y.

R.J. REYNOLDS BUILDING
WINSTON-SALEM, N.C.

KENOSHA COUNTY COURTHOUSE & JAIL
WISCONSIN.

HOTEL RESIDENCE FOR WOMEN
NEW YORK, N.Y.

FIDELITY-PHILADELPHIA TRUST CO.
PHILA., PA.

RECEIVING UNIT MILWAUKEE CO.
WAUWATOSA, WIS.

THE MELLON NATIONAL BANK
PITTSBURGH, PA.

ST. SCHOLASTICA ACADEMY
ATCHISON, KANSAS

ST. CHARLES BORROMEO
OVERBROOK, PA.

ELKS CLUB
MILWAUKEE, WIS.

ST. JOSEPH'S HOSPITAL
OTTUMWA, IOWA.

TRIPOLI-TEMPLE MOSQUE
MILWAUKEE, WIS.

EAGLES CLUB
MILWAUKEE, WIS.

THE PACIFIC BUILDING
MANILA, P.I.

THE MARBLEITHIC CO.

J. ELLIOT PEIRCE, PROPRIETOR

Manufacturers and Contractors, Pre-cast Terrazzo, Marble and Tile

DAYTON, OHIO

Manufacturers and Contractors

MARBLEITHIC (PRE-CAST TERRAZZO) FLOOR TILE.
MARBLEITHIC (PRE-CAST TERRAZZO) NON-SLIP FLOOR TILE.
MARBLEITHIC (PRE-CAST TERRAZZO) BASE.
MARBLEITHIC (PRE-CAST TERRAZZO) WAINSCOT, including STALL PARTITIONS, DOOR and WINDOW TRIM.
MARBLEITHIC (PRE-CAST TERRAZZO) STAIRS.
Contractors in Marble and Tile.

Marbleithic (Pre-cast Terrazzo) Products

We manufacture and erect pre-cast terrazzo (trade-name "Marbleithic") for practically all purposes where marble can be used, as floor tile, integral treads and risers, base, wainscot, stair strings, balustrades and rails, door and window trim; moulded or plain; honed or polished finish.

This is a hard dense stone equal to the marble aggregate in resistance to penetration by liquids.

Marbleithic products are manufactured by a special process which produces a stone of maximum density and solidity. The product is strongly reinforced with steel when necessary. The surface is rendered wear resisting by special treatment in finishing.

The marble chips are given a high, polished finish where desired, similar to polished marble. Floors, stair treads, etc., are finished with fine hone finish.

Marbleithic stairs, floors, etc., have been in use for thirty-four years.

Floor Tile—Marbleithic floor tile is manufactured in any desired design and size with the marble chips and cement as required to harmonize with the required color scheme.

Non-slip Floor Tile—Non-slip Marbleithic floor tile can be supplied where desired for elevator and entrance lobbies. These non-slip tile are made with the addition of a hard abrasive aggregate to the marble chips and cement and retain their non-slip qualities after continued and hard wear, as the abrasive is distributed throughout the marble aggregate.

Stairs—Marbleithic stairs are executed in the same manner as marble stairs. They are erected on concrete, wood or iron substairs, either complete with wall and balustrade string or in combination with other materials as required. Non-slip integral treads or separate treads as well as non-slip floor tile are manufactured where required.

Special attention is given to ornamental stairs, calling for curved and moulded work.

Base and Wainscot—Marbleithic is used for sanitary, plain or moulded base, wainscot, door and window trim for corridors, stall partitions for toilet rooms, etc.

Typical Installations

Chamber of Commerce, Minneapolis, Minn.
Union Station, St. Paul, Minn.
Singer Building, New York, N. Y.
Hotel Commodore, New York, N. Y.
U. S. Naval Academy, Annapolis, Md.
E. F. Albee Theater, Brooklyn, N. Y.
Proctor Theater, 85th Street, New York, N. Y.
Keith-Albee Theater, Columbus, Ohio
Hermann Hospital, Houston, Tex.
E. F. Albee Theater, Cincinnati, Ohio

Stairway in Keith Memorial Theater, Boston, Mass.
Treads, newels, strings and hand rails in White Marbleithic

TERRAZZO

MANHATTAN TERRAZZO BRASS STRIP CO., Inc.
151-155 EAST 128th STREET
NEW YORK, N. Y.

MANHATTAN TERRAZZO BRASS STRIP CO., INC.

Manufacturer of Twin Anchor Brand Strips

151-155 East 128th Street, NEW YORK, N. Y.

Products

TWIN ANCHOR BRAND TERRAZZO STRIPS in various gauges, widths and lengths.

MANHATTAN UNITS for geometrical designs.

BRONZE PLAQUES for panel centers.

SCRIPT or BLOCK LETTERS.

COVE BASE DIVIDERS.

Facilities

We specialize in manufacturing terrazzo dividing strips. We have designed and patented special machinery to produce a quality product automatically and in large quantities. Our factory is complete. We can handle any size order on short notice, and at very attractive prices.

BRASS DIVIDING STRIPS FOR TERRAZZO WORK

Terrazzo mosaic is one of the oldest of arts, dating back to the time of the Venetians and Romans. The industry was first originated by utilizing small pieces of varicolored marble, mixing them with mortar, and spreading them over a floor area. Pumicestone was used to surface off and smooth over the finish.

Terrazzo has been used extensively for flooring in this country for many years. It is laid plastic, allowed to set, is ground and polished smooth. This furnishes sanitary, durable, fireproof and remarkably long wearing floors in attractive colors.

Yet terrazzo flooring, with all its admitted advantages, was not always satisfactory, because cracking formerly proved a serious objection. The introduction of brass dividing strips, however, helped to overcome this difficulty to a great extent, but its high cost made it prohibitive for commercial terrazzo floors. After considerable experimenting we developed machinery which enabled us to cut the cost of brass strips 50% and, as a result, terrazzo flooring has forged to the front as a flooring industry.

Brass dividing strips provide deep, effective joints in the floor. Should a crack occur, it will in most cases run along the strip and be practically unnoticeable. The use of brass dividing strips also permits the laying of successive or adjoining panels, thus saving considerable time and eliminating the expensive method of laying alternate sections, as well as working out hundreds of attractive designs.

The great variety of colors and shades obtained by mixing various kinds of marble in correct proportion, enables the carrying out of any decorative scheme desired. The thin metal lines of the brass dividing strips definitely and neatly give the floor an artistic effect not easily obtained with other materials.

The brass strip is principally intended to prevent or localize cracking and, in addition, permits the architect to create any design desired to blend with the entire decorative scheme.

Sterling National Bank, 42nd Street and Lexington Avenue, New York, N. Y.
GILLETTE & WALKER, Architects

Continued on next page

TWIN ANCHOR BRAND TERRAZZO BRASS STRIPS

Arc and Cone Types

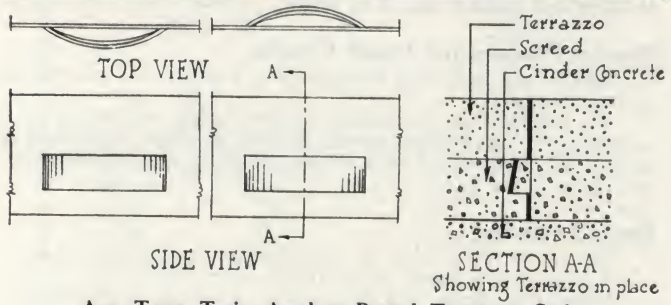
Twin Anchor Brand Terrazzo Strips are made in two styles, in various B.&S. gauges, widths and lengths. We use Anaconda semihard brass made especially for us. This metal is rigid vertically, but sufficiently pliable horizontally to permit its conforming practically to any shape desired for figures, shapes and designs.

Strips are easy to handle, pack easily, take up a minimum amount of space and have no sharp projections and may be had from stock for immediate delivery.

Zinc strips can be had from stock in all gauges marked ** in table in next column, other sizes on short notice. Though principally used for concrete work, they are making considerable headway in terrazzo floors where white metal at a reasonable cost is required. They are very effective in dark floors.

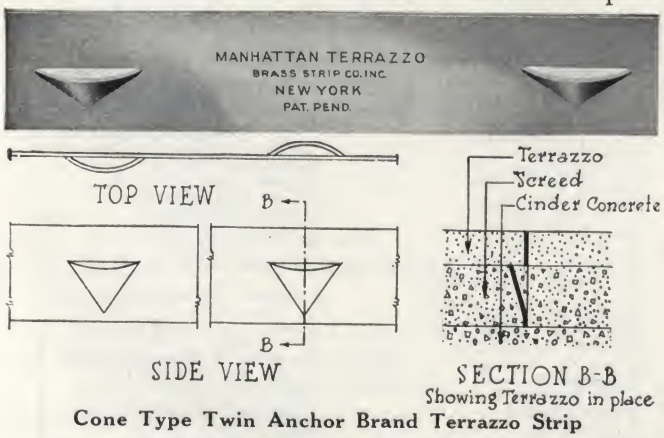
Arc Type—This strip is of a new and distinctly practical design. It has curved projections on either one or both sides which are integral parts of the strip.

The curved projections on this strip on being forced into the screed force the plastic material from one side of the dividing line to the other, thus creating a positive anchor and lock.



Arc Type Twin Anchor Brand Terrazzo Strip

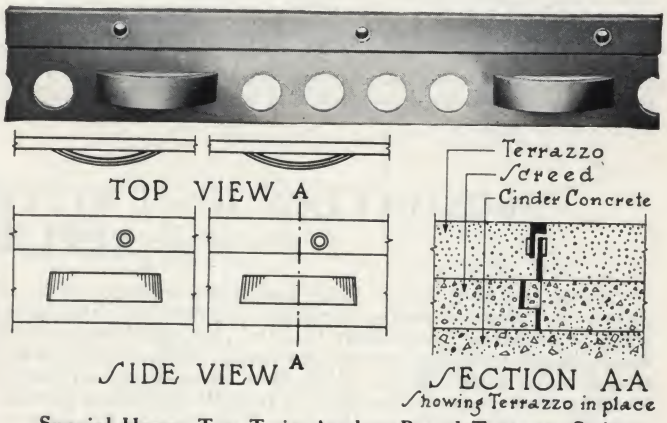
Cone Type—This terrazzo strip is easy to place, and economical to handle. It has cone shaped lateral anchors. Upon being forced into the screed this anchor moulds the plastic material to form a substantial bond. Manhattan Cone Type Terrazzo Strip insures good anchorage without sacrificing that quality of control over cracks, etc., desired in an efficient terrazzo strip.



Cone Type Twin Anchor Brand Terrazzo Strip

Special Heavy Top Strip—This is a design developed recently to give the often desired wide wearing surface, without the prohibitive cost of material and handling of a solid strip of the same thickness. It also has the advantage of shaping up easily for special design work.

The bottom of the strip is of 20 gauge brass with the tops available in 1/8, 3/16 and 1/4-in. thicknesses. The total depth of the strip is approximately 1 3/16 in., and can be had also 1 7/16 in. deep. Furnished in lengths of 6 ft. only. Assembly is by means of eyelet rivet as illustrated below. This strip made in arc type only. The saving in brass effected by the use of this type over that of a solid brass strip of the same over-all thickness is approximately 35% to 50% depending on gauge used.



Special Heavy Top Twin Anchor Brand Terrazzo Strip

Nickel-silver Strips—Where work of a better grade in white metal is desired, the heavy top strip made of nickel-silver is recommended. Construction features, sizes, etc., are the same as the brass strip, but the saving of metal runs as high as 50% or more.

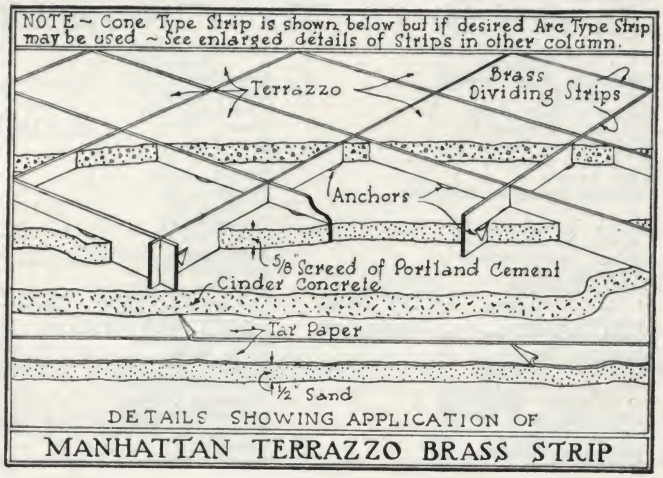
TWIN ANCHOR BRAND TERRAZZO DIVIDING STRIPS

Arc Type						Cone Type		
Size, in.	Gauge	Length, ft.	Size, in.	Gauge	Length, ft.	Size, in.	Gauge	Length, ft.
* 3/4	20	4	1	16	4–6			
1	20	4–5–6	**1 1/4	16	4–6	1 1/4	20	4–5–6
1 1/4	20	4–5–6	1	14	6	1 1/2	20	6
1 3/8	20	6	**1 1/4	14	6			
1 1/2	20	6	1 1/4	12	6	1 1/4	19	6
1	19	6	1 1/4	11	6			
1 1/4	19	4–6	1 1/4	10	6	1 1/4	18	4–5–6
1	18	4–5–6	1 1/4	9	6	1 1/4	16	6
**1 1/4	18	4–5–6	1 x 1 1/8	.....	6	1 1/4	14	6
1 3/8	18	6	**1 1/4 x 1 3/8	.....	6			

Note: We can also furnish 3/16 and 1/4-in. brass.
*For wainscoting. **From stock.

Application

The application is clearly shown in the illustration below, and fully described in the specification on the following page.



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SPECIFICATION FOR TERRAZZO FLOORS—SUGGESTED FOR ARCHITECTS' USE

General—The Terrazzo Contractor shall consult with the General Contractor for floor arch work and arrange to have the tops of all arches finished 2½ in. below finish floor level.

Sand Cushion—A bed of dry, clean sand shall be evenly spread, approximately ½ in. in depth, over the entire surface of the rough concrete (or.....) floor. This sand cushion shall be covered with one layer of tar paper, laid with generous laps.

Cinder Concrete—Over the completed sand cushion cinder concrete shall be poured (not less than ¾ in. thick) and screeded smooth to a uniform level 1¼ in. below the finished floor level.

Screed Coat—On the cinder concrete base a screed coat consisting of 1 part portland cement and 4 parts clean coarse sand shall be poured and leveled off exactly ⅝ in. below the finished floor level.

Brass Dividing Strips—[Arc Type] [Cone Type] Twin Anchor Brand Brass Dividing Strips, as manufactured by the MANHATTAN TERRAZZO BRASS STRIP CO., INC., New York, N. Y., shall be embedded in the screed coat in such manner that the top edges of the brass dividing strips shall be level with the finished floor surface.

Terrazzo—When the underbed shall have hardened sufficiently to withstand rolling, the wearing surface, consisting of 2 parts of marble granules and 1 part portland cement, shall be spread ⅝ in. thick and rolled and troweled to secure a dense, even surface.

Finish—After the terrazzo has set the floor shall be polished with a terrazzo grinding machine to secure a surface smooth and free from holes or blemishes.

Note: Proper protection of terrazzo work completed ahead of painters, plasterers and other trades is important.

Protection of Finished Floors—When the final grinding is completed, a solution of 1 part "Shine-all" and 6 parts water shall be applied in generous quantities and allowed to dry in. A thick covering of wood shavings or heavy building paper shall be used to protect the floors until their acceptance. On completion of all work clean floor by flushing with warm water and deliver the work in perfect condition.

MANHATTAN UNIT SYSTEM—ITS ADVANTAGES AND APPLICATIONS

Using standard Arc or Cone type brass terrazzo strips, in gauges as called for in the particular specifications, the MANHATTAN TERRAZZO BRASS STRIP CO., INC., has developed several dozen shapes, including squares, diamonds, ellipses, circles, stars, triangles and many others. With these basic shapes an almost limitless number of combinations is possible, providing literally hundreds of very attractive designs. This method has been in use for a sufficient length of time to prove its worth both as to artistic effect and economy of installation.

This installation of the units is a very simple process, easily accomplished by any experienced terrazzo contractor.

The ends of most all units are slotted to accommodate staple-shaped clasps which are inserted and bent over to lock the ends together, forming a butt joint of great strength and rigidity.

Sizes and Prices—Units can be made to any required dimensions, but for practical reasons it is advisable to limit the size so that the floor will average one unit per square foot. This requirement should also apply to special designs conceived by the architect.

Prices on various units are governed entirely by the sizes required; we shall be glad to quote prices upon receipt of specifications.

Angle Strips and Nosings

Details of the brass angle strip and nosing are shown at the bottom of the following page. The former are used for all types of composition and mastic floorings, acting as dividing strips between colors or materials and also as stops or nosings. They are also often used where there is a difference in floor levels between rooms at door openings.

The nosing is used for the top of bases, to finish off the point where terrazzo and plaster meet.

Cove Base Dividers

We can furnish from stock cove base dividers with standard radius, 18, 19 or 20 gauge material. Also hospital base dividers and special shapes to order.

Bronze Plaques for Panel Centers

Bronze plaques have become very popular for use in the centers of panels.

We maintain an assortment of the designs which are used regularly; or can furnish special plaques to order. Our bronze plaques are constructed with ample provision for inserting and anchoring in the floor.

Brass Lettering

We can furnish script or block letters in all sizes, ready to insert when the terrazzo is installed.

Write for prices, including sketch showing dimensions desired. We carry 4-in. solid cast brass or white metal block letters in stock.

Low Cost

We are in position to quote very attractive prices on strips because we specialize. Our patented labor-saving machinery, low overhead and small margin of profit enable us to make low prices possible.

Let us send you estimate and samples.

A FEW OF THE MANY INSTALLATIONS USING MANHATTAN STRIP

BUILDING	LOCATION	ARCHITECT	TERRAZZO CONTRACTOR
Shortridge High School	Indianapolis, Ind.	Kopf & Deery	Santarossa Mosaic & Tile Co.
City Hospital	Biloxi, Miss.	Carl Mathews	East Coast Tile Co.
Reymer's Main Store	Pittsburgh, Pa.	Lamont H. Button	Hachmeister-Lind Co.
Children's Hospital	Akron, Ohio	Good & Wagner	Flower Marble & Tile Co.
Foltis Fisher Foods	New York, N. Y.	W. F. Mayfroth	Marbleoid Company
St. John's Hospital	Brooklyn, N. Y.	Lord & Hewlett	L. Limanti & Son
Book Arcade	Detroit, Mich.	J. H. Book, Jr.	Wm. E. Brady Co.
Syracuse Memorial Hospital	Syracuse, N. Y.	John Russell Pope and Dwight James Baum	Schenectady Tile Co.
Patrick Henry Hotel	Roanoke, Va.	.....	Columbia Mosaic & Tile Co.
Sterling National Bank	New York, N. Y.	Walker & Gillette	V. Foscato, Inc.
Foshay Tower Arcade	Minneapolis, Minn.	Magney & Tusler	Venice Art Marble Co.
Christ Hospital	Palisades, N. J.	John T. Rowland, Jr.	A. De Spirt
Sterick Building	Memphis, Tenn.	Wyatt C. Hedrick	American & Venetian Marble Co.
St. Anne's Hospital	Chicago, Ill.	Hermann J. Gaul	Davia Bros. Marble Co.
Jefferson Hotel	St. Louis, Mo.	Teich & Sullivan	The Terrazzo Co.
Petroleum Building	Midland, Tex.	Wyatt C. Hedrick	Union Art Mosaic Tile Co.
Michigan Theatre	Flint, Mich.	J. Bachman	Flint Mosaic & Terrazzo Tile Co.
Weatherby Building	Portland, Ore.	Sutton & Whitney	William Frese Co.
Good Samaritan Hospital	Cincinnati, Ohio	Gustave Drach	The Cassini Mosaic & Tile Co.
St. Michael's Scholastic	Spokane, Wash.	Julius Zittel	Spokane Terrazzo Works
Mercy Hospital Addition	Springfield, Mass.	John W. Donohue	W. J. Kelly Co.
Anglican College	Vancouver, B. C.	Sharpe & Thompson	Wm. O'Neil Co., Ltd.
Palmolive Building	Chicago, Ill.	Holabird & Root	American Mosaic & Terrazzo Co.
Y. M. C. A.	Dayton, Ohio	Schenck & Williams	Serena Brothers

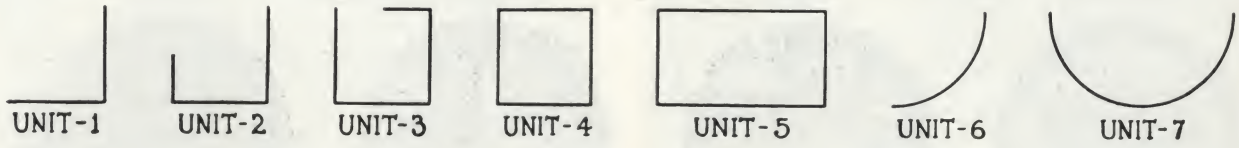
Continued on next page

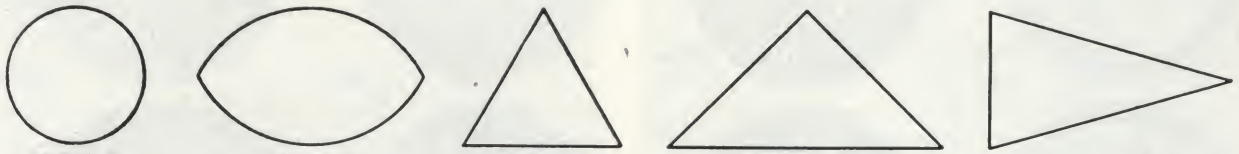
STANDARD UNITS FOR MANHATTAN SYSTEM OF TERRAZZO FLOORS

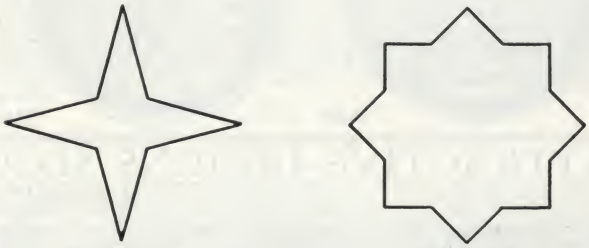
The standard units which go to make up the Manhattan Unit System of terrazzo floor designs are found below.

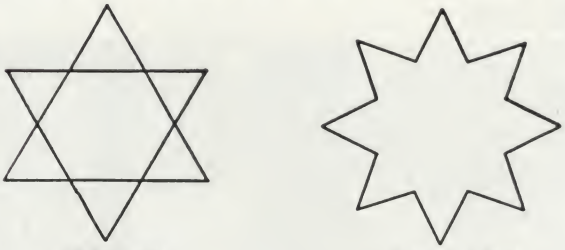
By combining certain of these standard insets, a wide variety of designs can be devised in making up the fields and borders.

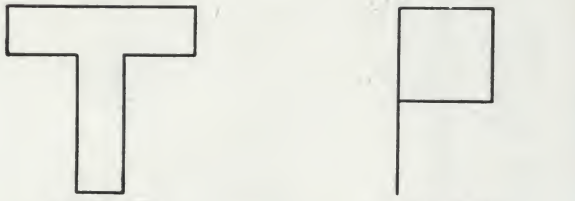
On the following pages will be found a few suggested designs with a list of the standard units employed in each design. It will be readily seen from a careful study of these plates how the effective use of the unit system will give the desired result when considering decorative floor designs.

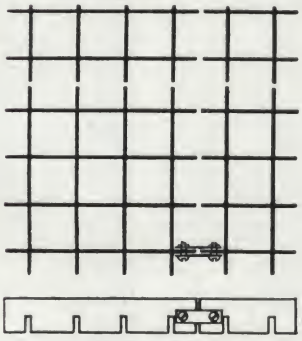






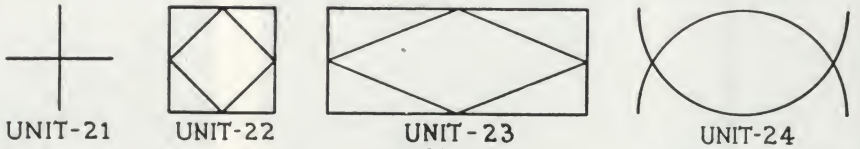


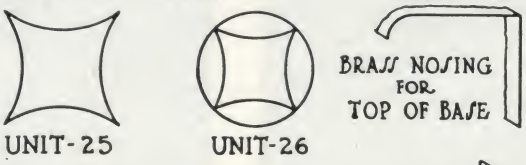


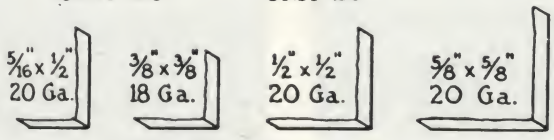


SLOTTED BRASS for checkered design used in Anaesthesia and Operating Rooms of Hospitals.

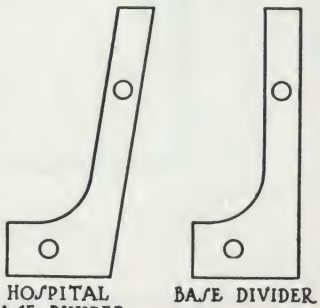
Note: Slotted brass strips grounded to a water pipe, thereby preventing being charged by contact with an open electric circuit.







ANGLE STRIPS FOR COMPOSITION FLOORING



STANDARD BASE DIVIDER UNITS

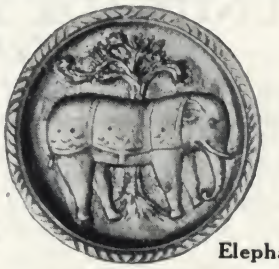
MANHATTAN TERRAZZO BRASS STRIP CO., INC.	STANDARD UNITS	PLATE 1

Continued on next page

BRONZE PLAQUES FOR PANEL CENTERS

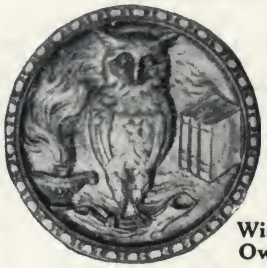
Eagle

Double Eagle


Elephant

Flying Horse

Flying Lion


Wise Owl

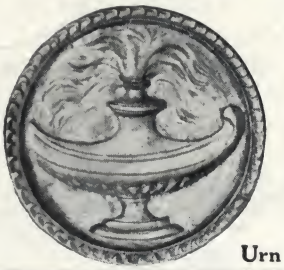
Star

Fisher

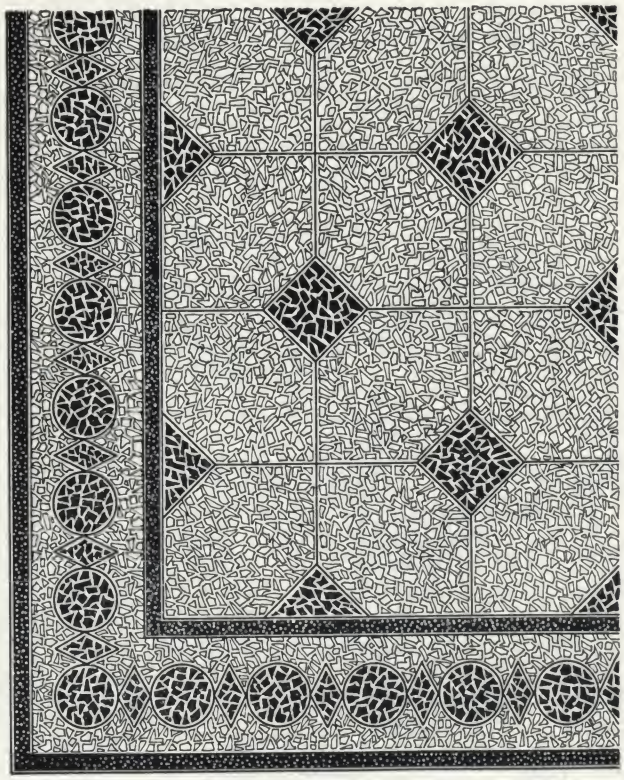
Bull

Strong Man

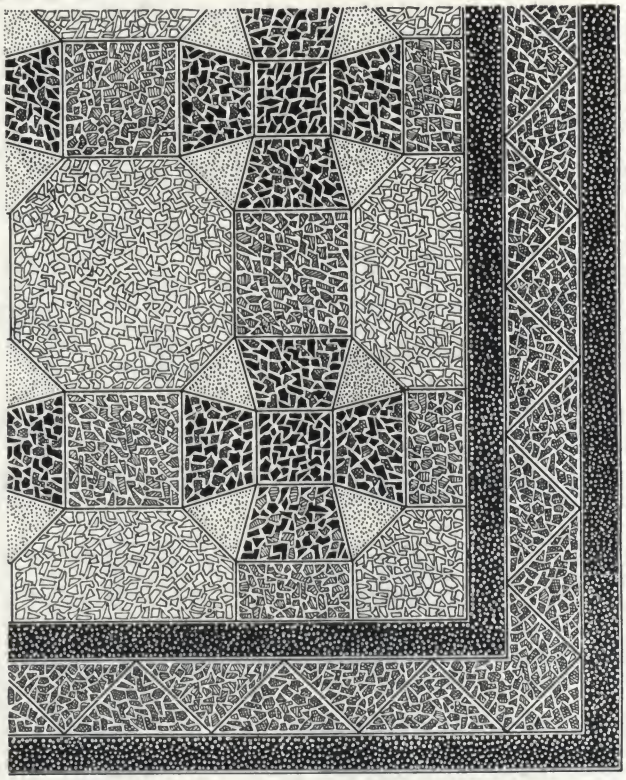
Ship


Urn

ATTRACTIVE DESIGNS SECURED BY USING MANHATTAN UNIT SYSTEM



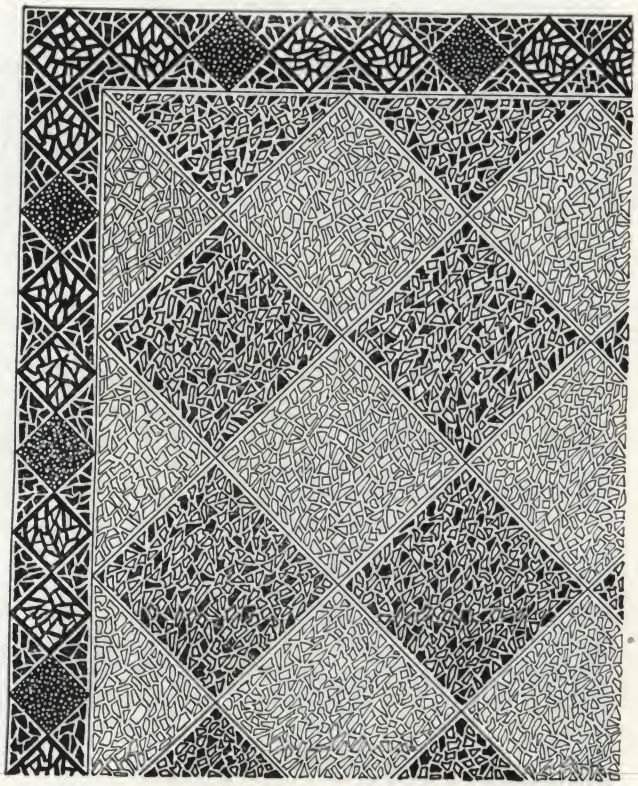
DESIGN No. 1
Field Units U-4, U-21. Border Units U-8, U-14



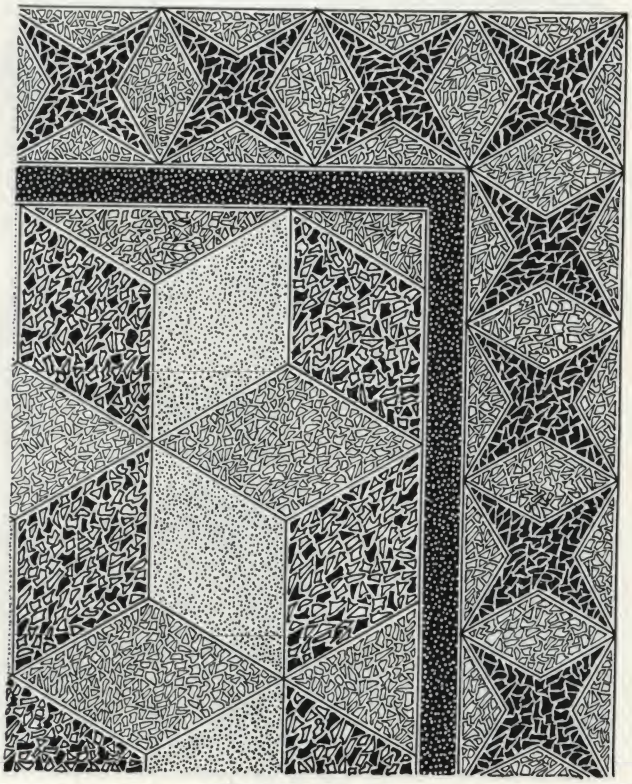
DESIGN No. 2
Field Units U-4, U-10. Border Unit U-1

MANHATTAN TERRAZZO BRASS STRIP CO., INC.	DECORATIVE FLOOR SUGGESTIONS AND PLAQUES BY MANHATTAN	PLATE 2

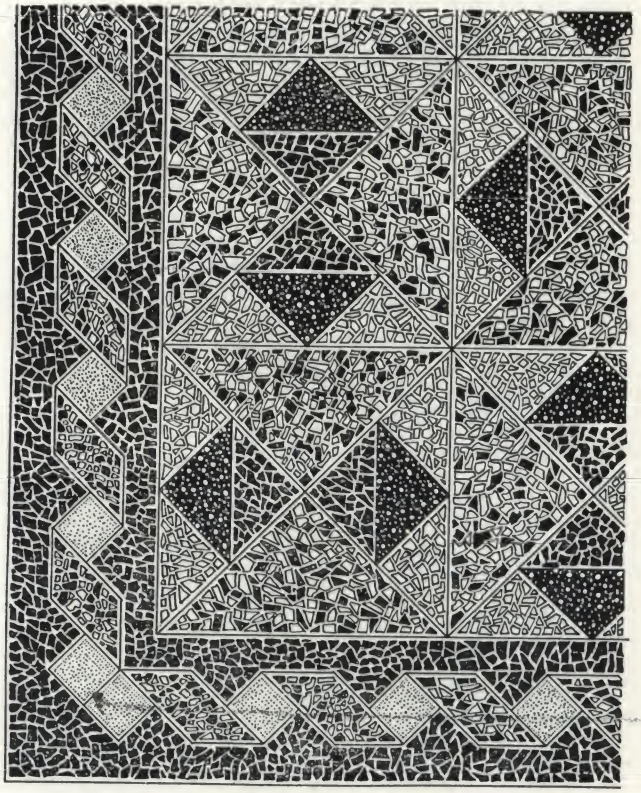
Continued on next page



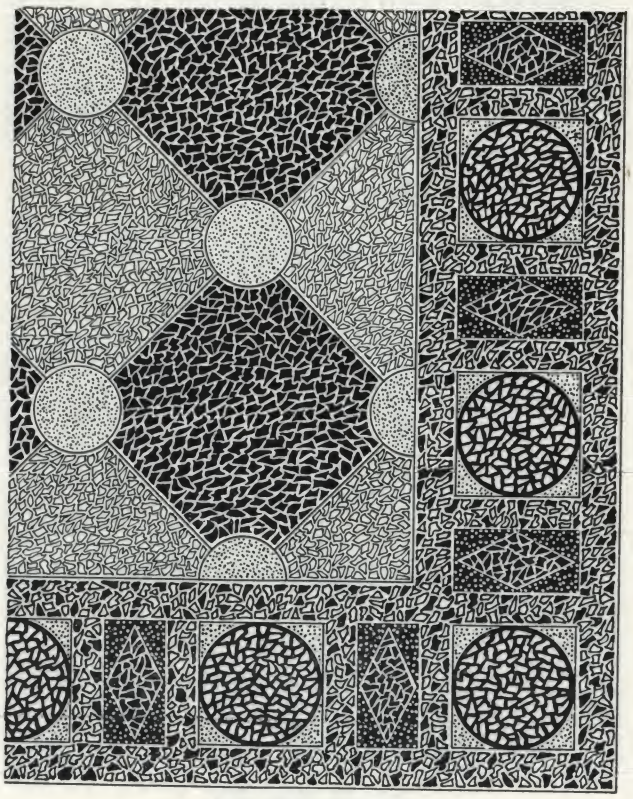
DESIGN No. 3
Field Unit Standard Strips. Border Unit U-15



DESIGN No. 4
Field Unit U-14. Border Unit U-16



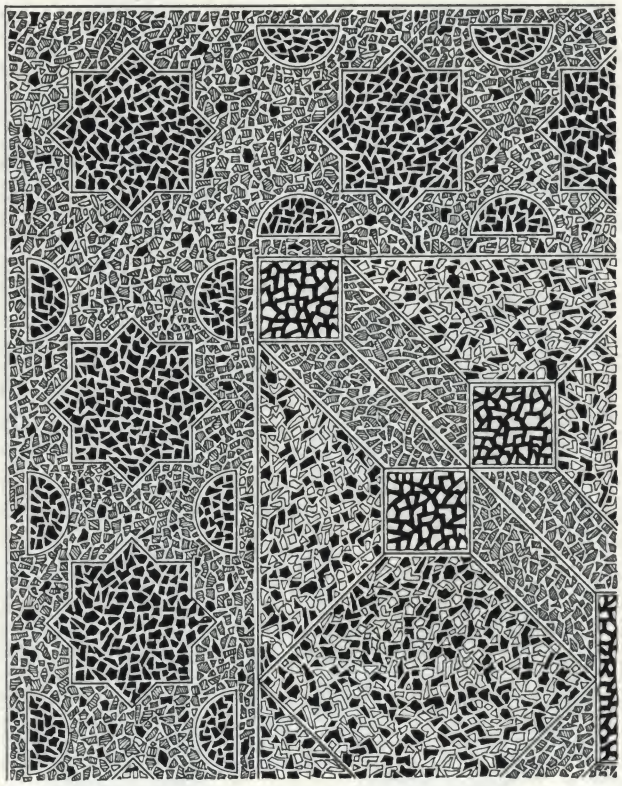
DESIGN No. 5
Field Units U-11, U-21 & Standard Strips. Border Unit U-20



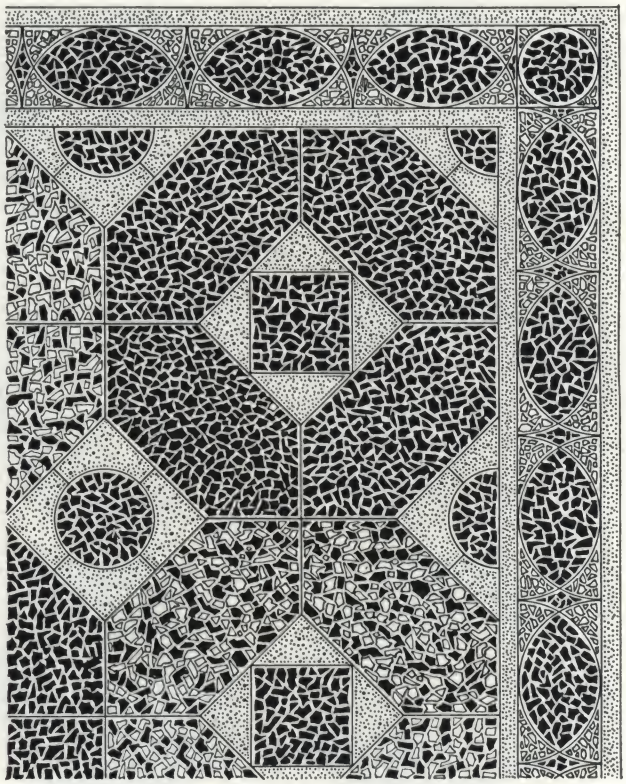
DESIGN No. 6
Field Units U-8 & Standard Strips. Border Units U-4, U-8, U-23

MANHATTAN TERRAZZO BRASS STRIP CO., INC.	DECORATIVE FLOOR SUGGESTIONS BY MANHATTAN	PLATE 3

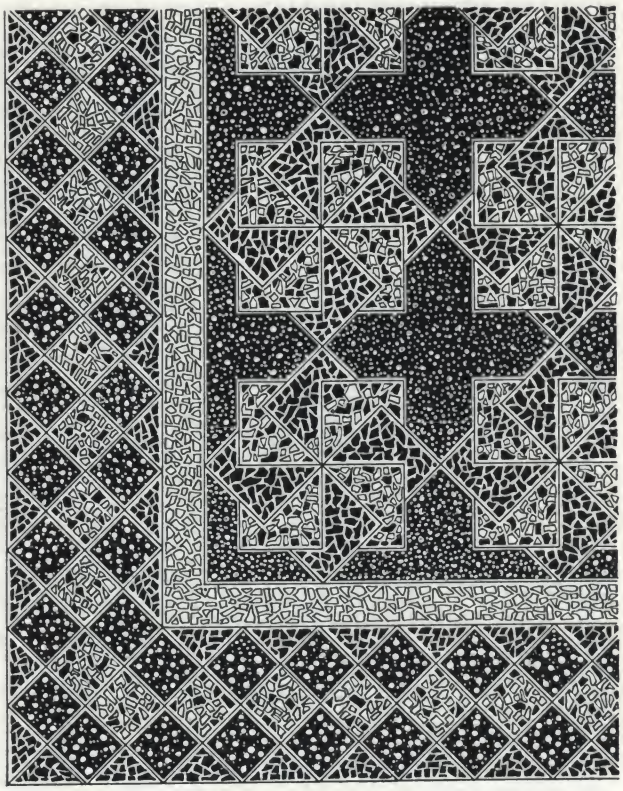
Continued on next page



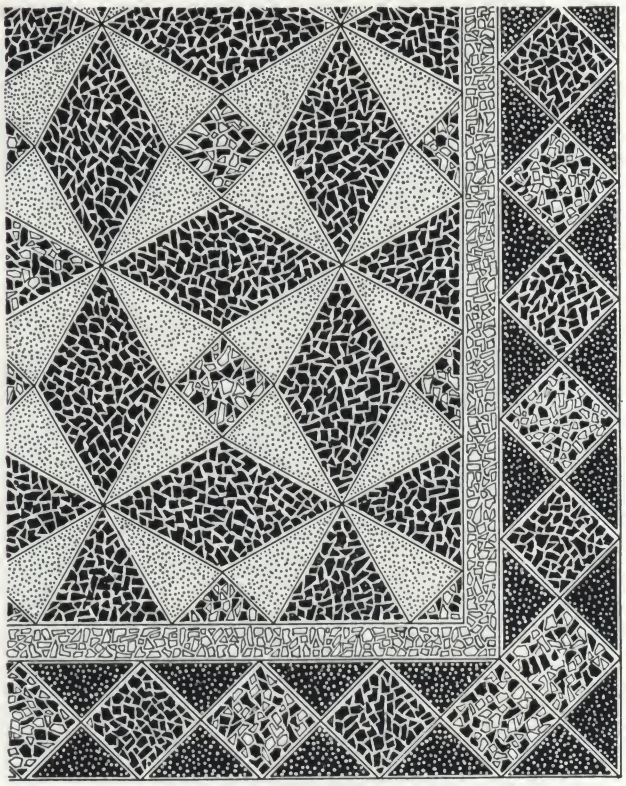
DESIGN No. 7
Field Units U-4 & Standard Strips. Border Units U-7, U-17



DESIGN No. 8
Field Units U-4, U-8, U-21. Border Unit U-24



DESIGN No. 9
Field Unit U-2. Border Unit U-15



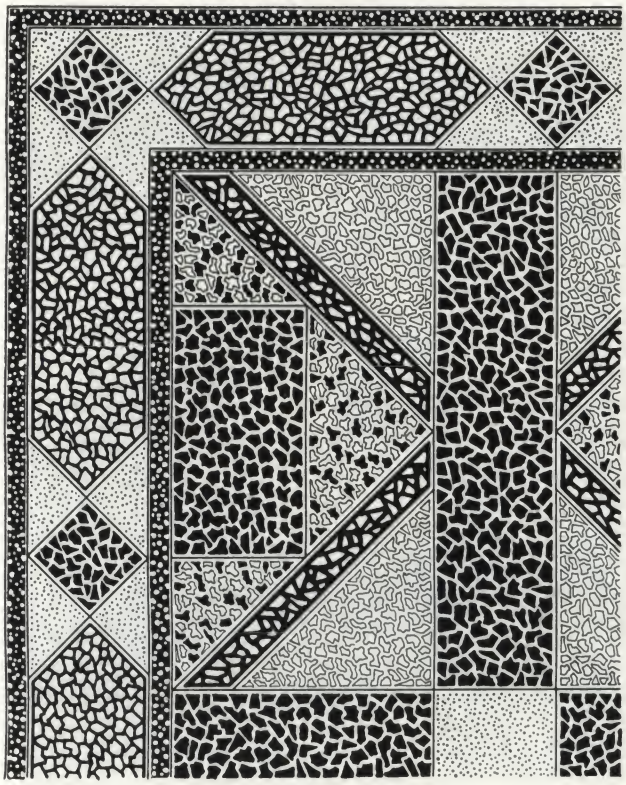
DESIGN No. 10
Field Unit U-12. Border Units U-4 or U-15

MANHATTAN TERRAZZO BRASS STRIP CO., INC.

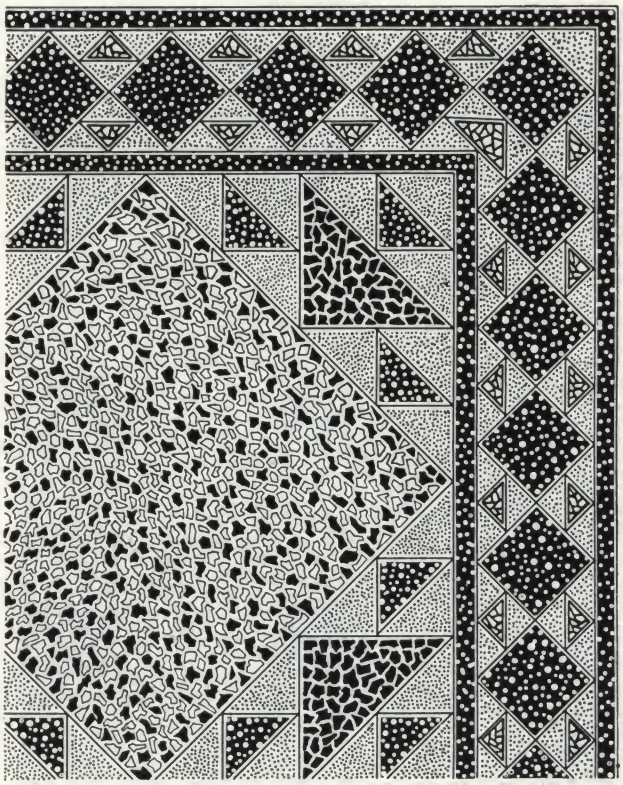
DECORATIVE FLOOR SUGGESTIONS BY MANHATTAN

PLATE 4

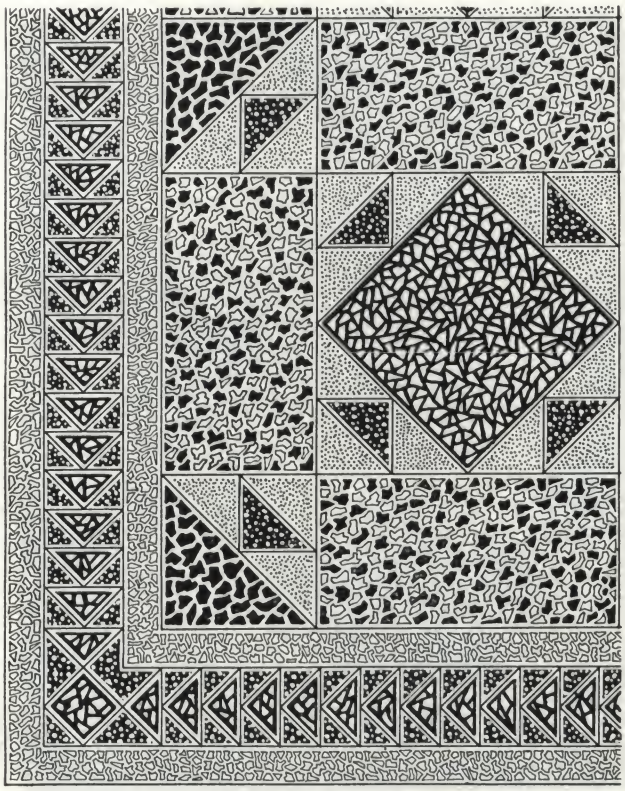
Continued on next page



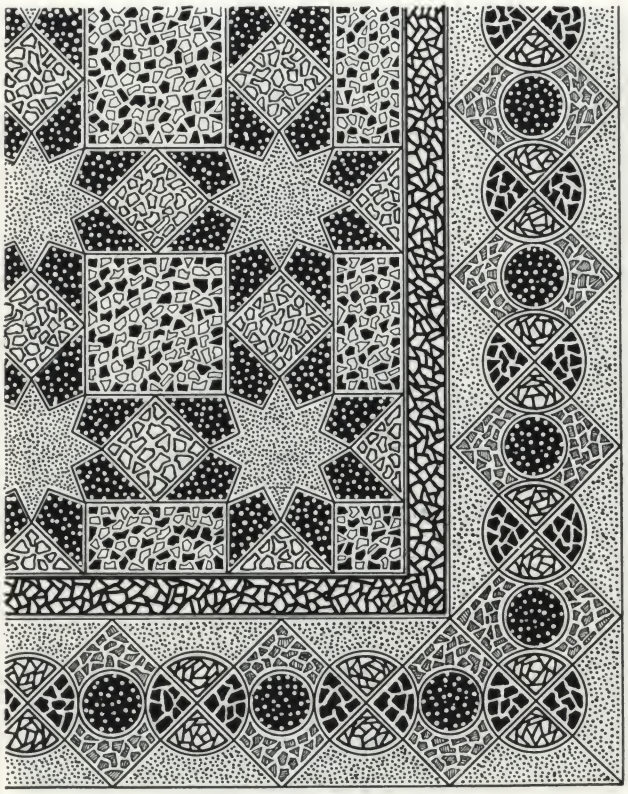
DESIGN No. 11
Field Units U-4 & Standard Strips. Border Unit U-21



DESIGN No. 12
Field Units U-4, U-11, Various Sizes. Border Units U-11, U-15



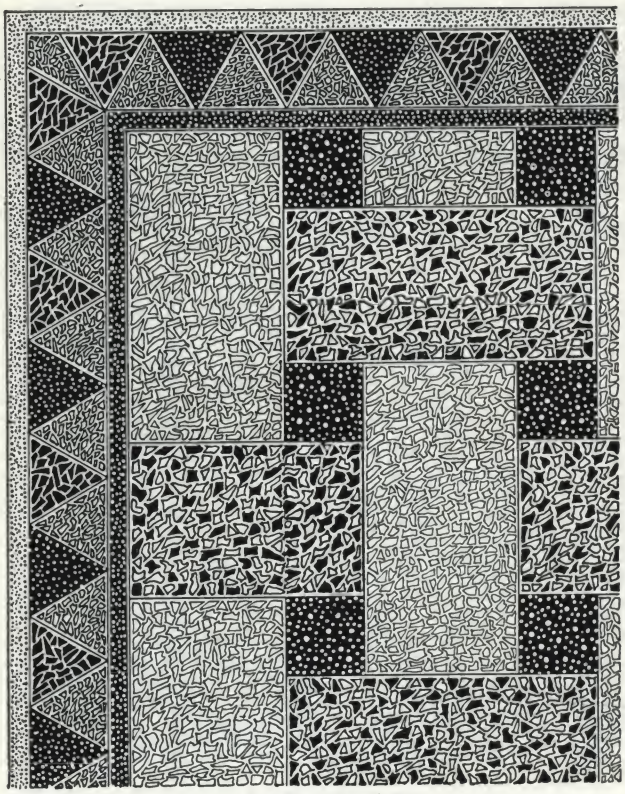
DESIGN No. 13
Field Units U-4, U-11. Border Unit U-11



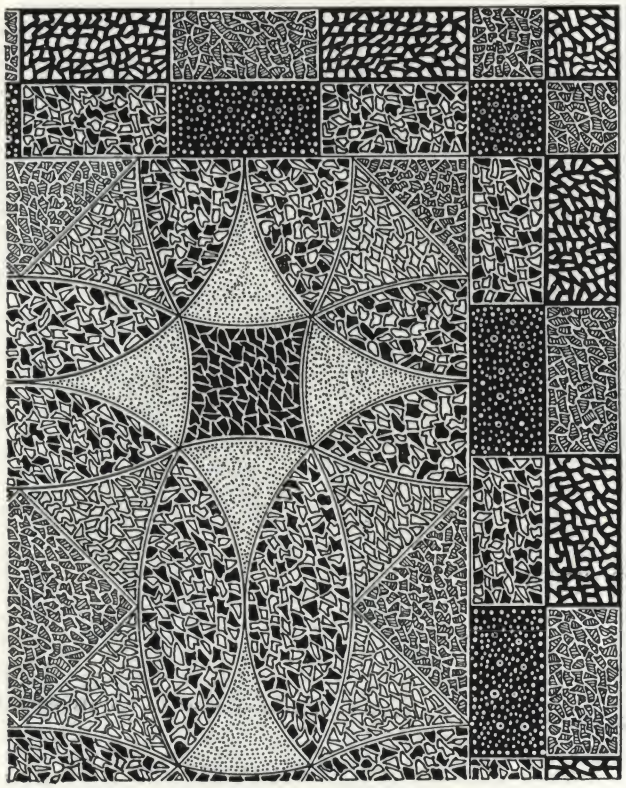
DESIGN No. 14
Field Units U-4, U-18A. Border Units U-4, U-6, U-8

MANHATTAN TERRAZZO BRASS STRIP CO., INC.	DECORATIVE FLOOR SUGGESTIONS BY MANHATTAN	PLATE 5

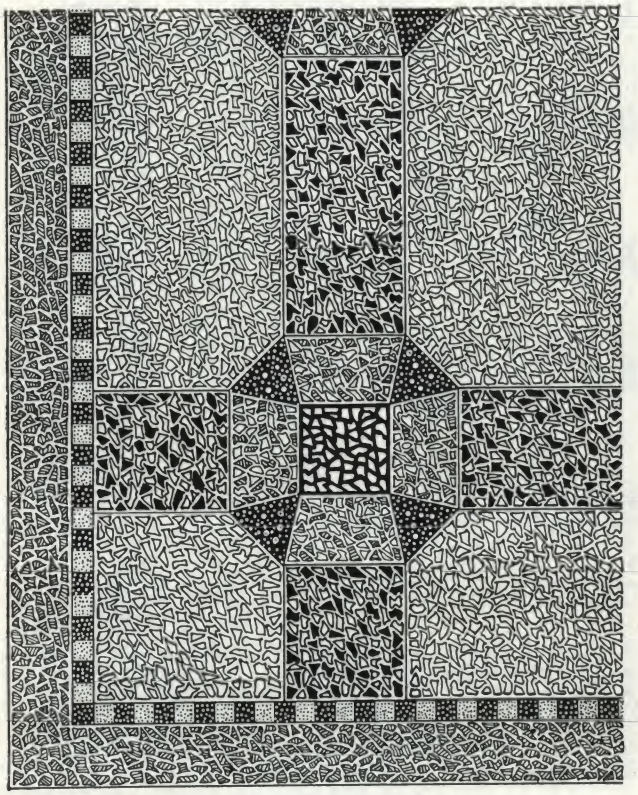
Continued on next page



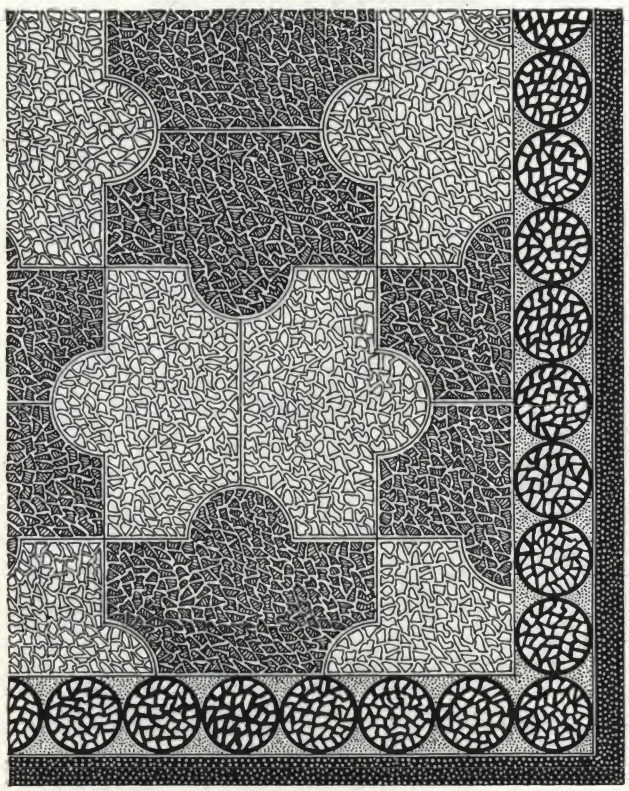
DESIGN No. 15
Field Unit Standard Strips. Border Unit U-1



DESIGN No. 16
Field Units U-4, U-25, U-26. Border Unit Standard Strips.



DESIGN No. 17
Field Units U-4, U-5, U-10. Border Unit Mosaic Cubes.



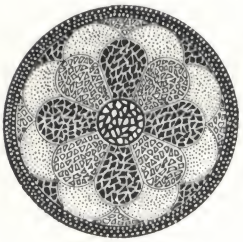
DESIGN No. 18
Field Units U-7, U-21. Border Unit U-8

MANHATTAN TERRAZZO BRASS STRIP CO., INC.	DECORATIVE FLOOR SUGGESTIONS BY MANHATTAN	PLATE 6

Continued on next page

SUGGESTIONS FOR CENTER PIECES

C-1



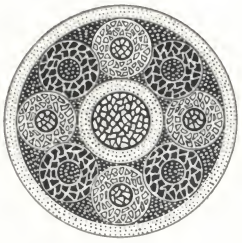
C-2

C-3

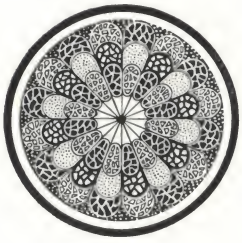
C-4

C-5

C-6



C-7



C-8

Script Letters

ABCDEF

GHIJKL

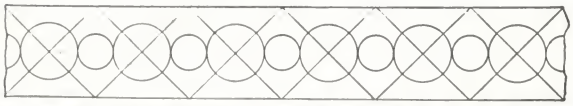
MNOPRU

1234567890 &

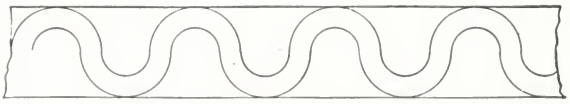
Script or block letters made up in all sizes.

E-1 CONSTRUCTED WITH UNIT-1

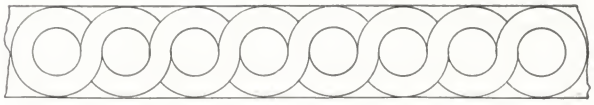
E-2 CONSTRUCTED WITH UNITS 6 & 8 OR UNIT-26



E-3 CONSTRUCTED WITH UNITS-4-6 & 8



E-4 CONSTRUCTED WITH UNIT-7



E-5 CONSTRUCTED WITH UNITS-6 & 8

MANHATTAN TERRAZZO BRASS STRIP CO., INC.	DECORATIVE FLOOR SUGGESTIONS BY MANHATTAN	PLATE 7

Continued on next page

MANHATTAN TERRAZZO BRASS STRIP CO. INC.
NEW YORK

NATIONAL HELIOPORE FLOOR CORPORATION

Manufacturers and Designers of Resilient and Permanent Floors

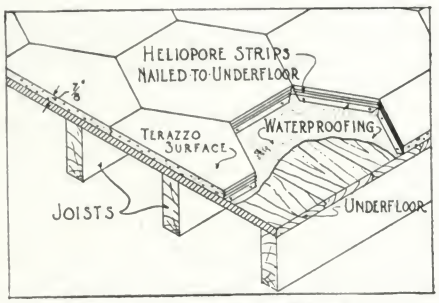
EXECUTIVE OFFICE AND SHOWROOMS
53 State Street, BOSTON, MASS.

Heliopore Floors

HELIOPORE FLOORS
TRADE MARK

Heliopore Floors are *non-cracking,* hard surfaced, yet flexible and resilient. They are made of concrete or with a terrazzo finish and are, therefore, sanitary, fire-resisting, waterproof, decorative, and permanent. Six years of use in Colorado and Michigan and three years in Maine have proved that a terrazzo or concrete floor ⅞ in. in thickness—not reinforced—can be laid directly over a wooden floor without cracking by the use of our patented strips and process of installation. They are used not only in new buildings, but can be laid equally as well over old wood floors, only ⅞ in. in thickness being added, to the old floor and removing for all time the consideration of upkeep. The *resiliency* of a wood floor is transmitted to the surface of a hard surface floor through the flexibility of Heliopore Floors. Each section, as illustrated, acts as a separate tile "hinged" to the adjoining tile by a patented Heliopore strip.

Success in producing a *resilient,* inexpensive, hard-surface and *non-cracking* floor over wood has led to the production of the same results over a concrete floor. This is done by laying a resilient subfloor of wood or other material, over the concrete slab, and then by laying the flexible Heliopore Floor on this subfloor. The resiliency of the subfloor is apparent and, as over the all-wood construction this resiliency is transmitted to the surface by Heliopore Floors. Furthermore, this substructure acts as a soundproofing in a solidly built concrete and steel building.



Construction Over Wood
⅞ in. thick, non-cracking and resilient

Application

Useful in homes, office buildings, hospitals, school houses, restaurants, stores, corridors, halls, solariums, showrooms, bathrooms, etc.

Weight

Approximately 11 lbs. per sq. ft. plus weight of subfloor.

Specifications

The following rooms—and where so indicated on plans and required under specifications—Heliopore Floors shall be furnished and installed by the NATIONAL HELIOPORE FLOOR CORPORATION, Boston, Mass., or its subsidiary, and installation must be made strictly according to the corporation's installation specifications and under their supervision.

Wood Subfloor—The wood subfloor over which Heliopore Floors are to be laid must be ⅞ in. below the finished floor grade. All areas to be covered must be of sufficient strength to withstand the added weight of the Heliopore Floor—approximately 11 lbs. per sq. ft.

Installation Over Wood—The wood subfloor shall be covered with 2-ply standard waterproof paper. Heliopore strips shall be nailed to the subfloor in accordance with an approved design.

The terrazzo floor shall then be poured ground, and finished by the standard method, and in color designated.

Concrete Subfloor—All concrete subfloors to receive Heliopore Floors must be finished true and even and free from high and low spots a sufficient depth below required finished floor grade to allow for the installation of the subfloor and ⅞ in. of Heliopore Floor.

Installation Over Concrete—The concrete subfloor shall be mopped with asphalt of standard composition. On the asphalt shall be constructed the subfloor. (For further description of subfloors write the Engineering Department of NATIONAL HELIOPORE FLOOR CORPORATION.) The forms shall now be attached to the subfloor and the floors finished as in the installation over wood.

Installation

Strictly according to specifications and under our supervision.

Estimates

In writing for estimates give: type of subfloor (wood or concrete), total area, desired finish (design and color—marble chips, granitine or graveltine, etc.)

Service

Designs and color schemes will be submitted for your particular floor upon request. Further information relative to installation, layouts, references, etc., will also be submitted.

Uses in Maine and Massachusetts

Home of Vinal Smart, Broadway and Hammond, Bangor.
Sunroom of Robert Moore of Boston, Mass., at Juniper Point, over wood
Memorial Hospital, Damariscotta—Operating and sterilizing rooms, halls and private office
Universalist Church, Rockland—2500 ft. over old wood construction
University of Maine, Orono—Woman's dormitory, 4 large lavatories, 2 private baths, large sunroom, front and rear entrances, and all stair wells—over concrete; Crowell & Lancaster, Architects
Daniels' Jewelry Store, Main Street, Rockland
McKown's Market and Grocery, including show windows, Boothbay
Lloyd's Optical Shop, 5 Brattle Street, Cambridge, Mass., on old wood floor
Emerald Toe Hosiery Co., Tremont Street, Boston, Mass., over wood.

Other references upon request.

ADAMS PRODUCTS, INC.

MAINTENANCE ENGINEERS

Specialized Floor Treatments, International Service, Electric Equipment-Materials

ST. PAUL, MINN.

MEMBERS NATIONAL TERRAZZO & MOSAIC ASSN.

TERRAZZINE TREATMENT FOR TERRAZZO

Its Purpose

To seal the moisture into the floor—effecting a slow and substantial curing.

To protect from stains during period of construction.

To permanently seal terrazzo against the penetration of dirty and disintegrating scrubbing solutions.

To permanently stop powdering and discoloring.

To greatly eliminate pitting.

To bring out the true, rich colors of the marble chips.

To effect a permanent sheen that does not track.

Is not slippery.

Does not darken terrazzo.

Contains no alkali or mineral oils.

Terrazzine and Its Action on Terrazzo

Terrazzine is composed of carnauba (a product of Brazil, S. A.) as its base and certain oxydizing oils and dryers.

The carnauba is used as the base because of its transparent nature, its ability to fill, seal and preserve and to remain unaffected under strong cleaning solutions bearing caustic, alkali and sodas, all of which are used in soaps and which penetrate and weaken cement structure, especially affecting the bond between the cement fill and chips.

Terrazzine not being soluble in water, affords a protecting film during the period of building and which eliminates many common stains, especially tobacco, which is quite impossible to remove after having once penetrated and dried.

Terrazzine cannot be scrubbed out of terrazzo. The surface film is required during the building period only; just prior to occupancy it is removed. The real treatment has penetrated into the floor. Such dust as might occur through granular cuttings is absorbed into the pores filled with Terrazzine. A smooth non-porous surface is effected.

Terrazzine is not a surface treatment, it is penetrated into the floor, therefore it is not slippery.

Terrazzine reduces maintenance costs. The dirt cannot penetrate the immediate surface, therefore, less material and less effort is required to clean, reducing maintenance costs and insuring permanent beauty.

Kindly advise the manufacturer when Terrazzine is specified. We operate in all parts of the United States.

Specifications: Terrazzine for Terrazzo

Paragraph No. 1—"Within one hour after final or polish grinding (immediately after drying of surface water), all Terrazzo surfaces are to receive a heavy coating of Terrazzine—Formula C1LO, manufactured by (X—and to be applied by—) the ADAMS PRODUCTS, INC., St. Paul, Minn. Application is to be made with a spreading mop, working base material well into the minute pores of the cement fill and chips with a heavy coating overall, and left to penetrate and surface dry for at least one-half hour, whereupon it shall serve as a protecting coat against granular wear, tobacco, water and plaster stains, paint, cement, plaster and other common bondings."

Remarks: Upon completion of building (just prior to occupancy), all treated areas are to be given a thorough scrubbing and resurfacing, removing all dirts and bonded surface matters. All finished surfaces shall be sealed permanently against powdering, shall not be slippery, shall bear the true rich colors of the natural base, shall be sealed permanently against the penetration of dirts and shall be of a smooth, evenly glazed non-tracking finish and shall not be darker in color.

Notes: *If specified (X—ADAMS PRODUCTS, INC.—), ample material and perfect workmanship are assured. With each contract we offer our Free Maintenance Engineering Service, providing instructions and systematic setup covering maintenance on all floors treated, insuring proper care, continued beauty and low maintenance costs.*

Costs

Paragraph No. 1—

CONTRACT ESTIMATE

	to 5,000	sq. ft.	2¼¢ per sq. ft.
5,000	to 20,000	sq. ft.	1¾¢ per sq. ft.
20,000	to 60,000	sq. ft.	1¼¢ per sq. ft.
60,000	to 100,000	sq. ft.	1⅛¢ per sq. ft.
100,000	to 1,000,000	sq. ft.	1¢ per sq. ft.
1,000,000	up		⅞¢ per sq. ft.

Material Costs—Coverage: 600 sq. ft. per gal. In 5-gal. drums, $2.65 per gal.

Note: When transportation exceeds 10% of gross contract this will be charged extra.

THE AMBASTONE COMPANY

Quarriers of Flagging, Steps, Copings, Curbing

1700 SANSOM STREET, PHILADELPHIA

New York Offices, 101 Park Avenue

Products

AMBASTONE FLAGGING.
AMBASTONE STEPS, COPINGS, CURBING.
AMBATILE TILING, WAINSCOTING, BASE, ETC.
AMARENE FLAGGING.
AMARENE STEPS, COPINGS, CURBING.

Description

Ambastone is a natural quarried stone furnished in a range of colors including delightful shades of rusts, browns, buffs, greys, purples, blues and amber.

While remarkably straight *Ambastone* has a surface just rough enough to be highly attractive, at the same time rendering the material slip-proof whether wet or dry. This feature makes it a most desirable material for the curbing of swimming pools, walks, steps and for many other uses.

While intensely hard to abrasion, *Ambastone* is of a texture that permits it to be broken along a desired line with the aid of a pitching tool or cold chisel. This quality makes it most economical and practical to handle.

Natural Cleft Ambastone as produced from our own quarries

Ambatile is *Ambastone* milled by sawing and rubbing, used extensively for interior or exterior work, sometimes in conjunction with natural cleft *Ambastone*.

Amarene a natural quarried stone in light shades including tans, buffs, yellows, pinks, rusts, lavenders, and ambers. The natural cleavage is unusually smooth, making it adaptable for both interior and exterior work. It is intensely hard and resists wear indefinitely. *Amarene* is furnished in thicknesses from 1″ to 12″ for flag and building stone.

Specifications.—All flagstone as shown, or otherwise indicated, on plans for interior floors, terraces, walks, treads, copings, etc., shall be of *Ambastone* (*Ambatile* or *Amarene*) as produced and furnished by the *Ambastone* Company.

Walks, Terraces and Flooring.—For outside work laid in cement shall not be less than 1″ in thickness, laid over a 4 rough concrete base in 1″ to 1½″ grouting of cement and sand. The joints to be ½″ or ¾″ in width and to be pointed with flush or raked joints.

When laid in top soil with grass or flower joints to be 1¼″ to 2″ in thickness, according to the type of soil and drainage conditions. The joints to vary from 1″ to 2″ for grass joints and from 1″ to 4″ for flower joints.

For interior flooring, etc., to be of an average thickness of ¾ to 1″ and to be laid in Random Rectangular (or Irregular, Semi-Irregular, Semi-Random Rectangular or European) pattern as shown, size of which shall be determined by the Architect.

When laid in cement shall have all cement stains sponged off carefully before they have had time to dry and thereby avoid the necessity of acid cleaning, which is difficult and sometimes not effective after cement has had time to harden.

Treads, Copings, etc. — All Treads and Copings shall be cut to definite widths and random lengths, with exposed edges rock faced (or natural split, quarry cut, sawed, axed) with full corners. Material to be in thickness as specified.

Risers to be of thin layers or laid on edge.

Caps to be cut as shown, edges cut as specified.

Sills to be of widths shown by random lengths in thicknesses as specified, edges cut as specified.

Wainscoting and Wall Facing.—Is furnished in thicknesses from ¾″ to 4″ and with rubbed or natural cleft surface, with sawed or broken edges and in either random ashlar or to given size.

Architect's Service.—We will be pleased to cooperate with Architects, Owners, Builders and Landscape Architects and are prepared to assist in the design of this work and will gladly furnish any information desired.

We will be pleased to send circular of information upon request.

Continued on Next Page

Showing Ambastone used as Caps, Copings, Sills, Steps and Flagging

THE MAXIMENT COMPANY

SUCCESSORS TO THE BALDWIN-TARVIN COMPANY

Manufacturers of Maximent (Laboratory Concrete) Flooring Material, Terrazzo Stucco, Stucco Base Coat, Brick Mortar and Concrete Hardeners

615 Carr Street
CINCINNATI, OHIO

Products

MAXIMENT FLOOR FINISH; TERRAZZO STUCCO BASE COAT; STUCCO; BRICK MORTAR; CONCRETE ACCELERATOR; CONCRETE HARDENER; INTEGRAL WATERPROOFING; METALLIC WATERPROOFING.

Also The Toch Brothers (R.I.W.) Line and Asphaltic Coatings.

Application of Floors

We apply Maximent Floors east of the Mississippi River, where the area will amount to 50,000 sq. ft. or more. Lesser areas, closer to Cincinnati.

Maximent

Maximent is Laboratory Concrete made commercially. Comes in 100-lb. sacks, sufficient for 10 sq. ft. of floor topping, 1 in. thick. Contains all the material necessary, so that nothing but the correct amount of water is added on the job. Label on each sack shows pints of water to be used.

Colored Maximent—Furnished in red, brown, buff, black, green or blue. Mineral pigment incorporated in cement. Applied same as ordinary Maximent.

Maximent Wax—To produce luster on colored floors. Made of same pigment as used in colored Maximent.

Ground Maximent—Special mix, so that finished surface may be ground with an electric floor surfacing machine. For beauty or for extra severe wearing properties.

Advantages of Maximent

Maximent may be considered as just the hard spots found in cement floors. The proportioning is done by weight of cement to thoroughly dried aggregate. The aggregate is artificially graded by density curve so as to require the minimum water-cement ratio and at the same time obtain a nicely plastic mix. It is uniform and uniformly hard.

Tests Show Compressive Strength of Maximent

Tests made by independent laboratories show Maximent to have a compressive strength of from 2 to 3 times that of ordinary concrete. Maximent is furnished in predetermined strengths of 6700 lb. and 8500 lb., 28-day compressive strength—A.S.T.M. method of test.

Specifications for Maximent Floor Finish

Floor finish shall be of Maximent as manufactured by THE MAXIMENT COMPANY, 615 Carr Street, Cincinnati, Ohio, and applied in strict accordance with manufacturer's specification, as follows:

Structural Floors marked for "finish" shall be brought to ¾ in. below finished floor line. As soon as the concrete has obtained its final set and the water has left the surface, the Maximent top surface shall be applied. Maximent shall be mixed with the exact quantity of water as stated on the label on the sack and nothing else added. As soon after mixing as possible Maximent shall be spread a little above the finished floor line and levelled off with a long straightedge.

The surface shall then be troweled or floated with a wooden float so as to remove all high points and cause the surface to become dense, after which it shall be given a final troweling with a steel trowel. As soon as the top surface has obtained its final set and is sufficiently hard so as not to be harmed thereby, 1 in. of wet sand shall be spread over the entire surface and kept moist for 7 days—or for 21 days.

Colored Maximent Floors—After the floors have been completely finished and prior to turning the building over to the owner, the colored Maximent floors shall be given a final wax treatment. After the floor has been thoroughly cleaned, pigmented wax of the same color as the floor on which it is to be applied shall first be spread on the floor with a stiff scrubbing brush so that 1 gal. of wax shall cover 1000 sq. ft. of surface. Not less than 15 minutes after, the floor shall be polished to a dull luster with soft rags, felt polisher or power floor polishing machine.

Ground Maximent Floors—Floor finish shall be of Maximent as manufactured by THE MAXIMENT COMPANY, 615 Carr Street, Cincinnati, Ohio, and applied and ground in strict accordance with manufacturer's specification, as follows:

Structural Floors marked for "finish" shall be brought to ¾ in. below finished floor line. As soon as the concrete has obtained its final set and the water has left the surface, the Maximent top surface shall be applied. Maximent shall be mixed with the exact quantity of water as stated on the label on the sack and nothing else added. As soon after mixing as possible Maximent shall be spread a little above the finished floor line and leveled off with a long straight edge.

The surface shall then be troweled or floated with a wooden float so as to remove all high points and cause the surface to become dense, after which it shall be given a final rolling with a steel roller and then cured as for ordinary Maximent. The first grinding should be given just as soon as the surfacing machine will function properly without disturbing any of the aggregate or causing the surface to appear rough or gritty (about 3 or 4 days). After all work is completed in the building, the floors shall be cleaned and given a light finish grinding if necessary, to remove plaster stains or other marks.

Description of Other Products

Maxtone Stucco Base Coat—Is manufactured on the same general principle as Maximent so as to obtain extreme uniformity, thus preventing uneven absorption of water from the finished colored coat and preventing uneven or blotchy appearance. Shipped in 100-lb. sacks containing 10/12 cu. ft.

Maxtone Stucco Finish—Is made in accordance with the best recommended specification for standard cement stucco. Shipped in 100-lb. sacks, sanded, containing 10/12 cu. ft.

B-T Brick Mortar—Ready mixed to give maximum strength and waterproofness to mortar joints, at the same time having a minimum of shrinkage. All that is necessary is to add water and mix. Shipped in 100-lb. sacks containing 10/12 cu. ft.

B-T Concrete Accelerator—Gives 28-day strength in 2 to 3 days and is also used as prevention from freezing. Quantity to be used ranges from 2 to 8 pt. per sack of cement, depending on temperature. Shipped in 30-gal. steel drums.

B-T Concrete Integral Waterproofing—Is the equal of any on the market. Use 2 pt. per sack of cement. Comes in 30-gal. steel drums.

B-T Concrete Surface Hardener—Is an after treatment for concrete or terrazzo floors. The effect is similar to case hardening, in that it causes an extremely hard wearing surface which is non-absorbent and eliminates dusting of the floors. One pound sufficient for 50 sq. ft., applied in 2 coats. Dissolve in water in sprinkling can. Shipped in 50-lb. cartons.

B-T Metallic Waterproofing—Used as a brush or plaster coat on inside of cement walls to prevent seepage of water. Comes in 100-lb. sacks, enough for about 400 sq. ft.

VERMONT STRUCTURAL SLATE CO.

Quarriers and Finishers of Vermont Colored Slate

TELEPHONE
FAIR HAVEN 28

FAIR HAVEN, VT.

SALES REPRESENTATIVES

BALTIMORE, MD., Jos. B. DUNN & SONS, 853 No. Howard Street
BIRMINGHAM, ALA., DODGE, DANIELS & SHOOK, INC., 3023 Sixth Avenue, So.
BOSTON, MASS., E. A. BULLARD, 746 Tremont Building
BUFFALO, N. Y., GEORGE H. DREYBUS, 333 Jackson Building
CHICAGO, ILL., SLATE & FLAGSTONE CO., 1825 Central Street, Evanston, Ill.
CINCINNATI, OHIO, OHIO VALLEY SLATE CO., 119 Sycamore Street
CLEVELAND, OHIO, CUYAHOGA ROOFING CO., 315 Union Building
DALLAS, TEX., VERMONT MARBLE CO., 1513 Wall Street
DETROIT, MICH., PENINSULAR SLATE CO., 12741 Birwood Avenue
HARTFORD, CONN., WINDSOR CEMENT CO., 16 Van Dyke Avenue
LOS ANGELES, CALIF., MUSTO-KEENAN COMPANY, 1801 So. Soto Street
LYNCHBURG, VA., N. B. HANDY COMPANY
MINNEAPOLIS, MINN, GEORGE T. WARNER, 1406 Washington Avenue, So.
NEW ORLEANS, LA., ARCHITECTURAL CAST STONE CO., 8122 Colapissa Street
NEW YORK, N. Y., KANE & LUNDY, INC., 103 Park Avenue
PHILADELPHIA, PA., WILLIAM MOORE CO., 1706 Fairmont Avenue
PITTSBURGH, PA., SMITH SLATE PRODUCTS CO., 1002 Union Bank Building
SEATTLE, WASH., E. C. HANSELPACKER & CO., 721 Virginia Street
ST. LOUIS, MO., J. W. JONES, 432 Pennant Building
SYRACUSE, N. Y., HOLMES BROTHERS, INC., 427 E. Jefferson Street
TAMPA, FLA., STEWART-MELLON MARBLE & TILE CO., 310 So. Morgan Street
TORONTO, ONT., DAVIS SLATE & MANUFACTURING CO., LTD., 131 Shaftesbury Avenue
WASHINGTON, D. C., STANDARD ART, MARBLE & TILE CO., 118 E Street, N. W.

WAREHOUSES IN PRINCIPAL CITIES

Products

STRUCTURAL: Base, Border, Cap, Closet Slabs, Cove Base, Fireplace Facings, Fireplace Hearths, Fireplace Mantels, Flooring, Lintels, Louvres, Pedestals, Platforms, Plinths, Quoins, Radiator Tops, Saddles, Shower Stalls, Sills, String, Treads, Troughs, Urinals, Wainscot.

ROOFING: Commercial, Flat, Graduated, Textural.

Exterior Uses: Bird Baths, Coping, Exterior Trim and Ornaments, Exterior Wall Facing, Foundation Walls, Fountains, Garden Benches, Headstones, Ledger Slabs, Markers, Porches, Stepping Stones, Swimming Pools, Terraces.

Electrical: Busbar Insulators, Fuse Blocks, Gauge-boards, Panelboards, Switchbases, Switchboards.

Special Products: Chemical Agitators, Chemical Vats, Counter Tops, Flower Boxes, Laboratory Sinks, Laboratory Table Tops, Laundry Trays, Sinks, Tanks.

Organization of the Company

The VERMONT STRUCTURAL SLATE COMPANY comprises three of the largest concerns quarrying and milling slate in Vermont: Fair Haven Marble & Marbleized Slate Company, Mahar Brothers Slate Company and W. H. Pelkey Slate Company.

Mills and Quarries

We have under our direct supervision five of the largest and best equipped mills as well as twelve quarries producing all the colors found in the Vermont Slate District. Inquiries, orders and, in fact, all details are handled by men who have had years of experience in the slate industry and are thoroughly conversant with the quarrying and manufacturing of slate products. No project is too large for us to render efficient service, no order so small but that it receives proper supervision.

Service

We are prepared to produce intricate jobs in slate, and on request furnish roofing, flooring and terrace layouts for approval without charge, either direct or through one of our branch offices.

Interior Floors

Vermont Colored Slate is extensively used for interior floors. The large range of colors and variety of finishes combined with durability and low maintenance cost is responsible for the increased popularity of slate for floors. Floors, though similar in design and finish, may be secured in a distinctive color blend, thus obtaining when desired, a color effect harmonizing with the interior decorations of any building.

Exterior Floors, Paving, etc.

Slate stone possesses natural characteristics making it very desirable for landscape installations. The colors are bright and permanent. The strength of slate is well known among architects and builders. Inch thickness is sufficient for paving and in fact for any installation unless subjected to extremely heavy duty. Well embedded in loam or concrete it will not crack under ordinary uses or from the effect of frosts.

Roofing Slate

The period of usefulness of a roof depends on its resistance to the elements, and its protection to the interior of a building, its contents and the occupants. Slate, the natural stone covering for roofs, performs this service under any and all conditions, requiring practically no maintenance and enduring through the ages.

We are prepared to ship promptly all types of slate roofs, furnishing the same expert service as rendered on structural and floor slate.

References

Flooring—Cadet Mess Hall, West Point, N. Y. The largest dining room floor in the United States. Arnold Brunner Associate, Architects.

Structural—State Office Building, Albany, N. Y. Treads and platforms. Wm. E. Hauguaard, Architect.

Exterior—Swimming pool for R. P. Stevens, Greenwich, Conn. Julius Gregory, Architect.

Roofing—Residence of Louis Wilputte, New Rochelle, N. Y. Granduated roof. Julius Gregory, Architect.

Continued on next page

VERMONT STRUCTURAL SLATE COMPANY'S COLOR SERIES

PLATE A

Reproduced by Direct Color Photography

Vermont "Irregular" Design
Full Color Range

Colors—Unfading green, unfading purple, unfading mottled green and purple, weathering green, gray, Vermont black and red.

Color scheme may be varied according to selection and arrangement of colors.

Edges of Slate—May be supplied natural quarry cut, sawed or trimmed.

Finish of Slate—May be supplied natural quarry cleft, sand rubbed or semi-sand rubbed.

Continued on next page

VERMONT STRUCTURAL SLATE COMPANY'S COLOR SERIES

PLATE B

Reproduced by Direct Color Photography

Vermont Random Rectangular or "Randash" Pattern

Full Color Range

Colors—Unfading green, unfading purple, unfading mottled green and purple, gray, weathering green, Vermont black and red.

Color scheme is a matter of choice and arrangement of colors. Architects may secure the effect desired by varying the percentage of colors selected or by the omission of certain colors.

Edges of Slate—Sawed or sand rubbed edges recommended.

Finish of Faces—May be supplied natural quarry cleft, planed, sand rubbed or semi-sand rubbed.

Note: A Semi-Randash" design may be secured as a variation of the "Randash" by using a percentage of angles other than right angles.

Continued on next page

Fitted Slate Floor of Large Units with Natural Cleft Surface in Hall of a Residence

Table of Colors

As a guide to the architect in selecting and specifying colors for slate the following designations and descriptions are given. By referring to the color plates which have been made by direct color photography from the actual stones the architect can make his own selection of colors.

Black—Vermont black slate is not a true jet black but rather a dark bluish gray black. After exposure to the weather it fades to a dark brown.

Gray—A plain dark color which forms pleasing contrasts with the brighter shades.

Purple—A strong color which adds life and interest to any floor.

Unfading Green—Ranges from a grayish green to a light strong green.

Light Mottled Green and Purple—A light green slate mottled with purple. In some pieces the purple appears as streaks or veins and in others it is in spots or blotches.

Dark Mottled Green and Purple—A purple slate mottled with green which appears in veins or blotches.

Weathering Green—A greenish slate which can be secured in about four different shades of grayish green. When exposed to the weather these slates fade to different shades of yellow to brown.

Red—Varies from a dark purplish red to brick and cherry red.

Buffs and Browns—Are obtained by using weathering green or Vermont black, respectively, and allowing them to fade.

ACME ASBESTOS COVERING & FLOORING CO.

INCORPORATED 1907

Manufacturers of and Contractors for Magnesia Flooring

TELEPHONE
MONROE 2342, 2343

250 North Elizabeth Street
CHICAGO, ILL.

What Acmetyle Is

Acmetyle is a "lifetime of the building" flooring material. It has a successful record covering sixteen years which justifies the use of Acmetyle where long service, a fine appearance (due to permanent color combinations), protection against fire or water, sanitation, easy maintenance and *low cost* are the primary factors in selection.

Composition

Acmetyle is a composition of scientifically calcined magnesium oxide, magnesium chloride and other finely graded minerals. Used as a plastic, it meets every requirement of a practical flooring for modern buildings.

Where Used

Acmetyle is recommended, especially for public buildings, institutions, hotels, theaters, banks, stores, offices, hospitals, churches, schools and residences. For reconstruction work it is laid directly over old floors without the expense of their removal.

Low Cost

Acmetyle usually costs less than other floorings of similar nature. Its first cost is the last.

Fine Appearance

A prime necessity in modern building is a floor which accents and harmonizes with the decorative features. Acmetyle is furnished in ten warm, unfading colors, two or more of which may be combined to suit any architectural plan.

Fireproof

We emphasize strongly that Acmetyle is fireproof and that it prevents the spread of fire.

Durability

Acmetyle Floors are practically indestructible. They retain their superior attractiveness under conditions which are commonly termed "the hardest kind of abuse and wear." The architect and builder can have implicit confidence in the durability of Acmetyle.

Other Features

Thoroughly sanitary, proof against oil, dirt, germs and vermin. Waterproof because it seals corners and joints. Comfortable to the foot, easily kept clean, and very light in weight.

Guarantee

Acmetyle is fully guaranteed. Any floor we install that proves defective on account of faulty material or workmanship, we will repair at our own expense.

Service and Samples

We maintain a Service Department for the use and convenience of the architect. Color Index and the Record Book of Acmetyle are available upon request.

Some Installations

Midwest Athletic Club, Chicago, Ill., Michaelson & Rognstad, Architects

Lincoln and Hammerschmidt Schools, Lombard, Ill., E. Norman Brydges, Architect, Chicago, Ill.

Osage County Courthouse, Linn, Mo., H. H. Hohenschild, Architect, St. Louis, Mo.

Berwyn Hotel Annex, Berwyn, Ill., William Sevic, Architect, Chicago, Ill.

St. John Hospital, Joplin, Mo., Brinkman & Hagan, Architects, Emporia, Kan.

Specification and Subfloor Data for Acmetyle Magnesia Floors

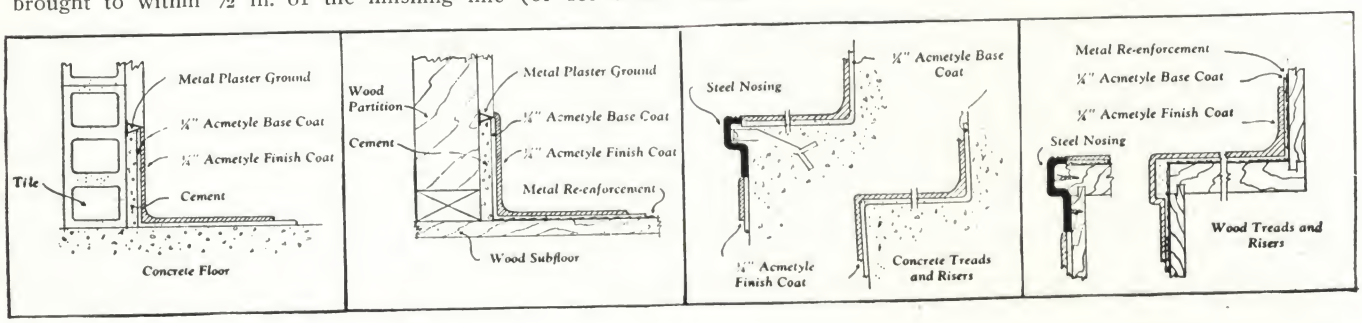
Acmetyle Magnesia Floors (and cove base) shall be furnished and installed by the ACME ASBESTOS COVERING & FLOORING CO., 250 North Elizabeth Street, Chicago, Ill., or its authorized agents, in two ¼-in. layers (or specified thickness) in such colors and patterns to be selected by the architect. All work shall be rubbed with steel wool and given one coat of liquid wax on completion.

Preparation for Acmetyle—The building shall be enclosed; plastering shall be completed; trim shall be set and stained. The temperature of rooms shall be at least 65° F. while the Acmetyle is being laid. It is important that the laying of Acmetyle be postponed as late as possible, as it is a finished material and must be protected if other trades are to work over it.

Concrete Subfloors—All subfloors shall be structurally sound, hard, clean, free from debris and bone dry. Specifications for concrete floors prepared by the Portland Cement Association are recommended. Concrete in steel stairways shall be at least 2 in. thick and reinforced. Slabs shall be brought to within ½ in. of the finishing line (or for other depths of flooring as provided by specifications) and be given a screed or float finish. Pitch desired in finished floor shall be provided in the slab. Cinder, lime or wet concrete is not acceptable as a foundation for Acmetyle.

Wood Subfloors—Six-inch sheathing, not less than ⅞ in. thick, laid rough side up, fairly close together is preferable; must be well-seasoned, securely nailed and supported so that floor is firm and not springy. No. 18 gauge metal reinforcer shall be furnished by the flooring contractor and nailed securely to the wood with roofing nailed on 6-in. centers.

Backing for Wainscot and Cove Base—Acmetyle can be laid directly on brick, terra cotta, concrete and stone, all of which should be brought to within ⅜ in. of the finishing line; to bring same to the proper level use a 1:2 mix portland cement and sand not thinner than ¾ in. Acmetyle will not adhere to lime plaster or gypsum tile. Wood sheathing ⅞ in. or thicker may be used as above, securely nailed. Where Acmetyle base or wainscot is installed flush with plaster a wood or metal ground strip shall be installed by others to separate them.



HACHMEISTER-LIND COMPANY

Flooring Specialists

FACTORIES

PITTSBURGH, PA. NORTH BERGEN, N. J.

CANADIAN FACTORY AND OFFICE: SARNIA, ONTARIO

BRANCH OFFICES IN PRINCIPAL CITIES

Halicomp

A plastic magnesia floor laid over concrete or wood subfloors. Thickness of finished flooring ½ inch. Laid monolithic with or without 6-inch sanitary cove base, in attractive color combinations. Quiet and comfortable under foot; sanitary; low in initial cost.

Halicomp Terrazzo

Same general specifications as for Halicomp. Thickness of finished flooring ½ inch. Installed with brass strips, using terrazzo aggregates in combination with colored Halicomp cement, producing very beautiful effects.

Masticomp

A cold mastic floor installed either ⅛ or $\frac{3}{16}$ inch thickness over smoothly finished cement subfloors. Finished floor has a tread under foot comparable with linoleum.

Completed floor is fire resisting. The use of Masticomp eliminates joinings and is entirely sanitary. Widely used on government work.

Layr-Bilt Masticomp

A heavy black mastic floor finished with Masticomp. Thickness ranges from ½ to 1 inch, depending upon conditions for which floor is required. Installed preferably over cement slabs left roughly screeded uniformly ½ to 1 inch below finished floor grade. This floor while monolithic, lays independent of the underslab and because of this quality construction cracking is greatly minimized. Layr-Bilt floors are now being widely used in public buildings of all kinds, particularly in schools and hospitals.

Halico Hot Mastic (Regular Type)

Strictly industrial. Laid 1 inch thick (heavier thicknesses where required) preferably over concrete—however, can also be installed over wood.

Halico Hot Mastic (Acidproof Type)

This floor meets special requirements in chemical plants and wherever acid conditions must be met. Finished floor is guaranteed absolutely acidproof. Installation conditions must be exactly the same as for Halico Hot Mastic (Regular Type).

Halico Asphalt Tile

While a new floor, its acceptance in a large way has been so general that it really needs no introduction. Halico Asphalt Tile is installed either ⅛ or $\frac{3}{16}$ inch in thickness, in attractive color combinations. Smoothly finished cement subfloors are required over which to make installation. Can also be installed over wood. Standard size of tile as follows: 9x9, 9x27, 12x12, 12x24 inches.

Samples, etc.

Write for samples, specifications, installation details and prices.

KOMPOLITE CO., INC.

Manufacturer and Contractor of Floorings

325 Borden Avenue, LONG ISLAND CITY, N. Y.

Products

FLOORINGS to Meet Every Requirement—
Plastic Types:
Kompolite Magnesite Composition Flooring
Kompolite Terrazzo Flooring
Mastolith Mineral Rubber Plastic Flooring
Resilient Tile Type:
Mastolith Tile
Also Rubber Tile, Marblelized and Plain Colors.

Slogan

Every building, old or new, can advantageously employ some Kompolite product.

What You Can Expect from the Kompolite Co.'s Flooring Products

Performance—Performance demonstrated over a period of 27 years of flooring installations of each type of floor—40,000,000 ft. laid under varying conditions.

Service—Service that gives a new meaning to a much abused word. Results are achieved by complete control—from raw materials to finished floor.

Produced in Our Own Plant

All the raw materials are converted, ground and refined right here in the heart of New York. Being original producers we control quality and prices and you get the advantage of both. Every mixing is under scientific laboratory control and every pound must analyze up to Kompolite standard. We stand back of every square foot of flooring put out under the Kompolite brand.

Co-operation

Our engineers will be glad to consult with you on any flooring problem without obligation. All our floors are laid by our own organization, assuring a satisfactory installation which is guaranteed.

Guarantee

Kompolite floors are guaranteed against all defects of materials or workmanship and we will repair free of cost any such defects, if brought to our attention in writing within a period of two years from date of installation.

References

A complete list of architects and contractors for whom installations have been made during the past 26 years furnished on request.

Short Specifications

In the following spaces (mention spaces) or wherever indicated on plans or mentioned in schedule of finishes, install Kompolite flooring (mention type) (with sanitary cove base, plinths, saddles, wainscoting, stair treads, risers, stringer, as required) as manufactured and installed by KOMPOLITE CO., INC., Long Island City, N. Y., in accordance with their standard specifications and by their own skilled mechanics regularly in their employ.

Complete Specifications

Complete specifications on request. Samples of any of these Kompolite floors are also available.

Kompolite Magnesite Composition Flooring

Description

Kompolite, built for a lifetime of wear, is the name we have given to our formula of magnesite composition flooring (endorsed by Bureau of Standards, Washington, D. C.). Its surface has a fine smooth texture yet is non-slipping and does not crack (K.C. brass dividing strips are recommended and used where light construction demands it and in unusually large sections). It can be successfully laid over old wood floors as well as in new buildings over concrete. When installed over rough wood underflooring or rough concrete slab as used in fireproof construction, Kompolite becomes a seamless finished floor practically as permanent as the building itself. When treated with our special penetrator finish treatment and ordinary waxing, it is stain-resisting and dustless.

Kompolite Composition the Outstanding Feature

Superiority of Kompolite composition and homogeneous texture are brought about by means of grinding, mixing and blending processes, through which the ingredients are cooked in special rock emery mills.

Laboratory test of all raw materials insures uniformity and certainty of results.

Colors

Kompolite comes in a full color range and in non-fading colors. It is adaptable to designs of two colors or more. The uniformity of the color is permanent throughout the life of the floor.

Durability

The durability of Kompolite is proven by the results covering installations of over 40 million sq. ft. during the past 27 years. These many installations together with laboratory tests show Kompolite as durable as stone or cement without hardness of either. Its weight is only 4 lb. per sq. ft. Its compressive strength over 5000 lb. per sq. ft. Our staff will always advise proper methods of foundation preparation and thickness of finished Kompolite to insure long life.

Installations

A few of our many installations are listed which may be of interest:

250,000 sq. ft. installed in Montefiore Hospital Institutions at New York, N. Y.—in use over 15 years without repair or worn spots.

80,000 sq. ft. installed in St. Mary's Industrial School, Baltimore, Md.—16 years without repairs.

20,000 sq. ft. installed in Star Casino, New York, N. Y., where traffic is exceptional—in daily use over 5 years without worn spots.

Maintenance

Exhaustive laboratory and field tests made by the American Hospital Association reveals Kompolite 25% easier to maintain than a hardwood floor, 10% easier than cork tile, 3% easier than linoleum and 30% easier than cement.

Noiselessness

In the same test made by the above, Kompolite proves less vibrant and resonant than hardwood, concrete, marble and compares in almost equal rating with linoleum, over which it has greater wearing quality.

Comfortable

Kompolite is comfortable under foot because of its high shock absorbing quality and its non-slippery even surface. Being seamless all possibility of tripping over edge is avoided.

Kompolite was rated by the American Hospital Association as having a greater degree of comfort than hardwood, 50% softer than concrete, cement, tile, marble or slate.

Fire Resistance

Kompolite is 100% fireproof. This feature makes it a most attractive floor to lay over wood and insures complete protection when laid over concrete.

Continued on next page

Kompolite Terrazzo—The Resilient, Non-slipping and Economical Flooring

Description

Kompolite Terrazzo, the result of twenty years of flooring experience, is a different type of terrazzo floor. It is not only highly decorative but also economical in initial and maintenance cost. Wears quite as well as marble and is not as slippery or as hard on the feet. It comes in many colors, combinations and designs. It is comfortable, quiet, artistic.

Uses

Kompolite Terrazzo can be laid over wood, cement, asphalt or iron.

Advantages

Resilient—It is very comfortable to walk on due to its high degree of resiliency.

Light Weight and Low Cost—It weighs only 6 to 8 lb. per sq. ft. It can be laid over lightly constructed subflooring. It can be laid in less than half the required thickness of ordinary cement terrazzo (as thin as ¾ in. thick). It has half the weight, is more attractive (due to use of color in the Kompolite mix) and in many cases lower in price.

Rapidly Installed—Rapid installation is possible with Kompolite Terrazzo. It can be walked upon within 12 hours. This makes possible the remodeling of stores, offices, showrooms, corridors, etc., without disturbing routine of business.

Does Not Crack—Kompolite Terrazzo does not have the tendency to crack because of its high resiliency.

Repairs Easily Made—Repairs or alterations to Kompolite Terrazzo can be easily made, as the new material will bond perfectly with the old.

How Made

Kompolite Terrazzo is made of Kompolite magnesite cement, crushed marble and asbestos. Unlike ordinary portland sand cement, it bonds firmly to each section of itself and to all parts and to every kind of underflooring in both new and alteration work.

How Laid

Kompolite Terrazzo is laid ½ to ⅝ in. on a cushion or expansion coat of magnesite cement ¼ in. thick or more over new or old subflooring to which it bonds firmly. Brass K. C. dividing strips are used according to the design adopted.

Base and Plinths—Kompolite Terrazzo base and plinths can be used but we advise, and most frequently install, a uni-colored Kompolite base in connection with our terrazzo. This produces a very attractive and much more inexpensive sanitary base.

Mastolith (Mineral Rubber Plastic) Flooring

Description

Mastolith Flooring is a concentrated asphaltic flooring which can be had in various degrees of resiliency from rubber softness to steel stone hardness. It is laid in a variety of colors.

It is low cost, attractive and permanent flooring. It is noiseless, odorless and dustless. It has the warmth of wood and resiliency of cork, linoleum and rubber at a substantial saving in both cost and maintenance. It can be brought to a polish by waxing.

Materials

Mastolith Flooring is composed of selected asphalts, rubbers and gums, inert mineral fillers and pure non-fading mineral and chemical pigments.

Colors

Mastolith Flooring comes in the following standard colors:

Chocolate Brown	Light Brown	Black
Maroon	Olive Green	

All colors non-fading and permanent. Special colors to order.

Durability

Mastolith Flooring is noted for its long life. It is resilient and non-absorbent. It will resist traffic over a long period of time. Being bonded thoroughly to the subfloor it remains flat without buckling, cracking, peeling, crumbling or creeping.

Use

Mastolith can be installed over wood or cement subflooring. When used over wood a special cushion Kompolite coat with expanded metal lath is necessary. It can be applied directly to finished cement floors. It is the choice flooring to use on cement laid directly over the ground.

Very desirable for stair treads, stair landings and elevator landings because of its slipproof qualities.

Features

Acid and Alkali Resistant—Mastolith is impervious to acids and alkalis.

Sanitary and Waterproof—Being seamless and having a non-absorbent surface Mastolith is permanently sanitary and waterproof.

Resilient and Slipproof—Mastolith is very easy under foot due to its high degree of resiliency and it remains resilient throughout the life of the floor.

When dry it is slipproof. Even when wet it is less slippery than ordinary smooth surface flooring.

Will Not Support Combustion—Mastolith Flooring will not ignite from the surface or support combustion. A cigarette or match burn is readily removed.

Non-conductor of Electricity—Because of its non-conductivity Mastolith is desirable for use for areas around electrical equipment. ⅛-in. thickness protects up to 20,000 volts. Short circuits are prevented because it is both seamless and waterproof.

Low Maintenance—Mastolith requires no special agents for cleaning. Its surface is so tough that it is easily cleaned by ordinary methods. Repairs caused by accidents, etc., are easily and quickly made without the slightest apparent demarcation between old and new area. The bond between the old and new is positive and permanent.

Mastolith Tile—Asphaltic Tile in Colors

Description

Mastolith Tile is an asphaltic gum mastic tile with an almost unlimited choice of non-fadable colors. Practically all colors between cream white and jet black are available. Mastolith Tile has all the good qualities of asphalt rubber gum—highly resilient, durable and economical.

Mastolith Tile is as good as rubber tile, cheap as a battleship linoleum and cheaper than linoleum tile. It must not be compared with the ordinary asphalt or tar tile. Mastolith Tile is made in accordance with a special formula which makes it entirely unlike any other tile.

Sizes

Cut into squares or oblong tiles in the following sizes: 4x4, 6x6, 6x12, 9x9, 9x18, 12x12 in. Special sizes to order.

Thicknesses

The standard thickness is ⅛ in. and is suitable for most types of service.

Also made in $\frac{3}{16}$ or ¼ in. for places subject to hard traffic.

Durability

Mastolith Tile is serviceable throughout its entire thickness. Its resistance to abrasion is such that it will last for years under the heaviest foot traffic. It will not wrinkle, crawl or turn up at the edges. It will not dust or crumble. It will stand comparatively heavy loads and sudden temperature changes without warping, cracking, breaking or splintering. It is almost as durable as stone. Will last a lifetime.

How Laid

Mastolith Tile is applied in the same way as ordinary asphalt tile. It can be laid on any dry base—smooth cement, stone, wood, iron or composition bottom coat. Tiles are securely cemented to the subfloor. They are butted against each other with joints that require no filling.

When installed in places on ground or below grade, cement foundation should be waterproofed or dampproofed.

Easy Replacement

When Mastolith Tile requires replacement due to rearrangement or partitions, repairs to pipes, or conduits or damage, new tiles can be easily laid in place.

THE MARBLELOID COMPANY

Flooring Specialists Since 1905

Manufacturers of and Contractors for Marbleloid Floorings

225 West 34th Street
NEW YORK, N. Y.

FACTORY: NEW DURHAM, N. J.

BRANCH OFFICES

PITTSBURGH, PA. PHILADELPHIA, PA. ROCHESTER, N. Y. BOSTON, MASS. BALTIMORE, MD.

Products

MARBLELOID "PLASTIC MAGNESIA."
MARBLELOID "MAGNESITE TERRAZZO."
MARBLELOID "TRAVERTINE TERRAZZO."

MARBLELOID FLOORINGS
REG. U.S. PAT. OFF.
TRADE-MARK

MARBLELOID "RUBBER TILING."
"TILE-TEX" TILING.
"PORTLAND CEMENT TERRAZZO."
All of these products are used for Flooring, Cove Base, Wainscot, Treads, etc.

MARBLELOID "PLASTIC MAGNESIA"

A magnesite composition with ingredients scientifically selected to produce a flooring which is clean; of pleasing appearance; of any color; quiet; non-abrasive; resilient; non-slipping; dampproof; plastic; of low thermal conductivity; durable; fireproof; acid and alkali resisting; elastic; strong; light, and relatively inexpensive.

Marbleloid "Plastic Magnesia" is a standardized product for floors, cove sanitary base, wainscot, trim, stair treads, risers, platforms, etc. It bonds perfectly to wood, concrete or steel, and is adaptable to both new construction and alteration work.

Installed in a plastic state, ½ in. thick in 2 coats, and sets in a few hours. The undercoat, $\frac{3}{16}$ in. thick, contains coarse fibrous fillers which take up inequalities in the foundation. The top coat, $\frac{5}{16}$ in. thick, is of a finer grained texture giving a smooth finish.

Physical Properties of Marbleloid "Plastic Magnesia"—Marbleloid "Plastic Magnesia" weighs approximately 3 lb. per sq. ft.; its compressive strength is over 5000 lb. per sq. in.; it has an average tensile strength of 750 lb. per sq. in.; it will withstand a heat of 1700° F. without cracking or disintegrating.

Attractive Colors and Color Combinations—Marbleloid "Plastic Magnesia" is made in practically all colors, including red, brown, buff, French and light gray.

Uses—Thousands of Marbleloid "Plastic Magnesia" installations of large area have been made in plants and factories of many of the leading corporations, in office buildings, schools, hospitals, association buildings, churches, hotels, railroad stations, libraries, theaters, banks, steamships, amusement halls, public buildings, stores, restaurants, powerhouses, garages, etc.

Specification and Specification Data for Marbleloid "Plastic Magnesia"

(1) General

(a) Wherever indicated on the drawings or herein specified, the floors, borders, cove bases and wainscoting of the heights shown shall be Marbleloid "Plastic Magnesia," as manufactured by THE MARBLELOID COMPANY, 225 West 34th Street, New York, N. Y., and shall be installed by mechanics regularly in their employ and in accordance with their standard process and procedure.

(b) The fields of floors shall be Marbleloid "Plastic Magnesia" color No. ..... The cove bases and borders shall be color No. ..... The wainscoting shall be color No. .....

(2) Scope of Work

(a) This Contractor shall include in his work the furnishing and installation of all Marbleloid "Plastic Magnesia" floors, borders, bases and wainscoting complete on the foundation and surfaces provided by others.

(3) Work Not Included

(a) Heat, light, electric power, and hoisting of materials, also the preparation of all foundations and surfaces to receive Marbleloid.

Note: The Architect should include the following installation requirements in the specifications for the proper trades.

Essential Conditions at Time of Installation

Marbleloid must be installed after all other work is finished, such as plastering, trim, glazing and all possible fittings. Whenever Marbleloid is to be used in connection with flooring, border or base of a different material, such material must be in place before Marbleloid is installed.

The temperature of the rooms or inclosure must be maintained at 65° to 75° F. as Marbleloid will not set when cold. THE MARBLELOID COMPANY will not undertake to supply heat, nor install work where salamanders, fire pots, etc. are the only means used to provide heat.

All necessary light, electric power, including temporary wiring, sockets and bulbs, labor and maintenance (to deliver power to THE MARBLELOID COMPANY'S machines) must be provided by the Owner or General Contractor without charge.

The Owner or General Contractor must provide for the hoisting of all materials used by THE MARBLELOID COMPANY without charge.

(4) Foundations

(a) All foundations for Marbleloid "Plastic Magnesia" will be furnished and installed by other contractors and shall conform to the requirements and be subject to the approval of THE MARBLELOID COMPANY.

Note: The Architect should include the following foundations and surface requirements in the specifications for the proper trades.

Floors and Treads

Concrete—Concrete foundations for Marbleloid must be composed of one part portland cement, two parts clean, sharp sand and not more than four parts broken stone, gravel or cinders. This foundation must be not less than 3 in. thick, and installed at one operation and brought up to within ½ in. of the finished floor level. The surface of the concrete must be given a raked or broomed finish.

Smooth Cement Floors—The surface of existing cement floors must be roughened by chipping with chisels to a depth of at least ⅛ in. every 2 in. (The roughening of existing finished cement floors will be done by THE MARBLELOID COMPANY if so specified.)

Caution: Marbleloid cannot and must not be applied over concrete foundations upon which has been placed a thin "screed coat" of sand and cement; neither should Marbleloid be applied directly over wooden sleepers embedded in concrete. Where these conditions occur, the matter should be taken up directly with THE MARBLELOID COMPANY.

Wood—Wood foundations for Marbleloid floors must be well-seasoned lumber not over 6 in. wide nor less than ⅞ in. thick, securely nailed to the joists. The surface of this flooring must be brought up to within ½ in. of the finished floor level.

Pitch or Slope—Wherever slope or pitch in the finished floor is desired or indicated on the drawings, this pitch must be provided for in the foundation.

Treatment of Pipes, Conduits, etc.—Wherever pipes or electric conduits are embedded in the concrete foundations, they must be securely tied down with expanded metal lath and be covered with at least 2 in. of concrete. Pipes passing vertically through concrete foundations must be protected with suitable sleeves. At all points where excessive heat is apt to be localized (e.g., where heating pipes pass close to the underflooring over which Marbleloid is installed), same must be suitably insulated.

Cleaning—All foundations for Marbleloid flooring must be thor-

Continued on next page

oughly cleaned, care being taken to remove all lime or plaster from the surface, before Marbleloid is applied.

Iron or Steel—The proper preparation of iron or steel foundations should be taken up directly with THE MARBLELOID COMPANY in each instance. Such foundations must be rough-finished and unpainted and, in most instances, suitable keys or anchors must be provided.

Sanitary Base or Wainscot

Cement Backing—A backing composed of one part portland cement and two parts clean, sharp sand, and not less than ¾ in. thick must be furnished and installed by others against all walls and partitions where Marbleloid base or wainscot occurs. The surface of this backing must be given a scratched finish and brought to within ½ in. of the finished Marbleloid base or wainscot line.

Alternate Backing for Base or Wainscot—If it is not desirable to use portland cement and sand backing, rough boards not over 6 in. wide or less than ¾ in. thick can be nailed to the studding of walls and partitions, allowing ½ in. for Marbleloid material.

Where Marbleloid cove base or wainscot is to project beyond the finished wall line, backing for same must be finished flush with the finished wall line.

Where Marbleloid cove base or wainscot is to be flush with the finished wall line, a galvanized metal ground must be furnished and installed by others to separate the plaster from the Marbleloid material.

Caution: Marbleloid cannot be installed directly over plaster, plaster board, patent plaster, Keene's cement, brick, gypsum or terra cotta tile blocks; nor can it be installed over cement or concrete containing lime or compounds thereof.

(5) Installation

(a) All foundations shall be thoroughly dry and broom cleaned before applying Marbleloid flooring.

(b) All plaster work shall be thoroughly dry before installing Marbleloid base or wainscot.

(c) All floors, borders, bases and wainscoting shall be installed in strict accordance with the manufacturer's instructions and supervision.

Note: The Architect should insert here, specification clauses covering the design, colors, type of jointing, etc.

(6) Protection of Finished Work

(a) When the surface of the Marbleloid has set sufficiently, the General Contractor shall cover the surface with heavy paper or sawdust, and shall maintain same until the surface has fully hardened.

Note: Marbleloid requires the same care to prevent damage caused by other contractors that is exercised in the case of finished wood flooring. Tobacco juice, plaster, lime, cement, nails, screws, planks, etc., must be kept off the finished floor, as they might seriously damage the floor. (The Architect should specify that the General Contractor shall assume the responsibility of the protection of the flooring after the work is entirely completed by THE MARBLELOID COMPANY).

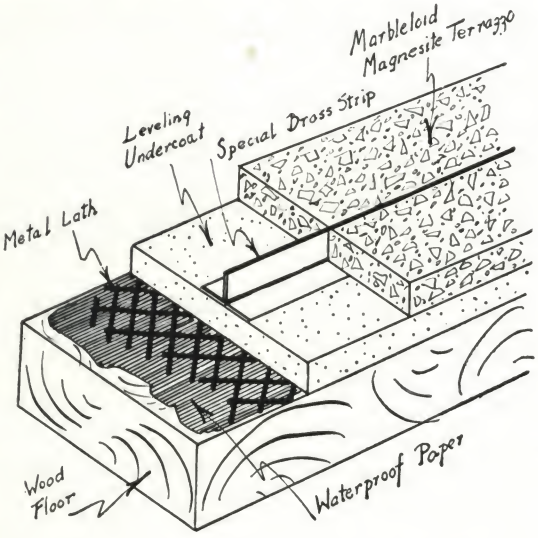
(7) Guarantee

(a) All Marbleloid "Plastic Magnesia" work shall be guaranteed against all defects in materials and workmanship such as pitting, disintegrating, or coming loose from the underfoundation for a period of two years from date of installation and acceptance by the Architect.

MARBLELOID "MAGNESITE TERRAZZO" FLOORING

Marbleloid "Magnesite Terrazzo" Flooring is the only type of terrazzo flooring which can be installed directly over worn wood as well as concrete, in new or alteration work.

This product is installed ⅝ to ¾ in. in thickness and weighs only 6 lb. per sq. ft. Floors can be walked on within twelve hours. Marbleloid "Magnesite Terrazzo" contains plastic magnesia and marble chips harmonizing or contrasting with the cementing material. The surface is ground by machine, producing an attractive and durable floor.



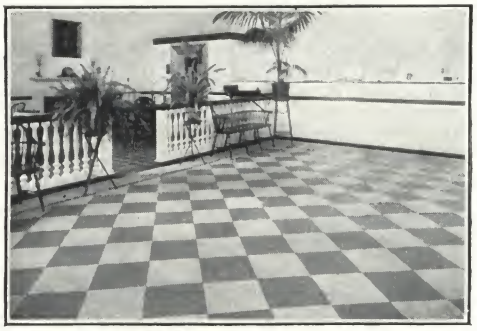
Design and Adaptability—Border designs contrasting with the larger areas can be produced; brass strips shaped into various designs can be incorporated; sanitary cove and wainscot can be formed.

There is ample opportunity to give individual taste full play, because there are 13 standard colors and combinations of marble chips to choose from.

Durability — Marbleloid "Magnesite Terrazzo" Flooring wears like true marble. Because of the nature of the cementing material used, Marbleloid "Magnesite Terrazzo" is not slippery, furthermore, it has a surprising degree of foot-comfort, particularly when installed over wood foundations.

Economical — Taking into consideration ultimate cost due to its wonderful wearing qualities, Marbleloid "Magnesite Terrazzo" Flooring is economical, and the upkeep expense practically nil outside of ordinary washing and cleaning.

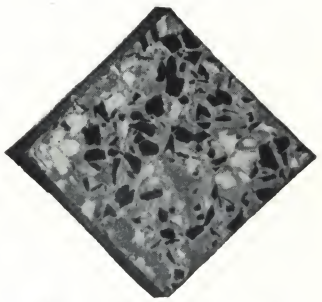
Installations—Marbleloid "Magnesite Terrazzo" installations are now in satisfactory use in department stores, retail shops, churches, public buildings, schools, showrooms, etc.



Marbleloid "Magnesite Terrazzo" Floor in Philadelphia Bank

Brass Strips — All Marbleloid "Magnesite Terrazzo" Floors are laid with a patented double brass strip which is designed to compensate for any expansion or contraction which may occur, thereby preventing unsightly cracking.

Note: Wherever desired, regular Marbleloid "Plastic Magnesia" base and border can be used in place of terrazzo base and border, at considerable saving.



Marbleloid "Terrazzo"

Specification and Specification Data for Marbleloid "Terrazzo"

Note: This specification can be easily adapted to Marbleloid "Travertine Terrazzo," see descriptive matter under heading of Marbleloid "Travertine Terrazzo."

(1) General

(a) Wherever indicated on the drawings or herein specified, the floors and cove bases and borders of the sizes shown shall be Marbleloid "Magnesite Terrazzo" as manufactured by THE MARBLELOID COMPANY, 225 West 34th Street, New York, N. Y., and shall be installed by mechanics regularly in their employ and in accordance with their standard process and procedure.

(b) The fields of floors shall be Marbleloid "Magnesite Terrazzo" color No. ..... The cove bases and borders shall be color .....

Continued on next page

(2) Scope of Work

(a) This Contractor shall include in his work the furnishing and installation of all Marbleloid "Magnesite Terrazzo" floors, brass dividing strips, borders and bases complete on the foundations and surfaces provided by others.

(3) Work Not Included

(a) Heat, light, electric power, and hoisting of materials, also the preparation of all foundations and surfaces to receive Marbleloid "Magnesite Terrazzo."

Note: The Architect should include the following installation requirements in the specifications for the proper trades.

Essential Conditions at Time of Installation

Note: *See similar heading in previous Specification for "Plastic Magnesia" for conditions at time of installation.*

(4) Foundations

(a) All foundations for Marbleloid "Magnesite Terrazzo" will be furnished and installed by other contractors and should conform to the requirements and be subject to the approval of THE MARBLELOID COMPANY.

Note: The Architect should include the following foundation and surface requirements in the specifications for the proper trades.

See specifications for Foundations in preceding Specification for Marbleloid "Plastic Magnesia." The only differences are that concrete foundations for Marbleloid "Magnesite Terrazzo" are brought to ¾ in. below finished floor level and wood foundations are to be ⅝ in. below finished floor level.

(5) Installation

Note: See preceding Specification for "Plastic Magnesia."

(6) Brass Dividing Strips

(a) THE MARBLELOID COMPANY'S special brass dividing strips shall be used to divide the field of the floor in tile effect as indicated on the drawings, and brass dividing strip shall be used between the field and border.

(7) Surfacing Finish

(a) All Marbleloid "Magnesite Terrazzo" shall be electric machine ground to a surface equal in texture, color and finish to approved samples.

(8) Protection of Finished Work

Note: See preceding Specification for "Plastic Magnesia."

(9) Guarantee

(a) All Marbleloid "Magnesite Terrazzo" work shall be guaranteed against all defects in materials and workmanship such as pitting, disintegrating, or coming loose from the underfoundation for a period of two years from date of installation and acceptance by the Architect.

Special Note: If desired regular Marbleloid "Plastic Magnesia" base and border can be used in place of Marbleloid "Terrazzo" base and border at a considerable saving.

MARBLELOID "TRAVERTINE TERRAZZO"

Patented March 29, 1927

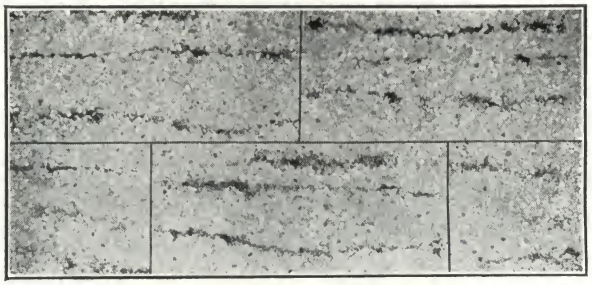
This product is an adaptation of Marbleloid "Terrazzo," but differs from anything else on the market in the fact that by a special process of our own, veinings of a contrasting color are introduced into the material, obtaining a replica of genuine travertine marble.

The highest type of imported travertine marble chips is used in the product, and the effect of individual blocks of travertine is obtained by blocking off the floor with brass strips laid ashlar pattern.

Unlike travertine marble, there are no holes or indentations in Marbleloid "Travertine Terrazzo" to catch dirt.

This type of flooring is particularly adapted to department stores, hotel lobbies, theaters, etc.

Specification—The specification and specification data for Marbleloid "Magnesite Terrazzo" can be easily adapted.



"Travertine Terrazzo"

MARBLELOID "RUBBER TILING"

The highest type of marbleized rubber tiling, obtainable in over 30 different shades and color combinations, installed in new construction or alteration work, over wood and cement flooring, in 3/16 and ¼-in. thickness.

This product is non-absorbent, resilient and elastic, and yet tough enough to withstand the hardest type of traffic in hospitals, hotels, theaters, stores, residences, libraries, etc.

Marbleloid "Rubber Tiling" is installed in alternating squares, slabs of one or more colors laid ashlar pattern; or in designs worked out in consultation with the architect.

MARBLELOID "PORTLAND CEMENT TERRAZZO"

We install, under standard specifications, the finest type of "Portland Cement Terrazzo" Floors, laid off with brass dividers to form squares or in pattern and design in one, two or more colors as desired. Cove base, wainscoting, stair treads and risers can also be installed. Our wide experience insures satisfactory completion of contracts of any size.

"Tile-Tex" Tiling

We are distributors in New York, New Jersey and Connecticut for The Tile-Tex Company, Chicago Heights, Ill. See Manufacturers' Index.

"Tile-Tex" floors are laid in tile effect with tight joints. The tile are composed of asbestos fiber and asphalt, together with the necessary coloring pigment. In sizes ranging from 6x6 in. to 18x24 in. Standard thickness, ⅛ and 3/16 in.

Marbleloid Service, Samples and Guarantee

Our Engineering Department will consult with you regarding flooring problems. Definite proposals for the work completely installed furnished on request.

Architect's and engineer's sample case and color card with complete data, will be gladly mailed on request.

All Marbleloid Products are installed by the Company's trained mechanics.

All Marbleloid installations are rigidly guaranteed against defects in material or workmanship.

Prominent Users of Marbleloid Floorings

Western Electric Company
Detroit Edison Co., Detroit, Mich.
Carnegie Steel Company
Humphrey's Pharmaceutical Co.
Armour Company
Pennsylvania Railroad Co.
Studebaker Company
Atlas Powder Company
Duquesne Light Co.
Frank G. Shattuck Co.
Whelan Drug Company
W. T. Grant Stores
E. I. du Pont de Nemours & Co., Inc.
United Gas Improvement Co., Philadelphia, Pa.
Maryland Pharmaceutical Co., Baltimore, Md.
Detroit Evening News, Detroit, Mich.
New York Times (Annex), New York, N. Y.
Sage, Allen Co., Hartford, Conn.
Wise, Smith, Inc., Hartford, Conn.
Frederick Loeser & Co., Brooklyn, N. Y.
Jones & Laughlin Steel Co., Woodlawn, Pa.
Connecticut Light & Power Co., New Britain, Conn.
Insurance Co. of North America, Philadelphia, Pa.
F. W. Schumacher Company, New York, N. Y.
Great Atlantic & Pacific Tea Co., Inc. Stores
Vacuum Oil Company, Bayonne, N. J.
Spreckels Sugar Refining Co., Yonkers, N. Y.
Queensboro Gas & Electric Co., Far Rockaway, N. Y.
National Carbon Co., Jersey City, N. J.
M. Klinghoffer & Bros., Asbury Park, N. J.
Pennsylvania Drug Co., New York, N. Y.
Aird-Don Company, Albany, N. Y.
Agfa-Ansco Company, Binghamton, N. Y.
Waterman Fountain Pen Co., Newark, N. J.

AMERICAN ASPHALT TILE CORPORATION

FORMERLY RUBBERSTONE CORPORATION*

Manufacturers of Hanotile Flooring, Waterproof Cements and Wax

One Madison Avenue, NEW YORK, N. Y.

DISTRIBUTORS IN THE PRINCIPAL CITIES OF THE UNITED STATES

Products

HANOTILE FLOORING.

Also Hanotile Waterproof Cements and Hanotile Wax.

*The name of the Corporation and the name of the product were changed because the word "Rubber" in Rubberstone often gave the erroneous impression that our tile was a rubber tile.

HANOTILE
Asphalt Tile Flooring
Built like a Highway - for Wear

Hanotile Flooring

A thin asphalt tile of extraordinary durability. Only high grade asphalts used. The skillful blending of the asphalts with asbestos fiber and non-fading coloring pigments forms a durable, permanently resilient wearing surface.

No sand, paper or rubber filler is used; nothing to hold dirt, rapidly oxidize or shorten the life of the tile.

Properties—***Durability***—The wearing quality of Hanotile Flooring is truly remarkable. The entire thickness is usable as wearing surface. The tile is of uniform composition and character throughout its thickness.

Water and Dampness Resistance—The base of Hanotile is asphalt which makes it non-absorptive. It can be used on basement floors, and dampness that comes up through the subfloor will not affect the tile or the asphalt cement in which the tile are laid.

Non-staining—Stains do not penetrate and can be easily washed off. Ink, match and cigarette marks are easily removed. Highly acid and alkali resisting.

Fire Resistance—A large percentage of asbestos fibre is used in the manufacture of Hanotile so that the tile are highly fire resistant.

Resistance to Age—The tile do not harden, scuff up or become shabby from age. It is a well established fact that a Hanotile Flooring actually improves under use.

Odorless—There is no odor released from the tile.

Resistance to Slipping—The nature of the material is such that sureness of footing is given at all times.

Maintenance—Waxing is not necessary but when a waxed finish is desired the best results are obtained by using Hanotile Wax. Oils should never be used on the tile, as any appreciable quantity will soften the surface.

For washing the floor, we recommend the use of soaps such as "Clean-O-Shine," "Briten-All" and "Shine-All" used in accordance with the manufacturer's instructions. Sweeping compounds are frequently used with satisfaction, and prove non-injurious to the flooring when dampened with water or with Hanotile Wax.

Costs—Costs vary with size of tile, thickness of tile and color selection.

It is of advantage whenever possible to make color selections, etc., when writing specifications or asking for prices and estimates.

Colors—There are seven plain color selections: gray, tan, red, olive green, ivy green, mahogany and black. Tile are also manufactured in a number of mottled colors. Special colors: blue, silver and old gold. The lighter colors cost more than the darker colors.

Sizes—Five standard sizes: 6x6, 9x9, 9x27, 12x12 and 12x24 in.

Thicknesses—Two thicknesses: $\frac{1}{8}$ and $\frac{3}{16}$ in. The $\frac{1}{8}$ in. is the standard thickness and is suitable for most types of service. The $\frac{3}{16}$ in. is recommended for stair treads, landings, elevator floors, and for other places subject to continuous, hard traffic.

In general, in the case of wood floors, best results are obtained by the installation of a Hanotile Undercoat, approximately $\frac{3}{8}$ in. in thickness, applied directly over the lumber base with a reinforcement of wire mesh, and troweled to a smooth level finish. The standard $\frac{1}{8}$-in. thickness is laid directly over the Hanotile Undercoat.

The years of service that Hanotile will give can not be gauged by its thickness. Hanotile is a concentrated flooring.

Specifications for Hanotile

For the guidance of architects, the following simple form of specifications is suggested:

All Finished floors in .... (specify spaces) .... shall be Hanotile Flooring, manufactured by the AMERICAN ASPHALT TILE CORPORATION and installed by them or their duly authorized agent. Thickness of tile shall be $\frac{1}{8}$ in. [$\frac{3}{16}$ in.]. Size of tile shall be [9x9 in.] [6x6 in.] [12x12 in.] [9x27 in.] [12x24 in.]. Colors: [mahogany] [ivy green] [olive green] [red] [black] [tan] [gray].

All Hanotile shall have a calendered surface; shall contain no sand, grit or rubber filler; and shall be equal in color and quality to samples held by the architect.

All Hanotile shall be installed in strict accordance with manufacturer's specifications and guaranteed as to quality of materials and workmanship for a period of one year.

Preparation of Subfloors to Receive Hanotile—***Over Cement Subfloors***—All portland cement floors upon which Hanotile Flooring is to be applied are to be furnished to the Hanotile Contractor in place, of sound, solid cement, free from scale or chalky deposits, to a true, even grade and with smooth steel troweled surface at a distance below the established grade of the finished floors equal to the thickness of tile specified.

Over Wood Floors—All wood floors to serve as grounds for Hanotile Flooring must be furnished to the Hanotile Contractor in place, of single or double construction composed of well seasoned lumber to minimize the possibility of warping at a later date. They shall be structurally sound, securely nailed, and there shall be no springy boards or loose butts.

The wood floor shall be $\frac{1}{2}$ in. below the grade of the finished Hanotile Flooring where the standard $\frac{1}{8}$-in. thickness of Hanotile is to be used. The pitch or level must be given to the Hanotile Contractor in the subfloor.

The Hanotile Contractor shall furnish and install a Hanotile Undercoat approximately $\frac{3}{8}$ in. in thickness, directly over the lumber base with a reinforcement of wire mesh and troweled to a smooth level finish. The Hanotile shall be firmly cemented in Hanotile Asphalt Cement directly to the top of the Undercoat.

THE DURAFLEX COMPANY

Duraflex-A Flooring and Duraflex Tile

BALTIMORE, MD.

NATIONAL REPRESENTATION

DURAFLEX-A FLOORING

Description

Duraflex-A Flooring is made of a ductile mineral rubber, and is applied cold in plastic form, to about the thickness of linoleum. It can be applied over new or old cement, composition, wood or steel floors, and stair treads except heavy duty factory or shop floors and those subject to the action of oils and greases.

Duraflex-A forms a continuous seamless finished flooring that bonds solidly and practically integrally to the subfloor.

Colors—Made in solid colors: olive green, tan, brick red and black.

Physical Properties—Duraflex-A floors can be maintained in perfect condition, equal to new, at all times because the surface is renewable in whole or in part by simply recovering worn or damaged parts. The new part forms a hermetic seal with the old, or bonds solidly to the subfloor if worn through. For this reason, Duraflex-A is a permanent part of the structure and should be so considered.

This maintenance feature covers not only the wear of traffic and repair of damage from abnormal use, but it is also possible and easy to add to and extend a Duraflex-A floor, or to fill in where a partition is removed, or where a conduit trench is cut in the floor, etc., all absolutely without visible seams or marks of joinings. Resurfaced parts can not be distinguished in color or appearance from the old floor, and patches are guaranteed without reservation, as to bond and invisibility.

Highly ductile—becomes smooth under use. Cuts and marks heal themselves. Durable, not subject to depreciation because surface can be renewed and maintained as worn. Sanitary, resists abrasion, quiet under tread—absorbs sound waves, resilient, water and moisture proof; fire, acid and alkali resisting, and a non-conductor of heat and electricity. Economical.

Specifications for Duraflex-A Flooring

Wherever specified, Duraflex-A Flooring is to be installed in strict accordance with the standard specifications of the manufacturer, THE DURAFLEX COMPANY, Baltimore, Md.

The materials are to be laid in not less than six coats—one bonding coat applied with brush; three body and two finish coats, applied with a trowel, of not more than three gallons per 100 sq. ft. at intervals of not less than twenty-four hours. Body and finish materials to average 60% solid matter per gallon.

The final coat is to be troweled and scraped to give a smooth surface and is not to be covered or washed with any material. When finished the floors are to be kept free from such abuse as will mar the surface until the material is thoroughly set.

The work is to be done by skilled and experienced workmen familiar with this trade.

The Duraflex-A Flooring is to be guaranteed for two years against all defects of material and workmanship, and that it will not crack, wrinkle, crawl, rot, swell, disintegrate or come loose from the subfloor. Also that it can not be permanently injured and can be patched, resurfaced and repaired at any time with additional materials, without showing marks or seams. The grounds or subfloor on which the Duraflex-A Flooring is to be laid are to be installed by others in accordance with the specifications for subfloors below.

Johns Hopkins Hospital—New Dispensary, Baltimore, Md.

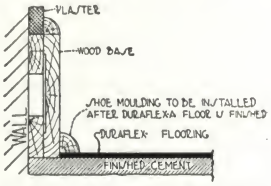
JOSEPH EVANS SPERRY, Architect
Area, 100,000 sq. ft. of Duraflex-A Flooring

Specifications for Subfloor for Duraflex-A Flooring

General—All surfaces to serve as subfloors or grounds for Duraflex are to be in place, structurally sound and solid, bone dry, broom clean, and free from scale, rust, chalky or laitance deposits, grease, paints or other foreign substances. The level or pitch must be obtained in the subfloor and not in the Duraflex covering.

A rigid stop of metal, or shoulder of solid masonry, projecting the thickness of the Duraflex above the subfloor, must be provided wherever the Duraflex floor ends—at open edges, against other floors, at landings, balconies, doorways, etc.

***Type I Duraflex-A Construction over Cement**—For use in Rooms, Corridors, Offices, Auditoriums, Halls, etc.*



Cement Subfloor—Cement subfloors are to be at a true even grade with smooth surface, at, or not more than ⅛ in. below, the finished floor grade.

Cement Base—Cement base grounds must be in place, of first class workmanship, acceptable as finished cement trim without additional smoothing, not over 6 in. high unless otherwise specified. If cove is specified, it must be even and smooth, tangent with the base and subfloors and of 1-in. radius.

Flush Base—Flush base must have the cement surface flush with finished surface of wall and a metal base screed used to form straight line between wall and cement.

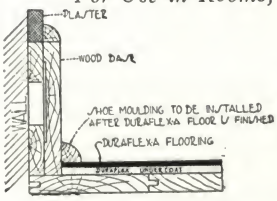
Projecting Base—Projecting base must have the cement base project full amount called for and have rounded top of not less than ½-in. radius.

***Type II Construction over Screeded Concrete with Duraflex Undercoat**—For Use in All Spaces Subject to Traffic, but Not Subject to Point Loads*

Screeded Concrete Subfloor—Screeded concrete subfloors must be screeded or leveled to an even grade not more than ½ in. below the finished floor grade.

Cement Base Grounds—Specifications same as for Type I.

***Type III Construction over New or Old Wood Floors**—For Use in Rooms, Corridors, Offices, Halls, etc.*



Wood Subfloors—Wood subfloors must be thoroughly seasoned and dry to insure against warping, with all boards securely nailed, rigid, closely spaced and without movement between the boards, not more than ½ in. below the finished floor grade.

Miscellaneous Construction—Base, Stair Treads, Trench Cover

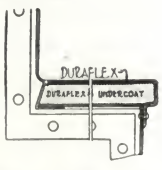
Construction Base—Base to be covered with Duraflex materials will be built by THE DURAFLEX COMPANY against any backing except plaster. A metal plaster screed must be set by the plasterer to form a straight line not over 6 in. above the finished floor grade unless otherwise specified. Any temporary grounds must be removed.

Thickness of the base must be specified for either flush or projecting base and amount of projection given. These two styles of base are shown in diagrams under Type I floor above.

Stair Treads—Must have all grounds in place, structurally sound and solid as specified above for cement, wood, or metal grounds. They must be provided with a suitable strong metal nosing securely anchored and so set that the top of the nosing will be flush with the finished surface of the tread. The following shows details for various types of construction.

Over Cement—Detail as shown on left. Depth of nosing allowing for Duraflex to be ⅛ in.

Steel Pan—Detail as shown on right. Total depth of stair tread must be specified.



Continued on next page

DURAFLEX TILE

Description

Duraflex Tile is made of a carefully prepared combination of mineral rubber, asbestos fiber and the very best of color pigments compressed under heavy pressure to tile form.

Sizes—Standard: 6x6, 9x9, 12x12, 9x18, 9x27, 12x24 in.; $\frac{3}{16}$ in. and $\frac{1}{8}$ in. thick.

Colors—Standard: Tan, olive, green, red, brown, black, gray and blue.

Sizes and color required, to be specified.

Properties—The tile form of mastic material retains all of the features of a mastic floor except the seamless property but offsets this by:

(a) Enabling the user to obtain a more ornamental effect by the use of patterns of various colors and

(b) Immediate availability of the space covered.

It is a warm, resilient, quiet floor that is non-slippery even when wet, and is acidproof, alkaliproof and waterproof. The close texture of the material makes it non-absorbent and highly sanitary. It is a non-conductor of electricity and is fire resistant.

When replacements become necessary through damage or wear (through excessive use of a small area) or alterations, they can easily be made by installing new tile only in the area affected, without changing the appearance of the floor or showing signs of the repairs made.

Duraflex Tile can be used as a floor covering for any spaces except those subject to the action of oils or greases. It is particularly adaptable to offices, corridors, waiting rooms, clubrooms, sun-porches, etc., in hospitals, office buildings, schools, clubhouses, and in other uses where an ornamental feature of the floor is requisite in addition to the properties which only a mastic covering possesses.

Specifications for Duraflex Tile Flooring

Wherever specified, Duraflex Tile shall be installed in strict accordance with the standard specifications of the manufacturer, The Duraflex Company, main office, Baltimore, Md. The material must have a rubbery body and surface equal to sample submitted, having the same ductility, elasticity, durability, self-healing and non-absorbing properties, and the same resistance to acids, water, alkalis, weather and fire. A smaller percentage or lower quality of mineral rubber, asbestos fiber or inferior coloring materials, will not be acceptable. It must be absolutely free from lumps of unmixed or free coloring matter.

The Duraflex Company shall guarantee the tile to be free from all defects in material and workmanship, and for one year from date of completion of the work, shall furnish without charge, any tile needed to replace any such defective material, provided payments have been made for the work as agreed, and notice of such defectiveness is given to them in writing.

The contractor installing the tile shall guarantee first class workmanship and materials, and that the standard specifications and conditions of The Duraflex Company for proper installation and use of the material, have been followed. Neither the tile manufacturer nor the installing contractor will be held responsible for defects caused by defective backing or underfloors, or to improper work or materials of other parties, nor for any unevenness or unlevelness in the finished floor, which is due to unevenness or unlevelness of the underfloor not furnished by them.

The grounds or subfloor on which The Duraflex Tile is to be laid shall be in accordance with specifications for subfloors as follows:

Duraflex Tile Installation in School, Liverpool, N. Y.
Earl Hallenbeck, Architect

Specifications for Subfloors for Duraflex Tile

General—All surfaces to serve as grounds on which Duraflex Tile are to be laid shall be structurally sound and solid, bone dry, broom clean, and free from scale, rust, chalky or laitance deposits, grease, paints or other foreign substances. The level or pitch required must be obtained in the subfloor. A rigid stop of metal, or other material, must be provided where the Duraflex Tile floor ends at landings, balconies, doorways, etc. The stop must extend below the finished floor by the thickness of the tile, with the top of the stop at or above the finished floor level.

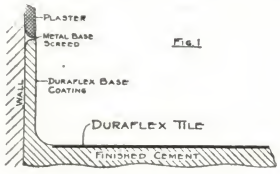


Fig. 1

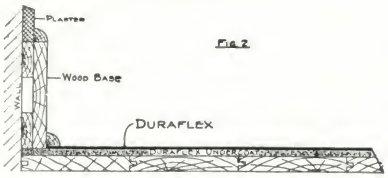


Fig. 2

Cement Subfloor—Where laid over a cement floor, the cement finish shall be hard troweled to a true, smooth and even surface a distance below the finished floor equal to the thickness of the tile to be used ($\frac{3}{16}$ or $\frac{1}{8}$ in.).

Wood Subfloor—Wood subfloors shall be thoroughly seasoned and dry to insure against warping, with all boards securely nailed, rigid, closely spaced and without movement between the boards, and shall be not more than ½ in. below the finished floor grade.

Note: Wood floors can be in single thickness providing the flooring is tongue and groove ⅞ in. or more in thickness, and joists are not over 16 in. on centers. The principal requirement is that the floor be so securely nailed as to be rigid with no movement between the boards. Before the tile is laid, a Duraflex undercoat ⅜ in. thick is installed by first nailing an expanded metal lath to the subfloor and spreading over this the Duraflex undercoat. This undercoat takes out any irregularities in the wood floor and is troweled to a true even surface on which the tile is laid, making a perfect floor.

By this method of construction old wood floors can be converted into new tile floors, but of course the new surface will be ½ in. above the old. This can usually be taken care of.

Stair Treads—Where Duraflex Tile is to be installed on any type of stair construction, grounds for the installation of the tile shall be prepared as under specifications above for subfloors of either cement or wood. If stair construction does not include a nosing this shall be furnished by the (Contractor) and set so that the top of the nosing is level with the finished tile tread.

Base—(a) Where sanitary cove base of same material as Duraflex Tile floor is specified, a smooth cement base of the height as specified shall be constructed flush with the plaster, the cove of the floor line to be made tangent to the finished floor level, leaving at the point of tangency a square shoulder of a height above the subfloor equal to the thickness of the tile specified.

(b) Where projecting cove base of same material as Duraflex Tile floor is specified, a smooth cement base of the height as specified shall be constructed, giving in the cement the full amount of the projection specified and making the cove at the floor tangent to the finished floor level, leaving at the point of tangency a square shoulder of a height above the subfloor equal to the thickness of the tile specified.

The cement base (in case of both (a) and (b)) is to be covered with Duraflex Base Coating, in any of the standard colors, according to the specifications of The Duraflex Company.

ESTABLISHED 1870

FULTON ASPHALT COMPANY

Manufacturers of Asphalt Mastic Floors

165 West Wacker Drive, CHICAGO, ILL.

Products

ASPHALT MASTIC FLOORS.
ACIDPROOF MASTIC FLOORS.
HEAVY DUTY TRUCKING FLOORS.
Also manufacturers of:
Fulton 1870 Brand Asphalt Mastic.
Fulton 1870 Brand Acidproof Mastic.
Fulton 1870 Brand Quality Asphalts.
Fulton 1870 Brand Asphalt Paints.

Fulton Service

Sixty years experience in the manufacture and installation of mastic and acidproof mastic floors in all types of building construction throughout the country, has given us the practical knowledge and ability necessary to efficiently and correctly install this type of flooring to meet all service conditions. The best refined asphalts, of special manufacture to meet flooring conditions, installed only by expert mechanics who have had many years of experience in installing these particular types of flooring, insure the engineer, architect or owner the best quality of workmanship and materials obtainable.

The services of a trained flooring engineer—fitted by experience to fully discuss and analyze flooring problems and to suggest or recommend the correct thickness and type of flooring best suited to your requirements, to assist in every way possible that will insure the architect, engineer, or owner of the correct construction for the class of flooring surface necessary—furnished upon request with no charge. This part of Fulton Service is just another addition to our efforts to maintain the quality of our products in seeing that they are correctly specified as well as correctly installed.

Our plants are centrally located for prompt rail shipments, and an ample number of trained mastic mechanics insures promptness on all installations of either small or large areas.

Specifications

Complete specifications on our products detailing construction, etc., samples and information gladly furnished upon receipt of request.

Uses of Asphalt Mastic Flooring and Acidproof Mastic Flooring

The practical flooring for service in:

Railroad passenger and freight terminals; packing, cold storage and manufacturing plants; paper, pulp and textile mills; food products plants; schools and colleges; laundries, warehouses and stables.

Chemical, acid, plating, galvanizing, engraving, battery, paint, dye, preserving, vinegar, pickle and yeast plants.

Flooring Thicknesses

Floors are installed in thicknesses from ¾ in. to 2 in., depending upon conditions—¾ in. for foot traffic, 1 in. for light trucking and manufacturing, 1¼ in. for general trucking, 1½ in. for heavy duty service installed in either one layer or two layers of ¾ in. each, and 2 in. for heavy service pavements, for private driveways, back-in spaces, teaming concourses, etc.

The weight of this material per square foot installed is 9, 12, 15, 18 and 24 lbs., respectively on the ¾, 1, 1¼, 1½ and 2-in. thicknesses.

Cove base or 3-in. triangular fillet installed on walls, columns or openings in floor area where desired.

Installation

Floors installed over any type of substantial base, such as new or worn wood, concrete, brick or tile floors having sufficient strength to carry floor loads. Owing to the fact that floors can be put into service within 4 or 5 hours after they are installed only a minimum delay is incurred in operating plants.

Advantages and Adaptability of Asphalt Mastic Floors

Asphalt mastic floors are unsurpassed for their durable, resilient, waterproof, sanitary, fireproof, dustless and noiseless qualities.

Our installations in place for many years under heavy trucking and hard floor service conditions are still giving excellent service in locations where other heavy duty floor types have not withstood the service demanded. Heavy trucking does not grind the surface of asphalt mastic floors, owing to their toughness and resiliency under traffic. Floors are laid monolithic, without joints, hence the waterproof and sanitary qualities.

Asphalt mastic floors are in service in the plants of the leading industrials of the country, as well as in the passenger and freight terminals of the leading railroads.

All of the above qualities combine to make this flooring the lowest priced, measuring cost per year of service, that can be laid.

Acidproof Mastic Floors

Acidproof mastic floors have the same excellent qualities as asphalt mastic floors and, in addition, are unaffected by commercial acids such as are in use in partial list of industries enumerated under paragraph covering uses of this type of flooring.

The leading industries of the country using acids in their manufacture have found that our acidproof mastic floors are meeting their service conditions, which, in addition to successfully withstanding acid action, are heavy trucking and hard usage, making them practically indestructible.

Waterproofing Protection Coat

A tough, durable, jointless, elastic coating for the protection of membrane waterproofing on bridges and viaducts.

Guarantee

All work is guaranteed by us to give the service for which it is installed.

St. Paul Union Passenger Terminal, St. Paul, Minn.
250,000 sq. ft.

New Chicago Union Station, Chicago, Ill.
100,000 sq. ft.

ESTABLISHED 1905

ALBERT GRAUER & COMPANY

Grauer-Watkins Red Asphalt and Graustic Floors

1408 Seventeenth Street
DETROIT, MICH.

REPRESENTATIVES

ATLANTA, GA., S. R. Hewitt, 608 Walton Building
BOSTON, MASS., Merton P. Ellis, 77 Summer Street
BUFFALO, N. Y., Edwin G. Day & Co., Erie County Bank Building
CANTON, OHIO, O. J. Weigand, 201 Broad Avenue, N. W.
CHARLESTON, W. VA., Fireproof Products Co., 216 Professional Building
CHICAGO, ILL., Howard Evans, 189 W. Madison Street
CINCINNATI, OHIO, Al Levinson Co., 607 American Druggists Building
CLEVELAND, OHIO, R. P. Keelor, 1268 Hathaway Avenue
COLUMBUS, OHIO, The B. M. Freeman Co., 42 E. Gay Street
DALLAS, TEX., Southwestern Flooring & Sales Co., 1300 Young Street
DAYTON, OHIO, The John G. Pool Co., 494 Ludlow Arcade
EL PASO, TEX., Neff-Stiles Co.
FORT WAYNE, IND., Arc-Con Specialties Co., 266 E. Columbia Street
GRAND RAPIDS, MICH., Consolidated Tile & Fireplace Co., 410 Ethel Avenue S. E.
GREEN BAY, WIS., Building Specialties Co. of Wisconsin, 1210 Bond Street
HUNTINGTON, W. VA., E. L. Warnick, P. O. Box 158
KANSAS CITY, MO., Day K. Smith, 1215 Midland Building
KNOXVILLE, TENN., Chas. M. Allen Co., 712 So. Gay Street
LIMA, OHIO, Lugabill Fuel & Building Material Co., Bryce Avenue and Metcalf Street
LOUISVILLE, KY., Equipment & Supply Co., 420 Baxter Avenue
NASHVILLE, TENN., John Williams Company, 722 Stahlman Building
NEW ORLEANS, LA., Nachary Builders Supply Co., 318 Carondelet Street
NEW YORK, N. Y., Master Waterproofers, Inc., 109 First Avenue, Long Island City
OMAHA, NEB., Kraus & Trustin, 511 Baum Building
PHILADELPHIA, PA., R. C. Kratz, 830 Perry Building
PITTSBURGH, PA., Pittsburgh Building Specialties Co., 1106 Jones Law Building
RICHMOND, VA., Lee O. Miller & Co., 209 Builders Exchange
ST. LOUIS, MO., P. M. Bruner Granitoid Co., 425 Frisco Building
ST. PETERSBURG, FLA., E. L. March, 303 Third Avenue, No.
SOUTH BEND, IND., South Bend Building Specialties Co., 740 So. Michigan Street
TOLEDO, OHIO, Treuhaft Brothers, 1014 Sylvania Avenue
WASHINGTON, D. C., Lally-Rohlader Co., Inc., 1756 M Street N. W.
YORK, PA., C. H. Strayer, 50 W. Philadelphia Street

Products

Grauer-Watkins Red Asphalt Floors, Preformed Cove Base and Tile, and Grauer-Watkins Style-Tile and Graustic Flooring. Acid-Proof and Industrial Heavy Duty Asphalt Floors.

For Sidewalk Lights, Skylights, Floor Lights, and Marquise Lights, see Manufacturers' Index.

GRAUER-WATKINS Red Asphalt FLOORING

Red Asphalt Flooring

A Floor of Highest Quality, Durability, and Long Term Economy—Grauer-Watkins Red Asphalt is a troubleproof, fifty-year floor. In high grade structures where the best of permanent foot traffic floors is desired, Grauer-Watkins Red Asphalt Flooring is recommended as a material attractive in appearance, which will endure for decades without upkeep expense. Its cost by-the-year becomes a fraction of the cost of cheaper floors.

It has longer life than many other types of flooring material, all of their advantages, and *lower* initial cost. This floor has highest qualities of quietness, sanitation, warmth, and elasticity.

Uses—Being an ideal foot-traffic floor, Grauer-Watkins Red Asphalt is especially intended for school corridors and classrooms, hospitals, banks, stores, public buildings. In science classrooms, its acid-resistant quality is a great advantage. For basements of churches, etc., being waterproof and non-slipping, it is unsurpassed.

Appearance—Red Asphalt is smooth and clean in appearance and even in color. The dull gloss finish eliminates glare of reflected light.

In case of necessity to cut the floor, repairs do not show, as new portions blend perfectly. It may be extended up on walls to form cove base, forming one continuous sheet.

Color—The beautiful red color blends well with almost any color scheme, making the decorating of rooms quite easy. The color may be varied from clear red through intermediate shades to black.

Easy to Work and Walk On—Grauer-Watkins Red Asphalt Flooring is comfortable under foot, quiet, warm and resilient.

Its quietness promotes efficiency.

It is never slippery, even when wet.

Clean and Sanitary—This floor is easily cleaned by flushing, dries quickly and is odorless. It is dustless, seamless, and may be coved. It never cracks and is absolutely waterproof.

Fire Protection—Grauer-Watkins Red Asphalt meets the requirements of all-fireproof buildings, as the floor will neither aid combustion nor communicate fire. It is proof against fire or explosion during laying and when in use. It is also acid-resistant, and is a non-conductor of electricity.

Thickness and Weight—All Grauer-Watkins Asphalt Floors are laid in a uniform thickness of ⅝ in. (thicker, if specified); positively guaranteed and strictly maintained. This provides practically lifelong durabilty. Weight per sq. ft. approximately 8½ lb.

Foundation—On account of the thickness and plasticity of this floor, either old or new foundation may be used equally well, and either wood or concrete is satisfactory. New foundations must be true to grade and ⅝ in. below the finished floor line, preferably float finished concrete. Old floor, where worn uneven, may be filled in with our special compound.

Speed in Laying—Floors laid one day, are ready for full service the following day, or within a few hours if desired. No costly delays due to waiting for floors to harden. Material is laid hot and hardens as it cools.

Guarantee—We guarantee positive satisfaction, full ⅝-in. thickness, and durability. We will replace Red Asphalt Floors, if they do not satisfy, with any floor of equal or lower cost selected by the buyer, without cost to him. We could not make such a guarantee if this floor had not proven itself by service, comfort and attractiveness.

Service—Grauer flooring service covers the United States. All installations are made by experienced workmen. Where desired, we are prepared to build up the subfloor of wood or concrete to proper grade before applying Grauer-Watkins flooring.

Information—Bulletins illustrated in colors, samples and quotations will be furnished promptly upon request.

Specifications—In the following rooms [..... etc.] [where indicated on plans], floors are to have a wearing surface of the Standard Grauer-Watkins Type Asphalt Floors, to be laid by Albert Grauer & Company, 1408 Seventeenth Street, Detroit, Mich., and shall be a decided red in color. This floor shall be laid in a continuous sheet ⅝ in. in thickness, and of such nature and characteristics that any section of floor can be laid completely in one operation and be ready for full service the next day. (No naphtha or other volatile solvent shall have come into contact with the floor or flooring ingredients at any stage of manufacture.) The hardness of the different floor areas is to be regulated according to the traffic requirements of the areas.

The concrete or other base for the above floor shall be finished off true to grade (floated, not troweled) ⅝ in. below the desired finished floor level by contractor for such floor base.

Continued on next page

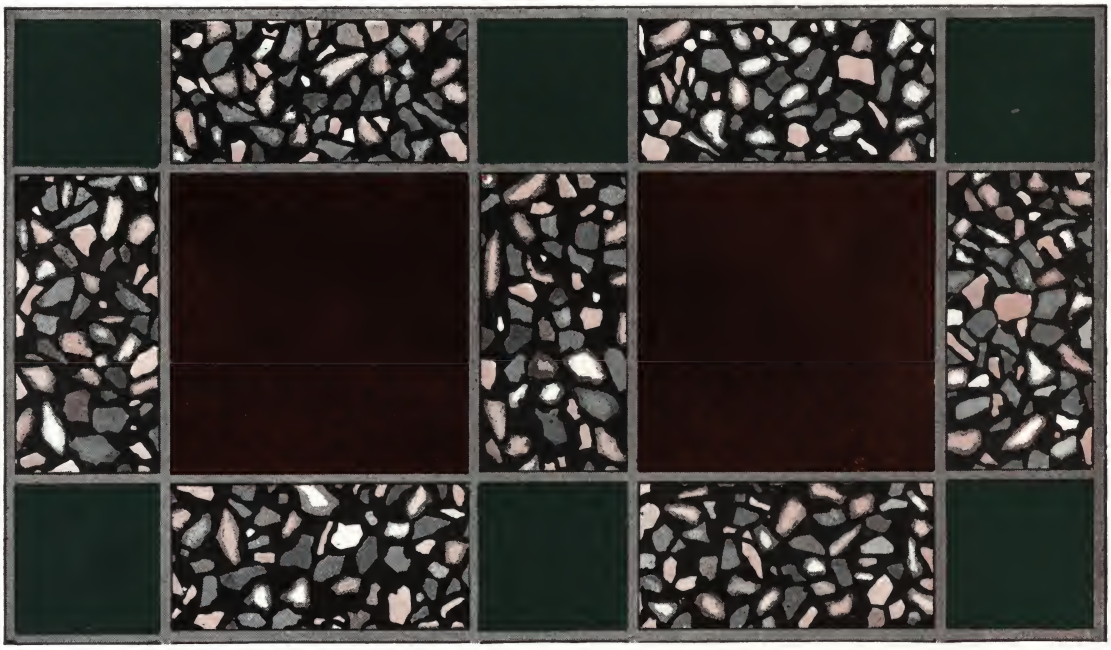
GRAUER ASPHALT GRANITO AND ASPHALT-CERAMIC STYLE-TILE

(Made in Standard and Special Designs)

Grauer Granito Style-Tile is obtained by mixing marble chips of various colors with hot asphalt as the cementing agent. This mixture is poured into shallow moulds, and subjected to pressure while hot. After cooling the slabs are ground down to the desired thickness, and then sawed to size with special equipment designed for this purpose. The process used in manufacture permits the use of different shapes in any size desired so that architects may specify the shape and size of tile that is best suited for each particular room. Shapes may be square, oblong, hexagonal, octagonal, triangular, etc. The standard thickness is ½ in. and the weight 6 lb. per sq. ft., but variations will be made, if specified.

Full details, designs and samples of Grauer-Watkins Asphalt, Granito Style-Tile and of Ceramic Style-Tile together with estimates of cost for specific areas will be gladly furnished upon request. We are always glad to co-operate with architects in making special designs to fit individual needs. Such service is rendered gratis and incurs no obligation.

Grauer Style-Tile may be obtained through local tile concerns or we will contract to install with our own men, anywhere.



Granito and Solid Color Style-Tile. Standard Tile Size 6x6 in., 6x12 in., 12x12 in. Design No. L6

GRAUSTIC FLOORING

Graustic is a medium priced industrial and general-use floor, of a rubberlike texture, composed of mineral bitumen, asbestos fiber, mineral coloring pigments and mineral oil, selected by careful research, and combined scientifically. It is provided in attractive colors and applied in plastic form to a thickness of ⅛ in. or more. Graustic is fire-resistant, acid-resistant and a non-conductor of electricity.

Durability—Graustic will endure for years under constant foot traffic. Time and hard usage tend to compact the material and improve the condition of the surface. If damaged in any way, the floor is easy to repair and does not show new work. The first cost is relatively low.

Appearance—Graustic is manufactured in the following permanent non-fading colors: Red, maroon, tan, brown and green; colors are even throughout the material, giving a rich velvety appearance.

Elasticity—Graustic floor will not crack, check, peel, crawl or wrinkle, but will expand and contract with the base to which it is applied. However, since it is perfectly bonded to the subfloor, cracks in this will also extend through the Graustic. Such cracks may easily be repaired and the new work will not show.

Hardness—Although elastic, Graustic is harder than rubber or cork. If struck with a hammer, Graustic will not chip or break. If the blow is hard enough to form a dent, this will work smooth with use.

Quietness—The yielding surface of Graustic deadens sound, a highly desirable quality in schools, hospitals, offices, churches and theaters.

Sanitation—Graustic is seamless, dustproof, waterproof and dries quickly when washed; is non-absorbent, warm and has no joints or cracks. Neither liquids nor germs can lodge in or penetrate Graustic.

Specifications—In the following rooms (.....), etc.) or (where indicated on plans), floors are to be Graustic as manufactured and installed by Albert Grauer & Company, Detroit, Mich., in strict accordance with the manufacturer's specifications. The material is to be laid in not less than 6 coats—2 bonding coats applied with a brush, 2 body coats and 2 finish coats applied with a trowel and not more than 3 gal. per 100 sq. ft. to be applied with a trowel and not more than 3 gal. per 100 sq. ft. to be applied at one time or at intervals of less than 24 hours. (If over wood, change 7 coats to 8. In addition, a layer of burlap is inserted between the first and second layers of body coats, which are increased from 3 to 4 coats.) The finished flooring, if over cement, is to be not less than ⅛ in. or if over wood, not less than $\frac{3}{16}$ in. in thickness. All work to be done by mechanics thoroughly experienced in this work. The finished floors shall not be abused or used for any purpose that will mar or damage the surface until thoroughly set.

The Graustic flooring is to be guaranteed against defects in workmanship and materials for a period of two years, that it will not come loose from the foundation, and will give satisfactory wear.

JOHNS-MANVILLE

EXECUTIVE OFFICES

292 Madison Avenue, NEW YORK

For Branch Offices, see Asbestos Wall Tile Section

Products

TILE FLOORING.

Also Packings; Refractory Cements; Waterproofings and Dampproofings; Asbestos Ebony; Asbestos and Rag-felt Roll Roofings; Special Rotproof Roofs.

For the following—see manufacturer's index:

Insulating Board; Wall Tile; Celite for Concrete and Mortar; Transite Corrugated Asbestos; Transite Flat; Asbestos Wall Board; Home Insulation; Built-up Roofing; Asbestos Shingles; Asphalt Shingles; Pipe Covering and Insulation.

J-M Tile Flooring, Type A

Johns-Manville Tile Flooring, Type A, fulfills both the requirements of utilitarian value and decorative interest. It is made of the finest grades of mineral gums, asbestos fibre, selected mineral pigments and selected fillers, and is furnished in the form of compact individual tiles. A specially developed waterproof plastic cement of equally high merit assures a permanent bond with the underflooring.

A sanitary cove tile base 6 in. high is procurable.

Adaptability

J-M Tile Flooring may be laid over wood, cement or concrete, asphalt mastic or metal, for floors or stairs.

Practical Advantages

The first cost of this flooring is lower than any other type of high grade resilient tile flooring and maintenance is correspondingly low. Barring unusual abuse the only maintenance expense is that of ordinary cleaning. Instances of more than six years use under foot in many buildings disclose practically no wear whatever. It is immune to oxidization and to injury from customary cleaning solvents. It will not curl or become loose.

J-M Tile Flooring being non-absorbent and the cement used being likewise impervious the result is a floor unaffected by moisture above or below. This characteristic enables it to be used for shower rooms, lavatories, walks around swimming pools, etc., in which latter application it is more sympathetic underfoot than other customary finishes. The material is odorless and does not originate dust. It is also alkali-proof. Usually it requires only ordinary soap and water for proper cleaning. In addition to these advantages it is also fire resistant.

Colors

Available colors are jet black, rich mahogany, Indian red, olive green, deep tan, gray, ivy green, sea green, and dark blue. The color range admits considerable freedom of choice in both monotone and polychrome effects.

A distinguishing characteristic of all these colors is that sympathy which painters denote by the term "quality"—absence of harshness and presence of mellow richness not readily described but occuring in advisable departure from primary color hues.

Sizes

Tiles are 6 x 6 in., 9 x 9 in., 12 x 12 in., 6 x 12 in., 9 x 18 in., and 18 x 24 in., as commonly used for field patterns. Sizes particularly adaptable to borders are 9 x 27 in. and 12 x 24 in. oblong. Border material is furnished in the same colors as all other sizes. Thicknesses are $\frac{1}{8}$ in. and $\frac{3}{16}$ in., the former not being recommended for use over wood.

Patterns Obtainable

Uniform sizes laid square or on the diagonal with alternating color are interesting or some variety of pattern may be had by using combinations of various sizes.

Red

Tan

Gray

Mahogany

Ivy Green

Olive Green

Blue

Black

Continued on next page

Weight

The 1/8 in. thickness weighs 1.35 lb. per square foot and the 3/16 in., 2.0 lbs.

Guarantee, Etc.

J-M Tile Flooring is fully guaranteed against any defects in material for a period of one year from date of completion of the job. Rubber castors, rubber sleeves, glass or composition slides or other proper bearings should be used as protection against indentation from sharp point loads of furniture or equipment. With reasonable care J-M Tile Flooring will last for a great many years.

Service

The Architectural Service Department of Johns-Manville will be glad to furnish samples and assist with advice on request.

SPECIFICATIONS FOR JOHNS-MANVILLE TILE FLOORING — TYPE "A"

Work Included

The work contemplated under this specification shall include all materials, labor, equipment and services necessary for and reasonably incidental to the installation of Johns-Manville Tile Flooring Type A on (State in detail surfaces to be covered) as shown on drawings or herein specified.

(Omit either or both of the following if not to be used.) The installation of a hot mastic sub-base shall be included. A cove base shall be included.

Work Not Included

Other contractors will furnish and install the following work as specified under other divisions and other specification text which this contractor shall read so as to ascertain what is called for therein:

(a) (Include if underfloor is to be concrete). Furnish and install the concrete underfloor which shall have a top layer thick enough to prevent cracking or separation from the sub-base structure and composed of one part of Portland cement and two parts of clean screened sand. It shall be steel troweled to a smooth finish, free from waves and irregularities, and shall be finished to a point below the required floor level equal to the thickness of the tile flooring specified. The underfloor shall not be treated with hardeners, paint or surface coatings of any kind. It shall be free from frost or the effects of freezing and shall be left dry and clean. No lines shall be struck in the surface of the underfloor. Where tile base is specified cement backing shall be provided to height of tile, troweled smooth.

(b) (Include if sub-floor is to be hot mastic). Furnish and install the concrete underfloor which shall be finished below the required floor level a distance equal to 1″ plus the thickness of the tile flooring specified. The top surface of the concrete underfloor shall be finished equal to a screed coat not troweled and shall be free from projections or depressions. The tile contractor will install the mastic.

(Omit the following if not required.) The concrete sub-floor shall be provided with proper slope to drains.

(c) (Include if underfloor is to be wood). Furnish and install the wood underfloor which shall be dressed, kiln dried, tongued and grooved flooring. The boards shall be not more than 3″ face width and shall be driven up tight and nailed to bearings at not greater than 16″ centers. Any irregularities shall be planed down to leave a smooth surface.

(d) (Include if stair treads or platforms are involved.) Furnish and install on stair treads and platforms a metal nosing recessed the exact thickness of the tile flooring specified so that such flooring will finish to the top of the nosing.

Connecting Work

This contractor shall examine all surfaces on which, or against which, his work is to be applied and he shall notify the architect in writing of any defects that he may discover, which, in his opinion, he considers detrimental to the installation of his materials.

Schedule

(It is suggested that, particularly on large jobs, the specification should contain a schedule indicating the following):

(A) Room name or number. (B) Size and thickness of tile units. (Over wood underfloors 3/16″ tile must be used). (C) Color and arrangement of tile used in field. (D) Cove base, if desired. (E) Color of tile used in border. (F) Type of underfloor (concrete, wood, hot mastic, etc.)

Materials

All tile flooring Type A, tile cement (and where specified, sanitary cove base and special hot mastic flooring) referred to in these specifications shall be those manufactured by Johns-Manville and shall bear the manufacturer's label. The thickness of the tile, size, colors, etc., shall be as specified in the schedule.

Installation

(If to be applied over wood underfloor, include the following paragraph):

The wood underfloor shall be overlaid with one layer of Johns-Manville 15 lb. Saturated Asbestos Felt, with the joints butted, (not lapped), secured in place with the tile cement.

(If sub-floor is to be hot mastic, include the following paragraph):

The underfloor shall be covered with J-M Special Hot Mastic Flooring installed by a contractor approved by the manufacturer. It shall be 1″ thick and shall be finished smooth and level to a point below the final floor level equal to the thickness of the tile flooring specified.

The surfaces which are to receive the tile shall be covered with the tile cement, troweled on evenly to an average thickness of 1/16″. The tiles shall be firmly pressed into the cement with the joints formed closely and shall be thoroughly rolled so that all joints will be formed tight and even and the finished surface smooth. Upon completion, the surface shall be cleaned of all excess of cement.

INSULITE CHEMICAL COMPANY

Insulite Mastic Flooring—The Original Finished Mastic Floor

AURORA, ILL.

Products

INSULITE MASTIC FLOORING; INSULITE TILE FLOORING; INSULITE INDUSTRIAL FLOORING.

The Company

Originators of mastic flooring applied cold, as a finished floor. The plant at Aurora, Ill., is the *only* flooring plant equipped for the actual depolymerizing and refining of Elaterite (mineral rubber) ore—thus permitting the use of pure Elaterite, with *complete* refining, manufacturing and installation operation controlled by this one company. Manufacturing and installation processes are the development of *over nineteen years' experience devoted to this line.*

Facilities and Service—All installations are made by skilled factory-trained mechanics, from permanent staffs maintained at the plant and by authorized agents. Local agents, who handle Insulite Mastic, are experienced flooring men.

Insulite Mastic (Elaterite) Flooring

Description—Insulite Mastic (Elaterite) Flooring is a finished, permanent wearing surface for cement and other floors. Its tough, rubbery composition will resist concentrated traffic almost indefinitely. Many installations of Insulite can be cited in practically perfect condition, after ten to fifteen years' service.

Distinguishing Features—Chief among the many points of difference between Insulite and other grades of mastic flooring is the fact that Insulite alone has a binder of *pure* Elaterite (mineral rubber). It contains no asphalt or gilsonite. The permanent life and resilience of pure Elaterite insure years of extra service and comfort for Insulite Floors. The perfect smoothness and absence of trowel marks are obtained by special finishing methods, developed exclusively by this company.

Where Used—Insulite is ideally adapted for use in: Office buildings—general offices, private offices, or corridors. Schools and colleges—in classrooms, corridors, libraries, dormitories, etc. Hospitals, sanatoria, children's homes—in wards, corridors, sun porches, etc. Churches, parish houses—in auditoriums, basement rooms, social rooms. Courthouses, civic buildings—in corridors, courtrooms, offices, etc. Laboratories—a perfect finished floor, resistant to acids and alkalis. Basements, in schools, churches or other buildings. Insulite bonds *permanently* and safely to basement or ground floor slab.

Essential Qualities—Insulite is built to the subfloor—will not loosen, wrinkle nor curl. It is ductile—minor dents quickly iron out under traffic. It is renewable—may be patched or resurfaced, after years of usage. It is non-absorbent—100% sanitary and easy to keep clean. It is fireproof and moisture-proof—does not show burns nor stains. It is noise-deadening, and a non-conductor of heat or electricity. It is verminproof—no foreign matter can penetrate or injure it.

Cost—Determined by the conditions, size and the character of each job. The cost of Insulite Mastic, installed complete, is considerably *less* than with other types of finished floor. We will promptly estimate complete costs on any areas submitted.

Colors and Borders—Insulite is furnished in soft, attractive shades of mahogany, brown, tan, olive or green. Attractive two-color effects can be had by installing borders.

Base—Insulite can be brought up in a sanitary coved base, troweled against cement. Or, to save cost, Insulite finish can be applied on base in double brush coat, to match floor.

Thickness—Insulite Mastic is installed in standard thickness of ⅛ in. This represents a scientific combination of six coats, separately applied, to produce the maximum of wear and firmness under ordinary conditions. On stair treads, or under special conditions, Insulite is installed in $\frac{3}{16}$-in. thickness.

Guarantee—All installations are fully guaranteed against wearing through, disintegrating, bulging, creeping, loosening, or any defects of workmanship or material.

Specifications for Insulite Mastic Flooring—Mastic flooring as indicated by plans and specifications, is to be Insulite Mastic Flooring, manufactured by the INSULITE CHEMICAL COMPANY, Aurora, Ill., installed by that company or its authorized representatives, in strict accordance with its standard specifications.

The mineral rubber binder shall be pure Elaterite ore only, which has been subjected to a refining process at the plant in which the complete manufacturing operation takes place. The Elaterite binder shall be fluxed with a volatile oil, but shall not be blended or compounded with gilsonite, asphalt, pitch or any other hydrocarbon.

The material shall be applied in six coats by experienced, factory-trained mechanics. The finished floor shall be not less than ⅛-in. thickness. The primer coat shall consist of pure Elaterite, fluxed with quickly evaporating oil, and applied by brush.

The finished floor shall be smooth, level, brought to a polish and of color designated by the architect. It shall not be subjected to traffic for a period of at least one week.

Subfloor Requirements—The concrete floor, over which Insulite is installed, shall have troweled or *smooth* float cement finish, brought to ⅛ in. below finished floor grade, delivered perfectly dry, clean, free from oil, dirt, scum, plaster, or chalky spots. On stair treads, landings or ledges, suitable metal nosing shall be installed by others.

Insulite Tile Flooring

Insulite Tile Flooring offers the same general advantages as Insulite Mastic Flooring, but in pre-cast tile form.

Description—Insulite Tile is a composition of natural bitumen binder, with asbestos fibre, mineral solids and high grade coloring pigment, manufactured into tile form. It has a tough, rubbery quality, providing extremely long wear, together with a pleasing, sound-deadening, resilient floor surface. It has a smooth finish, of close grained texture, easy to clean and presenting a soft rich lustre when polished.

Where Used—Insulite Tile is adapted to the same type of buildings as noted for Insulite Mastic, including use on basement or ground floor slab. It is *especially* adapted to use in corridors, aisles, vestibules, showrooms and like areas, where the greater decorative effect of tile flooring is desired.

Distinguishing Features—Insulite Tile is toughened by scientific treatment of the binder content—not hardened by excessive use of mineral fill. This, together with the superior bitumen binder used, produces a tile of greater flexibility. It insures more permanent life of the tile itself, without objectionable tendency to become hard or lifeless underfoot.

Sizes and Thickness—Furnished in standard $\frac{3}{16}$ and ⅛-in. thickness. Sizes, 6x6, 9x9, 9x18, 12x12 and 12x24 in.

Colors—Brown, black, red, green, tan, blue, gray, mahogany (dark red), ivy (dark green), cedar (dark tan), slate (dark gray).

Specifications for Insulite Tile Flooring—Where indicated, finished floors shall be Insulite Tile, installed in strict accordance with the specifications of the INSULITE CHEMICAL COMPANY, Aurora, Ill., equal in consistency, flexibility, finish, and all other respects to sample submitted.

Subfloor—Where laid over cement floor, the cement finish shall be hard and smooth, and troweled to a true and even surface, $\frac{3}{16}$ or ⅛ in. below grade of finished floor. All surfaces over which Insulite Mastic Tile is to be laid shall be bone dry, broom cleaned, free of chalky spots, grease, plaster, or foreign matter. A metal stop or recess shall be installed by others, where tile floor ends at doorways, landings, aisles, etc.—set to exact thickness of the tile. On stair treads, metal nosing shall be installed by others, set to exact thickness of tile.

Typical Installations of Insulite Flooring

Union Central Annex Building, Cincinnati, Ohio—181,000 sq. ft.
U. S. Veterans' Hospital, Little Rock, Ark.—120,000 sq. ft.
Canadian Government Hospital, Essondale, B. C.—84,000 sq. ft.
Big Four Railway Building, Cincinnati, Ohio—135,000 sq. ft.
Fisk Rubber Co. Offices, Chicopee Falls, Mass.—47,000 sq. ft.
Life & Casualty Building, Nashville, Tenn.—40,000 sq. ft.
LaSalle Extension University, Chicago, Ill.—60,000 sq. ft.
Elementary and High Schools, Greenfield, Ohio—24,000 sq. ft.
Weaver High School, Hartford, Conn.—8,000 sq. ft.
University of Virginia Gymnasium Building—30,000 sq. ft.
Courthouse, Wilson, N. C.—30,000 sq. ft.

THOS. MOULDING FLOOR COMPANY

Manufacturers of Moulding Master Floors and Floor Coatings

165 West Wacker Drive
CHICAGO, ILL.
NEW YORK, N. Y., Grand Central Terminal Building

Products

MOULDING MASTER FLOORS:

Troweled-on Floors:

- TMB Master Mastic.
- TMB Elaterite Mastic.
- Rubbercote.
- Moulstone.
- Terrazzo.
- Marbletread.
- Duraflor.
- Underlayment.

Soft Tile Floors:

- Moultile (asphalt tile).
- Rubber Tile.
- Cork Tile.
- Linoleum Tile.

MOULDING MASTER FLOOR COATINGS:

- Velvetread.
- Dancetread.

MASTER MASTIC

T-M-B FLOORING

TRADE-MARK

Installation

At any point in the United States we install with our own construction organization. Arrangements can be made for installation in other countries. (Terrazzo is installed in the Chicago district only.)

For the smaller jobs at points distant from centers where we maintain construction crews, Moulding Master Flooring Materials are sold for installation by local contractors.

Price Range

Cost ranges from 12 cents to more than $1.50 per foot of Moulding Master Floors installed and ready for use. By combining under one contract and by handling under one construction supervision we maintain the lowest possible cost.

Service

Our Engineering and Service Department is ready at all times to give a preliminary lump sum price on any of our floorings. Call on our Engineering and Service Department for flooring information before structural designs are completed or structural floors purchased, as many ways of saving money can be suggested.

Division of Thos. Moulding Brick Co.

THOS. MOULDING FLOOR COMPANY is the Flooring Division of the Thos. Moulding Brick Co., whose record covers nearly seventy years' service and responsibility. *(Ask for a Moulding representative to consult with you.)*

A Few of Those Who Specify and Use Moulding Master Floors

York & Sawyer, New York, N. Y.
Weary & Alford Co., Chicago, Ill.
George Awsumb, Memphis, Tenn.
Berlin & Swern, Chicago, Ill.
Long & Thorshov, Minneapolis, Minn.
Holabird & Root, Chicago, Ill.
Ritter & Shay, Philadelphia, Pa.
Graham, Anderson, Probst & White, Chicago, Ill.
University of Chicago, Chicago, Ill.
Crane Company
Trustees System Service Corp., Chicago, Ill.
J. A. Wetmore, Washington, D. C.
Frank D. Chase, Inc., Chicago, Ill.
Geo. B. Rogers, Mobile, Ala.
Shattuck & Layer, Chicago, Ill.
Diboll & Owon, Ltd., New Orleans, La.
S. N. Crowen & Assocs., Inc., Chicago, Ill.
Toltz, King & Day, St. Paul, Minn.
Coolidge & Hodgdon, Chicago, Ill.
University of Michigan, Ann Arbor, Mich.
Horders, Inc., Chicago, Ill.
Swift & Co., Chicago, Ill.

Merchandise Mart, Chicago, Ill.
GRAHAM, ANDERSON, PROBST & WHITE, Architects
Moultile, the choice of more than 120 tenants in the Merchandise Mart Building

REZILITE MANUFACTURING COMPANY

Manufacturers of Mastic and Composition Flooring

122 South Michigan Avenue
CHICAGO, ILL.

BRANCHES IN ALL PRINCIPAL CITIES

School Installation

REZILITE

TRADE-MARK
Reg. U. S. Pat. Off.

Products

REZILITE MASTIC FLOORING.

Also manufacturers of Rez-Il-Tile Mastic Tile Flooring, Rubber Tile Flooring, Sheet Rubber Flooring and Rez-Il-Tex Plastic Wall Coating.

High Noon Club, Pittsburgh, Pa.

REZILITE MASTIC FLOORING

Rezilite comes in semiliquid form and is laid from ⅛ to ¼ in. thick over the entire floor.

If desired it can be extended up over cove, base or wainscot forming one continuous sheet, which is waterproof, acidproof, wearproof, dustproof, germproof and fire resisting.

Rezilite will not crack, crumble nor peel; retains its elasticity. Deadens sound, and expands and contracts with the base to which it is applied. It is a most economical and permanent floor.

Rezilite is made in rich mahogany, battleship tan, and deep green.

Packed in barrels.

Wearproof—Rezilite floors are very durable and will last as long as the building; are quiet to walk upon, resilient, noiseless, and easy on the feet; eliminate fatigue.

They combine all the good features of concrete, tile, wood and linoleum.

Rezilite has permanent wearing qualities—the warmth of wood and the resilient, noiseless, dustless qualities of linoleum, cork and rubber at a substantial saving.

Waterproof—Water cannot injure Rezilite floors, neither will water make Rezilite slippery. It is therefore adaptable for stair treads, stair landings, elevator landings, elevator floors, street and railway cars, ships and other places where a permanent and waterproof floor is required.

Acidproof and Slipproof—Rezilite floors are acidproof and alkaliproof and can be used to advantage in chemical laboratories, operating rooms, nickelplating rooms, and other places where a good acidproof floor is necessary.

Rezilite floors are never slippery, wet or dry, thus being easy to walk upon.

Rezilite floors are non-conductors of electricity; and can be used to advantage in power stations, dynamo and generator rooms, battery rooms, etc.

Thoroughly Sanitary—Rezilite when laid in one piece on cove up to the top of base is one of the most sanitary floors extant.

By reason of its perfect adhesion it becomes a part of the permanent construction. Water, dirt, vermin and disease germs cannot penetrate and get between it and the base to which it is applied, as is the case with wood, linoleum, or other floors that must be pasted down.

It is not affected by changes in temperature, electricity, etc.

A Typical Office Installation

A Few Installations

U. S. Treasury Building, Top Floor, Washington, D. C.
Arlington Building, U. S. Government, Washington, D. C.
N. J. Zinc Co., Palmerton, Pa.
Vanderbilt University, Nashville, Tenn.
Chemistry Building, University of Illinois, Urbana, Ill.
Pittsburgh Plate Glass Research Laboratory, Milwaukee, Wis.
Richard Memorial Building, Bacone College, Bacone, Okla.
Claypool High School, Claypool, Ind.
Rose Avenue School, Toronto, Ont.
High School, Isabel, Kan.
Salvation Army, Pittsburgh, Pa.
Tuberculosis Hospital, N. H. D. V. S., Sawtelle, Cal.
Garden Road School, Wellesley Hills, Mass.
Sewerage Disposal Station, Milwaukee, Wis.
New Baker Laboratory, Cornell University, Ithaca, N. Y.
Animal Research Building and Robinson Laboratory, Ohio State "U", Columbus, Ohio
Mt. St. Joseph Academy, St. Joseph, Ky.

Salvation Army Building, Pittsburgh, Pa.

THE TILE-TEX COMPANY

Manufacturers of Resilient Floor Tile

FACTORY AND MAIN OFFICE
CHICAGO HEIGHTS, ILL.
EASTERN SALES OFFICE: Grand Central Terminal, NEW YORK, N. Y.

Product

TILE-TEX RESILIENT FLOOR TILE and SANITARY COVE BASE (asphalt-asbestos composition).

The Company

A corporation which for years has been engaged solely in the manufacture of asphalt floor tile. The personnel represents many years of successful experience in blending and adapting asphalts.

The Company enjoys a strong financial position and offers, back of the product and the finished floor, a responsibility upon which the architect and his client can confidently depend. References, R. G. Dun & Co., National Bank of the Republic, Chicago, Ill.

Manufacturing and Installation Facilities

A well equipped factory, operating 24 hours per day to meet demand and maintain adequate stocks with reserve production facilities for emergency periods, insures avoidance of shipping delays and prompt installation service.

Tile-Tex is installed by competent, approved resilient floor contractors located at strategic points throughout the country, aided by the supervision of experienced factory representatives. Responsibility for the finished floor rests with THE TILE-TEX COMPANY, whose guarantee covers each installation. Factory representatives are available for localized architectural service.

Description—Technical Data

Composition—Tile-Tex is composed entirely of inert materials. The major ingredients are natural asphalt of highest melt point and quality, asbestos fiber and pure mineral pigments; these are combined with the necessary blending agents.

Manufacturing Process—The ingredients are thoroughly amalgamated through the medium of heat and pressure and in sheet form are hot calendered to a uniform thickness. These sheets are cut cold by a special process to accurate, rectangular tile with perfect arrises.

Tile Thickness—Tile-Tex is made in two standard thicknesses—1/8 and $\frac{3}{16}$ in.

Tile Sizes—Tile-Tex is furnished in the following shapes and sizes: Standard rectangular sizes—6x6, 6x12, 9x9, 12x12, 12x24, 18x24 in. Special shapes—Long Hexagonal (surface area 87 sq. in.), Elltyle (surface area 108 sq. in.). Feature strips in the following widths—1/4, 1/2, 3/4, 1, 1 1/2, and 2 in.

Colors—Pure mineral pigments of uniform intensity, accurately proportioned and blended with the other ingredients, assure permanent colors which can always be depended upon to perfectly match existing installations where, due to alterations or accident, repairs are required.

Tile-Tex is furnished in the following colors: Standard—black, mahogany, red, olive, tan, green, gray; Special—silver, old gold, nublue, rose, jade and twelve marbleized colors (see color charts, on pages following).

Uniformity—Rigid laboratory control supplemented by careful tests of each run and inspection before packing assure uniform excellence of product.

Special Features

Resilient—The resiliency of Tile-Tex is equal to that of any other resilient floor and this is permanent—no oxidation is possible. Comfort and quiet are assured.

Durable—All the materials used in Tile-Tex are compressible, non-abrasive and inert.

Foot traffic, even under severe conditions, has practically no effect upon it.

Remarkable instances can be cited as to wear resistance of the material. Since Tile-Tex never curls or comes loose from the subfloor it becomes an integral part of the building construction.

Moistureproof—The chief ingredient of Tile-Tex is asphalt and the tile are bonded to the underfloor with asphalt cement. Since both tile and bonding agent are impervious to moisture, Tile-Tex can be laid on a cement subfloor in contact with the ground, at or below grade, without waterproofing or otherwise treating the subfloor slab. The Company's guarantee covers fully such installations.

Stainless—Nothing is known that will permanently stain Tile-Tex. Ink, iodine, etc., are easily removed with a damp cloth. Burning matches and lighted cigarettes leave no scar.

Sanitary—The joints seal producing a seamless, continuous covering of uniform thickness.

No dirt or foreign matter can penetrate and lodge below the exposed cleanable surface.

Odorless—Tile-Tex gives off no odor under any circumstances.

Non-slip—Even when wet, Tile-Tex is non-slip. It provides a safe, sure footing at all times; a valuable factor in schools, hospitals and similar public buildings.

Fire Resistant—Tile-Tex is substantially incombustible. Test and report by Columbia University, New York City.

An Electrical Insulator—It has a high dielectric strength.

Acidproof and Alkaliproof—Acids in ordinary commercial strengths do not injure Tile-Tex.

The floor is ideal for chemical laboratories.

Low Cost—Tile-Tex is installed at a price comparable with other resilient floors of merit, and much lower than many.

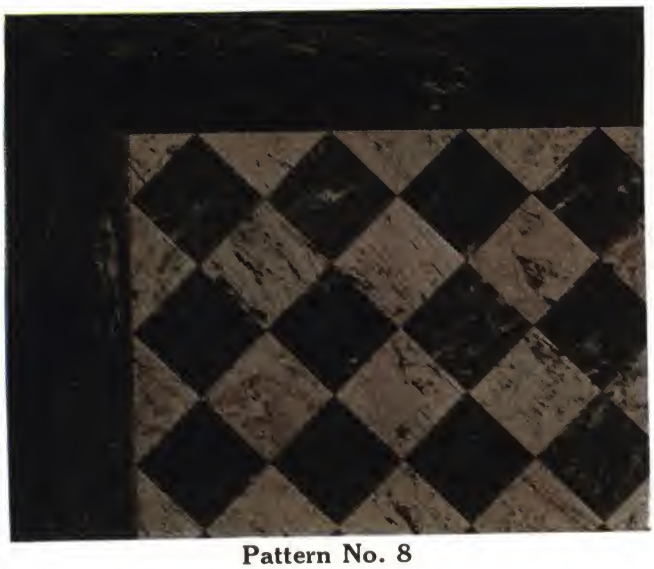
Low Maintenance—Since Tile-Tex requires no waxing or other surface treatment to maintain its appearance or make it impervious, it can be kept clean by the simplest, most inexpensive method—damp mopping. It acquires its sheen and polish by traffic and use.

Excellent Appearance—The variety of color and size combinations offer a wide range of attractive design possibilities. The appearance improves with use. Traffic adds surface luster and brilliancy.

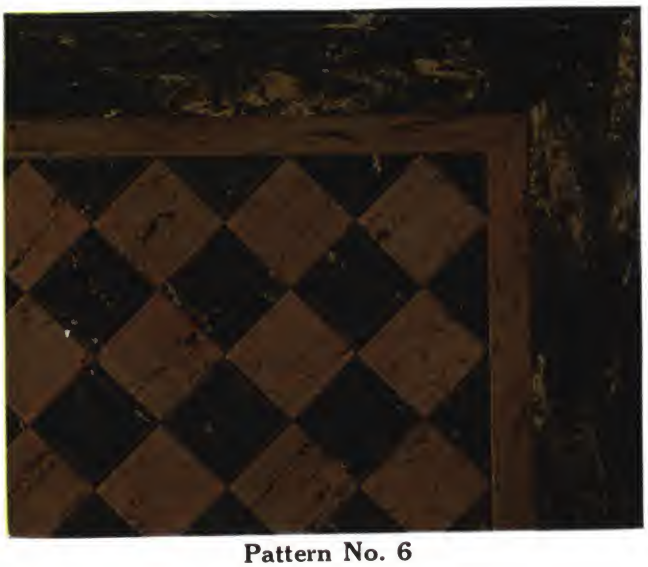
Continued on next page

BORDER AND PATTERN DESIGNS

Marbleized Tile



Pattern No. 8



Pattern No. 6

Pattern No. 7

Pattern No. 5

Pattern No. 15

Pattern No. 16

Continued on next page

Easy to Repair—In the case of alterations, partition changes or accidents, Tile-Tex floors can easily be repaired at minimum cost and inconvenience, leaving no visible evidence of the replacement.

ADAPTABILITY AND SUBSURFACE PROVISIONS

Note: *That the finished Tile-Tex floors may be installed with the greatest degree of economy, permanence and satisfaction as to appearance, we recommend that the following provisions, over which the flooring contractor has no control, be included under the various specification headings where and when they apply.*

Where Adapted—In all types of building where a resilient non-slip easily maintained floor of excellent appearance is desired. Tile-Tex is particularly well adapted for churches, schools, universities, chemical laboratories, hospitals, public buildings, offices, stores, restaurants, etc. It is not affected by moisture and can be laid over an unwaterproofed concrete slab, at or below grade.

Where Not Adapted—Oils and deposits of heavy grease are practically the only agents that injure Tile-Tex. Avoid installations in locations subject to oil drippings from machines, cooking, etc.

Do not lay Tile-Tex over wood floors attached to sleepers set in concrete fill at or below grade. Such wood floors, when the surface is sealed with an impervious material, dry rot.

Subsurfaces — General — A clean, sound, smooth subfloor surface without depressions or projections should always be provided. Depressions and projections in the subfloor will be apparent in the finished floor since Tile-Tex is of uniform thickness and follows the subfloor contour. Chalky, flaky surfaces or surfaces covered with foreign substances will affect the bond.

Allow the tile thickness from subfloor to finished floor level, unless difference in floor level is compensated for by thresholds.

Concrete Subfloors—Concrete subfloors to receive Tile-Tex should be structurally sound, hard and apparently dry, free from scale, laitance or foreign deposits and without surface imperfections.

Note: *The specification for concrete floors prepared by the Portland Cement Association as given in Sweet's Architectural Catalogues is recommended.*

Where tile is set in a sinkage with finished concrete or magnesite terrazzo borders or cove base, or finished against adjacent areas of these materials at doors, etc., without thresholds, we recommend that the fragile edges of the sinkage be finished against a brass finishing bar.

Wood Subfloors—New—Over wood joist always provide a double floor. New finished wood floors to receive Tile-Tex should be of good quality, not less than 25/32 in. thick nor greater than 3¼ in. face. Floor stock should be kiln dried, sound, matched flooring, laid close and thoroughly blind and face nailed. Surface should be machine sanded smooth.

Old—Unless smooth, old floors should be sanded. If badly cupped or worn, we recommend that they be leveled with a ¼ in. to ⅜ in. scratch coat of magnesite reinforced with wire mesh over waterproof paper and trowelled to a true smooth plane.

Specify only $\frac{3}{16}$" tile for application direct to wood.

Stair Treads—The subfloor provisions outlined for floors apply likewise to stair treads. Always specify a rigid metal stair nosing set to accommodate the Tile-Tex thickness.

BORDER AND PATTERN DESIGNS

Plain Tile

Pattern No. 11

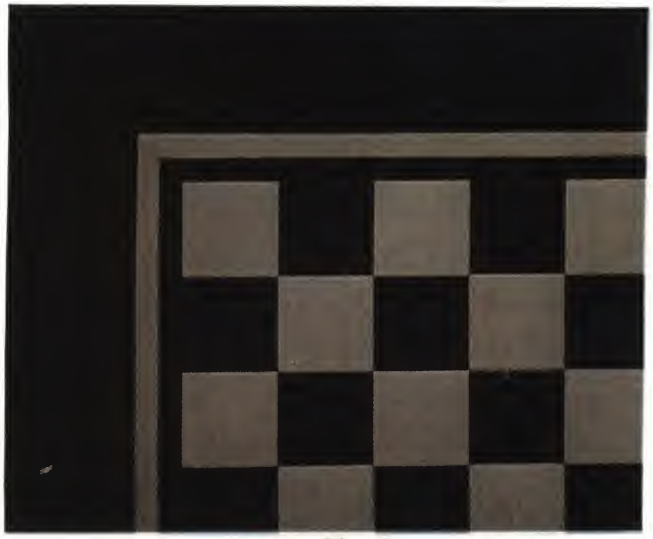
Pattern No. 12

Pattern No. 9

Continued on next page

BORDER AND PATTERN DESIGNS

Plain Tile



Pattern No. 1

Pattern No. 10

Pattern No. 4

Pattern No. 2

Pattern No. 13

Pattern No. 14

Continued on next page

No. 301

No. 305

No. 108

No. 103

No. 801

No. 121001

No. 109

No. 807

No. 804

No. 901

No. 102

No. 201

Continued on next page

Green No. 4

Grey No. 6

Silver Grey No. 8

Rose No. 11

Tan No. 3

Nublue No. 10

Olive No. 7

Red No. 2

Old Gold No. 9

Mahogany No. 5

Jade No. 12

Black No. 1

Continued on next page

MASTER SPECIFICATIONS

Work Included—

Note: List and locate either in schedules on plans or under this heading: (1) all floor areas to be covered with Tile-Tex and state type of subfloor; (2) all Tile-Tex sanitary cove bases; (3) all stair treads and landing.

Samples—File with the architect samples conforming with these specifications.

Subsurface Provisions—Provision has been made under other specification headings that all surfaces to receive finished flooring under this contract shall be constructed as set forth under "Adaptability and Sub-surface Provisions," of the Tile-Tex Company's catalogue in Sweet's Architectural Catalogues.

Inspection—Before installing the finished flooring this contractor shall thoroughly inspect the surfaces to be covered and shall notify the architect, promptly, in writing of any defects.

Material—Finished Flooring and Sanitary Cove Base—Asphalt floor tile and cove base shall be Tile-Tex as manufactured by the Tile-Tex Company, Chicago Heights, Ill., or equivalent, meeting fully this manufacturer's standard of quality as set forth in their catalogue published in Sweet's Architectural Catalogues.

Floor tile thickness shall be .....; sizes shall be .....; color(s) shall be .....; design shall be .....

Note: If more than one thickness or size is used, designate here where each is to be installed. If a variety of colors are used, specify those selected and their locations and specify the design or pattern characteristics.

Cove base shall be preformed base of standard size; color(s) shall be .....

Note: If a variety of colors are used, specify those selected and their locations.

Bonding Cement—Cement for laying asphalt composition tiles shall be Tile-Tex asphalt cement.

Heat—Heat will be provided by others. The building shall be heated for a period not less than 24 hours prior to the installation of Tile-Tex and a uniform temperature of not less than 70° maintained until completion of work under this contract.

Installation—All Tile-Tex floors and base shall be installed by approved Tile-Tex contractors.

Accurately miter-cut all cove bases to fit at reentrant angles and corners. Provide mortar fill to support cove. Cement all bases to backing.

Each tile shall be set in Tile-Tex Asphalt Cement. Tile shall be laid true to line and pattern specified. All joints shall be close and even and all surfaces shall be in a true plane.

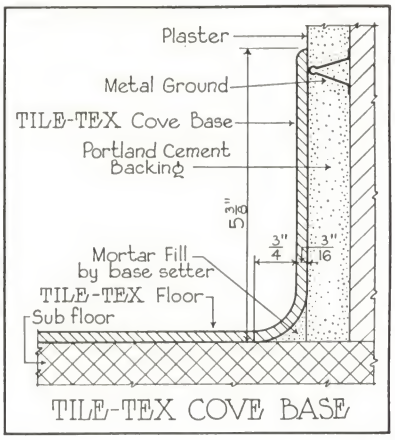
Cove Base

Tile-Tex Sanitary Cove Base is preformed 5⅜ in. high and 3/16 in. thick against the wall. Sanitary Cove has a ¾ in. radius. Made to abut ⅛ and 3/16 in. floor tile.

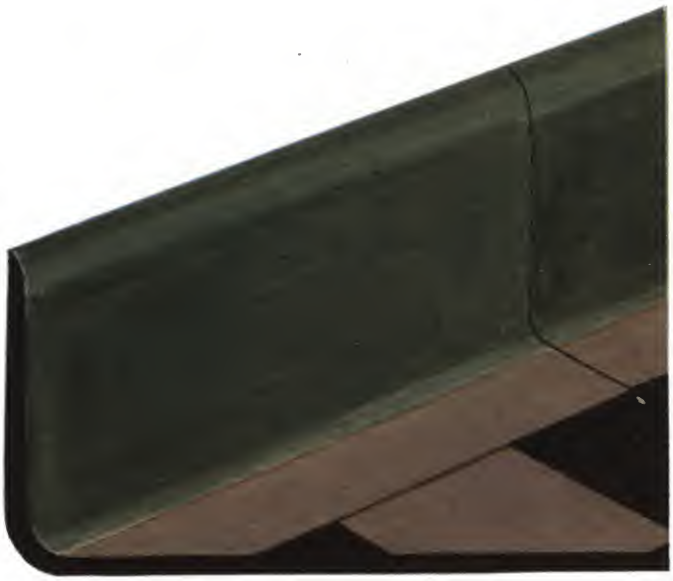
Backing

On new work where a coved Tile-Tex base is specified, provide a smooth Portland cement backing flush with the plaster and forming a clean, true angle of 90° with the floor. If metal bead plaster ground is used, it shall be set level and true ¼ in. below top of base and both plaster and Portland cement backing brought flush to it. If wood plaster ground is used, remove same before installing cement backing. See detail drawing.

A practical, economical sanitary base that can be used with linoleum. Comes in units 12 in. long by 5⅜ in. high, ready to set in place.



TILE-TEX COVE BASE



TILE-TEX SANITARY COVE BASE

BORDER AND PATTERN DESIGN
Pattern No. 3

UNITED STATES RUBBER COMPANY

FLOORING DIVISION

Asphaltum Tile

PROVIDENCE, R. I.

BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

Products

U. S. Rubber Asphaltum Tile Flooring.

For our pages on Rubber Tile Flooring, see Manufacturers' Index.

"U. S." Rubber Asphaltum Tile

"U. S." Rubber Asphaltum Tile is a different and better composition tile floor, designed and built for the specific purpose of producing a quality composition tile floor of outstanding merit at reasonable cost.

"U. S." Rubber Asphaltum Tile is pre-cast in individual art tile structural units in various shapes, colors and sizes, ready for laying with an asphalt, waterproof, paste cement.

General Characteristics and Advantages

"U. S." Rubber Asphaltum Tile is not only attractive and durable, but easily and quickly laid. It is waterproof, acidproof, sanitary, resilient, comfortable, non-slipping, and decorative in appearance. It will not buckle, crack, fade, curl, shrink, expand, or deteriorate with age.

Moistureproof—Resistance to moisture and dampness is one of the important factors of "U. S." Rubber Asphaltum Tile. It may be used for places below grade, such as cellars and basements; and for other locations which have proven disastrous to most other floor coverings.

Adaptability

"U. S." Rubber Asphaltum Tile is particularly adaptable for use in schools (corridors, rooms and stairs); hospitals; offices and corridors and on stairs of office buildings; in toilets, washrooms and locker rooms; public institutions; chemical laboratories; restaurants, dining rooms, lunch rooms, and around soda water fountains; bakeries, delicatessen shops, and in dining salons on ships, in basements and all spaces on, or below grade; jails, courthouses, and in all stores.

Repairs

If repairs are ever necessary, the tile can be easily and economically replaced since one or more units can be relaid without leaving an unsightly or patched appearance.

Designs

From the 13 colors and the various shapes available, it is possible to lay a "U. S." Rubber Asphaltum Tile in a variety of patterns and designs.

Colors

"U. S." Rubber Asphaltum Tile is furnished in 13 colors: Black, Mahogany, Maroon, Morocco Red, Dusky Olive, Chestnut, Tan, Ivy Green, Mouse Gray, Rose-Beige, Roman Green, Blue, and Old Gold.

Gauge

The standard thicknesses of all "U. S." Rubber Asphaltum Tile are $\frac{1}{8}$ and $\frac{3}{16}$ in.

Cove Base

We furnish a 4-in. and 6-in. black rubber cove base.

Sizes

Tile made in the following sizes: Square Tile—4x4 in., 6x6 in., 9x9 in., and 12x12 in. Also 12-in. Hexagon, 9.625 in. Octagon, and a 6-in. Rectangular Hexagon. Border—9x27 in., and 12x24 in.

General Specifications for Laying

"U. S." Rubber Asphaltum Tile should be laid over concrete, magnesite or composition floors, which are smooth, solid and free from waves and irregularities.

Asphaltum Tile should not be laid upon a wood floor, except in such cases where the wood floor is of the best grade of kiln dried seasoned lumber, which is tongued and grooved, top nailed and toe nailed in such manner that it would be impossible for the boards to shrink, curl or warp in any way. There are very few wood floors which are adaptable for Asphalt Tile and, in general, we do not recommend the installation of this material on a wood sub-floor.

Asphaltum Tile should never be installed where there is unusually heavy trucking, or where there are heavy point loads. This floor is a resilient type of flooring and all furniture such as swivel chairs, desks, etc., should be equipped with a proper form of caster which will not indent or mar the surface of this material. Asphalt Tile is not an adaptable floor where there is excessive grease, gasoline, oil or concentrated heat.

Information and Prices

Estimates on any installation are sent promptly upon receipt of inquiry. Requests for quotations should be accompanied by a sketch or blueprint of the space to be covered, showing all dimensions, with description of the floor (wood or concrete), over which tile is to be laid. Colors desired should also be stated in your request for quotation.

Service Facilities

"U. S." Rubber Asphaltum Floors are laid by selected "U. S." Flooring Dealers and Contractors. Installation can be made in any section of the country or the world. The name of the "U. S." Authorized Dealer nearest you and any other information will be gladly sent upon request.

Other "U. S." Products for the Building Trades

Rubber Stair Treads.

Rubber Mats and Mattings in color to harmonize with your interior.

Sheet Rubber Flooring.

Desk and Furniture Tops of rubber.

Rubber Counter Topping.

"U. S." Rainbow Wires, made in colors for easy identification.

ASPHALT BLOCK PAVEMENT COMPANY

EXECUTIVE OFFICES
Ohio Building
TOLEDO, OHIO
PLANT: TOLEDO, OHIO

Product

• Compressed Asphalt Blocks for heavy duty floors and pavements.

Description

The asphalt blocks manufactured by this company are the result of forty-four years' experience in the making of asphalt flooring and paving blocks, exclusively. They are manufactured under strict laboratory conditions and are guaranteed equal to the highest standard of asphalt block production.

The blocks are composed of refined asphalt and a perfectly graded, crushed rock aggregate, machine mixed at 300° F. to form a perfect asphalt mastic. This scientifically prepared block mix is then fed to great presses where it is moulded into uniform flooring blocks and paving blocks under tremendous compression.

Each and every block is precisely like its neighbor. Such blocks will lay smooth and stay smooth regardless of traffic loads or extremes of temperature. Uniformity of composition, texture and density are very important factors and explain why we are so *exacting* in the matter of raw materials and laboratory supervision.

Durability and even wear can be had in no other way.

Standard Block Sizes

Our 5x12x2-in. (deep) asphalt blocks are usually specified for industrial floors, platforms and pavements subject to extremely hard service.

Our 4x8x1¼-in. (deep) asphalt blocks (Eight-fours) are also designed to meet these same conditions, but are usually specified where weight and thickness of flooring are factors.

Hexagonal or square compressed asphalt tiles for park walks and terrace work can also be supplied when area involved is sufficiently large to warrant special run.

Method of Installing Asphalt Block Floors and Pavements

Asphalt Block Floors and Pavements

A perfected type of heavy duty flooring and paving representing pure refined asphalt in its highest development as a wearing surface for:

Factory floors and loading platforms
Railroad shops and roundhouses
Freighthouses and warehouses
Bridges, piers and docks
Streets and drives

Asphalt Blocks for Waterproofing Protection

Railroads are using the 1¼-in. blocks extensively for the protective coat over waterproofing on viaducts.

Our compressed asphalt blocks provide an absolute, permanent protection to the waterproof mat. There is no fuss or delay. As soon as the waterproof membrane gets its final coating of asphalt, the blocks are easily and quickly laid thereon, mopped with asphalt, and the work is ready to receive the rock ballast immediately.

Asphalt Blocks for Roof Decks

Compressed asphalt tiles may be installed successfully on roofs intended for hard traffic or recreation purposes.

A Few Typical Asphalt Block Installations

General Motors Truck Corp., Pontiac	Coach factory
Studebaker Corporation, South Bend	Auto plant
Hudson Motor Car Company, Detroit	Driveways
Fisher Body Corporation, Detroit	Press shops
Morgan & Wright Company, Detroit	Tire plant
D. & C. Navigation Co., Cleveland	Piers and docks
Rock Island Lines, Chicago	Bridges
Chicago, Burlington & Quincy R. R., Chicago	Freighthouses
Atchison, Topeka & Santa Fe Ry., Chicago	Roundhouses
Indianapolis Union Railway Station	Platforms
Grand Trunk Railway System, Detroit	Waterproofing
J. L. Hudson Department Store, Detroit	Service areas

Method of Laying Asphalt Blocks

The installation of asphalt blocks is quite simple, and numerous contractors prefer to lay the blocks with their own labor. However, we are always glad to furnish a reliable superintendent or experienced block layers to assist in the operation if such service is desired. We shall also be glad to bid on the installation complete when location and job conditions will permit.

For industrial floors or exterior drives, a mortar bed mix composed of 1 part cement and 4 parts of sharp sand, merely dampened, is spread over the concrete and struck to a smooth surface for reception of the blocks. This mortar bed is usually about ½ in. in depth and the asphalt blocks are laid thereon to a smooth top surface and as tightly together as possible. (See cut.) After the blocks are laid, a *very thin* cement grout should be flushed over the top and carefully swept into the joints. If, however, the installation happens to be outside and completely exposed, an asphalt joint filler should be carefully squeegeed over the block surface in place of the very thin neat cement grout.

THE HASTINGS PAVEMENT COMPANY

TELEPHONE
WHITEHALL 9140

25 Broad Street
NEW YORK, N. Y.

WORKS
HASTINGS-ON-HUDSON, N. Y.

Products

COMPRESSED ASPHALT FLOORING and PAVING BLOCKS and TILES.

Asphalt Blocks

A scientifically manufactured material for the wearing surface of streets and roads, and of piers, warehouses, loading platforms, factory floors, bridges, driveways, courtyards, etc.

Manufactured at a large permanent plant; shipped in block form ready to lay; and always obtainable in any quantity for extension and repairs.

Composition—A properly proportioned mixture of refined asphalt, crushed rock and limestone dust is heated to 300° Fahr., and shaped into uniform blocks under a pressure of 4000 lbs. per sq. in.

SIZES AND WEIGHTS

Width, in.	Length, in.	Depth, in.	Weight, lbs.
5	12	2	11
5	12	2½	13½
4	8	1¼	3½ ("Eightfours")

A square foot of 2-in. block weighs 26 lbs.
A square foot of 1¼-in. "Eightfours" weighs 15½ lbs.
The minimum specific gravity of asphalt block is 2.35.

Asphalt Tiles

For park walks, etc. are made in the following shapes and sizes: Hexagonal tiles, 8½ in. on the short diameter by 2 in. deep. Square tiles, 8x8x2 in. deep.

"Eightfour" Blocks

The "Eightfour" asphalt flooring block is designed especially to meet those conditions in which weight and thickness of flooring must be at a minimum consistent with durability under traffic.

Waterproofing Protection—The "Eightfour" is extensively used for protection of waterproofing on railroad bridges and is suitable for roofs subject to traffic.

Advantages—Asphalt blocks are pleasing in appearance, smooth, noiseless, dustless, easy under foot, sanitary, non-absorbent and durable as the hard rock of which they are made.

They present a gritty, non-slippery surface, are odorless, free from exudations and will not distort when subjected to heavy standing loads or concentrated traffic.

They are easily taken up and relaid, are reasonable in cost and can be made to suit any climatic and traffic conditions.

Method of Laying—Upon the surface of the concrete foundation there is spread a bed of portland cement mortar ½ in. thick, which is struck to a true and even surface. Upon this bed the blocks are immediately laid, with close joints and uniform top surface, the joints being broken 4 in. Depending on the uses to which the blocks will be subjected, the joints are sealed with asphalt, grouted with cement or filled with sand.

References

Manufacturing Plants, etc.

General Electric Co., Schenectady, N. Y.
Endicott-Johnson Corp., Endicott, N. Y.
Otis Elevator Co., Harrison, N. J.
Westinghouse Electric & Mfg. Co., Essington, Pa.
United States Navy Yards: Brooklyn, N. Y.; Boston, Mass.; Washington, D. C.
United States Naval Supply Base, Brooklyn, N. Y.
United States Naval Operating Base, Hampton Roads, Va.
Standard Steel Works, Burnham, Pa.
New York Central Railroad Warehouse, New York, N. Y.

Piers

Pier No. 84 South, Philadelphia, Pa.
Gerard Piers Nos. 3 and 5, Philadelphia, Pa.
Bush Terminal, Pier No. 6, Brooklyn, N. Y.
Ocean Steamship Co. Piers, Savannah, Ga.
Lamport & Holt Line Piers, Hoboken, N. J.
United States Army Supply Base Piers, Brooklyn, N. Y.
New York City Piers, Department of Docks, New York, N. Y.
Lehigh Valley Railroad Pier, Jersey City, N. J.
Wilson Line Terminal Pier, Hoboken, N. J.
McComas Street Terminal Pier and Warehouse, Baltimore, Md.

Platforms

Arbuckle Building, Brooklyn, N. Y.
United States Army Supply Base, Brooklyn, N. Y.
Lehigh Valley Railroad, Easton, Pa.
Canadian Pacific Railroad, Three Rivers, Canada

Bridges

Victory Bridge over the Raritan River between Perth Amboy and South Amboy, N. J.
Bridge over Susquehanna River between Columbia and Wrightsville, Pa.
Sunnyside Yards, Pennsylvania Railroad, New York, N. Y.
New Jersey State Highway Bridges (over 200)
Trenton-Morrisville Bridge, Trenton, N. J.

Driveways and Courtyards

Greenwood Cemetery, Brooklyn, N. Y.
Biltmore Country Club, Rye, N. Y.
Grand Central Station, New York, N. Y.
G. A. R. Memorial High School, Wilkes-Barre, Pa.

Streets and Roads

Fordham Road and University Avenue, New York, N. Y.
Bronx River Parkway Drive, Westchester Co., N. Y.
Albany Post Road—Dobbs Ferry and Hastings-on-Hudson, N. Y.
Delaware Avenue, Buffalo to Niagara Falls, Kenmore, N. Y.
County Highways (132 miles), Pinellas County, Fla.

Asphalt Block 5x12x2 in.

"Eightfour" 8x4x1¼ in.

Compressed Asphalt Flooring and Paving Blocks

CARTER BLOXONEND FLOORING CO.

902 Walnut Street, KANSAS CITY, MO.

SALES OFFICES

NEW YORK, N. Y., 501 Fifth Avenue—Telephone, Murray Hill 0558
WASHINGTON, D. C., Chandler Building—Telephone, District 1854
CHICAGO, ILL., 332 South Michigan Avenue—Telephone, Harrison 6491
BOSTON, MASS., 250 Stuart Street—Telephone, Hancock 0884
DETROIT, MICH., 2526 First National Bank Building—Telephone, Cadillac 6693

REPRESENTATIVES IN OTHER PRINCIPAL CITIES

MILL: KENSETT, ARK.

Bloxonend—"Built-up" Wood Block Flooring

Bloxonend Flooring is not loose blocks but is a perfectly matched wood flooring strip, composite in its structure—the upper surface with the ends of the fibers meeting the wear.

Uses—For factories, warehouses, shops, freight houses, textile mills, baggage and express cars, bakeries, gymnasiums (especially selected stock), schools, department stores, printing and publishing plants, loading docks and all locations subjected to trucking (hand or power) or concentrated foot-wear—where practically everlasting smoothness is the desideratum.

Advantages—An installation of Bloxonend convinces the user that it costs less per square foot, per year, than other floorings. Its use insures a durable, quiet, resilient, non-slip floor which practically eliminates repair costs, speeds up trucking and increases operating efficiency in general. Bloxonend absorbs vibration, insulates and affords a soft bed for tools or materials dropped. It is slow wearing because the tough fiber ends are presented to wear; smooth wearing for the same reason and because the entire floor is formed into a compact, composite unit with no loose blocks to kick out or break the regularity of the surface. Bloxonend is clean, attractive, sliver-and-splinter-proof, and is adaptable to any type of construction—whether steel, concrete or wood, new or old.

Construction—Built up at our plant (Kensett, Ark.) in flooring strips approximately 8 ft. long (Fig. 1). Kiln-dried blocks of Selected Yellow Pine, on end, are dovetailed to horizontal baseboards, presenting end of grain to wear, forming flooring sections which are milled to uniform height and grooved in the sides for heavy splines. Splines are used to break joints and to keep flooring sections in alignment thus securing smooth surface.

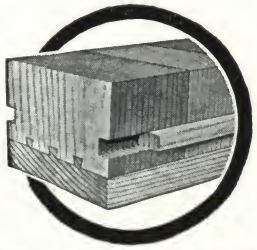


Fig. 1. End View of 8-ft. Bloxonend Section

Size — Standard sections are built with 2-in. blocks dovetailed onto base made from 1-in. stock. When ready to ship, sections measure $2\frac{9}{16}$ in. thick by 3½-in. face, in lengths averaging over 7 ft. 6 in.

Application

(1) Over Concrete, Lateral Nailing, Standard (Fig. 2)—For laying over concrete (old or new) without nailing strips or wood subfloor, Bloxonend sections are furnished with special nails positioned in countersunk bores. On the job, positioned nails are driven home, drawing sections together laterally into a compact, smooth surface. Concrete base must have been straightedged and floated to a true level surface, $2\frac{9}{16}$ in. below finished floor level. On all ground floor slabs, except where integral waterproofing is specified, a standard waterproofer shall be applied before Bloxonend is laid. Cork or other approved expansion joints of approximately 1 in. shall be applied at walls and columns for sealing, expansion and equalization. No end joints of Bloxonend or of splines shall coincide. Spacing blocks used for proper alignment of any openings must be removed when laying is completed.

Note: When necessary in old work to reconcile floor levels, or for any other special service, Bloxonend may be laid over and toe-nailed to wood strips of proper thickness spaced to meet conditions.

(2) Over Concrete, Alternate—For locations exposed to extreme weather conditions where swelling must be restrained, Bloxonend shall be laid at right angles on and nailed through groove with 16d cut casing or flooring nails, into beveled creosoted sleepers either bedded or laid over slab and filled flush with no depressions between sleepers. 2x4-in. sleepers at 11¾-in. centers are standard. Cork or other approved expansion joints of approximately 1 in. shall be applied at walls and columns for sealing, expansion and equalization. No end joints of Bloxonend sections or of splines shall coincide.

(3) Over Wood Structure—Bloxonend is laid like ordinary tongued and grooved flooring.

Repairs Seldom Necessary

Repairing or reconditioning made necessary from any cause is easily accomplished. Specially designed relief sections are provided in addition to the expansion joint, permitting the opening and replacing of any part of the floor.

Treatment

For dry locations, Bloxonend is treated with our standard dampproofer which is odorless and does not discolor the wood.

For wet locations, we recommend our treatment with a highly refined creosote oil of great toxic value, yet clean enough to be used in many places where ordinary creosote would be objectionable.

Special Information

With millions of square feet of Bloxonend in use, it is probable that Bloxonend has solved for someone else the unusual floor problem that confronts you. Write us advising areas to be covered, use of floors and nature of subfloor.

Gymnasium specifications on request.

Fig. 2. Laying Bloxonend Directly Over Concrete Slab by Lateral Nailing Method

Special nails that come positioned in Bloxonend sections are driven home with ordinary nail set.

Note: See paragraph 2 under "Application" for information concerning "Sleeper Method."

SOUTHERN WOOD PRESERVING COMPANY

ATLANTA, GA.

SALES OFFICES

NEW YORK, N. Y., 10 East 43rd Street
CLEVELAND, OHIO, Hunkin-Conkey Building
TOLEDO, OHIO, Spitzer Building
PITTSBURGH, PA., Dollar Savings & Trust Building
PHILADELPHIA, PA., Land Title Building
CHARLOTTE, N. C.

TREATING PLANTS: EAST POINT, GA. and CHATTANOOGA, TENN.

Products

CREO-PINE WOOD BLOCK FLOORS.

Also Creo-pine Subflooring, Wood Conduit, Cross Arms, Fence Posts and Poles.

Creo-pine
TRADE NAME
Registered

Uses of Creo-pine Wood Block Floors

Creo-pine floors are used in factories, machine-shops, warehouses, loading platforms and other establishments where durability is an essential factor, and comfort to workmen and consequent increased human efficiency are items of consideration.

Qualifications of a Good Floor

(1) It should withstand surface wear and afford a smooth surface. (2) It should be resilient, free from vibration, non-conductive of heat and non-slippery. (3) It should not dust or crumble. (4) It should be sanitary and easy to clean. (5) It should adapt itself readily to repairs, not only to the surface but to subfloor work. (6) It should be impervious to decay and the action of oils, acids, etc.

Determining Factors of a Good Floor

(1) Blocks shall be made of select Southern yellow pine. (2) They shall be manufactured with mechanical precision to the proper size for service required. (3) They shall be impregnated with creosote oil in accordance with standard specifications. (4) They shall be correctly installed.

Creo-pine Floors Conform to the Ideal

Creo-pine floors meet the above qualifications, as the foregoing determining factors are embodied in each finished floor. The lumber used is the best obtainable Southern yellow pine, thoroughly air seasoned.

Blocks are carefully manufactured to correct size for service required and impregnated with creosote oil by use of the most modern wood preserving equipment. Creosote used is obtained wholly from pure coal tar and is in accordance with standard specifications. The installation is handled by experienced superintendents.

Further information and estimates gladly furnished.

Plant of Illinois Glass Co., Bridgeton, N. J.

Specifications for Creo-pine Floors

Timber—Timber shall be air seasoned Southern Yellow Pine, square edged and sound, free from bark, loose or rotten knots, wormholes, shakes, check, or other defects detrimental to its strength or durability. It shall average not less than 6 annular rings to the inch measured radially and beginning 2 in. from the heart center.

Size—Blocks shall be truly rectangular, 2½ to 4 in. wide, 5½ to 9 in. long, and 2, 2½ or 3 in. deep (parallel to the fiber). A variation of ⅛ in. shall be allowed in depth, and ⅛ in. in width.

Only one width of blocks shall be used on any single floor.

Preservative—Creosote must be a pure coal tar product obtained entirely from coal gas or coke oven tar and must not contain any admixture of tar oils, petroleum or any other products. It shall be completely liquid at 38° C. and not more than 3% of the water-free oil shall be insoluble in chloroform or benzol. Specific gravity shall not be less than 1.05 and shall not exceed 1.14. When 100 grams of the creosote are placed in a retort and subjected to a distilling test as described in Bulletin No. 96 of the American Railway Engineering and Maintenance of Way Association, amount of distillation shall not exceed the following:

Up to 200° C., no distillate.
Up to 210° C., less than 5%.
Up to 235° C., not more than 25%.
Up to 315° C., not more than 50%.
The oil shall not contain more than 2% of water.

Treatment—Blocks shall be properly treated by pressure-vacuum-empty cell process by a creosoting plant properly equipped for such work, injecting not less than 16 lb. of oil per cu. ft. into blocks with a final retention of 6 to 8 lb.

Foundation—A concrete foundation shall be prepared from 4 to 6 in. thick, depending upon loads to which floor will be subjected, consisting of 1 part cement, 3 parts sand and 6 parts crushed stone or gravel, and brought to a smooth finish sufficiently below grade of floor to provide for depth of blocks.

Concrete must be brought to a smooth and true surface, allowing no coarse aggregate to show, as any unevenness will be apparent in the finished floor.

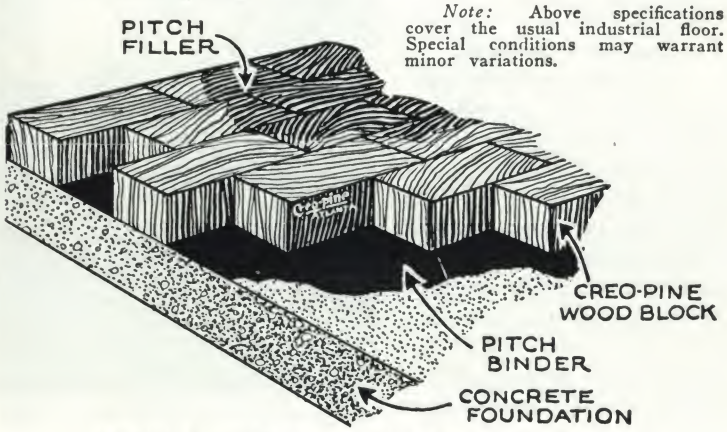
Bituminous Paint Coat—Upon the thoroughly cleaned and dried concrete base apply a coat of bitumen, spreading same smoothly with squeegees to a uniform thickness of not more than ⅛ in.

Laying Blocks—Blocks shall be laid on the paint coat in straight parallel lines (at right angles to line of traffic) breaking joints not less than 2 in. and using only whole blocks, except to start and finish courses. Blocks shall be driven tightly together both on sides and ends.

Top Dressing—After blocks have been laid, a top coat of bitumen shall be squeegeed over top of the blocks and well into interstices between the blocks.

Sand Covering—The entire floor shall be covered with a thin coat of fine clean sand which shall be allowed to remain for several weeks.

Note: Above specifications cover the usual industrial floor. Special conditions may warrant minor variations.



Method of Installing Creo-pine Wood Block Floors

THE JENNISON-WRIGHT COMPANY

Manufacturers of Kreolite Wood Block Floors

2480 Broadway
TOLEDO, OHIO

BRANCH OFFICES

BOSTON, MASS. DETROIT, MICH. PHILADELPHIA, PA. PITTSBURGH, PA. CHICAGO, ILL. ST. LOUIS, MO.
NEW YORK, N. Y. ALBANY, N. Y. CLEVELAND, OHIO WINDSOR, ONT.

Products and Services

KREOLITE WOOD BLOCK FLOORS and PAVEMENTS.

KREOLITE INSULATING KOATING.

SPECIALISTS IN WOOD PRESERVING.

Also Creosoted Timbers, Cross Ties, Piling, Creosote Oil, Coal Tar Pitch, etc.

THE JENNISON-WRIGHT COMPANY maintain a Construction Department to handle the installation of Kreolite Wood Block Floors complete; or, if preferred, they can furnish expert superintendents to instruct purchasers how to install the floors or to supervise the installation.

Kreolite Wood Block Floors

Kreolite Floors are constructed of several varieties of wood blocks which provide a specific type of floor for each service condition encountered.

These woods and the method of treatment are as follows:

Kreolite Long Leaf Yellow Pine Blocks, treated with Kreolite creosote oil; where the slight odor of creosote oil is objectionable, the blocks may be treated with Kreolite odorless oil.

Kreolite Mountain Oak Blocks, treated with Kreolite creosote oil for extra heavy traffic.

Kreo-Lite-Color Southern Yellow Pine Blocks, impregnated with Kreolite colorless and odorless preservative and waterproofing oil that does not stain the wood.

Kreolite Redwood Blocks are untreated and retain their original color.

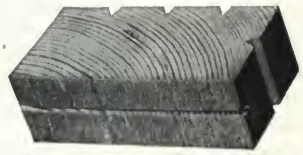
Co-operative Service

Our engineering department will furnish information as to how Kreolite Wood Block Floors can be used to advantage in your factory; how they will reduce maintenance and repair bills, increase the efficiency of workmen, and cut production costs. Inform us as to the requirements. *Detailed specifications sent on request.*

KREOLITE
TRADE-MARK

Kreolite Grooved Block
For dry heated conditions

Kreolite Kountersunk Lug Block
For use under wet conditions where the factor of expansion is to be encountered; also to offset slipperiness on grades



Kreolite Join-Tite Blocks
Note slots running at right angles to grain of the wood, which enable air to escape, preventing formation of air pockets when the bituminous filler is applied, and providing a maximum penetration of bituminous filler

View of Kreolite Wood Block Flooring in Building No. 21, National Cash Register Co., Dayton, Ohio

Kreolite Long Leaf Yellow Pine Block Floors

Kreolite Long Leaf Yellow Pine Block Floors are used in factories, machineshops, printing plants, warerooms, loading platforms, annealing rooms, foundries, pickling rooms, dyerooms, glass factories, paper mills, rubber tire plants, garages, stables, etc. They are also used on bridge floors and streets.

General Description of Kreolite Long Leaf Yellow Pine Blocks

Manufactured in special designs (see illustrations) to meet dry or wet conditions. They are rectangular in shape, surfaced on both sides and one end to a uniform size, either 3 or 4 in. in width and from 2 to 4 in. in depth, depending on the severity of service.

All blocks are furnished of the same width and depth for any one job. (A variation of $\frac{1}{16}$ in. in the depth and $\frac{1}{8}$ in. in the width to be allowed.)

Material—All blocks are manufactured from carefully selected Southern long leaf yellow pine, thoroughly air seasoned and free from bark, loose or rotten knots or other injurious defects.

Treatment—All blocks for interior floors are treated in airtight cylinders by the Kreolite pressure and vacuum process; the quantity of preservative injected per cubic foot of timber depends on the service and conditions the floor must withstand, but in no case leaving less than 6 lb. of oil per cubic foot of timber.

Blocks that are to be used for exterior purposes —such as driveways, loading platforms and court pavements, or that are subjected to considerable moisture—are treated by the Kreolite "two-stage" process which consists of a second application of hot Kreolite oil injected to insure a more thorough waterproofing of the blocks.

A pure grade of Kreolite creosote oil is used.

Continued on next page

Specifications for Installing Kreolite Long Leaf Yellow Pine Block Floors

Blocks—Kreolite Join-Tite Grooved Wood Blocks shall be used wherever the floors are subjected to dry conditions, and Kreolite Kountersunk Lug Wood Blocks where the conditions are wet, or considerable moisture is encountered. They shall be ... in. in depth, approximately 3 or 4 in. in width, and may vary from 4 to 8 in. in length.

They shall be manufactured by The Jennison-Wright Company of Toledo, Ohio, and laid according to the following specifications, under the direction of the manufacturer's superintendent.

They shall be manufactured from thoroughly air seasoned, carefully selected, long leaf yellow pine, and shall be treated in accordance with the Kreolite Pressure and Vacuum Process, with not less than 6 lb. of Kreolite Oil per cubic foot of timber.

Concrete Foundation—The blocks shall be installed on a concrete base, which shall be finished smooth, exactly the depth below the finished floor level corresponding with the depth of the block used. Care must be taken to see that there are no projections in the concrete that will form an uneven bearing for the blocks.

Kreolite Koncrete Coating—After the concrete has thoroughly dried out, it shall be swept clean and given a thin, even coating of Kreolite Bitumen, not exceeding ⅛ in. in thickness. The coating shall be allowed to harden before laying the blocks and shall not be applied over 20 ft. in advance of the block laying.

Laying the Blocks—Upon the base, as above prepared, the blocks shall be laid tightly together, with the grain vertical; the courses of the blocks shall be kept straight and parallel, starting from one side of the building and carried through to the other side; all joints shall be broken by a lap of at least 2 in. In truckways, and whenever possible, the blocks shall be laid with their length at right angles with the line of traffic.

Expansion Joints—Against the walls on all sides of the floor, as well as around all columns and other obstructions, a bituminous expansion joint 1 in. in width shall be formed.

Application of Kreolite Bituminous Filler—After the blocks have been laid in place and brought to as true and level a surface as possible, the joints between the blocks shall be filled with Kreolite Bituminous Filler applied at a temperature of not less than 350° F.

The filler shall be applied by flushing over the surface of the floor, using a rubber-edged squeegee to force it into the joints. Care must be taken to see that the filler penetrates the full depth of the blocks and that the joints are completely filled at the time of application.

Kreolite Mountain Oak Block Floors

For extremely heavy traffic, aisleways and floors subject to abnormal abuse, we recommend Kreolite Mountain Oak Blocks treated and laid in accordance with the above specifications.

Kreolite Wood Block Floor in A. T. & S. F. Ry. Shops, Albuquerque, N. M.

Kreo-Lite-Color Southern Yellow Pine Block Floors

Kreo-Lite-Color Block Floors are manufactured from carefully selected, kiln dried, Southern yellow pine. They are thoroughly impregnated with Kreolite colorless and odorless preservative and waterproofing oil, and laid on a smoothly finished concrete foundation in a bed of Kreolite Bituminous Binder. After laying, the floor is surfaced with an electric sanding machine presenting a smooth, clean finish in the natural color of the wood. This floor is particularly suited for operations requiring a clean, light-colored surface.

Kreolite Untreated Redwood Block Floors

Kreolite Redwood Blocks provide a flooring material that combines unusual beauty of finish with great durability.

With Kreolite Redwood Blocks the natural color of the original redwood is permanently maintained. They are laid with the tough end grain up, and the wearing surface may be sanded and polished.

Kreolite Redwood Blocks provide an ideal flooring material for schools, churches, auditoriums, department stores, hospitals, hotels, and high class industrial plants.

Kreolite Redwood Block Floors are only sold completely laid in place by our experienced engineers and, thus laid, carry a broad guarantee of satisfactory service. Write for additional details.

Specification for Kreolite Redwood Block Floors

The blocks shall be rectangular in shape and shall be manufactured from carefully selected, thoroughly seasoned California Redwood.

The blocks shall be installed on a concrete base which shall be finished smooth, exactly the depth of the block below and exactly in conformance with the contour of the finished floor level.

Upon the concrete foundation as described shall be laid a wearing surface of Kreolite Redwood Blocks manufactured and installed by The Jennison-Wright Company of Toledo, Ohio.

Type A—Finished smooth with an electric sanding machine, finished and polished.

Type B—Sanded once over with electric sanding machine.

Kreolite Insulating Koating

Produced in four colors: aluminum or silver, orange, green and red.

Ideal for marking aisleways in any institution having creosoted wood block floors.

Also applicable to the coating or painting of creosoted roofing timbers, posts, etc.

Kreolite Wood Block Floor in Castings Cleaning Room, Buick Motor Co., Flint, Mich.

MAPLE FLOORING MANUFACTURERS ASSN.

Northern Hard Maple, Beech and Birch Floorings

332 South Michigan Avenue, CHICAGO, ILL.

Products

NORTHERN HARD MAPLE, BEECH, and BIRCH FLOORINGS, standardized, trade-marked and guaranteed as to grade and manufacture.

Slogan

Floor *with* Maple
Beech *or* Birch

General Characteristics

Northern Hard Maple, Beech, and Birch offer a wide range of uses and color possibilities, yet in general characteristics the three are closely kindred woods.

All three are close grained, hard fibered, free from slivering and splintering, and polish under friction in a way which increases their wearing qualities.

All three have natural beauty when given a wax or varnish finish, and are suitable for use in any room of a fine dwelling, as well as for hard industrial service.

All three have a subdued grain pattern, in keeping with the changing taste, which is away from gaudiness in woods.

All three are particularly clean and sanitary, since the closeness of their grain and the smoothness of their surface afford no lodging place for dirt or germs.

Once laid a Northern Hard Maple, Beech or Birch floor is like a smooth, one-piece area of hardest wood because each piece is side and end matched to perfection.

Individual Characteristics

Northern Hard Maple—Is dense, strong, heavy, remarkably hard, supremely durable. The color of the heartwood is brownish, the sapwood is much lighter. The grain is close—sometimes curly or birdseye. Hard Maple has unusual ability to resist pointed pressure without abrasion. It takes a high polish and acid stains. Research work has developed transparent stains which produce a colorful finish enhancing the natural beauty of the wood.

Northern Beech and Birch—These woods show slightly more grain pattern than Hard Maple and have slightly more natural color when varnished or waxed. In physical properties they are so close to Maple that they are frequently used instead of Maple.

Beauty

Due to their leadership in wearing qualities, these three woods have sometimes been stressed for service uses, to the exclusion of any consideration of their beauty. And yet no one who has seen the mirrorlike luster of a dance floor can deny that such a floor has beauty.

Color Possibilities of Hard Maple

Hard Maple shows an attractive golden hue when waxed or varnished—it is literally a "floor of captive sunlight" which mellows and ripens with passing years. The color of Hard Maple flooring, when used for its beauty, is demonstrated by its appearance in ballrooms, where the cushioning comfort of wood is almost universally preferred.

Important Discovery—By a comparatively new special process, known as the Marietta-Murphy Finishing System, Hard Maple may now be given beautiful, lasting, penetrating colors. Standard finishes manufactured and sold only by Marietta Paint & Color Co., Marietta, Ohio, and the Murphy Varnish Co., Newark, N. J. This new process develops the character of the wood into a beautiful effect never before seen in any floor.

Color Possibilities of Beech and Birch

The grain pattern of Beech and Birch, like that of Hard Maple, is a delicate tracery, without fibrous ridges. Ordinary stains penetrate Beech and Birch evenly, so that a floor laid with either of these woods will present an attractive appearance which lasts for years.

In residential buildings, Beech and Birch are widely used where dark floors are desired. Their hardness and their susceptibility to staining places them in a class with Hard Maple for residential purposes.

Standardization

MFMA flooring is made to accurate specifications and this accuracy is attained by the use of standard gauges. The Official Inspector of the Association regularly visits the mills of the members of the Association to see that the standard grades established by the Association are being maintained.

Wearing Qualities

Tests show, in the order named, the following comparative values for wearing qualities, under practically the same conditions, of woods used for flooring:

(1) Hard Maple; (2) Beech and Birch; (3) Oak, quarter sawed; (4) Yellow Pine, edge-grain; (5) Fir, edge-grain; (6) Oak, plain sawed; (7) Yellow Pine, flat sawed; (8) Fir, flat sawed; (9) Norway Pine; (10) White Pine.

MFMA Grading Rules

Northern Hard Maple, Beech, and Birch Floorings are kiln-dried products sold in standard grades, described in accurate detail in a book of Grading Rules which may be had on application to the Association.

The standard lengths, in $\frac{25}{32}$ inch and thicker, are as follows:

MFMA First Grade: 2 to 16 feet, may contain up to 25% of 2 to 3½ feet, inclusive.

MFMA Second Grade: 1½ to 16 feet, may contain up to 40% of 1½ to 3½ feet, inclusive.

MFMA Third Grade: 1 to 16 feet, may contain up to 60% of 1 to 3½ feet, inclusive.

Hard Maple stock is a requirement of the MFMA Grading Rules for Maple flooring. A specification of MFMA Maple flooring assures a product made from all Northern Hard Maple lumber. Soft Maple (acer saccharinum) flooring or a mixed species of Maple stock cannot wear equally well with all Hard (acer saccharum) Maple flooring.

Special Grades

MFMA White Clear Northern Hard Maple—Selected for color uniformity.

MFMA Red Clear Northern Beech and MFMA Red Clear Northern Birch—Manufactured from all-red face stock, especially selected for color.

Continued on next page

Standard Measurement

Flooring ½ inch and thicker, all faces, is measured ¾-inch waste for matching.

Flooring ⅜ inch ($^{11}/_{32}$-inch) thick, all faces, is measured ½-inch waste for matching.

Jointed flooring, all thicknesses and faces, is measured ½-inch waste.

Kiln Drying

Flooring shall not be considered of standard grade unless the lumber from which the flooring is manufactured has been properly kiln dried.

End Matching

All flooring shall be end matched unless otherwise specified.

Custom in Bundling

It is the custom in bundling flooring to "give and take" by including pieces of flooring 3 inches over and 3 inches under the length marked on the bundle, and to include some pieces of flooring 3 inches (plus allowance for waste in end matching) under the minimum lengths specified in the Grading Rules.

Uses of the Different Grades

MFMA First Grade—This grade is the highest standard grade. It makes the most durable and desirable floor for any building, and is particularly suited for fine homes, apartment buildings, churches, clubs, dance floors, gymnasiums, hospitals, hotels, office buildings, public buildings, roller skating rinks, schools, stores and other buildings, where fine appearance as well as wear is desired.

MFMA Second Grade—This grade is nearly as serviceable as First Grade and can be used in the same type of buildings as First, if the slight imperfections permitted under the rules are not objectionable. Such imperfections, it will be noted, have an actually pleasing effect when the wood is given a color finish as per standard formulae.

The Straus Building, Chicago—One of America's Outstanding New Office Buildings

Because of its enduring wear, smoothness and resiliency, Northern Hard Maple was chosen for the Straus Building floors

MFMA Third Grade—This grade gives excellent satisfaction in factories, creameries, granaries, mills, warehouses, workshops, or at mines, on farms, etc. It is also coming into very general favor for use in grill rooms, billiard rooms, dens, or rooms of antique design and decoration, where the desire is for the unusual rather than for the conventional.

THICKNESS AND FACES, NORTHERN HARD MAPLE, BEECH AND BIRCH FLOORINGS; MFMA FIRST, SECOND AND THIRD GRADES. TONGUED AND GROOVED FLOORING

Thicknesses	Face Widths
Standard Thickness	
$^{25}/_{32}$ in.	1½, 2, 2¼ and 3¼ in.
Special Thicknesses	
$^{33}/_{32}$, $^{41}/_{32}$ and $^{53}/_{32}$ in.	2, 2¼ and 3¼ in.
⅜, ½ and ⅝ in.	1½, 2 and 2¼ in.

Jointed (or Square Edge) Flooring of $^{25}/_{32}$ and $^{33}/_{32}$-in. thicknesses is made in 2½ and 3½-in. faces.

MAPLE, BEECH AND BIRCH TONGUED AND GROOVED FLOORING BLOCKS, TO BE LAID OVER CONCRETE OR WOOD SUBFLOORS IN HERRINGBONE PATTERN, IN SQUARES OR OTHER PATTERNS

Thickness and Face Width	Face Length
$^{25}/_{32}$x2¼ in. $^{33}/_{32}$x2¼ in.	6¾, 9, 11¼, 13½, 15¾, 13½ in.

FABRICATED BLOCKS—SQUARES AND RECTANGLES

	Maple ⅜ in. Thick	Maple 1 $^{1}/_{16}$ in. Thick	Beech ⅜ in. Thick
1½-in. slats	7½x7½ in. 9 x9 in.		7½x 7½ in. 9 x 9 in. 12 x12 in.
2-in. slats	8x 8 in. 10x10 in. 12x12 in.		
2¼-in. slats	6¾x 6¾ in. 9 x 9 in. 11¼x11¼ in.	6¾x6¾ in. 9 x9 in.	6¾x 6¾ in. 9 x 9 in. 11¼x11¼ in.
3¼-in. slats	9¾x 9¾ in. 13 x13 in.		
1½-in. slats, 6 x12 in.			6 x12 in.
2¼-in. slats, 6¾x13½ in.			6¾x13½ in.
3¼-in. slats, 6½x13 in.			

Uses of Different Thicknesses

The $^{25}/_{32}$-inch thickness of Hard Maple, Beech or Birch Flooring is the most commonly used for general purposes. The ⅜-inch thickness is very satisfactory for laying over old floors but care should be taken that underfloor is dry, sound and of uniformly even surface.

The $^{33}/_{32}$-inch thickness with its ¼-inch additional wearing surface is recommended when floor is to be subjected to extraordinary strain and wear.

The ½-inch, ⅝-inch, $^{41}/_{32}$-inch, and $^{53}/_{32}$-inch thicknesses are manufactured for special purposes and can be obtained if desired. Jointed flooring, also called Square Edge flooring, possesses the advantage of easy replacement in industrial floors.

How to Lay MFMA Flooring

Subfloor—The $^{25}/_{32}$-inch and thicker flooring can be laid directly on the joists or on sleepers embedded in concrete spaced no wider than 16-inch centers, but is more frequently laid on a subfloor.

For best results a subfloor made of softwood boards surfaced on one or two sides is strongly recommended.

These boards should be no wider than 6 inches, nailed ⅛-inch allowance between boards and laid diagonally to the top floor. This permits of the top floor being laid at right angles to joists or sleepers, and the use of the narrower subfloor boards prevents the development of cracks between joints in the top floor due to shrinkage in subfloor boards. It should be securely nailed. It should be dry. A cover of black, glazed, waterproofed and coated building paper should be laid between subfloor and hardwood floor as a protection against moisture absorption by the top floor.

Top Floor—The top flooring should not be laid until plastering is thoroughly dried and woodwork and trim are installed. In fact, the laying and finishing of the hardwood floors should be the last operation in connection with the construction of the building. As a final precaution it is strongly recommended that either in summer or winter heat be on at least 10 days before flooring is laid.

After the trim is in place, line up the first course of strips flush with the face of the baseboard which must not extend below the surface of the top floor. Nail the first course directly through that portion to be covered with the quarter round or base shoe. Do not, under any circumstances, lay the flooring tight against studding or walls. Use short piece of flooring to put against end or edge of flooring strip when driving it up.

Literature for Free Distribution

The following booklets are offered through the office of the Association, and will gladly be mailed on request, free of charge:

"The New Color Enchantment in Hard Maple Floors"
"Grading Rules for MFMA Flooring"
"Achieved 3 Heavy Duty Finishes for Hard Maple Flooring"
"Hardwood Flooring in Office Buildings"
"The Problem of Flooring in School Houses"
"Why Northern Hard Maple Flooring Is Best for Textile Mills"
"Long Service from Short Lengths"

OAK FLOORING MANUFACTURERS' ASSOCIATION OF THE UNITED STATES

EXECUTIVE OFFICES
1815 Sterick Building, MEMPHIS, TENN.

Oak Flooring

The widespread use of Oak Flooring is an extraordinary fact, because it is the outcome of a deeply rooted preference for this material on the part of the architect and the public. No other wood compares with Oak in this respect. It is rich and cheerful in color, and blends harmoniously with any type of furniture and decoration. It is a wood that will harmonize with any interior trim and will do much to give distinction to any room.

All Flooring produced by O. F. M. A. Member Mills is branded with this trade mark

Owners and prospective purchasers and tenants instinctively ask for "hardwood floors," by which they usually mean *Oak* Floors. Nearly every one who builds, rents or sells property emphasizes Oak ("Hardwood") Flooring when advertising their property. "Oak" is almost synonymous with "homes" and "apartment buildings."

It is widely used in school classrooms, clubs, hotels, offices, and stores. Its price is comparable with any high grade flooring. Architects are invited to seek comparison in this respect, when writing specifications for schools, stores and similar projects. Its beauty and durability are proverbial. *The Oak Floor will last for the life of the building.* Use Oak and there will be no future wasteful floor replacements.

Oak Floors in Modernization Work

In connection with the growing tendency towards salvaging old properties by the modernization method, the advantages of installing new Oak Floors over other old floors, should be emphasized.

There is no single feature, perhaps, which can be installed so readily, with such ease and relatively low cost, as new Oak Flooring in such cases. It is doubtful if any single item of an interior alteration job gives more satisfaction to the owner or improves the appearance as much as new Oak Floors laid over the existing surfaces of other materials.

The modernization movement is extending into all classes of buildings. New floors are usually one of the chief items, whether the building to be remodeled, or modernized, is a residence, apartment, hotel, office building, store, hospital, school or otherwise. Oak will add value and enduring beauty to any property.

Finishing

There are proper finishes for Oak Floors for every type of building. A residential finish is not usually suited to rough usage buildings. There are finishes devised for rough usage which avoid maintenance cost admirably, in offices, work spaces, stores, hotels, hospitals, schoolrooms, etc.

Finishes put on by floor finishers of the better kind generally give enduring satisfaction to the architect, his clients, and to operating managers of buildings.

Local preferences for finishing Oak Floors vary somewhat. The architect would assure himself of the best results by consulting with a floor laying contractor in his vicinity who has a proven record of good work and who will be glad to recommend a finish suited to a given purpose. In any case the Research Division of this Association is at the service of the architects and the public, supplying detailed information in connection with finishing work for all types of buildings in any section of the country. Such requests will be given immediate attention.

A valuable specification and finishing manual for Oak Flooring has been prepared for distribution to architects and users.

Write to This Association

This Association serves as a clearing house, as it were, for information regarding Oak Flooring materials, qualities, laying methods, finishing and the care and maintenance of floors.

The "Modernistic" Style

Our research division will be glad to assist architects confronted with problems of a technical or designing nature. Its services are tendered also in connection with achieving interesting effects with Oak Flooring in harmony with the modernistic note. The adaptability of Oak in the standard sizes of strip flooring, for patterns and bright colorful stained effects, should not be overlooked by the architect.

STANDARD OAK FLOORING GRADES

According to the OAK FLOORING MANUFACTURERS' ASSOCIATION grading rules:

Quarter Sawed, *First Grade*—old name "Clear": Shall have one face practically free from defects, except ⅜ in. of bright sap; the question of color shall not be considered. Bundles to be 2 ft. and up, not to exceed 20% under 4 ft.; average length, 5 ft.

Quarter Sawed, *First Grade Sap*—old name "Sap Clear": Shall have one face practically free of defects, but will admit unlimited bright sap; the question of color shall not be considered. Bundles to be 2 ft. and up, not to exceed 20% under 4 ft.; average length, 5 ft.

Quarter Sawed, *Second Grade*—old name "Select": May contain sap, and will admit pinworm holes, streaks, slight imperfections in working or a small tight knot, not to exceed one to every 3 ft. in length. Bundles to be 1¼ ft. and up; average length, 4 ft.

Plain Sawed, *First Grade*—old name "Clear": Shall have one face practically free of defects, except ⅜ in. of bright sap; the question of color shall not be considered. Bundles to be 2 ft. and up not to exceed 20% under 4 ft.; average length, 5 ft.

Plain Sawed, *Second Grade*—old name "Select": May contain sap, and will admit pinworm holes, streaks, slight imperfections in working or a small tight knot, not to exceed one to every 3 ft. in length. Bundles to be 1¼ ft. and up; average length, 4 ft.

Plain Sawed, *Third Grade*—old name "No. 1 Common": Shall be of such nature as will make and lay a sound floor without cutting. Bundles to be 1¼ ft. and up; average length, 3 ft.

Plain Sawed, *Fourth Grade*—old name "No. 2 Common": May contain every character of defect, but will lay a serviceable floor with some cutting. Bundles to be 1¼ ft. and up; average length, 2½ ft.

Note: The old names have been discontinued and are mentioned above merely for convenience of comparison with the present grade names, which have been in effect since 1928.

Continued on next page

DATA FOR THE SPECIFICATION WRITER

Subfloors—Sleepers—Nailing—Surfacing

Oak Flooring should be specified "according to the grading rules of the OAK FLOORING MANUFACTURERS' ASSOCIATION."

Subfloors—Specify carefully that subflooring should be no wider than 6 in., and preferably should be square-edged. No. 1 Common or No. 2 Common boards, 1x4 or 1x6 sized two sides, driven close and nailed with two 10d nails to every bearing, and all butt joints to rest on bearings. It is preferable, when specifying the thinner sizes of Oak Flooring, to call for shiplap or tongue and grooved subflooring, where wood joist construction is used.

Over concrete, however, do not use close joined subflooring. Leave ¼ in. to ½ in. space between subfloor boards (to assist in ventilating and drying out the concrete slab or filler between sleepers).

In the interest of insuring a good job of flooring, architects should not permit subflooring to be wider than 6 in. In some sections of the country there is a tendency to use 10 and 12-in. boards. This practice is not in the interest of good construction or satisfaction.

Building Paper—Some architects dispense with the building paper customarily employed over concrete, in the interest of ventilation.

If building paper is used over concrete, however, it should be put down *before* the subflooring is laid and not on *top* of the subfloor. Building paper should always be used on top, however, of subflooring not laid over concrete. A good quality saturated felt known as "15-lb. felt" is recommended, lapped not less than 4 in., for the first story. Lighter paper upstairs.

Under Oak Floors in rooms directly over a heating system or subject to heat originating below such floors, it is advisable to use 30-lb. felt; or some standard insulating board not over ½ in. thick, *under the subfloor.*

Insulation of Oak Flooring from such temperature conditions will keep its surface free from cracks sometimes found in non-insulated cases.

Nailing—In all cases, keep in mind that plenty of nailing of the subfloor is important. Good nailing makes it properly rigid, and prevents creeping due to the natural shrinkage and expansion of the lumber that subfloors are usually made of.

One of the secrets of obtaining a rigid, non-squeaking, compact, almost one-piece finish floor, is to see that plenty of nails are used and close spacing of the nailing. It will insure more satisfaction when the architect can specify 12 in. on centers for sleeper spacing instead of the customary 16 in. on centers, when no subfloor is used over the sleepers. Close sleeper spacing means close nailing of the Oak Flooring—12 in. on centers. This is the maximum spacing for nails, to make the right kind of an Oak Floor job. As a matter of fact, nails should be spaced 10-in. centers when it is feasible to do so when laying finish flooring on top of subfloors. If a subfloor is laid over sleepers (or screeds or furring, as they are called differently) the sleepers may be spaced 16 or 18 in. on centers.

Plenty of Nailing is the one sure means of preventing squeaks in floors. Squeaks result most frequently from too few nails, too small a nail, subfloors not nailed solidly, or sleepers not tightened in place.

What has been stated above applies more especially to the ⅜ in. standard thickness. The following table gives nailing spacing for all thicknesses:

⅜x2¼ in.—nails 10 in. on centers. Use 8d light flooring nail (steel cut casing nail preferably).
⅜x1½ in.—nails 12 in. on centers. Same nails above specified.
½ in.—nails 10 in. on centers. 6d bright wire finishing nail.
⅝ in.—nails 8 in. on centers. 4d bright wire casing nail.
(All of the above to be "blind nailed.")
25/32 in. square edge—1⅛ in. barbed wire flooring brad, No. 16, two nails every 7 in., face nailed.

There are various methods of fastening sleepers to concrete. Some architects prefer to tighten them down with wiring twisted in place, in addition to the grip exercised by the concrete filler.

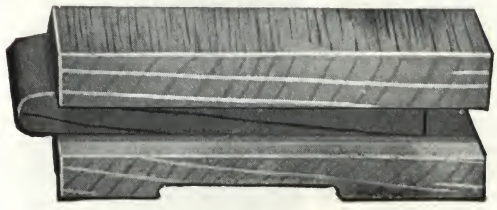
There are certain kinds of nailing concrete which have proven satisfactory when attention has been given to the application of the material and necessary drying out before the Oak Flooring is laid on same. Some notable projects have been executed with certain brands of nailing concrete, used in lieu of sleepers and subfloors, or in lieu of sleepers and cinder-fill. The use of nailing concrete makes it unnecessary to use sleepers or subfloors over concrete slab or tile slab construction.

Surfacing—Finish flooring should not be surfaced until all other work in the building or on that story has been completed, including all but the final coat of paint. By doing this, the extra protection which a floor requires after it is surfaced is not imposed on the contractor. After the rough work is completed the Oak Flooring can be swept clean (use no water for cleaning) and turned over to the surfacers.

Surfacing may be done by hand scraping or by electric machines. State in the specifications who is to pay for the electricity used. Floors should be traversed more than once and several times, according to quality wanted. Properly graduated sandpaper should be used. Again, it is desirable to make sure of the finisher's qualifications so that a well built and well laid floor will not otherwise prove unsatisfactory in the final processes. A machine cannot work too near wall, in tight corners, or inside of closets. These should be hand scraped. Use fine sandpaper for cleaning down after the scraping or sanding is done. Then sweep perfectly clean. Permit no one to walk on the floor after the surfacing is done, until filler is applied, and is dry. Apply the filler at once.

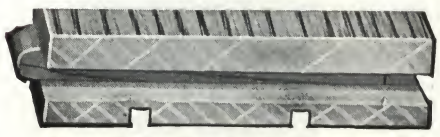
OAK FLOORING SIZES, KINDS, AND USES

There is an Oak Flooring grade for every flooring purpose and adaptable to any type of structural system in buildings, large or small.



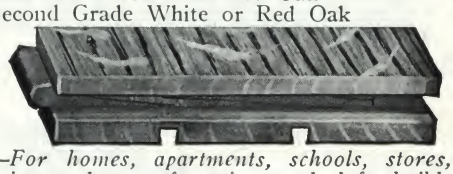
⅜x2¼-in. Oak Flooring
Actual size

First Grade—*For fine residences, apartments, hotels, clubhouses, public buildings, colleges, gymnasiums:*
Quarter Sawed First Grade White or Red Oak
Quarter Sawed First Grade Sap White or Red Oak
Quarter Sawed Second Grade White or Red Oak
Plain Sawed First Grade White or Red Oak
For fine residences, apartments, hotels, churches, schools, fine stores, clubhouses, colleges, institutions, etc.:
Quarter Sawed Second Grade White or Red Oak
Plain Sawed First Grade White or Red Oak



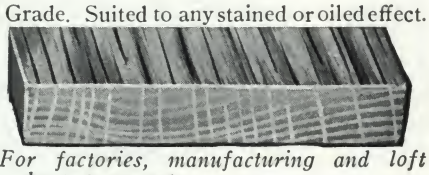
½x2-in. Oak Flooring
Actual size

Second Grade—*For residences, apartments, hotels, schools, office buildings, stores, institutions:*
Plain Sawed First Grade White or Red Oak
Plain Sawed Second Grade White or Red Oak



⅜x2-in. Oak Flooring
Actual size

Third Grade—*For homes, apartments, schools, stores, higher class factories and manufacturing and loft buildings, and tenements.*
Plain Sawed Third Grade. Suited to any stained or oiled effect.



25/32x2-in. Square-edge Oak Flooring
Actual size

Fourth Grade—*For factories, manufacturing and loft buildings, warehouses, cheap tenements.*
Plain Sawed Fourth Grade
Note: "Second Grade" is equal to "First Grade" in durability.

Caution—Oak flooring should never be laid when plaster is damp or when there is damp brickwork or concrete. Flooring can, and should, be the last equipment installed in the building. See that all slabs, fireproof fills or nailing concrete, over which the oak is to be laid, are thoroughly dried out before starting to lay floors.

In winter, the building should have the heating system in operation. For best results in large projects, it is advisable to have the heat turned on at the proper time, and the oak flooring then delivered into the building and kept stored there, under as near a *normal* condition of heat and humidity as possible, for *one week* before starting to lay the floors. When possible to approximate these conditions in smaller buildings it should be done. The largest projects in this country, under expert guidance, turn on the heat for this purpose whether it is summer or winter.

Architects and their superintendents are in position to insist on proper care in this respect, to insure better results in the finished job.

E. L. BRUCE COMPANY

Manufacturers of Oak and Maple Flooring

EXECUTIVE OFFICES
MEMPHIS, TENN.

MILLS

NASHVILLE, TENN. MEMPHIS, TENN. LITTLE ROCK, ARK. PRESCOTT, ARK. REED CITY, MICH.
CAIRO, ILL. LAUREL, MISS. BRUCE, MISS. OAK GROVE, LA.

Products

WOOD FLOOR BLOCKS *CELLized; OAK FLOOR PLANKS *CELLized; STRIP OAK FLOORING *CELLized or untreated; CEDA'LINE (Tennessee Red Cedar closet lining).

Also manufacturers of: Maple Gum and Beech Flooring; Oak and Gum Finish and Mouldings; Stair Treads; Oak Wagon Stock; Oak, Beech and Gum Dimension Stock; Oak Bridge Plank and Timbers; Rosemary Yellow Pine; Southern Hardwood Lumber, air-dried or kiln-dried, rough or surfaced, and Bruce TrimPaK.

Bruce Wood Floor Blocks—*CELLized

The development of the unit block has brought oak flooring into all types of buildings, from modest homes to the most elaborate commercial and public structures, such as apartments, hotels, office buildings, schools, churches, clubs, and exhibition halls. For full details as to nature and application, see pages of *CELLized Oak Flooring, Inc., immediately following.

Bruce Solid Oak Floor Planks—*CELLized

Five widths, 4, 5, 6, 7 and 8 in., $\frac{13}{16}$-in. thickness, chemically treated to make them more resistant to moisture conditions. The *CELLizing process, in addition to reducing the tendency of solid planks to change in size, impregnates the wood, partly filling the cells, and permits a richer and more lasting finish with less finishing material. Side and end matched; bevel-edged to show a V-shaped groove in the finished floor. Three grades: Mansion, Fireside and Tavern. Sold on actual square foot basis, allowing a slight per cent for waste. May be laid equal widths or random widths full length of the room; or random widths, random lengths.

Full instructions for proper laying and finishing available on request and included in every bundle shipped.

TRI-treat—for Lumber Preservation

After exhaustive laboratory and practical tests on a large scale, we announce TRI-treat, a process for general wood preserving. TRI-treat impregnates the wood, inexpensively, by open tank method; immunizes wood to rot and insect attacks; lengthens its life; is non-volatile, and non-toxic to humans; does not chemically react with wood. TRI-treated wood is odorless, brown in color, can be painted, handled as untreated wood, and is ready for use the day following treatment. Unqualifiedly recommended for inside use, and tested for exposed construction with results definitely favorable.

TRI-treating plants are now being installed, which will treat lumber for retail lumber dealer distribution.

Bruce Strip Oak Flooring—*CELLized or Untreated

Bruce Oak Flooring is made of the best of raw material, manufactured in modern daylight plants built expressly for the purpose and equipped with machinery and tools of the latest and most efficient type. Kiln drying represents the latest improvements in the proper seasoning and conditioning of the lumber, supervised by skilled technicians.

Tests of the finished product are made every few minutes with steel templets to insure proper fitting of the flooring.

This flooring may be obtained *CELLized, with the same advantages which apply to floor blocks and solid planks.

Sizes and Grades—As set forth by the Oak Flooring Manufacturers Association are strictly adhered to (see Manufacturers' Index). Each bundle is marked as to grade to insure correct delivery of material desired. Check graders are regrading bundles continuously to see that the regular graders are using the proper care and judgment in marking grades.

Method of Packing—Bruce Oak Flooring is carefully packed in bundles securely bound by wires—enough to guard against one or two wires opening and the breaking of bundles. Due to our careful manufacturing facilities, better than standard average lengths are maintained.

Ceda'line—for Closet Lining

Genuine Tennessee aromatic red cedar is unexcelled for use in lining clothes closets. Ceda'line is manufactured exclusively by E. L. BRUCE COMPANY, and may be obtained through your local lumber dealer.

Sizes—$\frac{3}{8}$x1$\frac{1}{2}$ in., $\frac{3}{8}$x2 in., $\frac{3}{8}$x2$\frac{1}{2}$ in., $\frac{3}{8}$ x3$\frac{1}{4}$ in., $\frac{13}{16}$x2$\frac{1}{4}$ in. (latter size for floors), and quarter round (for corners of walls, ceilings and floors). One grade permitting knots.

Application — Ceda'line is tongued, grooved and end matched. It is recommended that building paper be used, applying Ceda'line horizontally, blind nailing to studding. A layer of inexpensive ceiling may be used and the Ceda'line applied vertically. Furring strips should be used in applying over lath and plaster in old homes. The cost is little more than the lath and plaster replaced.

Finish—Use no finish whatsoever. Varnish destroys aromatic qualities.

Literature

(1) "Style in Oak Floors," illustrating block, plank, and strip oak flooring, *CELLized. (2) "Just Inside Your Threshold"—oak flooring untreated and Ceda'line. (3) Leaflets, descriptive of *CELLized floor products, individually. (4) "Bruce Every Month," a house organ valuable to every user of wood flooring products. (5) "TRI-treat—a wood preservative," File No. 19-a-31—19-a-34 A.I.A.

**CELLized—Chemically treated to retard shrinkage or expansion.*

CELLIZED OAK FLOORING, INC.

MEMPHIS, TENN.

MANUFACTURED BY THE FOLLOWING LICENSEES

ARKANSAS OAK FLOORING CO., Pine Bluff, Ark.
E. L. BRUCE COMPANY, Memphis, Tenn.
NASHVILLE HARDWOOD FLOORING CO., Nashville, Tenn.
THE LONG-BELL LUMBER CO., Kansas City, Mo.

Products

*CELLIZED WOOD FLOOR BLOCKS: following same grading as set forth by the Oak and Maple Flooring Manufacturers Association. Standard sizes, 6¾, 9 and 11¼-in. squares, 6¾x13½ and 6x12-in. rectangles, 13/16 and 1 1/16 in. thick.

Made in Oak, Maple, Beech, Walnut, Philippine Hardwood and Yellow Pine.

LICENSED UNDER PATENTS OWNED BY *CELLized Oak Flooring INC. MEMPHIS TENNESSEE. FLOORING CONTRACTOR

Copyright 1929
*CELLIZED OAK FLOORING, INC.

*CELLized TRADE-MARK

Guarantee and Laying

*CELLized Wood Floor Blocks are guaranteed by *CELLIZED OAK FLOORING, INC.

They must be laid by Licensed Flooring Contractors.

The names of those who have been licensed to lay these block floors in your locality will be supplied upon request.

The *CELLizing Process

*CELLizing is a chemical, deep-cell wood treatment which
(1) reduces the tendency toward shrinkage or expansion by making the wood more moisture resistant;
(2) prevents decay and damage by wood-boring insects;
(3) takes an improved finish;
(4) adds little to the cost.

Literature

Architects' Data Sheets, loose leaf; Sizes and Grades of *CELLized Blocks; Standard Specifications; Basic Designs; Monthly List of Licensed Flooring Contractors.

Wood Floor Blocks—*CELLized

Designed in units, laid without nails. Each block is a complete unit of three or more 13/16-in. or 1 1/16-in. wood flooring strips, joined into squares by one or more steel splines at the back.

Laid in EVERBOND, a sound-deadening plastic cement directly over a wood subfloor or concrete, as rapidly as the usual strip flooring. No nails are used.

As EVERBOND never sets hard, possible movement of the subfloor will not communicate itself to the finished design floor.

EVERBOND has insulation value and is in itself an additional protection against the effects of moisture. The result is a quiet, solid floor with a "feel" under foot unique even in a wood floor. Squeaking is eliminated.

The unit block, with its rapidity of laying, and the moisture resistant and superior finishing properties caused by *CELLizing, makes a design wood floor available for schools, apartments, hotels, clubs, office and public buildings, and similar structures where wood floors have heretofore not been considered economical.

Wherever a distinctive floor, combined with permanence and lowest upkeep cost is desired, *CELLized Blocks are ideal.

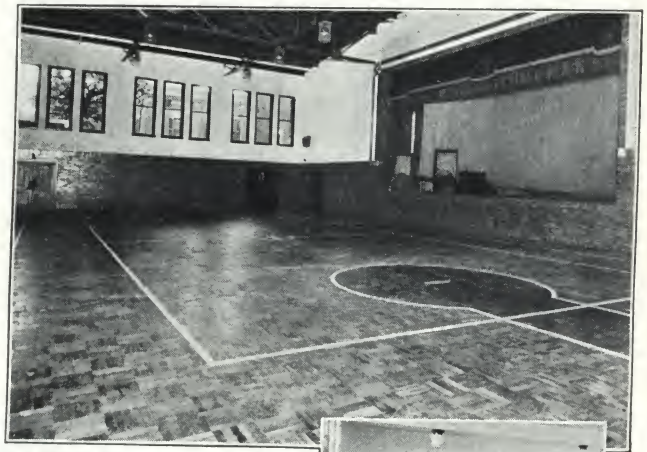
Nature created wood flooring. Without impairing the well known qualities that Nature has given wood, the *CELLizing treatment has greatly advanced its efficiency as a flooring material.

For All Types of Buildings

*CELLized Wood Blocks are admirably adapted to schools and apartments. For such construction nine factors are important in making floor selection.

(1) The floor must be comfortable under foot, neither too hard nor too soft; (2) it must be reasonably noiseless; (3) durable; (4) sanitary; (5) it must require a minimum of labor in the cleaning operation; (6) it must present a safe, non-slippery surface; (7) it must call for a minimum of upkeep and repair expense; (8) it must have beauty in color and texture; and (9) be economical to install.

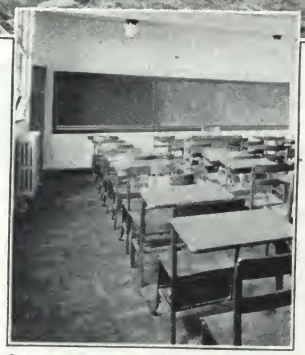
Maple and Beech Blocks — Factory Sanded, then *CELLized



First Grade Oak Blocks in the Father Ryan High School, Nashville, Tenn.

A very material saving in finishing costs is effected by the use of factory sanded blocks, especially appropriate in schools, stores, high-class factories, etc., where durability is the first consideration. At the same time, the appearance is highly pleasing.

Cleaning, if necessary, and polishing may be accomplished in one operation by the application of hard paste-wax.



Seats Screwed Firmly to the *CELLized Block Floor in North Little Rock High School, Little Rock, Ark.

***CELLized Block Floor in the Office of Diamond Chain and Mfg. Co., Indianapolis, Ind.**
BISHOP, KNOWLTON & CASSON, Architects

Continued on next page

CROMAR FACTORY-FINISHED OAK FLOORING

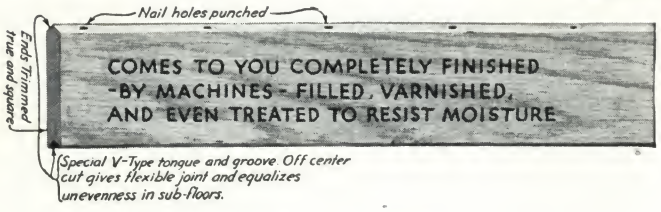
Manufactured Only by

THE CROMAR CO.

WILLIAMSPORT, PA.

Description

Cromar Factory Finished Oak Flooring—now in the twelfth year of manufacture—is completely finished at the factory. It is milled, filled, varnished and treated to resist moisture—by *machines*. It has a tongue-and-groove of special design, as shown below and described on next page.



Grades, Sizes and Colors

Cromar Golden Brown Varnish Finish	Cromar Tobacco Brown Wax Finish
Plain or quarter sawed white oak	Plain white oak only
No. 1 or No. 2 Grades	No. 1 Grade only
1½ or 2-in. face width	2-in. face width only
⅜-in. thickness	⅜-in. thickness

Lengths—***No. 1 Grade***—Strips come in promiscuous lengths from 2 to 16 ft.

No. 2 Grade—Strips come in promiscuous lengths from 1 to 16 ft. Each length is separately crated (see following page). Lengths are approximately as follows:

No. 1 Grade	No. 2 Grade
15%— 2 to 4 ft. long	25%— 1 to 4 ft. long
30%— 4 to 8 ft. long	35%— 4 to 8 ft. long
35%— 8 to 12 ft. long	30%— 8 to 12 ft. long
20%—12 to 16 ft. long	10%—12 to 16 ft. long

Slight variation in these percentages is permissible.

Specifications for Laying Cromar Factory-Finished Oak Flooring

Note: The following specification covers the materials and laying of the finish floor only.

Finish Flooring—

(1) ***Preparation of Sub-floor***—All common or sub-floor surfaces in rooms or spaces that are to have "Cromar" flooring shall be carefully inspected before finish flooring is laid. The surface shall be brought to a true and level plane. The ends of each sub-floor board shall have a solid bearing on a joist and each board shall be securely nailed to every bearing with at least two 8d or 10d flat head nails.

(2) ***Flooring***—All finish flooring shall be "Cromar" Factory Finished Oak Flooring, manufactured by The Cromar Co., Williamsport, Pa., and shall be of the color, grade, face width and thickness specified below (or as shown on plans).

(3) Finish flooring in (state locations) shall be "Cromar Tobacco Brown Oak Flooring," No. 1 Grade, 2-in. face width, Plain Oak, ⅜ in. thick, finished on face with penetrating stain and hard drying wax. No filler or varnish shall be used in the finishing.

(4) Finish flooring in (state locations) shall be "Cromar Golden Brown Oak Flooring" (No. 1 or No. 2 Grade) (½-in. or 2-in. face width) (Plain or Quartered Oak) ⅜ in. thick finished with one coat of paste filler forced into the pores of the wood under machine pressure and "Cromar" varnish.

Note: Retain Par. 3 or 4 or both as required. In Par. 4 select grade, etc., as desired.

(5) All thresholds shall be of the same kind, grade and finish of wood as that used for flooring.

(6) ***Laying Flooring***—Over all common or sub-flooring surfaces lay one thickness of moisture proof paper (Cromar brand or ..... brand) with all joints lapped not less than 1 in. and extending up on the base board or studding ½ in. or sufficient to be covered by moulding.

(7) Before laying flooring, space shall be "squared up" accurately.

(8) Unless sub-floors are laid diagonally, all flooring strips shall be laid in opposite direction to the boards of the sub-floor.

(9) Allow for any possible expansion of top floor by leaving as much space between base board and flooring, at two sides of room, as will be covered by moulding; but at the two ends of room (i.e. ends of Cromar strips) fit them, snug against the base board.

(10) All end joints shall be staggered throughout the floor and, so far as possible, no end joints shall occur in front of door openings. Short lengths shall not be used in front of doors but shall be laid in closets and similar places when possible. Where necessary to cut strips, all end joints shall be made accurately, using fine cutting saw and mitre box.

(11) Each piece of flooring shall be well nailed with 15½-gauge, 1¼-in. cement coated wire nails. The first few strips in each room shall be nailed through each hole punched in the tongue. The remainder of the pieces shall be nailed through every other hole and close to the end of the joints. Further nail the first and last strips through surface close to base board so that moulding will cover nail holes.

(12) If two groove sides come together—as at doorways when strips have been reversed in adjoining rooms—drive nails on 12-in. centers through the lower lip of one grooved edge and fit Cromar slip tongue into groove, placing adjoining flooring strip tight against it.

Note: Where Cromar flooring is to be laid in old buildings the same specification given above can be followed if provision is made for the removal of the base mouldings and thresholds and resetting of same in a neat manner upon completion of the work.

Cromar Raw Materials

Lumber—West Virginia (Appalachian) white oak only. This slow growing timber better takes *and holds* a finish. The better grades of this medium textured oak are only used.

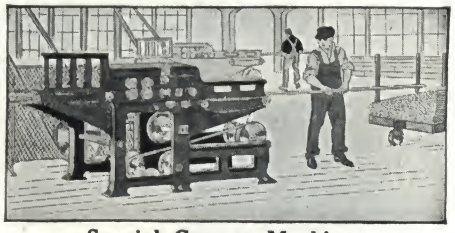
Filler—*Only Silex paste filler is used.*

Varnish—*This material is made specially* by one of America's best known and largest varnish makers. It costs more than the average commercial varnishes—is long in oil, hence elastic and long wearing.

Moisture Resistance—Several years of experimental work and chemical research have brought this to a high degree.

The Cromar Process

Lumber Drying—Improperly dried white oak checks, splits and warps. When scientifically cured, the opposite is true. All lumber going into Cromar Flooring is air dried for at least one year. It is then held in dry kilns of the most modern type until scientific tests prove the moisture content to be between 3% and 4%. This low degree of moisture would be unsafe and impractical were it not for the fact that Cromar Flooring is treated to resist moisture. From the kilns the lumber passes to a "tempering shed" to cool for an average of six days. This prevents shrinking after the material is worked.

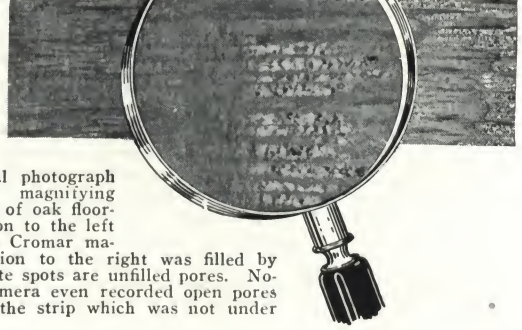


Special Cromar Machines

They not only make the tiring, trying hand methods unnecessary but they insure *uniformly* high quality and reduce costs as well

Milling—Yates American, high speed, disc-head milling machines are used. They produce a surface of satin smoothness. At these machines, operators do the manual work and the man in charge devotes the entire time to watchful care and constant testing of dimensions with metal gauges.

Filling—Here begins a series of finishing operations with the ingenious Cromar machines—the only machines in the world, it is believed, that apply a cabinet finish to wood. First the putty-like Silex filler is forced into all the pores under pressure, sealing the pores and thus preventing the oil of the varnish, which is later applied, from entering the wood. When the varnish oil is taken up by the wood, only a brittle substance remains which ordinary traffic quickly flakes off. With Cromar, you cannot flake off the varnish even with a hammer, as a test of samples will demonstrate.



Difference Between Machine and Hand Filling

From actual photograph made through magnifying glass of a piece of oak flooring. The portion to the left was filled on a Cromar machine; the portion to the right was filled by hand. The white spots are unfilled pores. Notice that the camera even recorded open pores on the end of the strip which was not under the glass

Continued on next page

Varnishing—The machines for applying the varnish are unfailing in their precision. They cannot apply too much in spots or too little; they cannot tire, or forget, or become careless. Furthermore, because powerful machines do the spreading, a larger amount of solids can be carried in the varnish—resulting of course in a much more durable finish. A varnished strip of Cromar is of an excellence which man has never yet equalled by hand on hardwood floors.

Machines which are similar in design to the varnishing machines apply the moisture-resisting compound.

Grading and Packing

Specially trained inspectors trim the flooring strips and grade them for defects in the finish as well as the wood. Finishing flaws caused by knot-holes, bad ends, etc., are cut into waste.

The crating of Cromar strips protects them to such extent that in ten years the company *has made but one claim upon carriers for damage in transit.* Strips are packed face to face, 18 strips of 2-in. width, 24 strips of 1½-in. width to a bundle. Bundles are clamped in a press, edges protected with crating and bound with strap iron to prevent rubbing. Each length is packed separately. Grade and quantity are stenciled on each bundle, the No. 1 with Black Ink, and No. 2 with Red Ink.

Grading and Packing Cromar Strips

Special Tongue-and-Groove

The improved V-joint type of tongue-and-groove fits quickly and snugly without "blocking." Each nail-hole is punched in the tongue. The flat, beveled edge of the tongue permits rapid nailing with no necessity whatever for "setting" the heads and with no sharp edges to show hammer marks. Specially trained floorlayers are not needed; carpenters complete the installation. An ingenious off-center cut has been provided so that the tongue does not fit into the groove on a "dead center." This gives a flexible joint and equalizes unevenness in sub-floors.

Cromar lays satisfactorily over a rougher sub-floor than other tongue-and-groove or square-edge flooring.

When Cromar Flooring is nailed down, a shallow surface seam is formed between the strips. This seam is obtained by slightly rounding both top edges of the strips at the milling machine. It is 1/40 in. deep and *finished exactly like the face.* This provides a thoroughly and easily cleanable surface.

Cost

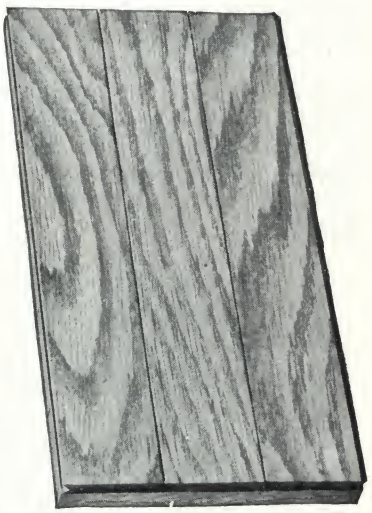
Naturally, the initial cost of Cromar is greater than that of unfinished oak flooring. But, due to all finishing being done by high speed machinery, it will be found that the *cost of the completed floor* is actually less, providing of course that a fair price for installing is made.

The price for *nailing* Cromar should certainly be no higher than asked for the nailing of unfinished flooring, since Cromar can be nailed *at least* as fast as any other hardwood flooring.

Cromar Offers You a Choice of Two Beautiful Colors

The high lustre and the brighter beauty of Golden-Brown Cromar makes this type of hardwood flooring still the more popular. But some little time ago a demand for a darker colored flooring sprang up, inspired by leaders among architects and interior decorators. And to meet this demand, The Cromar Co. developed its Tobacco-Brown finish. Golden-Brown Cromar has a varnish finish, while Tobacco-Brown Cromar has a wax finish without varnish.

The beauty of Tobacco-Brown Cromar flooring is more restrained. Dark floors have a quiet charm that lends greater warmth to the tone of a room and, to some at least, conveys a feeling of a quality more sound and substantial. The background of history and tradition favors the darker floor. Much of the charm of Europe's old manors and of the stately mansions of our own earlier periods, rests in the impressive beauty of their oak floors, dark-stained and waxed. Certainly there is a practical value in giving floors a darker tone, since it is a surer foundation for the colors of any decorative scheme. And the separate strips of the darker flooring, joined one to the other, blend more easily regardless of the varying character of the grain.



Cromar Flooring Blends Well Regardless of Varying Character of the Grain

To achieve the rich beauty of those deep-brown floors which have borne the tread of many generations, we had to adopt the same principle of finishing oak strips that was then in vogue. Hence, in making Cromar Tobacco-Brown Flooring, we had to apply a deep-penetrating stain and a special, heavy-bodied cake-wax. This wax is forced deep into the pores of the wood, by machines, under extreme pressure, and at a temperature of 250 degrees.

The result is that the finish actually becomes a part of the wood itself! And hence the wearing qualities of this darker finish are most unusual.

Rules for Calculating Quantity

To the square footage *to be covered* add one-fourth (if using 2-in. face width) to obtain *strip measure.* For 1½-in. width add one-third. To either total add 2% for carpenter's cutting waste.

Specifications should always state whether *square measure* or *strip measure* figures are given.

Cromar Dealers—Literature and Samples

Not all retail lumber dealers stock Cromar, but any of them can obtain immediate shipment of flooring, finished base moulding, insulating paper and cement coated wire nails (15½ gauge x 1¼ in. long) from key dealers or from factory.

Your request will bring literature, samples and names of nearby dealers who can show you Cromar floors in use.

Patent Protection

Product, finishing machines, bundle, bundling machines and other devices fully covered by patents.

ESTABLISHED 1899

HASBROUCK FLOORING COMPANY

Parquetry and Wood Block Flooring, Cork Tiling

MAIN OFFICE, MILL AND YARD

Thirty-fifth Avenue and Thirty-sixth Street

LONG ISLAND CITY, N. Y.

SHOWROOM: 101 Park Avenue, MANHATTAN

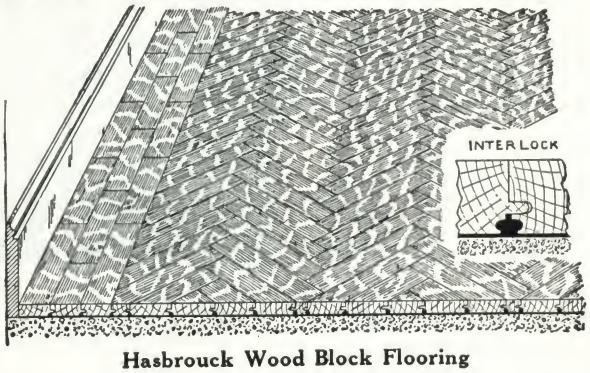
Products

WOOD BLOCK FLOORING; PERIOD and WIDE PLANK FLOORING; PARQUETRY; COMPRESSED CORK and CORK COMPOSITION TILING.

Wood Block Flooring

Hasbrouck wood block flooring consists of tongued and grooved blocks so designed as to interlock at both ends and sides, insuring permanently level and even floors. These blocks are set in an asphaltic composition on a cement base. The sides are grooved at the bottom edge to form a key for the mastic, which binds the whole so as to form a solid permanent floor surface.

Hasbrouck wood blocks are made in two thicknesses, 7/8 and 1⅛ in. and can be furnished in teak, walnut, oak, maple and Georgia comb grained pine. For private residences and where the best class of floor is desired, we recommend that teak, walnut or oak be used and that maple or pine be used in public buildings and institutions.



Hasbrouck Wood Block Flooring

These blocks can be laid in a great variety of designs. They should not be confused with pine end wood blocks set on a sand or concrete base.

Advantages—***Fireproof***—There are no air spaces under this flooring to feed flames.

Sanitary—No cracks or unevenness to hold filth or germs.

Durable—It will outwear marble.

Dampproof—Asphaltic composition effectually prevents all passage of moisture and prevents *dry rot.*

Noiseless—The composition fills up all hollow spaces and acts as a cushion, making floor soft and easy to the feet, unlike tile, marble, terrazzo or cement.

Saves Floor Height—Cement foundation may be carried just high enough to cover conduits, pipes, etc., saving the thickness of sleepers and underfloor.

Specifications for Hasbrouck Wood Block Flooring

On the cement foundation of rooms specified, furnish and lay a wood block floor of HASBROUCK FLOORING COMPANY'S manufacture, or equal, to be approved by architect and to conform to the following requirements:

Blocks to be 7/8 or 1⅛ in. x 2 or 2½ in. x 12 or 14 in. of (wood specified) milled in such manner as to interlock on sides and ends with solid tongues and grooved at bottom edges to form key for mastic. Blocks to be laid in basket or herringbone design with strip borders formed by laying the blocks end to end.

Mastic to be a pure asphaltic composition, sample of which shall be submitted to architect for his approval.

These floors shall not be laid until the foundations are thoroughly seasoned and dried out, when the foundation will receive a coat of special preparation to act as a binder. On this the wood blocks are to be set in the mastic, which must be heated to such temperature as to allow it to flow freely, and fill all grooves at bottom of blocks.

Floors to be traversed, smoothed and sandpapered to smooth even surface ready for painter's finish.

Contractor shall be required to give a written five-year guarantee that the floor will not become detached or loose from the foundation, or show any other defects attributable to imperfect materials or workmanship, and to make good any such defects which may develop; also to repair any damages to other work by reason of such repair.

Cork Tiling

Pure cork compressed to great density and baked. Particularly suitable where a sanitary, noiseless flooring is desired.

This tiling may be laid on a wood or cement foundation. In either case they are set in our special cementing compound which holds the tile firmly in place and seals the joints, making a waterproof and acidproof floor when treated with our tile finish. The tiles are made in colors to give designs of a very pleasing effect.

A sanitary cove and base can be furnished for use with these floors.

Stock sizes of cork tiling are ½ in. thick, by 4½x4½, 6x6, 9x9, 12x12, 3x6, 4½x9, 6x12, 9x18, 12x18 and 12x24 in.; but any intermediate size can be cut to order at small additional cost, and it is possible to work out any parquetry or marble design with this material.

Cork Composition Tiling

A composition of ground cork, oxidized linseed oil and special gums. It is laid in our special waterproof cementing compound on any kind of smooth, level foundation.

The tiles are made in 7 colors: blue, brown, black, white, red, green and gray, which allow them to make beautiful parquetry designs.

Particularly suitable for public buildings, steamships, service portions of clubs, hotels and dwellings, stair treads and landings.

Period and Wide Plank Flooring

We make a specialty of these floors, both veneered and solid, and in all the domestic and imported cabinet woods. Any special pattern or design desired by the architect to carry out the scheme of decoration can be furnished, as all floors laid by us are made from the rough lumber at our plant in Long Island City and under our supervision. Our men, both in mill and outside, are trained in the making and laying of high class floors, many of them having been in our employ over twenty-five years.

References and Installations

List of references and installations furnished upon application.

W. M. RITTER LUMBER COMPANY

Manufacturers of Appalachian Oak Flooring and Hardwood Lumber

115 East Rich Street, COLUMBUS, OHIO

BRANCH OFFICES

NEW YORK, N. Y., 2568 Park Avenue

LONDON and LIVERPOOL, ENGLAND

Products

OAK FLOORING.

Specialists in Appalachian Oak and Yellow Poplar Lumber.

Also Maple, Beech and Birch Flooring, Appalachian Hardwood Lumber.

Special Features of Ritter Appalachian Oak Flooring

(1) **Ritter Appalachian Oak Flooring Is Scientifically Seasoned**—The lumber is air dried for several months and then carefully kiln dried to an average of 6% moisture content. It is then permitted to cool in a dry place for 72 hours before it is manufactured into flooring, thus preventing the warping and twisting of finished stock and eliminating many of the difficulties of laying floors.

(2) **Ritter Flooring Is Accurately Manufactured**—It must pass a rigid system of inspection. The pieces are tested with a steel templet when leaving the side-matching machines and tested for squareness when delivered from end-matching machines. Two more inspections must be passed before the flooring is bundled and sent to the warehouse.

Typical Example of Ritter Appalachian White Oak Flooring

Panel made of six flooring strips 2¼ in. wide

(3) **Ritter Flooring Is Stored in Heated Warehouses**—To protect Ritter Flooring from absorbing moisture, it is held till shipment in steam heated, well ventilated warehouses, where uniform temperature and moisture conditions are maintained from month to month.

(4) **Ritter Flooring Is Economical to Lay**—Owing to the excellent quality of the oak and the extreme care exercised in its seasoning and manufacture, the initial cost of Ritter Flooring is higher than the average flooring, but in the long run, it is more economical. It matches so accurately that it can be laid with a minimum of labor and material. Because of its excellent texture, it can be properly nailed, scraped and finished more easily than oak flooring produced from timber developed under less favorable conditions of growth. Flooring contractors have estimated the saving on Ritter Flooring in laying and finishing to be five to ten dollars per 1000 board feet.

Grading

Same as Oak Flooring Manufacturers Association Rules.

First Grade—Face side is practically free from defects, except ⅜ in. of bright sap wood. The question of color shall not be considered. Shipped in lengths of 2 ft. and up. If a 5-ft. average length is maintained, as much as 20% under 4 ft. may be included. This grade should be used in the better class of residences, apartment houses, clubs and other buildings where only the best grade of flooring is desired.

Second Grade—Admits pin wormholes, very slight imperfections in machinery, or sound, bright knots no larger than an ordinary pencil. Not more than one of any of the above mentioned defects is allowed for each 3 ft. of length. Bright sap admitted without limit. Lengths, 1 ft. 6 in. and longer. If a 4½-ft. average is maintained, as much as 35% under 4 ft. may be included. This grade should be used where an excellent but not necessarily the best floor is desired. When finished darker than natural color it is practically equal to the first grade in appearance.

Third Grade—Admits pin wormholes, spot wormholes if surrounded by sound wood, and any other smooth, sound, light defects which will enable one to lay a sound, serviceable floor without cutting. Lengths, 1 ft. 6 in. and longer. If a 3½-ft. average length is maintained, as much as 45% under 4 ft. may be included. This grade may be used in the cheaper apartments and residences where a serviceable but not necessarily a perfect floor is required. When properly finished in a color darker than natural, this grade will produce a serviceable as well as a very presentable floor.

Fourth Grade—This grade is composed of pieces containing defects too large or rough to go into the third grade. Used only in factories and similar buildings and will lay a serviceable floor with some cutting.

Important—Specifying Oak flooring by grade only is *not sufficient to obtain the most beautiful results.* This is because oak timber obtained in one section of the country varies greatly in the character of its texture and grain pattern than oak timber of another part of the country. Some oak has a close grain and fine texture while other oak has a wide grain and a coarse texture, depending on the climatic, soil and drainage conditions under which it grows.

Oak timber grown on the highland territory of the Appalachian region (Virginia, West Virginia, Eastern Kentucky, Western North Carolina and Eastern Tennessee) develops slowly and sturdily. This oak possesses a closeness of grain and fineness of texture which makes it highly prized by craftsmen who seek great beauty and refinement in their oak floors, interior trim and cabinet work. In order to be assured of obtaining the best results in your floors, specify the grade of flooring you desire, but also insist that it be *Appalachian* stock. This also applies to your specifications for Oak trim.

Standard Sizes

The standard measurements of Ritter Tongued and Grooved Strip Oak Flooring are: ⅛-in. thickness, 1½ and 2¼-in. face width; ⅜-in. thickness, 1½ and 2-in. face width. Every piece is branded W. M. Ritter Lbr. Co., in the back for your protection.

Complete information on parquetry tongued and grooved oak flooring sent on request.

Our Booklet

"Ritter Oak Flooring" containing useful information will be sent to you upon request.

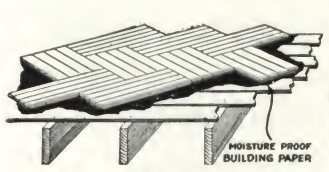


Fig. 1

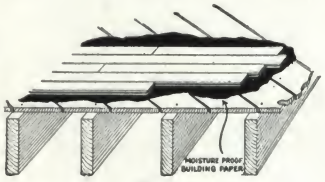


Fig. 2

Illustrating Method of Laying Flooring Over Subfloors, Non-fireproof Construction

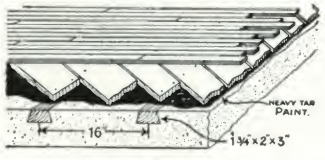


Fig. 3

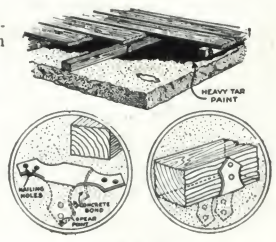


Fig. 4

Illustrating Methods of Securing Subfloor to a Concrete Base

ESTABLISHED 1876

D. M. ROSE & COMPANY

Manufacturers of Distinctive Oak Flooring

KNOXVILLE, TENN.

"There's a Difference"

Products

GENUINE APPALACHIAN OAK FLOORING in Strips, Parquetry and Wide Planks.

Cedar Closet Lining; Moulding and Trim; Millwork.

Devoted to the making of unusual Interior Woodwork.

A Different Oak Flooring

Our ideal is to manufacture oak flooring that will contribute to durability approaching permanence, to beauty of important decorative value, and to economy in final cost of finished floor.

Distinctive Features

Extra clear, all heart, shaded for color, selected for grain, D. M. Rose matched and genuine Appalachian Oak—a combination that makes a blending of pattern, texture and color.

Genuine Appalachian Oak

We use it exclusively because its fine grain and smooth even texture make a hardwood that yields readily to our modern machinery and the skill of our craftsmen, responds to finishing with an unusual beauty and by our method of preparation, correct installation and proper care, the floor will retain its original beauty and remain even and solid.

Extra Clear—The term "Extra Clear" is used to distinguish our superior grades which are free of any blemish that will not vanish while preparing the floor for the finish.

All Heart—Heartwood is essential to the success of the Extra Clear All Heart Shaded and Grained grades. It is preferable for a natural finish, being rich in color and beauty. Sapwood and heartwood do not respond uniformly to finish. All sap, whether bright or discolored, is eliminated to remove a hindrance to uniformity of color or shade.

Harmonious Shading—There are many shades in red oak and the shades in white oak are more numerous and the contrasts are wider.

Our flooring is classified into three groups of shades—light, fair and dark—to eliminate the discordant variations of shades, which is highly important in making the floor a harmonious background that will add to rather than detract from the ornamental art produced by architectural design and arrangement.

Uniform Graining—The grain varies in design and fineness according to the manner of sawing the board from the log and then, too, since open grain absorbs more filler than close grain, it is necessary to group the grain patterns to obtain uniformity of pattern and shade in the finished floor.

Each piece of our flooring in the Extra Clear All Heart Shaded grade is grouped according to the grain predominating in the piece, bundled and marked as follows: plain line grain, plain flat grain, 45° quartered, quartered large figure and quartered medium figure.

The quartered edge grain or 45° quartered has more uniformity than any of our grades and is made only in the Extra Clear All Heart Shaded grade.

Economy and Utility—A loose fitting tongue and groove with an uneven subfloor causes the face edges and corners to project, making defects in side and end matching, requiring severe scraping and sanding that destroys the even plane of the floor and makes the cleaning costly.

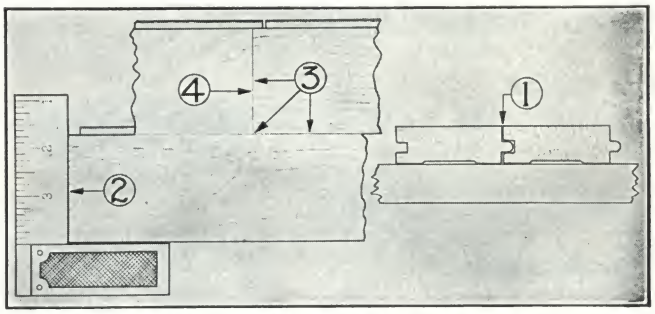
In D. M. Rose matching the face edges are even, the end joints are square and the corners are cut clean and sharp. The tongue enters the groove easily until $\frac{1}{16}$ in. up, then draws the flooring to a true fit, making a solid floor of even plane with hairline joints, all of which contribute to a strong, secure floor that will not squeak. There is no occasion in the preparation for finishing to scrape or sand to the extent of making uneven places in the smooth, even surface of the floor.

Preparation and Care

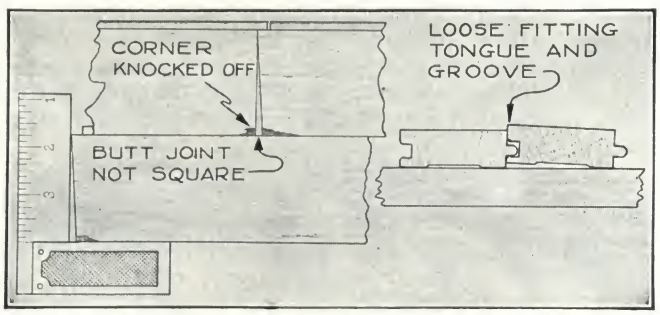
Our oak flooring is thoroughly air seasoned in our own yard and kiln dried in our recirculating and reversible type kilns in accordance with the method developed by the U. S. Forest Products Laboratories to approximately 6% moisture content by test, then tempered before working.

Distribution

It is available through responsible dealers and should never be sent to the job until the building is ready for its installation—when all other work is done, the plaster dry and heat is on to prevent the flooring absorbing atmospheric moisture during installation and finishing.



Some Features of D. M. Rose & Company's Flooring
(1) Face edge even, (2) square butt joint, (3) clean sharp edges and corners, (4) hairline joint



Defects Common to Flooring Produced by Inferior Machine Work

ESTABLISHED 1883

WOOD-MOSAIC COMPANY, INCORPORATED

Hardwood Flooring

GENERAL OFFICES, SAWMILLS, VENEER MILL AND CORE PLANT

LOUISVILLE, KY.

NEW YORK WAREHOUSE, 315 Vanderbilt Avenue, Brooklyn, N. Y.
PHILADELPHIA WAREHOUSE, Second and Tioga Streets

Display of Finished Samples at Architects' Sample Corporation Rooms, 101 Park Avenue, New York, N. Y.

Products

PERIOD FLOOR DESIGNS; WOOD FLOORING for Fireproof Buildings (Mastic Wood Blocks); PARQUETRY; STANDARD STRIPS and BLOCKS, Thin Square-Edge, and $\frac{13}{16}$-in. Tongued-and-Grooved.

Service

Exclusive parquetry floor-laying firms handle and install our flooring specialties in most principal cities. Through them we can work with architects, submitting photographs and samples of classic period flooring, or work from architects' drawings. In cities where we have no regular representatives we shall be glad to correspond directly with architects and decorators.

Period Floors of High-Grade Woods

For nearly half a century this company has manufactured period flooring of both foreign and domestic woods. During this time, Wood-Mosaic Flooring has been installed in hundreds of prominent buildings and fine homes, in patterns ranging from 17th Century French to most modern "L'art nouveau" designs.

Fontainebleau

This lovely pattern appears in the Fontainebleau palace and in other famous buildings at Versailles, Petit Trianon, Chateau de Compiegne, etc. In these historic structures the Fontainebleau design is laid in oak.

In a modern building, the Fontainebleau design is just as often carried out in other woods to match panelling, etc. Walnut is the most popular, but it is also made in Brown Teak, White Mahogany, Prima Vera and many other woods.

Herringbone

Regular herringbone is the French design usually desired by architects and decorators. Reversed, mitred, herringbone as seen in the foyer of the Opera House in Paris is very handsome and applicable to large rooms.

Colonial or Decking Floors

During the past twenty-five years the vogue of wide-board effects, as seen in many of the old manor houses and castles in England, has been growing along with the revival of early-English architecture. Our own colonial residences show these same wide boards. White oak is used in most of these floors. Rangoon teak is also very popular, as is walnut. Australian lacy oak is something new and beautiful.

Most people demand a smooth, non-curling surface. To get this result we build wide-plank decking of three-ply, laminated wood—as fine desks, doors and panels are constructed—using the waterproof glue evolved for the Navy hydroplanes during the war.

Gothic Oak Decking

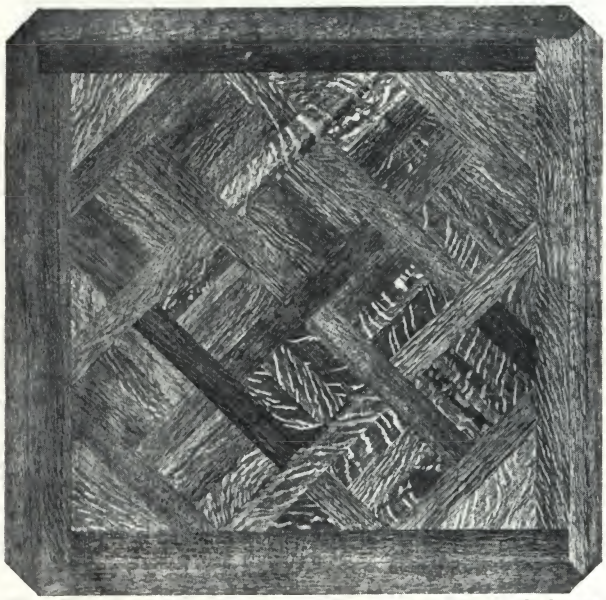
Our Gothic Oak plank (or decking) is a product to which we draw particular attention. It is a quartered oak artificially aged to the mellow brown of old carvings and early-English chests. Unlike fuming, this aging process penetrates the wood through and through. Beautiful when first laid, a few months mellow the tints so that the older the floor the more beautiful it becomes. Occasionally Gothic Oak is made up clear. Usually it is supplied with some of the boards showing wormholes and minor defects in the wood which simulate age in a most intriguing fashion.

Squares

In some cases the layout of individual rooms or entire buildings demands the use of square patterns or "Squares."

Many old English residences of the Elizabethan Period were floored in oak squares. Hatfield House in Hertfordshire, Wentworth castle, Yorkshire, and many more famous old buildings were floored with 8 to 24 in. oak squares, laid either in one shade or in alternate dark and light sections according to the old English tradition.

These squares can be made up by Wood-Mosaic in quartered oak or in alternate squares of oak and Gothic Oak, oak and walnut, oak and teak, and sometimes in white maple and walnut.



The Fontainebleau Design in Quartered White Oak, as Seen in the Fontainebleau Palace Just Outside Paris

Continued on next page

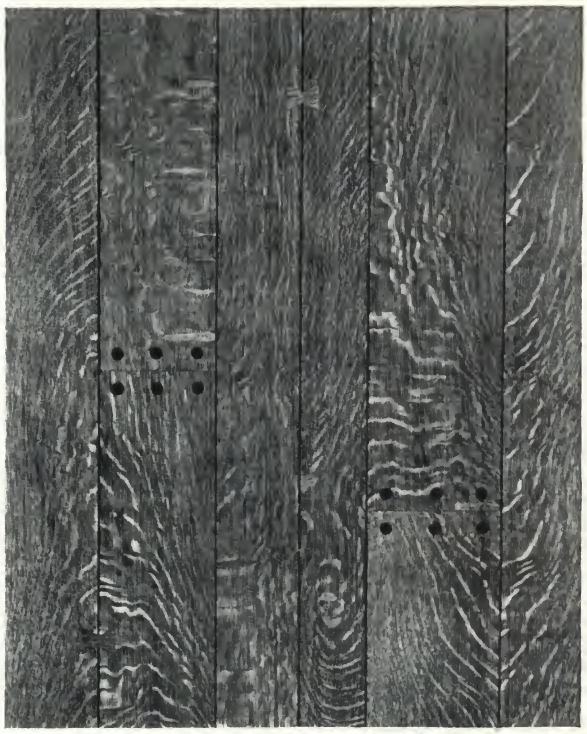
Early Parquetry

Parquetry flooring has a distinguished history. In the famous Mellbury House in Dorset and in Castle Howard —which Latham describes as "the greatest of the classic mansions in Yorkshire and one of the greatest in England"—parquetry flooring, showing a decided Renaissance influence, is found.

The first parquetry floors recorded in America were installed by Thomas Jefferson at Monticello.

During the past few years we have furnished this same Monticello pattern in burl and striped walnut, in curly oak and rift-sawn oak and other combinations, for some of the finest buildings in the country.

Tile effects in wood for Spanish and Italian residences can also be worked out from our array of varicolored lumber. L'art nouveau or moderne effects are frequently made up by us from architects' drawings.



Laminated (Three-Ply) Colonial Flooring of Random Width Quartered White Oak Boards Showing Artificial Crack Lines, Plugs and Keys

Sources of Supplies

Because of its superior texture and color as compared with Southern oak, Northern white oak is used in Wood-Mosaic Flooring.

The teak used in W-M Flooring is the same as that imported from Burma by the United States Navy for use in American battleships.

As one of the largest producers of American walnut, we are also well equipped to supply the finest quality of walnut in Wood-Mosaic Flooring.

Large stocks of rosewood, ebony, tulipwood, green mahajua, red and white mahogany, Australian lacy oak, oriental walnut, purple amaranth and numerous other foreign and domestic woods enable us to meet fully the fancy of decorators and architects.

Specifications for Period Floors

General—Flooring to be manufactured by the Wood-Mosaic Company, Incorporated, Louisville, Ky.

Where possible, add: to be installed by Wood-Mosaic Company's floor-laying agents.

Solid English Decking Boards (Rough Cast) of Random Widths, Showing Natural Variations and Knots, Also Patches as Found in Queen Elizabeth Banquet Hall in the Castle at Carnarvonshire, Wales

Plank Floor $\frac{13}{16}$-in. Colonial Flooring Laminated—Finished flooring (kind of wood here) shall be Colonial or Decking Flooring, manufactured by Wood-Mosaic Company, Louisville, Ky., and to be laid, scraped and finished in a workmanlike manner. Flooring to be $\frac{13}{16}$ in. in thickness, random lengths and also random widths, 4 to 8 in. wide. To be laid with plugs, at butt joints, of same wood as floor (also dovetails and crack lines if desired). The boards to be of laminated construction, made three-ply with cross core, with veneers top and bottom which shall run lengthwise of the piece; finished face $\frac{3}{16}$ in. thick. (Where solid boards are desired, they are to be specified.) Boards to be grooved, edges and ends, and laid with slip tongues or splines.

The above is a concise specification which will save time and trouble and result in a satisfactory floor. Following are alternate paragraphs applying to Old English Solid Decking and to the Fontainebleau design.

Old English Solid $\frac{13}{16}$-in. Decking—Finished flooring to be Old English Solid $\frac{13}{16}$-in. decking prepared by Wood-Mosaic Company's tempering process. To show patches, worm-holes, and varied grain of woods, with sound knots.

Fontainebleau $\frac{13}{16}$-in. Design—Finished flooring to be Fontainebleau $\frac{13}{16}$-in. design as made by Wood-Mosaic Company, Incorporated. Pattern to be supplied in separate pieces, tongued-and-grooved and grooved for slip tongues.

Mastic Wood-Block Flooring to Be Laid Direct on Concrete

Mastic wood block flooring is not new. It has been used for over a century in Europe. The principle of mastic flooring is that the smooth, concrete base floor is covered by flat-backed, wood blocks laid in a film of mastic so prepared as to retain a certain resiliency or suction.

Two pieces of smooth, wet glass can not be easily pulled apart, and this attraction is the theory of the mastic floor.

For many years this com-

Continued on next page

pany has manufactured mastic wood block flooring, made according to the time-tested principles that have proven so completely successful both in this country and in Europe.

Wood-Mosaic Mastic Blocks are made with perfectly flat backs to insure the most intimate contact and permanent bond with the concrete. They are also tongued-and-grooved on all four edges and have mastic grooving around all four lower edges to take up surplus mastic.

These blocks have proved their reliability beyond all question of doubt and have been ordered and reordered for some of the finest buildings in America.

Mastic wood blocks are usually laid in the herringbone pattern which, because of its interlocking design and varied direction of grain, withstands wear and abuse much better than do ordinary squares, etc.

This company has prepared a comprehensive, illustrated book on mastic wood block flooring. It will prove a valuable and probably an enlightening addition for your files. Your copy will be gladly sent you on request.

For Good, Permanent Floors

Anything made of wood is more or less sensitive to atmospheric changes. Some woods are more easily affected than others. Years of experience have taught us the best methods of counteracting these tendencies. Wherever fine cabinet work, interior woodwork in pianos, etc., are desired to "stay put" the lumber is quarter-sawed. Not only does quarter-sawed oak remain straight as compared with plain-sawed, but its swelling and shrinking take place mainly in the thickness of the board, whereas in plain-sawed they take place laterally, causing cracks under extreme conditions.

Ordinary tongued-and-grooved flooring is undercut at the joints so that only at the surface of the floor is there a point of contact. During exposure to dampness the strips push up at these joints and an unpleasant washboard effect becomes more or less evident. Wood-Mosaic cabinet-joint, tongued-and-grooved flooring is center-matched and has a close joint at the bottom as well as at the surface of the floor. It makes as perfect a joint as is found in a solid table. It can be laid either side up without showing openings. It is quite obvious that this eliminates tendency to buckle. This cabinet-joint flooring is used in all our high grade herringbone, squares, rhombs or other high-grade designs

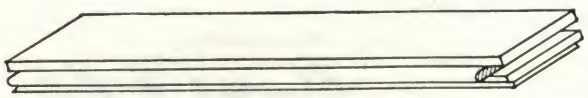
The wood which we can recommend as being the most impervious to moisture is the brown, quartered, Gothic Oak mentioned earlier. It positively moves less than any wood we know of. Teak is probably the next in line of woods which are least likely to move under alternating damp and dry conditions.

Three-ply, wide boards (decking) are especially designed to resist atmospheric changes and still remain flat owing to the reversal of grain of wood in the laminations. (See illustration of laminated Colonial flooring.)

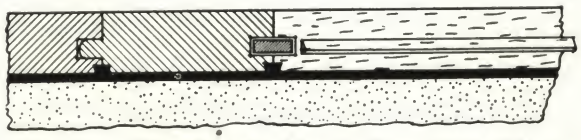
In solid decking (wide boards) 4 to 8 in. standard, we have been very successful in eliminating swelling and buckling in country houses, etc., by a special method of tempering and curing the wood. Our solid rough-cast floors are being laid all over the country most successfully. (See illustration of Solid English Decking.)

Standard Floors

We carry in stock, standard $\frac{5}{16}$ and $\frac{13}{16}$-in. flooring in strips and squares, also $\frac{5}{16}$-in. parquetry and $\frac{13}{16}$-in. decking. We can give prompt service in supplying $\frac{13}{16}$-in. and $1\frac{1}{16}$-in. parquetry, strips, squares, herringbone, decking and mastic blocks. Send for colored catalogue and Colonial Decking pamphlet.



Detail of Wood Mosaic Mastic Wood-Block. Notice the Interlocking Tongue and Groove with the Mastic Groove Below



Detail of Wood-Mosaic Mastic Wood-block Floor, Showing the Concrete, the Mastic Grooving, and the Interlocking Tongue-and-groove Construction

AMERICAN TILE & RUBBER COMPANY

Manufacturers of Amtico Marbleized Rubber Tile and Flooring

Perrine Avenue, TRENTON, N. J.

INSTALLATION BY AUTHORIZED DISTRIBUTORS

BOSTON NEW YORK TRENTON PHILADELPHIA DETROIT CHICAGO SAN FRANCISCO

SUBSIDIARY TO

PANTHER RUBBER MFG. CO., Stoughton, Mass.
PANCO RUBBER COMPANY, Chelsea, Mass.
PURITAN RUBBER MFG. CO., Trenton, N. J.
PANTHER RUBBER CO., LTD., Sherbrooke, Que., Can.

Amtico Rubber Tile and Flooring

The result of over 25 years' successful rubber manufacturing experience. Made of new, selected, live rubber, scientifically compounded and colored. Vulcanized under tremendous hydraulic pressure, resulting in a beautiful, durable resilient product having an appearance closely resembling marble.

Colors—Made in a wide variety of colors and veinings, including blacks, whites, blues, greens, golds, grays and the very popular paisley effects.

How Laid—Amtico is laid over old and new floors, both wood and concrete or stone. It is laid in tile patterns, in a wide variety of designs securely fastened to the subfloor by our own Amtico Waterproof Cement.

SIZES OF TILE

Thickness, in.	Squares, in.	Oblongs, in.
1/8, 1/4, 3/8	4x 4 18x18 6x 6 24x24 8x 8 36x36 12x12	4x 8 6x12 9x18 12x24

Uses—Used in hospitals, hotels, office buildings, restaurants, tea rooms, stores, boats, clubs, churches, homes, etc.; in all classes of buildings where floors are subject to heavy foot traffic, and where silence, beauty and sanitation are necessary.

Runners—Amtico is also made in the so-called runner style, 15 ft. long by 36 in. wide. For corridor use, the runner type can be installed in the panel design, with good effects.

Guarantee—Amtico Tile carries the standard guarantee of the Rubber Manufacturers' Association, Inc., of which we are members.

Application and Installation

Because of its light weight, Amtico Tile is splendid for remodeling old buildings, for flooring, wainscoting, stair covering, table tops and counters, and for use wherever dignity, smart appearance and good wearing quality is demanded.

It is installed by authorized distributors who are chosen as being well qualified by experience to give expert workmanship.

WARREN HARDING HIGH SCHOOL
BRIDGEPORT, CONN.

RALPH W. HEDGES
PRINCIPAL

March 22, 1929.

Mr. H. D. Turner
American Tile and Rubber Co.
Perrine Ave.
Trenton, N. J.

My dear Mr. Turner:

It is indeed a pleasure to write in commendation of the Amtico marbelized rubber tile and flooring which was installed in the library and front corridor of the Warren Harding High School in 1925.

It is so noiseless that we consider it indispensable in our Library. Our school has an enrollment of 1,470. Consequently the floors are subjected to very hard usage. At the present time there are no evidences of wear. If I were free to select any type of flooring, regardless of cost, for a school library it would be Amtico.

Very truly yours,

Ralph W. Hedges
PRINCIPAL.

RWH:L

Samples

Upon request we will gladly send you our beautiful cabinet of tile samples showing all colors, also manual and design booklet.

Warren Harding High School, Bridgeport, Conn.
CALDER, WALKER, BECKWITH, Architects; WILLIAM B. ITTER, Consulting Architect

Service to the Architect

The Amtico Designing Department is ready at all times to co-operate with the architect in creating custom-built flooring that will lend itself to any motif, decoration, period or personal design. Rich, glowing color combinations and patterns are available for your selection. Our engineering department is always available free of charge.

THE GOODYEAR TIRE & RUBBER CO., INC.

Manufacturers of Goodyear Rubber Flooring

AKRON, OHIO

Products

HOMOGENEOUS RUBBER FLOORING in variegated and solid colors—a permanent and resilient flooring material for all classes of buildings; RUBBER FLOORING ACCESSORIES; RAY RUBBER for X-Ray rooms.

Goodyear Rubber Flooring

Advantages—Goodyear Rubber Flooring has been benefited in its development by the science and extensive research of Goodyear rubber laboratories. It is homogeneous in structure and of the same quality throughout—the colors penetrate from surface to base. It is lustrous, durable, non-resonant and strictly sanitary.

Rubber Flooring is made in one grade only, in three thicknesses, fifty-nine standard sizes, and thirty-two standard colors. Cove base, plinth blocks, inside and outside corners, door saddles, and stair treads are made in standard colors to match. Odd sizes, special designs, and special colors can be made to order.

Standard Colors—For pattern suggestions with standard colors of Goodyear Rubber Flooring see next page. A new and convenient folder of specifications containing forty-eight color patterns will be furnished on request.

Abbey—Dark Gray, Black and White.....No. 57
Alamo—Black, Maroon and Gold.....No. 58
Alcazar—White, Maroon and Black.....No. 52
Amazon—Taupe, White and Yellow.....No. 64
Auric—Gold and Green.....No. 28
Balisand—Yellow, Chocolate and White.....No. 54
Canyon—Umber, Yellow and Black.....No. 63
Carribean—Light Green and White.....No. 27
Cathedral—White and Black.....No. 20
Celtic—Green and Gold.....No. 29
Colonial—Two-tone Dark Brown.....No. 81
Cuban—White and Green.....No. 26
Delta—Chocolate, Yellow and White.....No. 55
Devonshire—White .....No. 1
Dutch—White and Blue.....No. 24
Etna—Light Gray, Dark Gray and White.....No. 56
Gothic—Black and White.....No. 21
Holland—Blue and White.....No. 25
Jade—Light Green .....No. 11
Jet—Black .....No. 2
Mission—Gold and Black.....No. 22
Mountain—Ivory, Coral and Black.....No. 62
Pompeian—Venetian Red, Yellow and White...No. 65
Pueblo—Black and Gold.....No. 23
Roman—White, Venetian Red and Yellow.....No. 66
Stuart—Gray, Paisley .....No. 60
Valencia—Valencia Blue, Yellow and White....No. 67
Venetian—White, Green and Black.....No. 50
Verde Antique—Black, Green and White.....No. 51
Victorian—Two-tone Light Brown .....No. 80

Samples of standard colors of Goodyear Rubber Flooring will be furnished free on application to GOODYEAR, Akron, Ohio, or Los Angeles, California.

Standard Sizes—Last dimension represents direction of grain. Furnished with square edges only.

4-in. Width	6-in. Width	9-in. Width	12-in. Width
*4x4	6x4	9x4	12x4
4x6	*6x6	9x6	*12x6
*4x8	6x9	*9x9	12x9
4x9	*6x12	9x12	*12x12
4x12	6x18	*9x18	12x18
4x18	6x24	9x24	*12x24
4x24	6x36	9x36	12x36
4x36			

18-in. Width	24-in. Width	36-in. Width
18x4	*24x24	36x4
18x6	One	36x6
*18x9	Size	36x9
18x12	Only	36x12
*18x18		*36x18
18x24		36x24
*18x36		*36x36

*Right and left diagonal halves of these sizes only.

Standard Thicknesses—Goodyear Rubber Flooring is made in three thicknesses, 3/16, 1/4, and 3/8 in.

Cove Base

Goodyear rubber cove base is obtainable in all the standard colors. It is furnished by the lineal foot and made in five heights—1½, 2, 4, 5, and 6 in. above floor line. The 1½ in. is a featheredge cove. The base is made the same thickness as the rubber floor so that juncture is true and absolutely sanitary.

Plinth Blocks

Goodyear rubber plinth blocks are made in two types, plain and offset, and are obtainable in all standard colors. Moulded in 30-in. lengths. Plain plinth in 6 widths—4¾, 5¼, 5⅜, 5½, 5¾, and 6 in. Offset plinth made in one width only—4⅛ in.

Inside and Outside Corners

Inside and outside rubber corners overcome variations in the wall line that make it impractical to mitre cove base corners. An inside corner designed especially for hospital use is furnished to fit into a corner having a curvature of 1⅛-in. radius.

Goodyear Moulded Stair Treads

Beautiful and durable. Obtainable in all standard colors in lengths up to 7 ft. The ease with which moulded rubber stair treads can be applied to worn stairs makes it desirable for remodeling. Goodyear Flooring in sheet form makes excellent stair treads when used with brass or aluminum nosings.

Desk, Counter, Table and Pantry Tops, and Drainboard Covers

Goodyear Rubber Flooring in sheet form is quiet, sanitary, easily cleaned, and resilient enough to materially reduce breakage. Used extensively to decrease dish clatter. Slab stock of this nature will be cut to any size up to 12x3 ft.

Thresholds or Door Saddles

Thresholds or door saddles in all standard colors complete the line of Goodyear Rubber Flooring accessories and make it possible to carry out in minute detail the decorative possibilities of the material.

Wainscoting

Application of Goodyear Rubber Flooring to walls is decoratively effective and useful for cleanliness. The insulating value for sound and temperature is marked, the cost low as compared with other materials. Wainscot caps are available in two sizes for paneling.

Ray Rubber for Hospital X-Ray Rooms (Special Display)

Goodyear Ray Rubber has passed all tests made by X-Ray machine manufacturers. It is recommended by leading hospitals. Contains a homogeneous lead compound and is the equivalent of ⅛-in. lead sheeting in resisting power. Made in many standard colors permitting X-Ray rooms to conform with main hospital decorations.

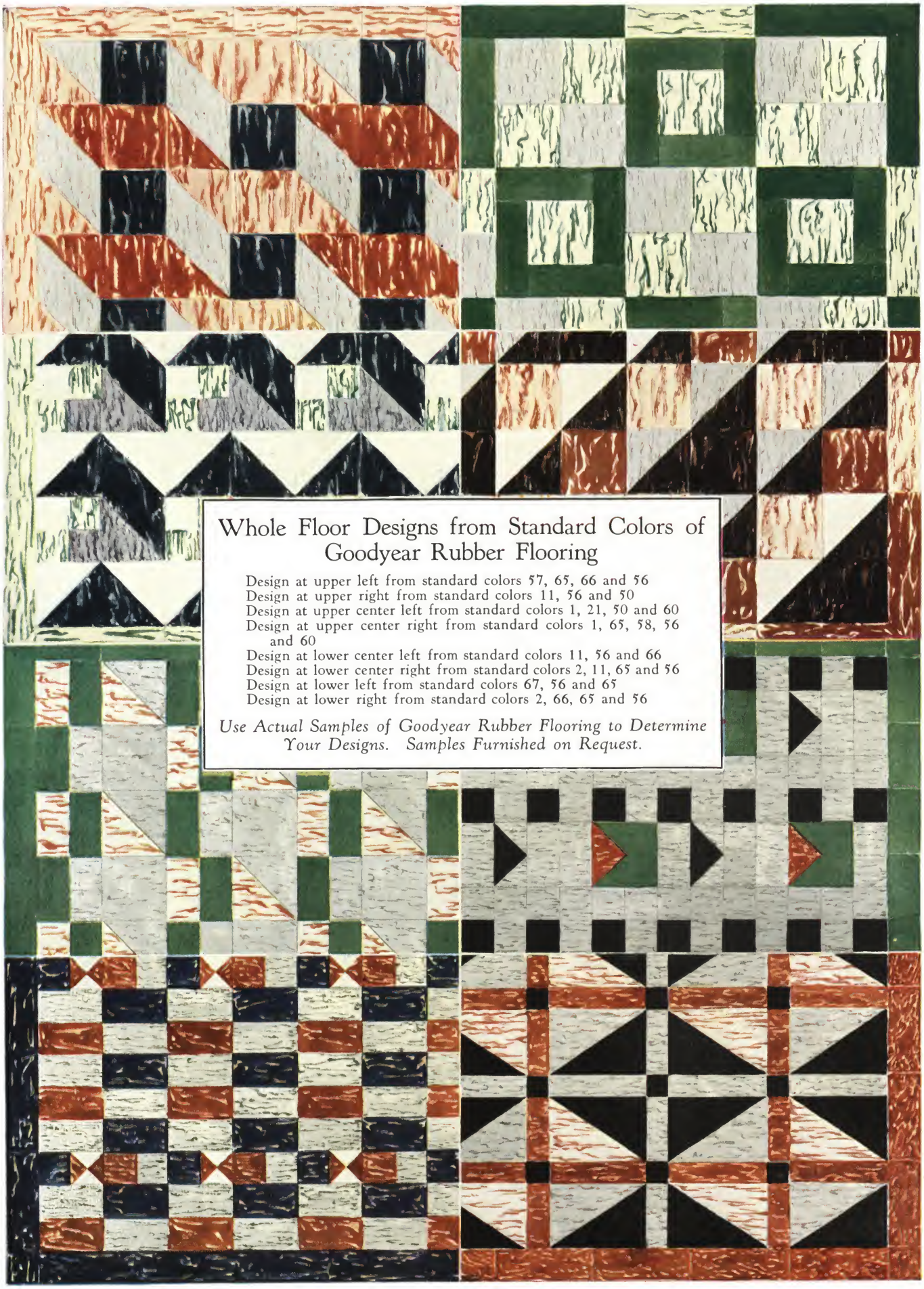
Co-operation with Architects

GOODYEAR welcomes the opportunity to work with architects or contractors in soft floor design and architecture. Trained engineers and expert mechanics in the Goodyear Development Department devote their entire time to the perfection of rubber flooring—their researches and knowledge are gladly offered to the profession. Authorized Goodyear Rubber Flooring dealers are soft flooring engineers and can be relied on for expert services.

Architect's Data File and Samples

Write to Goodyear, Akron, Ohio, or Los Angeles, for samples and A.I.A. File 23c containing full data and specifications.

Continued on next page



Whole Floor Designs from Standard Colors of Goodyear Rubber Flooring

Design at upper left from standard colors 57, 65, 66 and 56
Design at upper right from standard colors 11, 56 and 50
Design at upper center left from standard colors 1, 21, 50 and 60
Design at upper center right from standard colors 1, 65, 58, 56 and 60
Design at lower center left from standard colors 11, 56 and 66
Design at lower center right from standard colors 2, 11, 65 and 56
Design at lower left from standard colors 67, 56 and 65
Design at lower right from standard colors 2, 66, 65 and 56

Use Actual Samples of Goodyear Rubber Flooring to Determine Your Designs. Samples Furnished on Request.

HOOD RUBBER PRODUCTS COMPANY, INC.

Manufacturers of Rubber Floor Tiling

WATERTOWN, MASS.

Hood Rubber Floor Tiling

The *density* of Hood Floor Tiling is its most outstanding feature. It is created by a special Hood Process, making a more *compact, resilient* mass with less *porosity*. These qualities assure a tile of *greater durability,* which will give many times the wear of ordinary floor coverings.

The unusual and attractive, finished appearance of Hood Rubber Tile is a natural lasting sheen, produced without the aid of greases or other artificial agents. Its many colors and color combinations and its exceptional wearing qualities provide a floor covering that can be safely and confidently specified for many types of installation.

Above:
S. S. President Wilson

At Left:
Dining Salon

Advantages of Hood Rubber Tile

Hood Rubber Tile is a floor covering possessing many artistic, serviceable as well as practical advantages. It is:

Durable
Artistic
Noiseless
Waterproof
Sanitary
Stainless
Easy to clean

Above and at Right:
Boston Children's Hospital

Standard Mottled Colors of Hood Tiles

The following are standard mottled colors of Hood Tiles:

Black white
White black
Gray mixture
Napoleon gray
Black mixture
Red mixture
Blue white
White blue
Tennessee pink
Dark verde antique
Green white
White green
Black gold
Oxford fleuri
Walnut mixture
Cream mixture
White paisley
Tan mixture
White red black
Veined carnelian
Gray piastra
Ivory mixture
Green gold
Plain black

Suggested Specification

Preparation of Wood Floors—All wood underfloors should be double floors of kiln-dried lumber. The top layer should be not less than ¾-in. material, not more than 4 in. wide, tongued and grooved, thoroughly top-nailed and toe-nailed and finished true and level to exactly the thickness of the Hood Tile below the finished floor line. Old wood floors that have been waxed or oiled should be thoroughly scrubbed before laying Hood Tile. Tile should not be laid on a wood floor over concrete as this type of floor is subject to dry rot. A good quality 1½-lb. building felt and strong cotton fabric should be tacked to the wood before laying tile.

Over Concrete Floors—All concrete floors should be finished true and even to within the thickness of the tile from the finished floor level. Concrete must be absolutely dry and free from moisture. Old concrete floors which have been painted must be thoroughly cleaned, and all cracks should be filled and smoothed over.

Installation—Hood Tile should be laid in the following manner: The border material should be first laid out and fitted to accommodate a center space of the proper size for the blocks selected. An especially made waterproof cement is thinly spread with a trowel. Border tile should be laid on two adjacent sides, then the tile in the center, placing each block about an inch away from the desired joint and pushing it over the cement into place. This insures enough cement on the edges to fill the joint. The last rows of tile on two remaining sides of room should be laid loosely overlapping the border, which is then cut to perfect fit. Border and remaining blocks are then cemented.

Finishing—Finished floors should be rolled thoroughly after cementing and all surplus cement removed by use of alcohol and a cloth. The floor should not be washed until five days after the installation is completed.

Sizes and Thicknesses

Standard Thicknesses—¼ and $\frac{3}{16}$-in.
Standard Sizes—4x4, 6x6, 9x9, 12x12 in.
Standard Border Strips—36 in. long by 6, 9, 12, 24, 27 in. wide
Cove Base, Internal and External Corners—4 in. or 6 in. high.
Stair Tread and Nosing—In one piece ¼ in. thick, 12 in. tread and 1½-in. nosing.
Thresholds—Are made 5½ in. wide, ½ in. high and 4 ft. long.
Plinth Blocks—6⅜ in. high, 4 in. wide and 1 in. thick.
Wainscot Caps—2 in. high, ⅜ in. thick and 3 ft. long.

KLEISTONE RUBBER COMPANY, INC.

Manufacturers of Rubber Tile

WARREN, R. I.

DISTRIBUTORS IN PRINCIPAL CITIES

KLEISTONE
RUBBER TILE FLOORS

Product

KLEISTONE RUBBER TILE for floors and walls in marbleized and plain colors; WARREN RUBBER TILE, made in marbleized colors only.

Description

Kleistone Rubber Tile—A resilient, noise deadening flooring of the highest quality standards, combining permanence with unlimited decorative possibilities. Its reasonable initial cost and low upkeep expense make it an ideal floor material wherever soft floors are desirable.

Being without fibrous content, it is almost entirely non-absorbent and its smooth surface, with proper care, permanently retains the original polished finish. Colors and markings go through to the back, and the entire thickness of the tile is made of the same high quality composition as the surface.

Warren Rubber Tile—Also a high quality flooring material. It is slightly lighter in weight than Kleistone Rubber Tile and somewhat lower in price. It is made through to the back of the same compound.

For Walls—Both Kleistone and Warren Tile are unusually well adapted for use on walls, because of their sanitary qualities and permanent freedom from any maintenance cost.

Sizes and Thicknesses

Standard thicknesses are $\frac{3}{8}$, $\frac{1}{4}$ and $\frac{3}{16}$ in.

Standard sizes are 4x4, 6x6, 9x9, 12x12, 18x18, 24x24, 3x6, 6x12, 9x18, 12x24 in.

Border strips of any width up to 24 in., border slabs up to 28x66 in.

Cove base and other accessories shown in detail on following page.

Colors

Kleistone Rubber Tile is regularly made in 25 marbleized color effects, and in 8 plain colors as listed below. Special colors can be manufactured, as required, to harmonize with any special decorative scheme.

202 Verde Antique
203 Black Paisley
205 Red Paisley
207 Dark Sienna
209 Black and White
210 Black and Gold
211 Gray Paisley
213 Napoleon Gray
214 Brown Napoleon
215 White, Red and Black
216 White, Green and Black
217 Light Sienna
218 White and Black
219 Pink Tennessee
220 White and Blue
221 Blue and White
222 Green and White
223 Red, White and Black
224 Black, Red and Gold
225 Brown and Buff
226 Chocolate Brown
227 Buff, Black and Brown
228 Brown, Gold and White
229 Gray, Green, White and Black
230 Brown Paisley
301 Plain Brown
302 Plain White
303 Plain Black
304 Plain Red
305 Plain Light Gray
306 Plain Dark Gray
307 Plain Blue
308 Plain Green

Warren Rubber Tile is made only in the colors listed below. *Not made in plain colors.*

W-150 White and Black
W-151 Black and White
W-152 Light Sienna
W-154 Red Paisley
W-155 Black Paisley
W-156 Napoleon Gray
W-157 Gray Paisley
W-158 Black and Gold
W-159 Verde Antique
W-160 White, Green and Black
W-161 White, Red and Black
W-162 White and Blue
W-163 Blue and White

Warranty

The life and satisfactory service secured from rubber tile floors being dependent upon their usage and care, no definite time warranty can be given, but we warrant the installation against defective material or workmanship provided our recommended cleaning agents and methods are used. We do not assume responsibility for defects due to defective subfloors or other surfaces provided by you, or for defects arising from dampness in the subfloor or underparts of the building.

Samples and Service

Samples and literature mailed on request. Our Service Department is prepared to forward information regarding proper methods of installation, to make suggestions regarding designs, or furnish other pertinent information.

Specifications

Standard Specification for Rubber Tile Floors—(1) Rubber tile flooring indicated on drawings or as listed herein, shall be Kleistone Rubber Tile, manufactured by KLEISTONE RUBBER COMPANY, INC., Warren, R. I., or other tile of equal quality in the opinion of the architect. The rubber tile shall contain no fibrous material and shall be practically non-absorbent. Thickness of tile shall be .... inches, (insert $\frac{3}{16}$, $\frac{1}{4}$ or $\frac{3}{8}$ in.) and all tiles furnished shall be of exactly equal thickness, cut true to size with square, clean-cut edges. The colors and markings of the rubber tile shall run through the entire thickness of the material and the tile shall be made of the same composition throughout. Colors and sizes of tile and border to be selected by the architect.

(2) The cement used in setting the rubber tile shall be waterproof and shall be "Topco" Cement manufactured by Templar Oil Products Co., Brooklyn, N. Y., or other make of waterproof cement approved by the architect.

(3) The contractor installing the rubber tile flooring shall be experienced in this class of work and shall employ only mechanics thoroughly familiar with the laying of rubber flooring. Before commencing work, the contractor shall ascertain whether the subfloor is suitable for the rubber tile work. If it is not suitable he shall not proceed with his work until all defects are remedied. Tile and border shall be accurately fitted

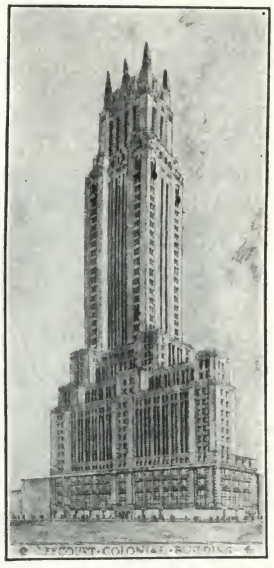
Commercial Office, New York Telephone Company, Buffalo, N. Y.

VOORHEES, GMELIN & WALKER, New York, N. Y., Architects

Continued on next page

Lefcourt-Newark, N. J. Building—Kleistone Rubber Tile in All Corridors

One of Over 50 Corridors Lefcourt-Colonial Building, New York



Lefcourt-Colonial Building, New York

against all walls, pipes and other permanent projections. Borders, wherever possible, shall be approximately equal in width on all sides of each space. After setting, tile shall be thoroughly rolled in both directions with a roller weighing not less than 150 lb., and not more than 12 in. long. All cement shall be removed from the surface of tile and the floors shall be left broom-clean by the tile contractor.

Specification for Concrete Underfloors to Be Covered with Rubber Tile—*(Include in mason's specifications for floors).* Concrete subfloor to receive rubber tile shall have a top layer 1 to 1½ in. thick, composed of 1 part portland cement to 2½ parts clean screened sand, troweled to a smooth sidewalk finish and free from high and low spots, ... inches (insert $\frac{3}{16}$, ¼ or ⅜ in.) below the required finished floor level.

Joints shall be cut through top layer approximately 20 ft. apart, following the lines of floor beams and girders. After the concrete has set, the joints are to be filled and troweled even with top surface. No lines shall be struck on the surface, and it shall be delivered to the rubber tile contractor clean, dry and free from foreign material.

Cement hardeners and so-called integral waterproofings should not be used in concrete over which rubber tile is to be installed. They tend to retard evaporation of the moisture content.

In order to insure rapid drying, allow all possible ventilation in rooms where rubber tile floors are to be laid.

Concrete which has been frozen, or has a chalky or scaly surface, or which is not well bonded to fill, must be removed and replaced with top coat as above.

All concrete and masonry laid in contact with the ground, on or below grade, shall be thoroughly waterproofed by the membrane method.

Specification for Wood Underfloors to Be Covered with Rubber Tile—*(Include in carpenter's specifications for floors).* In spaces where rubber tile is called for in the plans and specifications, lay double floors; the top or finished floors to be ⅞ in. tongued and grooved, not more than 4 in. wide, driven tight, well nailed and finished true and level .... inches (insert $\frac{3}{16}$, ¼ or ⅜ in.) below the required finished floor level; joints and butts to be planed or scraped smooth.

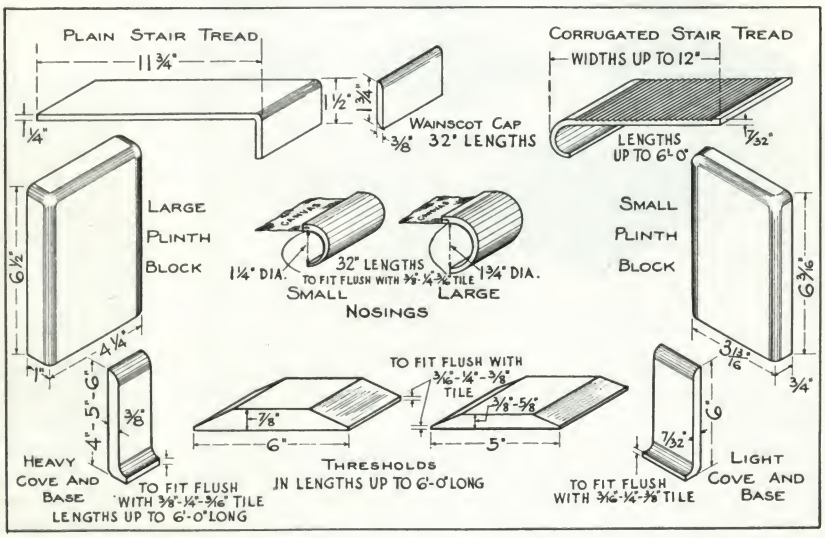
Old Work—In preparing old wood floors to receive rubber tile, remove all badly worn or decayed boards, and boards containing knotholes or loose knots, and replace with new lumber, in accordance with wood flooring specifications. Old floors to be thoroughly surface-nailed to secure all springy boards, loose butts or joints; joints or butts then to be scraped, planed or sanded smooth and even.

Note: In laying rubber tile floors over wood subfloors, both old and new, it is necessary to provide an interlining between the wood and the rubber to prevent any possible expansion or contraction of the wood floors from being communicated to the rubber tile. A light weight canvas or heavy cotton sheeting should be carefully tacked with special ½-in. flat headed tacks over the entire area of the wood floor. Care must be taken to drive the tacks well home so that the heads do not protrude above the surface of the canvas. Tacks should be scattered over the entire area of the floor on about 3-in. centers. In spaces where traffic is light and where there is no possibility of water getting beneath the surface of the tile, unsaturated builder's deadening felt may be used instead of canvas or cloth. The rubber tile is cemented directly to the canvas or felt with waterproof cement.

Specification for Ground Over Which Rubber Cove and Base Is to Be Installed—Plaster, wood or other material against which base or wainscoting is to be installed shall be carried down to and finished square with the underfloor, making a clean, straight right angle with same, and free from lumps, dirt or other obstruction.

Installations

Thousands of Kleistone Rubber Tile Floors give satisfactory service in a wide variety of buildings. We will be glad to furnish a list of such installations for any locality in the United States.



Kleistone Cove Base and Other Accessories

NEW YORK BELTING & PACKING CO.

Rubber Tile Flooring

NEW YORK, 91-93 Chambers Street
CHICAGO, 124-126 West Lake Street
PHILADELPHIA, 821-823 Arch Street
ST. LOUIS, 218-220 Chestnut Street
SAN FRANCISCO, 519 Mission Street
BOSTON, 20-24 East Street
PITTSBURGH, 420 First Avenue

Products

SQUARE BLOCK RUBBER TILING.
INTERLOCKING RUBBER TILING.
COVE BASE.
STEEL REINFORCED RUBBER STAIR NOSING.

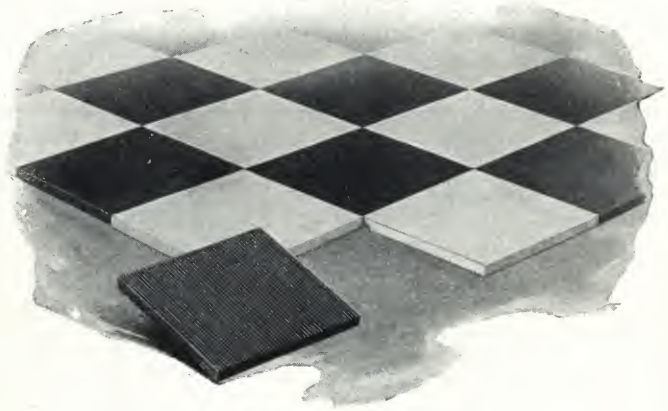
Rubber Tile Flooring

NEW YORK BELTING & PACKING CO.'s rubber tiling is essentially a permanent floor that is built into a structure and is not to be confused with materials of a thinner and lighter nature that are classed as floor coverings. It is ⅜ in. thick; heavy enough to last for years when subjected to the most severe wear. Sufficiently firm to stand the heaviest traffic, waterproof and non-absorbent.

Durability—The wearing quality of our rubber tiling is truly remarkable. Years of service under the most severe traffic conditions have proved it to be one of the longest wearing floors made. Floors installed over twenty-five years ago are still in excellent condition and good for a long time to come.

The resiliency of the rubber prevents wear resulting from the effects of abrasion and friction, and the elasticity saves it from cracking and becoming unsightly.

For all floors subject to unusual wear there is nothing to surpass rubber tiling. It is the ideal floor for office buildings, hospitals, public buildings, banks, churches, clubs, libraries, schools, stores, theaters, residences, and all buildings where a sanitary, durable and safe floor is required.



Square Block Rubber Tile

Advantages—Particular attention is directed to the advantages of our rubber tiling for the following spaces:

Stairways—Rubber tiling of the interlocking type, with the steel reinforced rubber nosing illustrated herewith, forms a non-slip, long wearing stair tread for heavy traffic. This material meets the requirements of insurance companies for the element of safety.

Elevator Cars—With considerable traffic confined to a very small area, ⅜-in. thick *interlocking rubber tiling* is a most satisfactory and safe flooring for elevators. It is considered by many building managers to be indispensable for this service. Also desirable for spaces in front of elevators at each floor.

Ramps and Vestibules—Interlocking rubber tiling affords a safe foothold on all inclined surfaces with the additional advantage of durability and good appearance.

For revolving doors, interlocking tile is a safe floor, outwearing marble and plastic materials.

Bank Vaults—Vault floors must withstand the effects of running trucks over their surfaces. Interlocking rubber tiling has been proved a superior type of floor for this service.

Can be made to stay in place on portable platforms at vault entrances.

Interlocking Tiling Laid without Cement—There are many spaces where interlocking tiling can be used without the application of cement. Our recommendation gladly given on request.

Interlocking and Square Designs

Two distinct types of tiling are made: interlocking and block designs.

Interlocking tiles measure 2⅜x2⅜ in., ⅜ and ¼ in. thick.

Block or square tiles are made 6x6 and 9x9 in., ⅜ in. thick only.

Interlocking Rubber Tile

Colors and Designs

Made in twelve rich colors: blue, red, white, light green, dark green, black, buff, salmon, slate, light chocolate, dark chocolate and pearl gray.

The colors are permanent and no amount of wear and tear can affect them.

With such a variety of colors offered, designs in harmony with any decorative scheme can be selected.

Continued on next page

Steel Reinforced Rubber Stair Nosing

Specifications

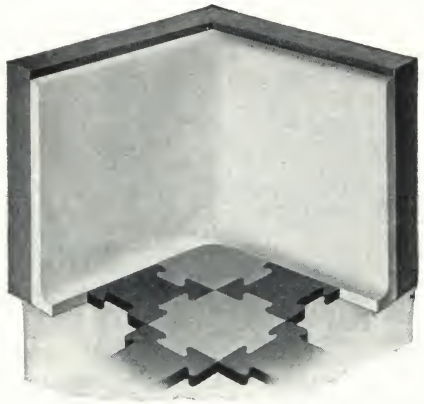
For the guidance of architects the following simple form of specification is suggested:

Rubber Tiling—Furnish and install complete, floor of rubber tiling, 3/8 in. thick [interlocking type] [square block type], manufactured by NEW YORK BELTING & PACKING CO., in spaces specified herein. Design to be selected by the architect.

This tiling shall be carefully cemented to the base by the manufacturer's special impervious liquid cement. After the cement has dried, the surface of the tile shall be thoroughly cleaned and left ready for use.

Preparation of the Base—*Cement Floors*—Wherever rubber tiling is to be installed, lay a finished coat of 3-to-1 cement, not less than 1½ in. thick, the surface to be troweled smooth and level and free from all lines or scores. Allowances of 3/8 in. to be made for the thickness of the rubber tile. All cement shall be thoroughly dry and clean before the installation of the tiling.

Wood Floors—Wherever rubber tiling is to be installed, lay a tongue and groove wood floor of well seasoned stock, not over 3 in. wide, this floor to be blind nailed and the surface planed smooth and free from irregularities. Allowance of 3/8 in. to be made for the thickness of the rubber tile.



Rubber Cove Base

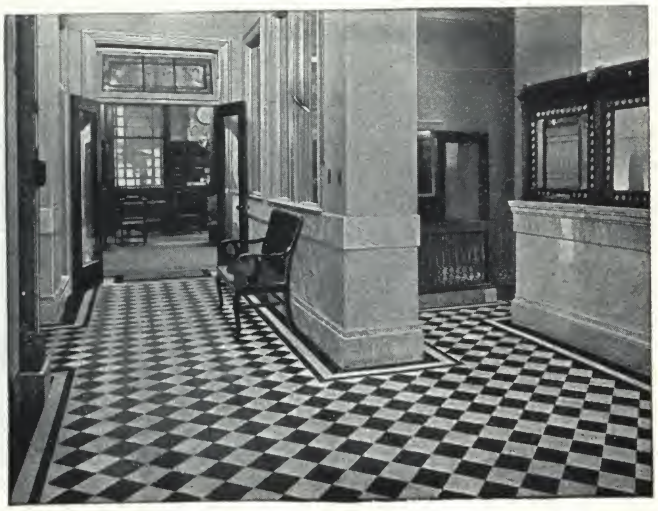
Samples and Catalogues

We will send, on request, an assortment of samples of interlocking and square tiles. Please specify colors and shapes desired.

A catalogue showing a variety of designs in both interlocking and square types will also be furnished on request.

A Few New York Belting & Packing Co. Installations

Empire Building, 71 Broadway, New York, N. Y.—Main corridor
Maiden Lane Realty Co., New York, N. Y.
M. C. D. Borden & Sons, New York, N. Y.
First National Bank, New York, N. Y.
Gimbel Brothers, New York, N. Y.
Williamsburgh Savings Bank, Brooklyn, N. Y.
Delaware, Lackawanna & Western R. R. Ferryboats—60,000 sq. ft. in service 22 years
Fairfield County Courthouse, Bridgeport, Conn.—Library, court-rooms, etc. Part of this tiling installed over 20 years ago
Chicago & Northwestern Terminal Station, Chicago, Ill.—Main concourse, stairs, landings, stairs to balcony—7000 sq. ft.
Standard Oil Co. Building, San Francisco, Cal., Geo. W. Kelham, Architect—45,000 sq. ft.
Standard Oil Co. Building, Los Angeles, Cal., George W. Kelham, Architect—12,000 sq. ft.
California State Life Insurance Co., Sacramento, Cal., George C. Sellon, Architect—10,000 sq. ft.
Pacific Telephone Building, San Francisco, Cal.—35,000 sq. ft.
Magnolia Building, Dallas, Tex.—40,000 sq. ft.
Blind Brook Club, Portchester, N. Y.—2000 sq. ft.
United States Shipping Board, 45 Broadway, New York, N. Y.
Hotel Asbury Park, Asbury Park, N. J.
St. Denis Hotel, Atlantic City, N. J.
Larchmont Yacht Club, Larchmont, N. Y.
Wm. Barthman (Jeweler), Maiden Lane, New York, N. Y.
Logan & Bryan Stock Brokers, 42 Broadway, New York, N. Y.
Fifth Avenue Building, New York, N. Y.
Shippee & Rawson Stock Brokers, 111 Broadway, New York, N. Y.
New York Telephone Co., 140 West Street, New York, N. Y.
Douglas Elliman & Co., 15 East 49th Street, New York, N. Y.
Ward Island Hospital, New York, N. Y.
Savoy-Plaza Hotel, New York, N. Y.
United States Government Penitentiary, Leavenworth, Kan.
Church of the Blessed Sacrament, Newark, N. J.
Bank of Manhattan, New York, N. Y.
Manufacturers Trust Co., New York, N. Y.
American Express Co., New York, N. Y.
St. Vincent Hospital, New York, N. Y.
Bank of United States, New York, N. Y.
Chesapeake & Potomac Telephone Co., Washington, D. C.
St. Colomba's Church, Newark, N. J.
Title Guarantee & Trust Co., Brooklyn, N. Y.
St. Joseph's Hospital, Far Rockaway, N. Y.



QUABAUG RUBBER COMPANY

FACTORY AND MAIN OFFICE

NORTH BROOKFIELD, MASS.

BRANCH OFFICE: 101 Park Avenue, NEW YORK, N. Y.

Armortred Rubber-style Floors

Product

ARMORTRED RUBBER-STYLE FLOORING furnished in Individual Block Tile.

Description

Armortred Rubber-style Flooring is made from new live rubber, scientifically compounded, giving it maximum durability, combined with resiliency, sanitation, and beautiful color effects. It is vulcanized in one piece under tremendous pressure, the colors penetrate from face to back, making a solid homogeneous tile.

Uses

Armortred Rubber-style is suitable for installation in every type of commercial building where the floors are subjected to heavy foot traffic. In every office, store, hospital, institution, theater, bank, showroom, apartment house or residence, where durability, character and beauty are desired.

Sanitation

Armortred Rubber-style is manufactured by a process that eliminates all pores, and furnishes an absolutely smooth surface with a high finish. It is not affected by any ordinary staining agent, such as dirt, ink, grease, mild acids, etc.

Colors and Sizes

Colors—Armortred Rubber-style Flooring is manufactured in more than 60 mottled or plain colors. Our standard colors and sizes will give you an unlimited range of harmonious color combinations and beautiful designs. When necessary, special colors can be produced.

Standard Thicknesses—$\frac{3}{16}$, ¼, ⅜, and ½ in.

Standard Sizes—Squares, 4x4, 8x8, 6x6, 12x12, 24x24 in. Rectangles, 2x6, 6x12, 4x8 and 12x24 in.
Border strips, 24x24, 24x36 and 18x36 in.

Cove Base—All standard colors. Height—4 and 6 in. Gauge—$\frac{3}{16}$ and ¼ in.

Maintenance

It is not necessary to wax Armortred Rubber-style Floors. Proper cleaning with clear warm water and mild soap will remove all accumulation of grit and dirt and bring out the glistening beauty of the tile. We will furnish instructions for the proper cleaning and care of Armortred Floors with each installation.

Guarantee

We guarantee Armortred to be free from defects in material and workmanship. All guarantees, expressed or implied, are contingent on the use of such cleaning agents and methods that are recommended by us.

Deliveries

Our organization is so planned and equipped that every order receives personal attention, and our manufacturing facilities insure exceptionally prompt deliveries.

Specifications

Complete specifications data will be furnished on request.

Condensed form below together with masonry and carpentry clauses to insure perfect laying of Armortred.

Flooring—Where indicated on drawings or listed herein, rubber tile flooring shall be Armortred Rubber-style Floors manufactured by the QUABAUG RUBBER COMPANY, North Brookfield, Mass. The tile shall be homogeneous and the mottling shall run through the entire thickness of the tile. Tile shall be [$\frac{3}{16}$ in.] [¼ in.] [⅜ in.] [½ in.] thick and all tile shall be of uniform gauge, cut square with cleancut sides. Colors, sizes and design as selected by the architect.

The contractor shall see that all finished floors are true and smooth, and free from all lines before Armortred is laid.

Cove Base—The contractor shall see that all wall surfaces at floor intersection are in proper shape to receive the cove base. The cove base shall be neatly fitted against floor tile and wall surface and shall be thoroughly secured in place.

Note: Plaster, wood or other material against which base is to be installed shall be carried down to and finished square with the underfloor, making a clean straight right angle with same, free from dirt, lumps or other obstruction. Furring strips shall be placed to come ¼ in. below the top of the cove base to be installed.

Masonry Clauses—

New Cement Floors—To have a finished surface 1 in. thick, consisting of 1 part cement to 2 parts clean screened sand, troweled to a smooth finish and laid before concrete below it has set, to form one homogeneous slab. The surface should not be scored. Allowance is to be made for the thickness of Armortred Rubber-style Floor so as to bring the surface of the finished floor to the proper height.

Old Cement Floors—All loose surfaces should be removed from the cement, all depressions filled in, and the floor thoroughly cleaned, and finished surface applied as specified above.

Frozen Concrete—Armortred should not be laid on frozen concrete, unless the scale surface has been removed and 1 in. top layer applied as above.

Carpentry Clauses—

New Wood Floors—Wherever Armortred is installed the underfloor shall be quarter-sawed, kiln dried hardwood, laid in tongue and grooved flooring not more than 3 in. wide, tightly driven in and blind nailed, over centers not exceeding 16 in. All irregularities shall be planed down to present a smooth face. Allowance shall be made for Armortred Rubber-style Floors so as to bring the surface to the finished floor level.

Old Wood Floors—Remove all badly worn or decayed boards, and boards containing knotholes and replace with new lumber in accordance with new floor specifications. Old floors are to be thoroughly surface nailed to secure all springy boards, loose butts or joints. The floor is to be scraped or sanded, smooth and even.

Armortred Rubber-style Flooring Installed in Merchants Bank & Trust Co., Hartford, Conn.

Co-operation and Service

We are always at the service of the architect or contractor, to submit laying specifications, suggestions, and recommendations, covering installation of rubber tile on floors, stairs, and other locations.

We will furnish scaled drawings showing suggested designs for any installation you may contemplate. We will suggest tentative color combinations to harmonize with the decorations of the building when asked to do so.

Samples of colors, in any standard size desired, furnished upon request.

We shall be glad to furnish quotations promptly upon receipt of blue prints or drawings showing all necessary dimensions.

STEDMAN RUBBER FLOORING COMPANY

Originators of the Modern Reinforced Rubber Tile Floor

SOUTH BRAINTREE, MASSACHUSETTS

AGENCIES IN ALL PRINCIPAL CITIES

LOCAL REPRESENTATIVE

The Products

STEDMAN REINFORCED RUBBER TILE, the original reinforced multiple colored rubber flooring; originated 1920; patented Feb. 5, 1924; other patents since that date.

Tiles, Runners, Wainscoting, Panels, Cove Bases, Stair Treads, Thresholds, Plinths, Rayproof Rubber for walls and floors of X-ray rooms; Desk, Counter, and Table Tops.

Also, Push and Kick Plates, Vases, Trays, Drain Mats and other accessories made of Reinforced Rubber.

Fibre Reinforcement

The principle of integral (cotton fibre) reinforcement lies in the process of introducing new cotton fibres—short filaments almost invisible to the eye—into the rubber compound which surrounds and impregnates them, forming a reinforced mass that later, under a tremendous vulcanizing pressure becomes a homogeneous whole. That a definite physical affinity and reinforcement follow is unmistakably shown by the demonstrable fact that the Stedman process yields the highest results in *tensile strength, ultimate elongation and resistance to abrasion, indentation and penetration.* In everyday language it means that *wear and permanence* in a floor are after all a matter of structure.

Structure in Tile

The great pressure required in the reinforcement process produces a density which, in turn, is an effective resistant to spreading, absorption and premature deterioration. Stedman Tile does not warp or curl, nor does it become brittle; and it is notable for its wear in areas subject to extreme traffic. The precision of special machines operated by experienced mechanics insure the square edges and uniform thickness of each tile, so essential for the satisfactory installation.

Installation of Rubber Tile Floors

The skilled workmanship which characterizes Stedman Tile does not stop with its production. The Stedman laying organization has been developed to a high degree of skill and initiative, because a high quality floor material may be easily defeated by inferior installation. In addition, a proper installation calls for co-operative and expert effort so that a typical Stedman floor will result; the subfloor must be correct, border strips must fit closely to wall and threshold, every joint and juncture must be level and snug, and the floor must be left clean, ready for use. The importance of these factors cannot be minimized, and they are the essential ingredients of Stedman service.

The Organization

The STEDMAN RUBBER FLOORING COMPANY is an organization devoted to the production and installation of reinforced rubber tile floors. This company is not only the originator of marbleized rubber tile floors but it is the pioneer concern of the industry, the first to perfect this type of material and place it on the market. In 1919, the first floors were laid of reinforced rubber and through the ensuing 12 years, this company's business and reputation have expanded until today they occupy an enviable position in the flooring field.

Specializing in Rubber Tile

Over this period of time the company has assembled and trained an organization of specialists whose entire time is occupied with the problems attendant upon the manufacture and installation of rubber tile. This absolute devotion to the manufacture of rubber floors, to the exclusion of other products, results in that high degree of efficiency found in connection with all Stedman operations.

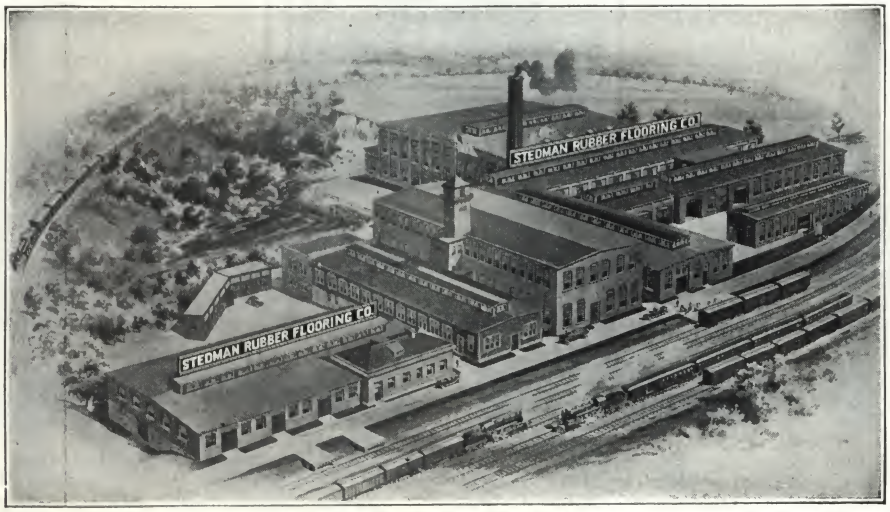
Qualified Flooring Experts

Because of this undivided attention to the various flooring problems, the company is in a position to render intelligent flooring service. The organization is equipped to handle all the phases of rubber floor installation from the very inception of the design down to the laying of the tile. Its experts stand ready to advise just where a rubber floor should be laid and what to expect of it; and just where a rubber floor should not be laid and what not to expect of it.

The sales personnel is composed of men who are intimately familiar with all the details of rubber floor installation. Representatives are located in the leading cities of the country and are trained to be of every assistance to the architects specifying reinforced rubber tile. When special problems arise, the factory laboratory stands ready to make experiments and submit solutions.

Manufacturing Facilities

In a highly specialized manufacturing process the efficiency of the personnel must be supported by efficiency in mechanical equipment and efficiency in the control of raw products. The mechanical equipment of this plant is specifically designed for its purposes and is thus capable of rapidly producing orders of any size and complexity. This productive capacity is supported by the research work of the laboratory that checks the quality of the raw materials, and is also alert to every possible improvement in formula and process, the factors that maintain the quality and prestige of Stedman Rubber Tile.



Factory, South Braintree, Mass.

Continued on next page

Characteristics

Beauty (Appearance)—The beauty of Stedman Tile is wholly original in its rich, definite veinings. These colors are permanent and extend through the thickness of the material. Stedman Tile can be secured in a variety of color combinations (see color chart), many of which have been developed for specific conditions of lighting and traffic.

Durability (Wear)—The extreme density of the scientifically constructed Stedman Tile is responsible for its high resistance to the effects of traffic, age, and fire. When installed under the proper conditions (see specifications) and maintained according to instructions, a Stedman floor may be considered a permanent installation.

Resilience (Comfort)—The natural resilience of Stedman Tile is such that it is always comfortable under foot. By its reduction of foot traffic clatter at the source it is a definite aid in the designing of quiet areas. It does not originate dust to be inhaled or to settle into valuable mechanical equipment.

Adaptability (In Use)—Because of its appearance, its resistance to wear and its proved economy, Stedman Tile may be safely and wisely used on practically every type of interior area. This includes public buildings of all kinds and particularly hospitals and department stores whose floor requirements are more exacting. Office buildings, churches, schools, and shops find the color latitude and the economy of this product appealing. Its use in residences, once confined to bathrooms, is largely expanding to its application in every room.

Precision (Joints)—The characteristic exactness of its tile units is a vital factor in the success of Stedman installations. Square cut edges devoid of beveling and undercutting are necessary to insure perfect results; this is an important requirement commonly overlooked.

Maintenance (Upkeep)—The maintenance of a Stedman Floor is of course regulated by the amount of traffic to which the specific floor is subjected. Under average conditions a simple mopping with clear water or a buffing with an electric brush will keep the surface clean and attractive. Definite recommendations are made with every installation.

Architects' Library

A supply of printed brochures helpful to architects in specifying and manipulating rubber tile is available upon request.

Catalog No. 10—Story of Stedman Tile.

Catalog No. 11—Illustrating designs and types in color.

Color Chart—Actual color reproductions.

Standard Designs—32 floor patterns.

Cleaning Instructions—Maintenance information.

Ray-proof Rubber—Complete data.

Accessories Folder—Accessory products details.

Technical Data

Types (Colors)—Stedman Tiles are divided into two general classes, Standard and Special. Standard colors or types are those listed as such on Stedman literature and may be obtained through all regular channels. Special types are colors especially compounded to meet the requirements of architects' original designs. These made-to-order types are developed in the factory's laboratory which co-operates closely with the designing architect until a satisfactory color is secured.

GENERAL MOTORS
Building, Detroit. A corridor done in O S Red with a Black Gold Paisley Border.

U. S. TREASURY
A Cash Room; the large squares are O S Red, and small squares Red Paisley.

HARTFORD HOSPITAL
Corridor; rectangles of White, Black and Gray Paisley, a spot of Black and a border of Black Paisley.

Borders (Outer and Inner)—Outer borders are cut to fit while inner borders or feature strips are supplied in 1, 2 and 3-in. widths.

Wainscoting (Tile and Runner)—Tile or runner, $\frac{3}{16}$-in. thickness, is available and has proved practical for this purpose. Material may be attached direct to trowel finish cement; to kiln dried matched hardwood boards not more than 3 in. wide blind and surface nailed; to ¾-in. hard plaster, Keene cement, portland cement plaster, or to securely nailed compo board or sheetrock. Wood pulp boards are not to be used. Wall backing must be dry and free from moisture before installation of rubber is started. The use of a special molded wainscot cap, specially molded internal and external corners, and standard cove base insure a decorative and practical result. Installation will not show nailholes. Inside corners should be furnished with the new Stedman molded corner section and all corners must be true 45° angle. Size of molded section 18x6x 2x$\frac{3}{16}$ in.

Limitations (Location)—Stedman Reinforced Rubber Tile should not be laid in areas subject to moisture and the continued contacts of strong acids, alkalis, oils, and other rubber solvents.

Ray-proof Rubber for X-ray Rooms—This material is being used successfully as a substitute for lead or barium plaster on the floors and walls of X-ray, deep therapy, cystoscopic and fluoroscopic rooms. Furnished in ½ and 1-in. thicknesses. Easily installed and insulates the room against the leakage of rays (special booklet on request).

Reinforced Rubber Tops—This attractive material in flat or molded sections makes a decorative as well as practical topping for all types of desks, tables and counters. Because of its easy application it is of special appeal to furniture manufacturers both for the protection of surface or base and as a substitute for marble, metal or wood.

The Stedman Rubber Flooring Company has organized a separate department whose entire attention is given over to the protection and decoration of surfaces, with reinforced rubber. It will review any problem of surface protection and submit recommendations.

STANDARD SIZES

Size, in.	Area sq. ft.	Size, in.	Area sq. ft.
3x 3	.0625	3x 6	.125
6x 6	.25	6x12	.50
9x 9	.5625	9x12	.75
12x12	1.00	9x18	1.125
18x18	2.25	12x18	1.25

Border and strip base widths, in.	Feature strip widths, in.	Full runner sheets
3, 6, 9 and 12	1, 2 and 3	15 ft. 10 in. x 36 in.

Approximate shipping weights per sq. ft.
$\frac{3}{16}$ in.....2.00 lbs. ¼ in.....2.50 lbs.

Standard Guaranty of the Rubber Manufacturers' Association, Inc.

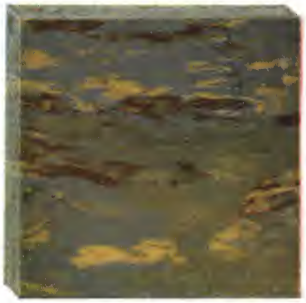
We guarantee our product against defects provided our recommended cleaning instructions are followed and we will repair or replace any such defective product which is brought to our attention in writing, within one year after date of completion of installation. We do not accept responsibility for any damages arising from defects or dampness in sub-floors or other surfaces which may occur after completion of installation.

Note: *As we install our own material, we also warrant the installation under the above conditions.*

Continued on next page

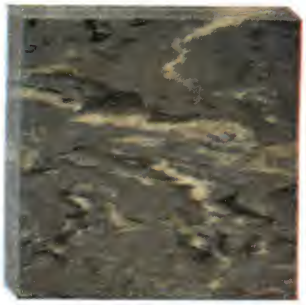
Stedman Reinforced* Rubber Tile

*See note on page following



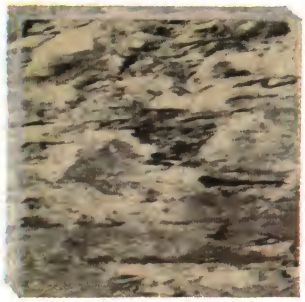
Grey Walnut Gold
Grey with veinings of
Walnut and Gold

THIS COLOR CHART is designed to assist you in your selection of types. The material is homogeneous, the veinings being a definite part of the structure. For this reason each color and pattern is lasting, the tile retaining its fine appearance through years of wear. Because these clear cut color contrasts and veinings are produced in a non-repeating process, we do not guarantee exactly the same color and design in every tile.

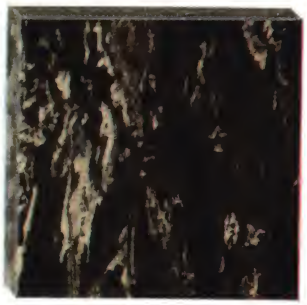


Grey Paisley
Grey with veinings of
Black and Cream

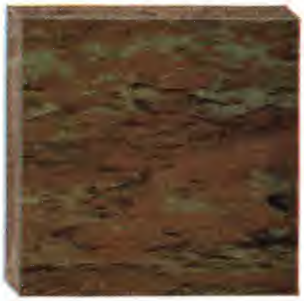
Walnut Paisley
Walnut with veinings of
Gold and Cream



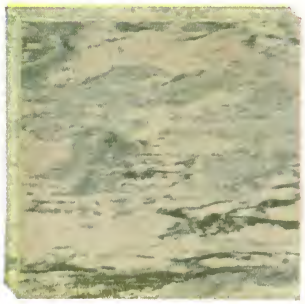
O.S.
Cream with veining of
Black



Black White
Black with veining of
White

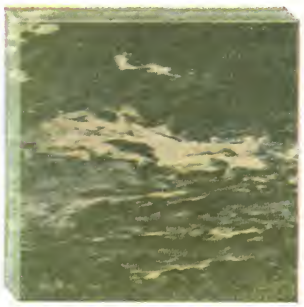


Brown Green Paisley
Brown with veinings of
Sea Green and Black



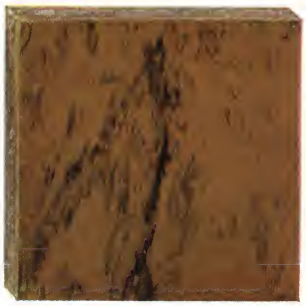
White Sea Green
White with veining of
Sea Green

Black Red
Black with veining of
Dark Red

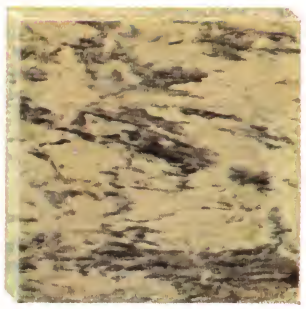


Sea Green White
Sea Green with veining
of White

Slate Red Paisley
Slate with veinings of
Dark Red and Cream

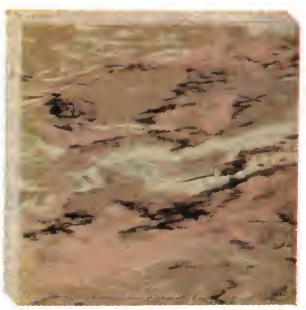


Brown Black
Brown with veining of
Black



Buff Black
Buff with veining of
Black

Dark Red



Napoleon Grey
Grey with veinings of
Pink, Cream and Black

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BINDING

UNITED STATES RUBBER COMPANY

FLOORING DIVISION

Rubber Tile and Sheet Rubber Flooring

PROVIDENCE, R. I.

Products

"U.S." TILE FLOORING; USCO SHEET FLOORING; "U.S." STAIR TREADS, MATS and MATTINGS; WAINSCOTING; TABLE and DESK TOPPING.

Also "U.S." Thresholds, Cove Bases, Plinth Blocks, etc.

For our page on Rubber Asphaltum Tile Flooring, see Manufacturers' Index.

TRADE-MARK

"U. S." Tile Flooring

In "U.S." Tile you find a flooring of unusual decorative effect and beauty combined with maximum durability and service qualities. Here is an ideal flooring material which offers all the advantages of other types of floorings with none of their disadvantages.

Decorative Adaptability—There is a cheerful warmth of friendly color in a floor of "U.S." Tile that subtly rounds out and adds the finishing touch to decorative completeness. There are in the "U. S." Tile line many distinctive types and color combinations. The varied perfection and rich color tones found in this line represent a real triumph of rubber manufacture. Full color reproductions of every tile in the line will be sent on request. In addition to variety of color, "U.S." Tile is available in varying sizes. The standard dimensions are: 6x6, 9x9, 12x12, 18x18, 6x12, 12x18 and 9x18 in. There are three standard thicknesses: $\frac{3}{16}$, $\frac{1}{4}$ and $\frac{3}{8}$ in. Besides tiling, all types of "U.S." Tile material can be furnished in the form of strips or sheets in any width up to 36 in. and in lengths up to 6 ft.

The broad range of colors and sizes of tiles makes possible an unlimited number of combinations to create floors in fullest decorative harmony with any interior.

And the beauty of "U.S." Tile is permanent beauty, for the rich colors and mottling effects are not merely surface treatments—the design runs entirely through the full thickness of the tile.

Durability and Sanitation—It is natural that our long experience in compounding rubber to specifically meet hundreds of varying service conditions enables us to build into "U.S." Tile a maximum of durability and service to be found in any soft-type flooring on the market. The basic foundation is virgin rubber from our own plantations in the Far East, carefully compounded and skilfully vulcanized. With proper care (complete maintenance instructions sent on request) a floor of "U.S." Tile will give outstanding service and satisfaction.

Here is a floor of maximum sanitation. The non-absorbent tiles are tightly cemented together with waterproof glue when laid; there are no cracks or seams to accumulate dirt and germs. "U.S." Tile floors are easy to clean and to keep clean. Their shining surfaces are highly resistant to the action of acids, alkalis, abrasion, etc.

Resiliency and Quiet—All the resiliency of finest rubber, skilfully compounded, assures noiseless comfort and ease underfoot for the occupants of a "U. S." Tiled room. Its high acoustical properties eliminate the din of traffic reverberation. In churches, auditoriums, theaters, etc., "U.S." Tile is forming an interesting and important part of acoustic and audition remedies.

Maintenance—It requires no special treatment, simply washing when necessary. Ink, blood, matches, lighted cigars, etc., leave no permanent marks. It does not show indentations from chair legs or other furniture. Folder on cleaning "US." Tile will be gladly sent on request.

Installation of "U.S." Tile—"U.S." Tile Flooring may be laid over concrete or wood subflooring in accordance with our complete specifications given herewith. The proper installation of a rubber floor is equal in importance to the actual manufacture of the material itself. All floors are installed according to the instructions laid down by the Company regardless of whether the installation is made by our own contracting department or an Approved Flooring Contractor. This insures perfect installation, without which no rubber floor, no matter how fine its quality, can give satisfactory service.

Standard Guaranty on Rubber Flooring—

Recognizing the evident desire of architects, building contractors and owners that materials or accessories used in building construction be guaranteed for a definite time in service, effective September 25, 1929, the following guaranty on rubber flooring was recommended by the Rubber Flooring Manufacturers Division of The Rubber Manufacturers Association, Inc., and was adopted as standard by the manufacturers:

"We guarantee our product against defects provided our recommended cleaning instructions are followed and we will repair or replace any such defective product which is brought to our attention, in writing, within one year after date of completion of installation.

"We do not accept responsibility for any damages arising from defects or dampness in sub-floors or other surfaces which may occur after completion of installation."

Special Information; Prices—Estimates on any installation are sent promptly upon receipt of inquiries. Requests for quotations should be accompanied by a sketch or blue print of the space to be covered, showing all dimensions, with description of the floor (wood or concrete) over which the tile is to be laid. Prices for installations are governed by the size and location of the installation, and thickness of "U.S." Tile selected. Prices are moderate, the lowest consistent with quality, material, workmanship, and service.

Wainscoting

An interesting development in the use of "U.S." Tile is its application in tile and panel form to wainscoting. Unusual practical and decorative effects are obtained. Installation on smooth walls is simple and floor loads are materially reduced. "U.S." Wainscoting is $\frac{3}{16}$ in. thick, made from regular "U.S." Tile compound.

A special "U.S." Wainscot Cap (moulding) is furnished to finish off the installation.

Stair Treads

Noiselessness, safety, beauty, and durability make "U.S." Stair Treads a perfect covering for stairs subjected to heavy traffic. Made from special stock with nosing of "U.S." Tile compound. Attached to wood, steel or concrete. Installed with or without metal nosing. Twenty standard colors.

Mats and Mattings

A complete line of mats and mattings of exceptional quality—perforated, corrugated, pyramid, knob types; flexible, noiseless, easy to clean, long wearing. Available in varied colors; special lettering or designs to order.

Continued on next page

Literature

Modern conditions call for modern materials. A floor must not only be durable or beautiful, but it must be quiet, easy to clean, sanitary, comfortable underfoot and low in upkeep cost.

"U.S." Rubber Tile meets all of these conditions fully.

A standard size A.I.A. folder, showing in full colors with full size color reproductions of our complete line of tiles will be mailed to architects on request. In addition, we will be pleased to demonstrate to you correct flooring effects, based on tonal values, lighting and reflection factors, feature and background effects, warm and cool colors for any type of building where a resilient type of floor is required.

Other "U.S." Products

In addition to "U.S." Tile, every architect will be interested in the following products:

Usco Sheet Rubber Flooring—Usco Flooring is made in one solid seamless uniform sheet of maximum durability and outstanding cushioning resiliency. It is especially adapted to the covering of small floor areas such as Pullman cars. It is available in a wide variety of designs and colors.

Table and Desk Topping—Specially fitted sheets of "U.S." Tile material are extensively used for table, desk and furniture topping in offices, showrooms, hotels, schools, etc. Made in many color designs to harmonize with any room interior. The effect is decorative and the application effectively protective.

Specifications for "U.S." Tile

Labor and Material—(1) Where rubber tile floors are indicated on the drawings or called for in the specification, they shall be "U.S." Tile Flooring, manufactured and installed by the UNITED STATES RUBBER COMPANY, 1790 Broadway, New York, N. Y.

(2) This contractor shall report to the architect any subfloors that are not in a suitable condition to receive the rubber tiling and shall not proceed with the work until the underfloors have been placed in proper condition.

(3) Rubber tile floors should be laid after painters, carpenters and plasterers have completed their part of the work, to avoid injury to finished rubber flooring.

Schedule—The following should be noted in the schedule:

(a) Room, name and number.

(b) Size of tile units.

(c) Catalogue numbers of tile used in fields.

(d) Catalogue numbers of tile used in border, if border is required.

(e) Cove base, if desired. State height.

(f) Type of underfloor—as concrete or wood.

Notes—Notes applying to specifications of other trades for subfloors.

(A) Concrete—(For concrete underfloors).

(a) Top layer of concrete subfloor should be 1½ in. thick.

(b) Specify the top layer to be composed of 1 part portland cement and 2 parts clean screened sand. It must be steel troweled to a smooth finish free from waves and irregularities.

(c) Finish level of top layer lower than the required floor level by the thickness of the "U.S." Tile specified.

(d) Do not specify any admixture in the concrete subfloor. Do not treat the top layer with any hardeners, paint or surface coats of any kind.

(e) Any scaling, crumbling, or deterioration of the cement subfloor will be the responsibility of the cement contractor.

(f) Steam heat should be turned on in the building with adequate ventilation so as to draw out all moisture from the interior (floors, walls and ceilings) before rubber floors are laid.

(B) Waterproofing—(a) All concrete surfaces, on or below grade, must be waterproofed by the membrane system where "U.S." Tile is to be installed. Waterproof both floors and walls below grade. Waterproofing must be carried up in the masonry walls to a point above grade.

(C) Carpenter—(For wooden underfloors).

(a) Specify underfloor to be of kiln-dried hardwood, tongued and grooved flooring, not more than 3-in. face width, driven up tight and blind nailed to bearings at least every 16 in. Plane down irregularities to leave smooth face.

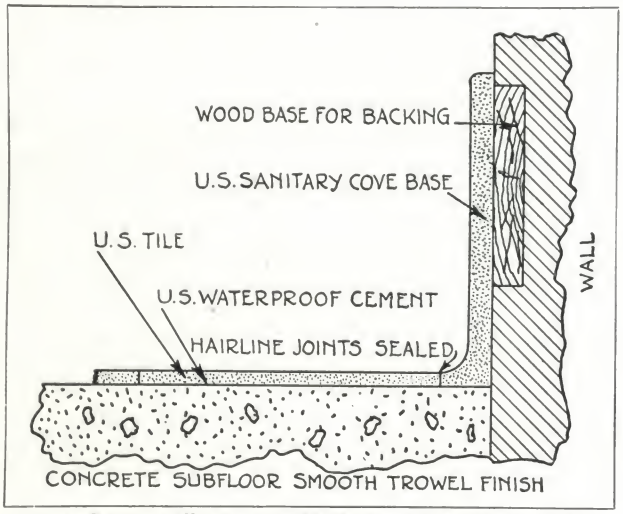
(D) "U.S." Tile Base—(a) Where cove base is installed with "U.S." Tile on concrete floors see that a solid wall backing is provided, forming an angle of 90 degrees with the floor. Juncture of floor and wall must be clean and even. Specify furring strips set flush with face of finished wall above tile and with top ¼ in. below the top of the cove base.

(E) "U.S." Rubber Wainscoting—(a) Where rubber wainscoting is installed specify:

1—Sheets
2—Tile

(b) The wall on which U.S. Rubber Wainscoting is to be installed shall be of hard plaster troweled smooth and free from any irregularities. The surface of the plaster should not be treated with any surface coat or finish.

(c) Any irregularities in the wall surface must necessarily reflect on the surface of the U.S. Wainscoting. The responsibility of a smooth wall surface must rest upon the plastering contractor.



Cross Section Illustrating Method of Installing "U.S." Tile Flooring

Special Notes—(a) Lines struck upon the surface of concrete subfloors must be filled in before "U.S." Tile is laid.

(b) Concrete underfloor must be absolutely dry, clean, and free from foreign material.

(c) Frozen concrete must have the surface scale removed and refinished with a new top layer 1½ in. thick.

(d) Concrete and wood underfloors must be smooth, dry and level.

(e) "U.S." Tile must not be laid over subfloors that are rough, cracked or warped.

(f) Do not specify "U.S." Tile in basements, spaces below grade, or laid directly on the ground, unless areas are waterproofed by the membrane method.

(g) Do not specify "U.S." Tile in public kitchens and laundries, spaces behind restaurant counters, soda fountains, or in restaurants where excessive spillage of grease and foodstuffs is encountered.

(h) "U.S." Tile must not be laid on old wood floors which are springy and vibrating, and lacking in that firmness which we require as foundation. This condition is often found in churches, department stores, etc., of the older type, where "sleepers" have dry-rotted, causing this condition.

WRIGHT RUBBER PRODUCTS CO.

Manufacturers of Rubber Floor Tile, Cove Bases, Stair Treads and Paving Blocks

RACINE, WIS.

LOCAL REPRESENTATIVE

Products

WRIGHT RUBBER TILE for floors, bases, wainscots, table and counter tops, etc.

WRIGHT RUBBER INTEGRAL-NOSING, ONE-PIECE STAIR TREADS.

WRIGHT RUBBER PAVING BLOCKS for heavy traffic such as bridges, industrial floors, sidewalks, etc.

The Company

The WRIGHT RUBBER PRODUCTS Co. was founded in 1921. It has established a financial rating and reputation to assure efficient, dependable service and to guarantee its integrity and responsibility.

References on request.

Experience

The officers and those actively in control of production have been continuously associated in the manufacturing and marketing of well-known rubber products for a period exceeding 20 years. Their wide, practical experience, coupled with recognized ability as chemists in the rubber industry, gives assurance of unexcelled technical ability.

The Plant

The new factory, located on a four-acre site on trackage of the Chicago & Northwestern Railroad, is a thoroughly modern plant designed and used for the manufacture of rubber flooring products, *exclusively*. The present capacity is 5000 sq. ft. per day. Ample facilities are provided for the storage of raw materials, the efficient and economical handling and routing of the various processes of manufacture, and the maintenance of adequate factory warehouse stock. The plan permits of ready enlargement without disturbing the present equipment units or interrupting production. All equipment is modern and much is of special design to meet the requirements as to pressure, vulcanization, etc., used exclusively in the manufacture of Wright Products.

Sales and Service

In addition to the experienced factory service accessible for assistance in the solution of special flooring and paving problems, Wright Rubber Products are sold, installed and serviced by reliable dealers in all of the principal cities in the United States. The name of your nearest local dealer will be furnished promptly on request.

(A) DESCRIPTION—Technical Data

(A1) Composition

Wright Rubber Products are composed of carefully selected, finely divided, inert mineral fillers, pure non-fading mineral pigments, accelerators (required to produce vulcanization), a small quantity of wax to increase and maintain the finished surface polish (wax is also a natural preserver of rubber), and approximately 25% by volume of plantation para rubber.

Note: Finely ground mineral fillers not only best combine with the rubber to form a homogeneous mass but are necessary to give the requisite density to withstand the severe impact and abrasion of traffic. Fibrous fillers destroy the fine grained surface texture and affect seriously the wearing and non-absorptive qualities. Too much rubber materially lessens the life of the material due particularly to the deleterious effect upon it of sunlight. Only sufficient elasticity to maintain resilience is desirable. Ability to flex or bend readily is an attribute wholly non-essential in a flooring material of this nature and should be distinctly guarded against as prime evidence of too much rubber.

(A2) Process

The ingredients are thoroughly amalgamated into calendered raw sheets, two thicknesses of which, in comparatively small areas (not to exceed 648 sq. in.), are vulcanized together in steel moulds under extremely high pressure (from 1600 to 2200 lb. per sq. in. of tile). In the *Homogeneous Type* (see C1) the two raw sheets are identical and the same colors and markings extend through the entire tile thickness. In the *Cushion Back Type*, the upper raw sheet (approximately one-half the tile thickness) is made of the same raw stock as the *Homogeneous Type;* the lower sheet is of black composition in which reclaimed rubber is used as the binder.

The exposed surfaces of all tiles have a glazed plate finish.

(A3) Gauged Thickness

All tiles are carborundum ground to a uniform thickness of not to exceed ten one thousandths of an inch variation.

(A4) Shaping

All tiles are cut on special precision machines to accurate rectangular size with square, clean cut edges.

(A5) Inspection

Each process of manufacture is rigidly controlled and under experienced supervision, assuring positive uniformity.

(A6) Warranty

The WRIGHT RUBBER PRODUCTS Co. guarantee their products fully in accordance with the current warranty of the Rubber Association of America.

(B) ESSENTIAL CHARACTERISTICS

The following essential characteristics are pre-eminent in Wright Rubber Tile Flooring.

(B1) Durable

The material is sufficiently tough and dense to resist the impact and abrasion of traffic over a long period of years and, when properly installed, will remain permanently flat without creeping, shrinking, curling or warping.

(B2) Resilient

Permanently resilient for the life of the material. Sufficiently elastic to recover from indentation. Promotes quiet and foot comfort.

(B3) Non-absorbent

The surface is impervious to stains and acids (not nitric or sulphuric). Oils, particularly mineral, and grease, unless promptly removed, are injurious. The hair line joints are permanently sealed with insoluble cement, assuring the utmost in sanitation.

(B4) Not Slippery

When dry is non-slip. Is not more slippery when wet than other smooth surface flooring materials.

(B5) A Non-conductor

Is a non-conductor of electricity. Is low in thermal conductivity, consequently is not cold underfoot.

(B6) Fire Resisting

Is practically fireproof. Burning matches and cigarettes leave but slight surface discolorations which are easily removed.

(B7) Superior Appearance

Color tones are permanent and clear. Mottling and veining of color combinations are clearly defined and extremely harmonious. Original surface luster easily maintained.

(B8) Variety of Design

The wide variety of standard colors and color combinations, coupled with the number of stock sizes, assure the greatest flexibility in design and pattern arrangement. Special inlaid decorative designs may be obtained at moderate added cost.

Continued on next page

(B9) Easy to Clean

The tough, high-luster, impervious surface cleans with the greatest ease Maintenance cost is low.

Note: Complete directions for cleaning and maintenance furnished with each installation. Copies sent on request.

(B10) Reasonable Cost

Cost varies, dependent on type of material and pattern design. It is extremely reasonable when superior appearance, long life and negligible maintenance expense are considered.

(C) TYPES AND SIZES

(C1) Types

Note: See (A2) opposite.

(a) **Homogeneous Tile**—Where the colors and markings extend through the entire tile thickness.

Note: Recommended for use where heavy traffic is expected.

(b) **Cushion Back Tile**—Where the colors and markings extend through approximately one-half the tile thickness, backed with black cushion material.

Note: Recommended for wainscots and residential work or for other classes of buildings where moderate traffic is expected. (The saving in cost over the *Homogeneous Tile* is from 7 to 10 cents per sq. ft.)

(C2) Thicknesses

Note: See (A3) opposite.

Both homogeneous and cushion back types of tile are made in two thicknesses—$\frac{3}{16}$ and $\frac{1}{4}$ in.

Note: The $\frac{1}{4}$-in. thickness is recommended for use over concrete or similar subfloors.

(C3) Sizes

Note: See (A4) opposite.

(a) **Tile Sizes**—4x4 in., 6x6 in., 8x8 in., 9x9 in., 12x12 in., 18x18 in., 9x18 in., 16x24 in., 18x36 in.

(b) **Borders**—18x36 in. (maximum).

(c) **Accessories**—Bases, shoe mouldings, wainscot caps, thresholds, etc., in 42-in. lengths. (For other dimensions see details, Wright page 5.)

(d) **Stair Treads**—With integral moulded nosing, 12 in. wide by 42 in. long. (For details, see Wright page 5.)

(C4) Colors

Note: See (B7) opposite.

(a) **Plain Colors**—Fourteen (14) standard plain colors ranging from cream white to black (grays, buffs, browns, reds, blues, and greens).

(b) **Mottled (Marbleized)**—Thirty-eight (38) standard color combinations, with striking resemblance to natural domestic and imported marbles (See Wright color pages 3 and 4).

(D) ADAPTABILITY AND SUBSURFACE PROVISIONS

Note: That the rubber tile installation may be accomplished with the greatest degree of economy, permanence and satisfaction as to appearance, it is recommended that the following provisions be included under the various specification headings where and when they apply.

(D1) Where Adapted

In all types of buildings as a finished flooring laid over sound, smooth wood or concrete subfloors.

Note: A Concrete subfloor is preferable.

(D2) Where Not Adapted

(a) Rubber tile flooring should not be laid over unexcavated areas whether above or below grade, even when water-proofed.

Note: Experience has proven that dampness, always prevalent in these positions, affects in time the best waterproof cements obtainable, invariably disintegrating the cement bond between the tile and subfloor. The tile itself is not injured by moisture.

(b) Rubber tile flooring should not be laid over wood floors attached to sleepers set in concrete fill.

Note: Wood floors laid over concrete, the surfaces of which are hermatically sealed by the rubber tile flooring, frequently dry rot.

(c) Rubber tile flooring should not be laid in hotel or restaurant kitchens near cooking or dishwashing equipment, etc., where deposits of heavy grease are prevalent, or behind counters or other areas where there is liable to be continual deposits of water or moisture. (See (B3) opposite).

(D3) Subsurfaces—General

A clean, sound, smooth, true subfloor surface without indentations or projections is imperative. Chalky, flaky surfaces or surfaces covered with foreign substances will affect the cement bond. Surface indentations and projections will be communicated through and appear in the surface of any soft or resilient type of flooring. The same provisions apply to plaster wall surfaces behind rubber tile bases, wainscots, etc. Defects of this nature cannot be overcome by the rubber tile installation contractor and obviously cannot be attributed to negligence or lack of skill on his part.

(D4) Wood Subfloors

Note: See (D1) and (D2b).

It is recommended that rubber tile flooring be laid only over *double* wood subfloors. The finished subfloors to receive rubber tile flooring shall not be less than $\frac{25}{32}$ in. thick or greater that $3\frac{1}{4}$-in. face (1x4-in. stock). Floor stock shall be kiln dried, sound, matched and end matched flooring laid close and thoroughly blind nailed to bearings. All surfaces shall be carefully scraped and sanded smooth. Thorough sanding with a sanding machine is recommended. Allow the tile thickness plus $\frac{3}{32}$ in. from subfloor surface to finished floor level, unless difference in floor level is compensated for by thresholds.

(D5) Concrete Subfloors

The concrete subfloors to receive rubber tile flooring shall be structurally sound and hard, free from scale, laitance or foreign deposits and without surface imperfections.

Note: The specifications for concrete floors prepared by the Portland Cement Association, as given in SWEET'S ARCHITECTURAL CATALOGUE, are recommended.

All concrete subfloors shall be "bone dry."

Note: Moisture destroys the bond of the setting cement. To test concrete floors for dampness, place calcium chloride crystals on the floor surface; cover with glass 12x12 in. in area with edges carefully set in putty to exclude the outside atmosphere. Dissolving of the crystals or moisture condensation appearing within 60 hours on the underside of the glass is prima facie evidence of moisture in the concrete.

Allow the tile thickness plus $\frac{1}{16}$ in. from subfloor surface to finished floor level, unless difference in floor level is conpensated for by thresholds.

Where rubber tile flooring is set in a sinkage with concrete cover bases or borders, or where it finishes against adjacent areas of flooring of concrete or similar nature at doors, etc., without thresholds, it is recommended that the fragile edges of the concrete or similar floor be finished against a brass finishing bar.

(D6) Plaster Surfaces

Plaster surfaces to receive rubber tile base or wainscots shall be laid to accurately set base and wainscot cap grounds carefully rodded and screeded and troweled to a hard, smooth surface. All plaster surfaces shall be "bone dry."

WRIGHT RUBBER PAVING BLOCKS AND COLORED SIDEWALKS

Description—A rubber paving block of the same composition as Wright Rubber Tile, $1\frac{1}{4}$ in. $\frac{7}{8}$ in. or $\frac{5}{8}$ in. (thick) by 6x12 in. with interlapping flaps to provide concealed nailing to the underlying base. Surface is either smooth or mould-grooved to give traction grip.

Adaptability—The ideal floor for bridges, industrial shops, gymnasium and hand ball courts. It is unaffected by expansion and contraction or climatic changes ranging from 40° below zero to 110° in the sun.

Satisfactory long wear assured.

Bridge Roadway and Sidewalk Installations:

Michigan Avenue Bridge, Chicago, Ill.
Cedar-Biddle Bridge, Milwaukee, Wis.
Bascule, 16th Street Viaduct, Milwaukee, Wis.

Colored Sidewalk Installations:

James Oviatt Building, Los Angeles, Calif.
Richfield Oil Company Bldg., Los Angeles, Calif.
The Banks-Huntley Bldg., Los Angeles, Calif.
Edison Building, Los Angeles, Calif.
Clune Building, Los Angeles, Calif.
Ontra Cafeteria, Los Angeles, Calif.

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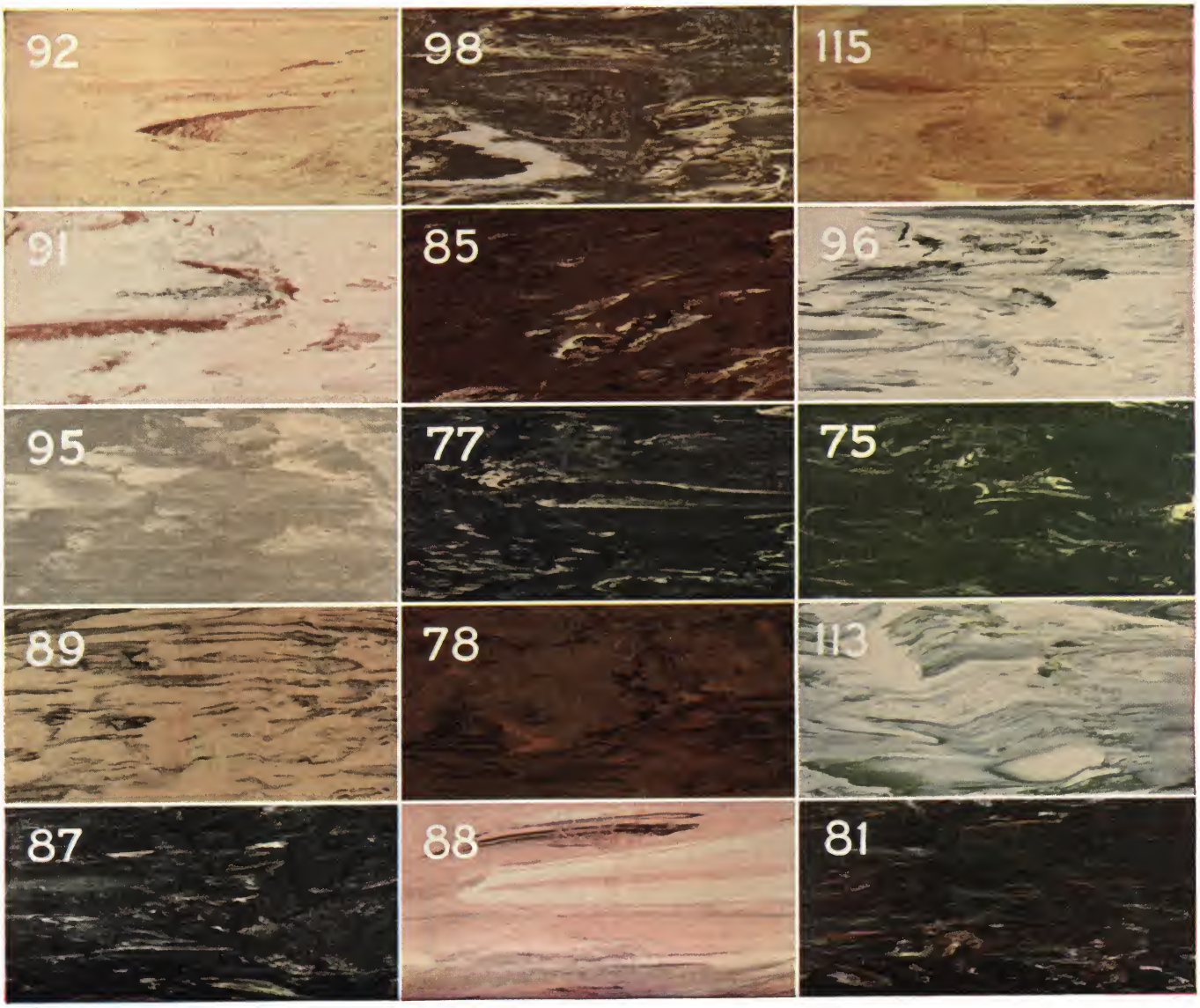

COLOR INDEX

WRIGHT RUBBER TILE
Rubber Only Material That Withstands Tire Road Wear

Homogeneous and Cushion Back Tile

Mottled Colors

No. 75 Alpine—green mottled with white.
No. 76 Batesville—gray mottled with black.
No. 77 Black with white mottling.
No. 78 Circassian—dark brown mottled with black and salmon.
No. 79 Copperstone—cream mottled with gray.
No. 80 Geneva—blue mottled with white.
No. 81 Golden Ebony—black mottled with red and white.
No. 82 White Italian—white mottled with black.
No. 83 Light Red Granite.
No. 84 Dark Napoleon Gray—dark gray mottled with black and white.
No. 85 Red Granite—red mottled with black and white.
No. 87 Verde Antique—black mottled with white and green.
No. 88 Tennessee—pink mottled with white and black.
No. 89 Sienna—light buff mottled with black.
No. 90 White mottled with blue.
No. 91 White Granite—white mottled with red and black.
No. 92 Golden Sienna—gold mottled with red and white.
No. 93 Red mottled with gold and black.
No. 94 Black mottled with gold and red.
No. 95 Mayo Gray—light gray mottled with white.
No. 96 White Italian with Green—white mottled with black and green.
No. 97 Black Onyx—black mottled with gold.
No. 98 Dark Brown Sienna—dark brown mottled with gold and white.
No. 108 Dark Gray Paisley—white mottled with gray and black.
No. 109 Dayton Brown—brown mottled with white and yellow.
No. 110 Cream mottled with red and buff.
No. 111 Serpentine Green—green mottled with gold.
No. 112 Light Alpine—light green mottled with white.
No. 113 White mottled with green.
No. 114 Brown mottled with black.
No. 115 Golden Travertine—gold mottled with brown.
No. 116 Olive Green mottled with white.
No. 117 Light Red mottled with gold.
No. 118 Light Napoleon Gray—light gray mottled with black and white.
No. 119 Gray Tennessee—gray mottled with brown and pink.
No. 120 White, Blue and Gold.
No. 121 Blue, Gold and White.
No. 122 Passavant Green—green mottled with black.

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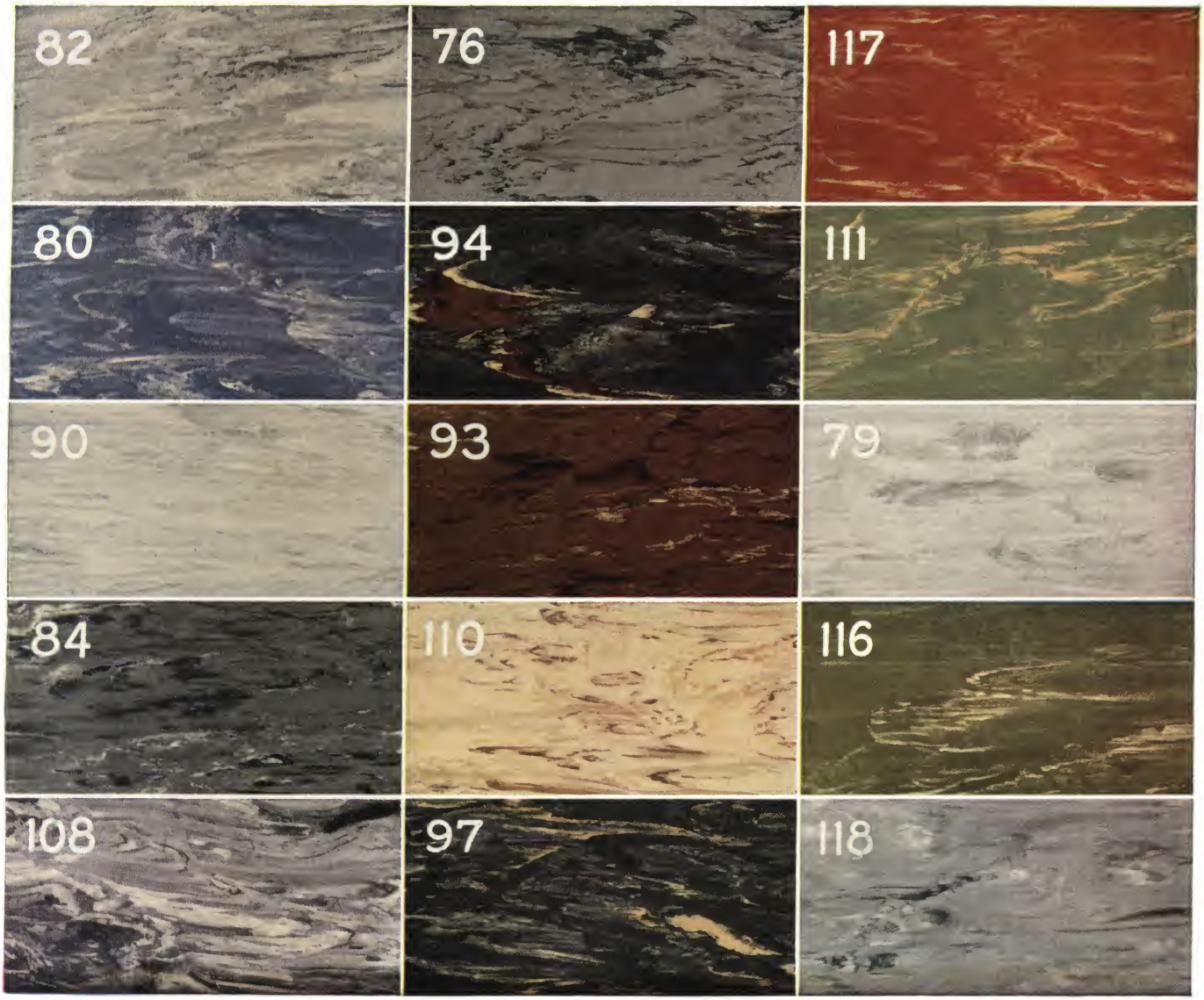


COLOR INDEX

WRIGHT RUBBER TILE
Rubber Only Material That Withstands Tire Road Wear

Homogeneous and Cushion Back Tile

PLAIN COLORS

No. 53 Dark Red
No. 54 Light Red
No. 55 Slate
No. 56 Dark Gray
No. 58 Light Buff
No. 59 Dark Buff
No. 60 Blue
No. 61 Black
No. 62 Green
No. 63 Brown
No. 64 Green (Background of No. 75)
No. 65 Green (Background of No. 111)
No. 101 Brown

Standard Sizes of Wright Rubber Tile, Base, Treads, etc.

TILE SIZES—4x4 in., 6x6 in., 8x8 in., 9x9 in., 12x12 in., 9x18 in., 16x24 in., 18x18 in., and 18x36 in. Borders furnished in 18x36 in. for Homogeneous and Cushion Back.

BASE—All base comes in 42-in. lengths.

Standard Sizes of Wright Rubber Tile, Base, Treads, etc. [Continued]

Heavy base, cove or straight—5 and 6-in. heights.
Heavy base, straight—8-in. height.
Heavy base, cove—9-in. height.
Heavy base, cove—4-in. height, 3/8-in. thick.
Light coving, 5 and 6-in. heights.
SHOE MOULDING AND WAINSCOT CAPPING—42-in. lengths.
QUARTER ROUND—42-in. lengths.
OUTSIDE ANGLES FOR WAINSCOT TRIM—18-in. lengths.
STAIR TREADS—42x12 in. with moulded rubber nosing attached. Smooth surface.
THRESHOLDS—42-in. lengths—3x3/4 in.; 5 1/2x1/2 in.
PLINTH BLOCKS—4 1/4x6 1/4x7/8 in.; 3 7/8x6 1/4x7/8 in.

Note: For ordinary traffic, wood subfloor installations, 30 lb. Bird's asphalt felt is recommended.

Continued on next page

(E) MASTER SPECIFICATIONS

(E1) Work Included

Note: List and locate either in schedules on plans or under this heading all areas to be covered with rubber tile.

(E2) Shop Drawings and Samples

(E2a) **Shop Drawings**—Furnish, in triplicate for the approval of the architect, shop drawings of work under this contract. Drawings shall show accurately all jointing, color designations, etc.

(E2B) **Samples**—File with the architect samples conforming with these specifications and the approved shop drawings.

(E3) Subsurface Provisions

Provision has been made under other specification headings that all surfaces to receive rubber tile shall be constructed as set forth under (D) *Adaptability and Subsurface Provisions*, Wright page 2 of SWEET'S ARCHITECTURAL CATALOGUE, Twenty-fifth Edition.

(E4) Inspection and Cleaning

(E4a)—Before installing the rubber tile this contractor shall thoroughly inspect the surfaces to be covered, make tests, if necessary, to assure absence of moisture and shall notify the architect promptly (preferably in writing) of any defects.

(E4b)—Thoroughly clean all subsurfaces of dust or other foreign matter before installing the rubber tile.

(E5) Materials

(E5a) **Rubber Tile**—

(*E5a1*) ***General***—All rubber tile shall be as manufactured by the WRIGHT RUBBER PRODUCTS CO., Racine, Wis., or equivalent, meeting fully this manufacturer's standards of quality as set forth under (A) *Description—Technical Data* and (*B*) *Essential Characteristics*, Wright pages 1 and 2 of SWEET'S ARCHITECTURAL CATALOGUE, Twenty-fifth Edition.

(*E5a2*) ***Type***—Tile shall be [Homogeneous] [Cushion Back].

Note: If both Homogeneous and Cushion Back types are used under the same contract, designate definitely here where each is to be installed. See (C1.)

(*E5a3*) ***Thickness***—Tile shall be [$\frac{3}{16}$ in.] [$\frac{1}{4}$ in.] thick.

Note: $\frac{1}{4}$ in. is recommended over concrete subfloors.

Note: If both thicknesses are used under the same contract, designate definitely here where each is to be installed.

(*E5a4*) ***Size and Pattern***—Size of tile, pattern, etc., shall be in accordance with the detail drawings.

Note: If details are not provided, describe here.

(*E5a5*) ***Color***—Colors shall be [plain] [mottled].

Note: Designate colors on details by numbers. If details are not provided, describe color selections here.

(E5b) **Waterproof Cement**—Waterproof cement shall be of the highest quality.

Note: The quality of the cement used for installing rubber tile is a vital factor. Only cement approved by the tile manufacturer and of proven dependability should be used.

(E5c) **Felt**—Saturated felt shall be Bird's 30 lb. Asphalt felt.

(E5d) **Paste**—Any standard brand of linoleum paste.

(E6) Preparing Wood Subfloor

(E6a) **Applying Felt**—Cover the wood subflooring with felt accurately fitted to the floor space with edges carefully butted. Cement the felt to the wood in a full bed of linoleum paste and roll thoroughly with a 150-lb. roller to expel air bubbles and insure complete adhesion. At exterior doors exposed to dampness, use waterproof cement in lieu of linoleum paste.

(E7) Installing Rubber Tile

(E7a)—All rubber tile shall be installed by thoroughly experienced, skilled workmen.

(E7b)—Each tile shall be set in a full bed of waterproof cement with joints flushed full by sliding it into position. Tile shall be laid true to line, and pattern in accordance with the approved shop drawings. All joints shall be close and even and all surfaces shall be in a true plane.

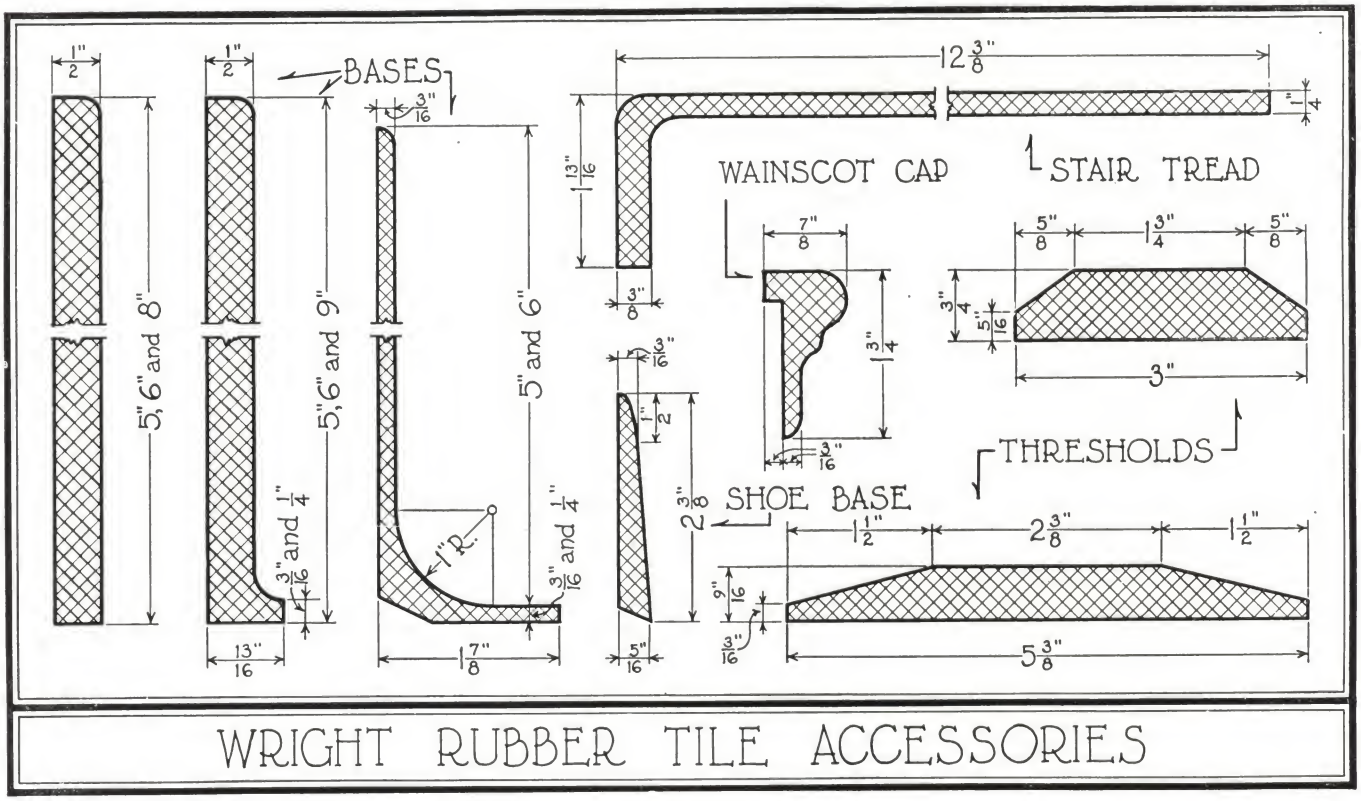
(E7c)—Before the setting cement has hardened, thoroughly roll the surface in two directions with a 150-lb. roller.

(E7d)—Where rubber tile is applied against plaster surfaces, size the plaster with a thin coat of waterproof cement. Allow sizing to dry before installing tile.

(E7e)—Bases, wainscot caps, etc., shall be bradded to wood grounds in addition to cementing with waterproof cement.

Note: The surface of rubber tile material closes tightly over brads when these are carefully set.

(E7f)—Before surplus cement has hardened upon the tile surface, clean off thoroughly with a rag moistened with alcohol.



ARMSTRONG CORK COMPANY

FLOOR DIVISION

Manufacturers of Linoleum and Allied Products

HOME OFFICE
LANCASTER, PA.

BRANCH OFFICES

ATLANTA, GA., 432 Candler Building
BOSTON, MASS., 507 Bedford Building
BUFFALO, N. Y., 1325 Liberty Bank Building
CHICAGO, ILL., 1917 Daily News Building
CINCINNATI, OHIO, 538 Dixie Terminal Building
CLEVELAND, OHIO, 603-605 Hanna Building
DALLAS, TEX., 708 Santa Fe Building
DENVER, COLO., 720-21 Symes Building
DETROIT, MICH., 1232 Book Building
KANSAS CITY, MO., 114 W. 10th Street Building
LOS ANGELES, CAL., 1206 Santee Street
MEMPHIS, TENN., 1104 First National Bank Building
MINNEAPOLIS, MINN., 912 Plymouth Building
NEW ORLEANS, LA., 1833-36 Canal Bank Building
NEW YORK, N. Y., 295 Fifth Avenue
ST. LOUIS, MO., 1102-3 Ambassador Building
SAN FRANCISCO, CAL., 180 New Montgomery Street
SEATTLE, WASH., 803 Terminal Sales Building

ARMSTRONG'S LINOLEUM AND ALLIED PRODUCTS

The Armstrong Line

ARMSTRONG'S LINOLEUM: Battleship and Plain; Jaspé (two-tone effect); Embossed Inlaid; Straight Line Inlaid; Handmade Marble Inlaid; Parquetry Inlaid; Embosstex Granite; Printed Linoleum; Armstrong's Quaker Rugs.

ARMSTRONG'S CORK CARPET
ARMSTRONG'S LINING FELT
ARMSTRONG'S LINOLEUM WAX
ARMSTRONG'S LINOLEUM LACQUER
ARMSTRONG'S WATERPROOF CEMENT
ARMSTRONG'S LINOLEUM PASTE
ARMSTRONG'S LINOTILE and CORK TILE

Armstrong's (A) *Product*

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What Linoleum Is

Linoleum takes its name from one of its principal ingredients, linseed oil (*linum,* flax; and *oleum,* oil). The oil is oxidized by exposing it to the air until it hardens into a tough, rubberlike substance, and is then thoroughly mixed with powdered cork, wood flour, various gums, and suitable color pigments. The resulting plastic mass is pressed on burlap by means of heavy calenders, the exact processes varying with different kinds of linoleum. The "green" linoleum then passes into drying buildings called "stoves," where it is cured and seasoned from two to six weeks, depending on thickness of material.

Standards of the Armstrong Line

General Characteristics—Every yard of Armstrong's Linoleum is fully guaranteed against defect by the ARMSTRONG CORK COMPANY. This Company maintains, for the manufacture of linoleum, a plant at Lancaster, Pa., strictly modern in both equipment and manufacturing methods.

Only the best obtainable ingredients are used in the manufacture of Armstrong's Linoleum. Most of the cork comes from the Company's own plants here and abroad. The cork is ground to a fineness of 50-mesh to the inch, which results in a finished surface on plain, Jaspé, and inlaid linoleum of almost plate glass smoothness. Every car of linseed oil and all color pigments are tested in the laboratory. The whole manufacturing process is under physical and chemical control.

Armstrong's Linoleum now has a fine lacquer surface, produced by the Accolac Process—which greatly simplifies cleaning, and preserves and intensifies the colors of the pattern.

The ARMSTRONG CORK COMPANY possesses an organization thoroughly experienced in the manufacture of linoleum. Many of the men in this organization were trained abroad where linoleum traditions were founded and developed. Exceptional attention is paid to the designing of the patterns and the selection of the colorings.

Tests—Armstrong's Linoleum is carefully tested at every step of the making. Final inspections are especially rigid.

The guiding principle in the Armstrong factories is "quality," not "quantity"; not "how much," but "how good" can linoleum be made. Armstrong's Battleship Linoleum more than meets the highly exacting "United States Government Master Specification for Battleship Linoleum" promulgated by the Federal Specification Board on July 30, 1924, as Specification No. 209.

Varieties of Armstrong's Linoleum

Plain Linoleum—Solid colors without pattern—the three heavier gauges of which are known as Heavy, (6 mm.), Medium, $\frac{3}{16}$-in., and Light Battleship (A Gauge) (.142″). What is commonly spoken of as plain linoleum is of the same quality as battleship linoleum, only lighter in gauge.

Altogether there are 6 thicknesses of plain linoleum and 17 colors. See colorplates following these specifications.

Jaspé Linoleum—A species of inlaid linoleum, since the colors run clear through to the back. It presents a striated appearance with a two-tone effect and is made in 8 colors and 5 gauges: 6 mm., $\frac{3}{16}$-in., Light Battleship (A Gauge) (.142″), B, and C. See colorplates.

Embossed Inlaid Linoleum—A distinctive, patented, new type of Armstrong's Linoleum made in several gauges and many patterns. The interliners between the blocks of the pattern and frequently certain other portions of the design are slightly depressed, giving the design an embossed effect, thus adding to linoleum for the first time all the interest and texture of old hand-set ceramics. See colorplates.

Straight Line Inlaid Linoleum—The colors of the patterns go through to the burlap. In making Straight Line Inlaids, the individual parts of the pattern are die-cut, laid in position and finally keyed on the burlap under enormous pressure. See colorplates.

Handmade Marble Inlaid Linoleum—A Straight Line Inlaid Linoleum in which the design is made up of large marbleized blocks of varied designs and colorings. Made in AA (.142″) and A Gauges. See colorplates.

Continued on next page

Linosets—To further individualize floors, special figures in silhouette, called Linosets, are now offered to architects. Twelve stock designs are immediately available in any two colors of plain, Jaspé, or Marble Inlaid—star, shield, fleur-de-lis, ship, deer, helmet, castle, escutcheon, knight, swan, lion, and a modernistic figure.

The ARMSTRONG CORK COMPANY also furnishes custom-cut floor ensembles of any designs required. These floors are cut at Lancaster, Pa., and shipped to the merchant, ready for installation. Particularly adapted to kindergarten rooms, game rooms, children's wards, nurseries, department stores, and barber shops, are these individually designed floors, for they present the opportunity to inlay the necessary layouts for many juvenile games.

Linostrips—As an aid in producing special floor effects, with double and triple borders, etc., machine cut strips of all gauges of all plain colorings of Armstrong's Linoleum, either ⅝ in. or 1½ in. wide and 45 ft. in length, are offered in individual packages.

Armstrong's Cork Carpet

Cork carpet is made of relatively large granules of cork by a process which preserves the natural elasticity to a high degree. Cork carpet, therefore, not only softens footsteps, but helps absorb other noises as well. For auditoriums and other rooms in churches, lodges, libraries, museums, etc., where excessive dirt is not tracked in directly from the street and where heavy traffic is not an everyday occurrence, cork carpet is admirably adapted.

Armstrong's Waterproof Cement

This is guaranteed to make a waterproof joint at seams and edges, when properly applied. It has high adhesive power, possesses ample covering capacity, and is entirely free from sodium silicate (water glass) and other ingredients harmful to linoleum.

A gallon will cover about 60 ft. of floor space, enough to cement the seams and edges of about 40 sq. yds. of linoleum.

Armstrong's Linoleum Paste

A high grade non-waterproof adhesive (free from all harmful ingredients) intended for use in fastening felt to the floor and centers of the linoleum strips to felt.

A gallon will cover approximately 100 sq. ft.

How to Get Armstrong's Linoleum

Distribution—Armstrong's Linoleum is sold through retailers of home furnishings and floor coverings, as well as linoleum contractors, throughout the United States. The names of reliable handlers in any locality may be had by writing the home office of the Floor Division of the ARMSTRONG CORK COMPANY, Lancaster, Pa., or the nearest branch office. In practically every city there are good firms which make a specialty of laying in accordance with the Armstrong Specifications. Names of such firms may be had on request.

Protection of Customer—For the protection of the purchaser the gauge mark is printed on the back of every yard of Armstrong's Battleship Linoleum, and where there are slight imperfections which cause the goods to be sold at a discount, the word "Seconds" is plainly marked on the burlap back.

Contract Department—Architects contemplating the installation of linoleum floors are invited to use the services of the Contract Department, which is prepared to work with owners, architects, or contractors in preparing estimates from blue prints; to make recommendations of gauges and patterns for specific purposes, and supply technical information on laying and care of floors. All service is rendered free of charge.

Bureau of Interior Decoration—For the benefit of architects, decorators, owners, and others interested in the use of linoleum as a decorative floor material, a Bureau of Interior Decoration, in charge of an experienced interior decorator, is maintained by the Company. This Bureau will gladly send samples of linoleum patterns and suggestions as to designs and color schemes that will be suitable for any particular problem. Information and recommendations as to the use of linoleum floors for rest rooms, private offices, shops, and the various rooms of the home, especially, may be obtained at no cost or obligation whatever.

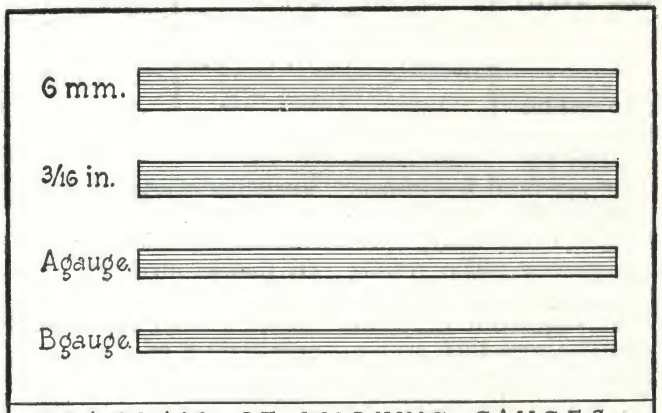


DIAGRAM OF WORKING GAUGES

Kind of Linoleum	Width, ft.	Approximate thickness, in.	Finished gauge, in.	Average net weight per sq. ft., lb.
Plain Linoleum—				
Heavy Battleship 6 mm	6	¼	.235	1.53
Med. Battleship 3/16-in.	6	3/16	.187	1.22
Light Battleship (A Gauge) (.142 in.)	6	9/64	.142	.91
B Gauge	6	⅛	.119	.82
C Gauge	6	3/32	.095	.64
Jaspé Linoleum—				
6 mm	6	¼	.235	1.53
3/16-in.	6	3/16	.187	1.14
Light Battleship (A Gauge) (.142 in.)	6	9/64	.142	.86
B Gauge	6	⅛	.119	.80
C Gauge	6	3/32	.095	.63
Straight Line Inlaid—A Gauge	6	1/8	.118	1.02
Handmade Marble Inlaid—				
AA (.142 in.)	6	9/64	.142	1.19
A Gauge	6	⅛	.118	1.05
Embossed Inlaid—				
Embossed—3/16-in.	6	3/16	.187	1.22
Embossed—A Gauge	6	⅛	.118	.94
Embossed—B Gauge	6	3/32	.095	.78
Cork Carpet (unpolished)	6	¼	.250	.81

The weights and gauges given in this table are the manufacturing standards for the various kinds of linoleum. Slight variations will occur, but, for practical purposes, these figures are substantially correct.

Samples and Literature

Samples of any coloring or pattern or thickness of Armstrong's Linoleum and Cork Carpet will be sent to any architect, contractor, or builder on request.

The following literature is also offered:

(a) "Armstrong's Floors," prepared in the form recommended by the American Institute of Architects. In addition to a description of linoleum, Linotile and cork tile, and their uses, this handbook contains essential information needed in the selection of Armstrong's resilient floors for any particular purpose, and information regarding the laying of floors over wood or concrete, including architects' detailed specifications. 8½x11 in. in size.

(b) "Pattern Book," showing all the patterns in Armstrong's Linoleum reproduced in full color.

(c) Quality samples showing the various thicknesses of plain, Jaspé, printed, and inlaid linoleum.

(d) "Linoleum Layer's Handbook," a 36-page book containing detailed directions for laying and caring for permanent linoleum floors. Illustrated. 5½x8 in. in size.

Continued on next page

Armstrong's Embossed Inlaids Give Texture to Linoleum

No. 16000 Embossed Inlaid—De Luxe—A Gauge
(Plate shows 34″ x 32″ section) 2 yards wide only

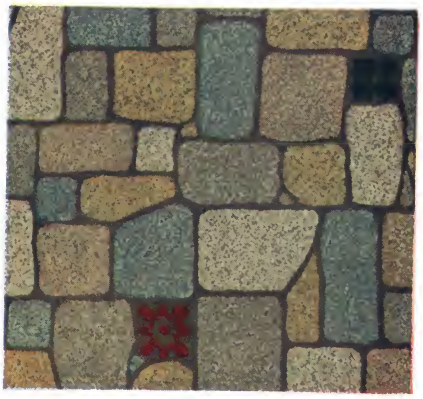
OF THE nearly 500 designs and colorings available in the Armstrong Floor Line, this Catalog shows 54 representative patterns —those few which are of greatest value to architects, decorators, and others who are interested in modern linoleum as a decorative and permanent floor. The current Armstrong Pattern Book, which shows the entire range of designs in color, will be sent upon request.

Armstrong's Embossed Inlaid, a most distinctive and artistic type of linoleum, is made in three gauges—A, B, and C. The embossing on the tile and flagstone patterns gives an unusual and effective texture to the surface. Embossed Inlaid De Luxe, a new linoleum, particularly effective for showrooms, hotel lobbies, and similar places, reproduces in a single design the textures of brick, stone, tile, slate, and jasper.

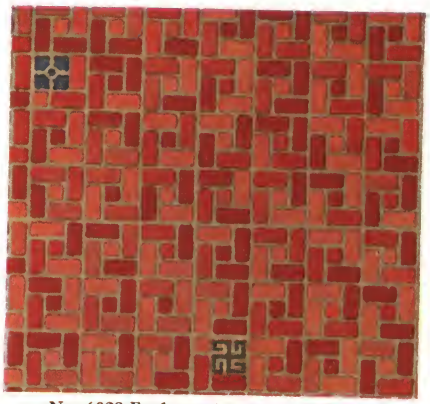
No. 16010 Embossed Inlaid—De Luxe—A Gauge
(Plate shows 34″ x 32″ section) 2 yards wide only

No. 16012 Embossed Inlaid—De Luxe—A Gauge
(Plate shows 34″ x 32″ section) 2 yards wide only

No. 16003 Embossed Inlaid—De Luxe—A Gauge
(Plate shows 34″ x 32″ section) 2 yards wide only



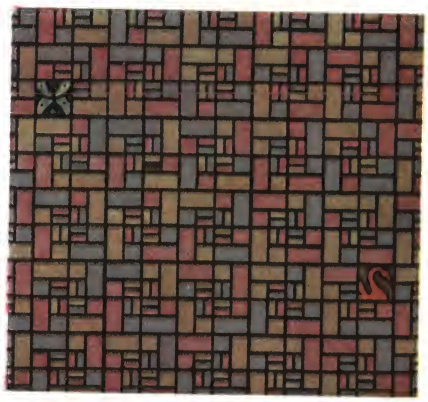
No. 6120 Embossed Inlaid—A Gauge
(Plate shows 34″ x 32″ section) 2 yards wide only



No. 6028 Embossed Inlaid—A Gauge
(Plate shows 34″ x 32″ section) 2 yards wide only

No. 6122 Embossed Inlaid—A Gauge
(Plate shows 34″ x 32″ section) 2 yards wide only

No. 6042 Embossed Inlaid—A Gauge
(Plate shows 34″ x 32″ section) 2 yards wide only



No. 6033 Embossed Inlaid—A Gauge
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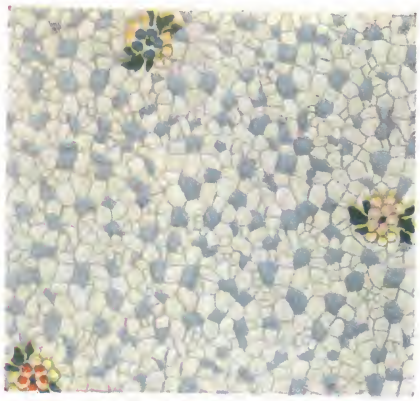

No. 6051 Embossed Inlaid—A Gauge
(Plate shows 34″ x 32″ section) 2 yards wide only

No. 6061 Embossed Inlaid—A Gauge
(Plate shows 34″ x 32″ section) 2 yards wide only

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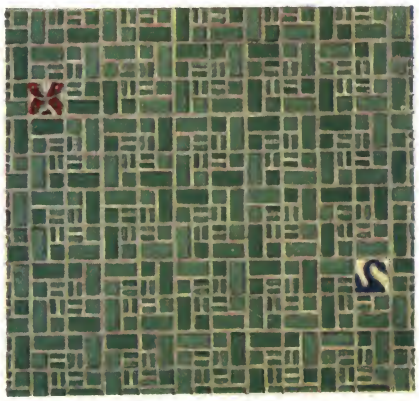
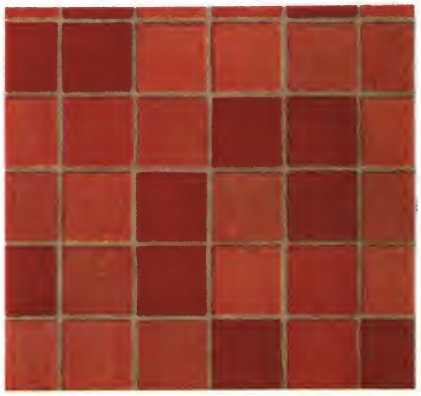
No. 6102 Embossed Inlaid—A Gauge
(Plate shows 34″ x 32″ section) 2 yards wide only



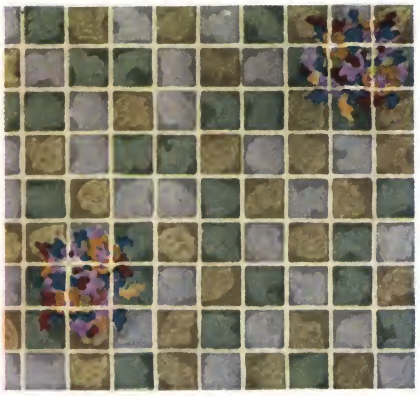
No. 6032 Embossed Inlaid—A Gauge
(Plate shows 34″ x 32″ section) 2 yards wide only

No. 6130 Embossed Inlaid—A Gauge
(Plate shows 17″ x 16″ section) 2 yards wide only

No. 6062 Embossed Inlaid—A Gauge
(Plate shows 34″ x 32″ section) 2 yards wide only



No. 6018 Embossed Inlaid—A Gauge
(Size of Blocks—about 6″ x 6″) 2 yards wide only



No. 6091 Embossed Inlaid—A Gauge
(Plate shows 34″ x 32″ section) 2 yards wide only

Eight Pleasing Colors in Jaspé, the All Purpose Floor

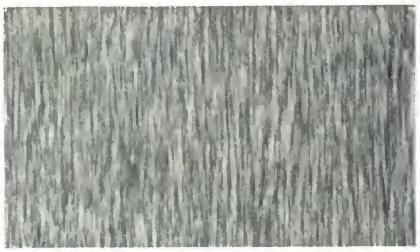
Taupe Jaspé Linoleum—Color No. 12
2 yards wide only. 6mm., $\frac{3}{16}$-in., Lt. B/S (.142″), B, and C Gauges

IN business houses, as well as in residences, there has been an increasing use of Jaspé Linoleum during the past few years. Its subdued, two-tone graining forms an inconspicuous, yet quietly dignified, background for rugs and furnishings.

Taupe, Dark Gray, and Light Brown Jaspé Linoleum are now available in the 6mm. Battleship Gauge. This extra-heavy weight is made especially for use in business and public building installations and will meet an increasing demand for a decorative floor material in large contract installations.

Rose Jaspé Linoleum—Color No. 14
2 yards wide only. Lt. B/S (.142″), B, and C Gauges

Green Jaspé Linoleum—Color No. 19
2 yards wide only. Lt. B/S (.142″), B, and C Gauges



Light Gray Jaspé Linoleum—Color No. 13
2 yards wide only. $\frac{3}{16}$-in., Lt. B/S (.142″), B, and C Gauges

Blue Jaspé Linoleum—Color No. 18
2 yards wide only. Lt. B/S (.142″), B, and C Gauges

Light Brown Jaspé Linoleum—Color No. 16
2 yards wide only. 6mm., $\frac{3}{16}$-in., Lt. B/S (.142″), B, and C Gauges

Dark Gray Jaspé Linoleum—Color No. 15
2 yards wide only. 6mm., $\frac{3}{16}$-in., Lt. B/S (.142″), B, and C Gauges

Dark Brown Jaspé Linoleum—Color No. 17
2 yards wide only. $\frac{3}{16}$-in., Lt. B/S (.142″), B, and C Gauges

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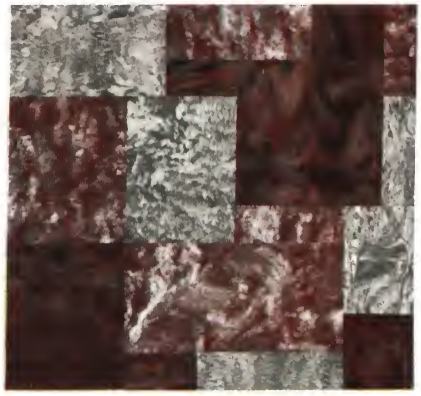
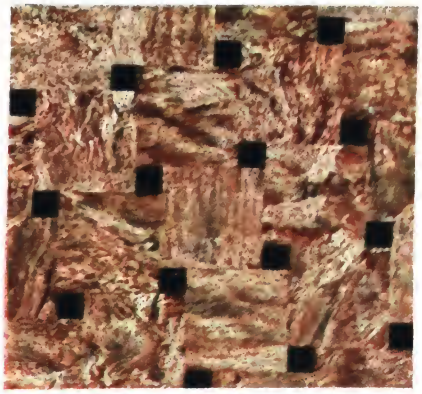
Rich Designs in Handmade Marble and Straight Line Inlaid



No. 62 Handmade Marble Inlaid—
AA Gauge (.142″)
(Plate shows 34″ x 32″ section) 2 yards wide only

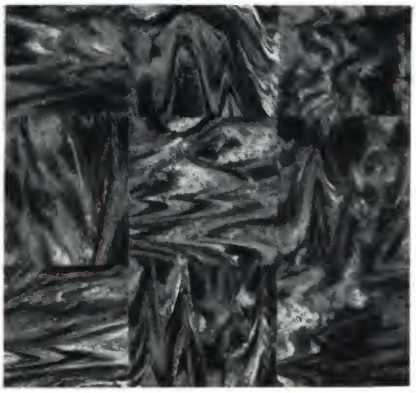
No. 73 Handmade Marble Inlaid—
AA Gauge (.142″)
(Plate shows 34″ x 32″ section) 2 yards wide only



No. 61 Handmade Marble Inlaid—
AA Gauge (.142″)
(Size of Large Block—about 8½″ x 8½″)
2 yards wide only

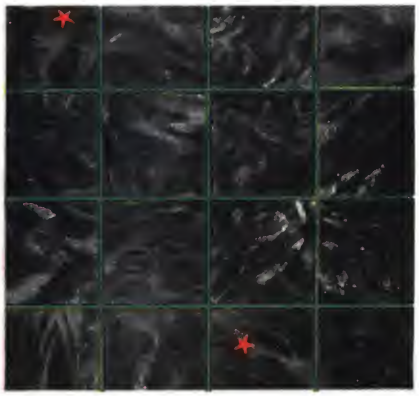
No. 70 Handmade Marble Inlaid—A Gauge
(Size of Blocks—6″ x 6″) 2 yards wide only

No. 90 Handmade Marble Inlaid—A Gauge
(Size of Blocks—9″ x 9″) 2 yards wide only

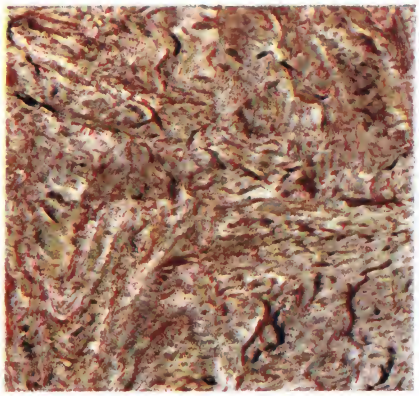


No. 89 Handmade Marble Inlaid—A Gauge
(Size of Blocks—12″ x 12″) 2 yards wide only

No. 71 Handmade Marble Inlaid—
AA Gauge (.142″)
(Plate shows 34″ x 32″ section) 2 yards wide only



No. 173 Handmade Marble Inlaid—A Gauge
(Size of Blocks—about 9″ x 9″) 2 yards wide only



No. 13137 Straight Line Inlaid—A Gauge
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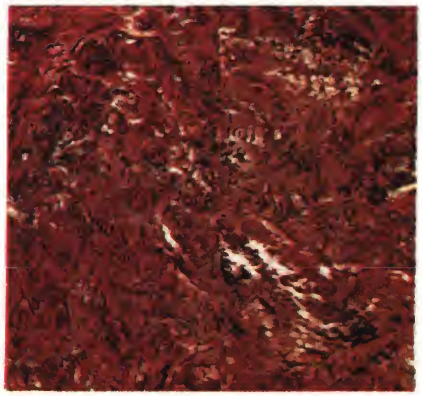

No. 13134 Straight Line Inlaid—A Gauge
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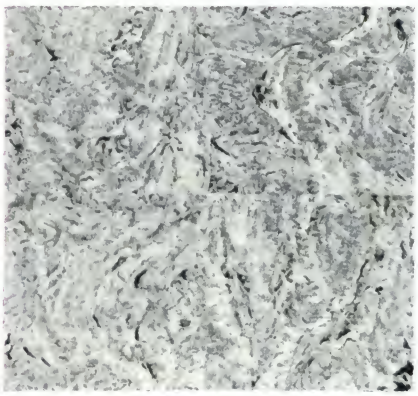

No. 13131 Straight Line Inlaid—A Gauge
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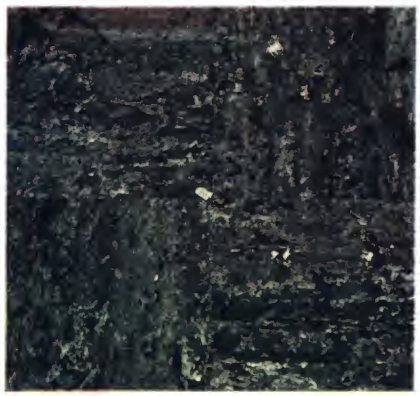

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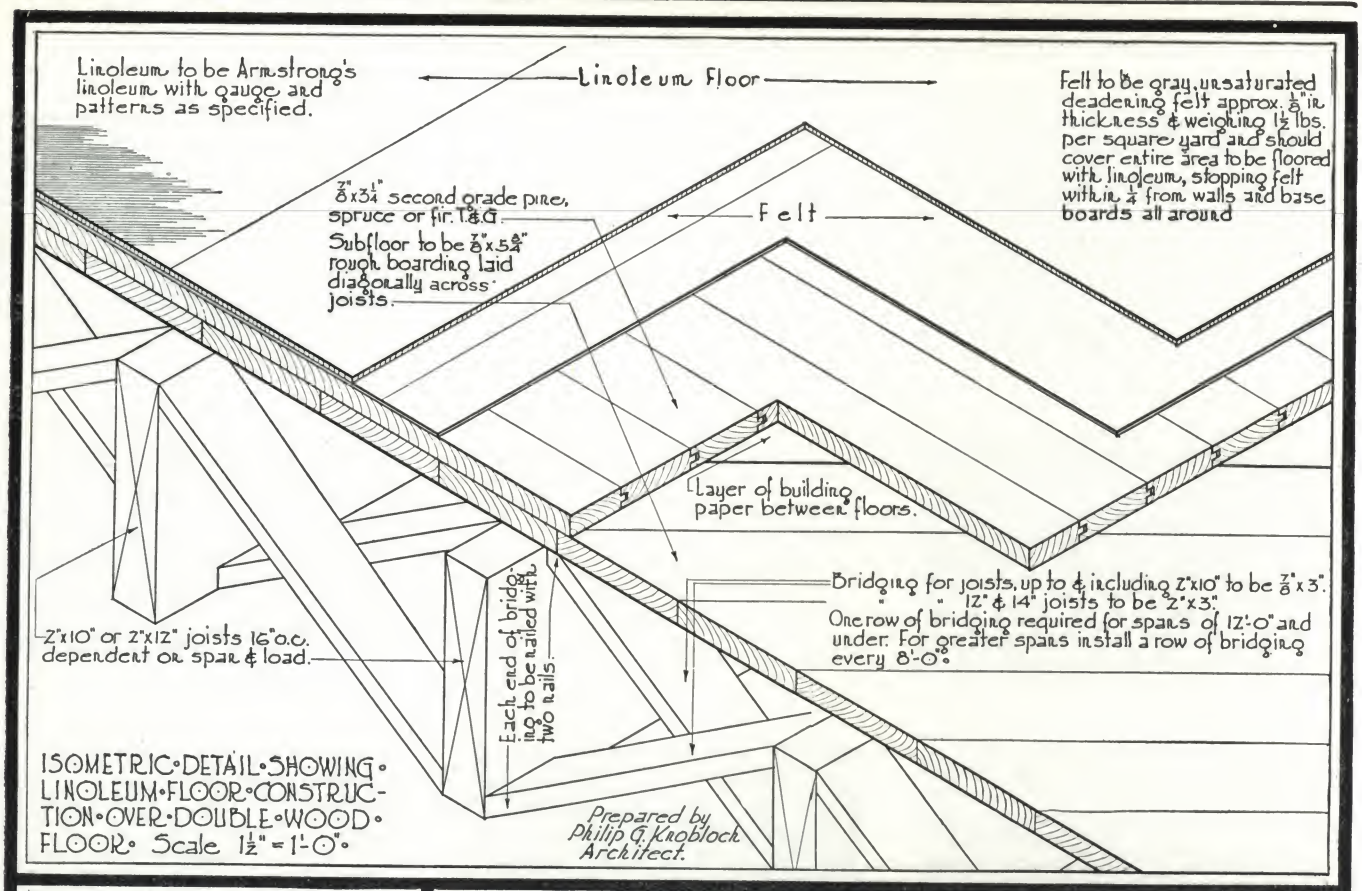

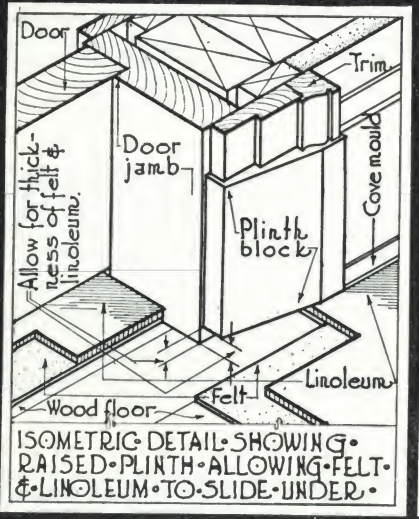

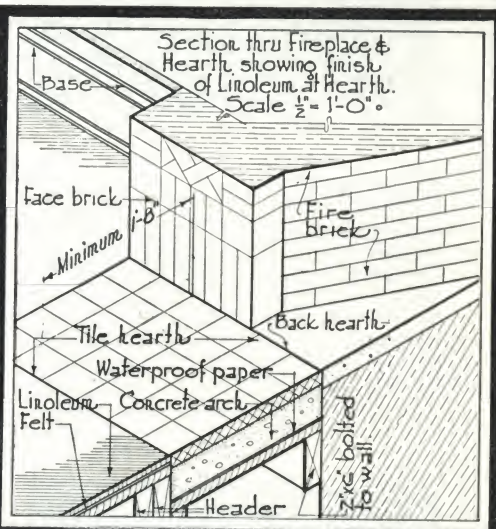

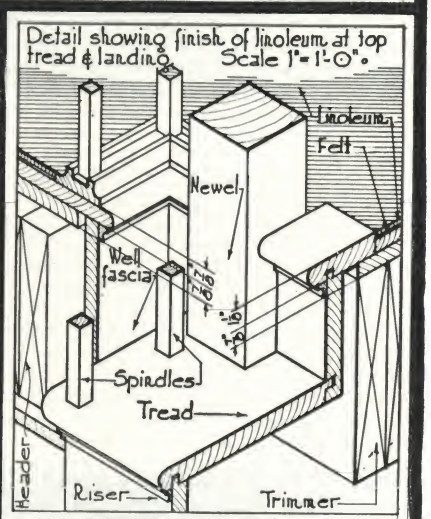

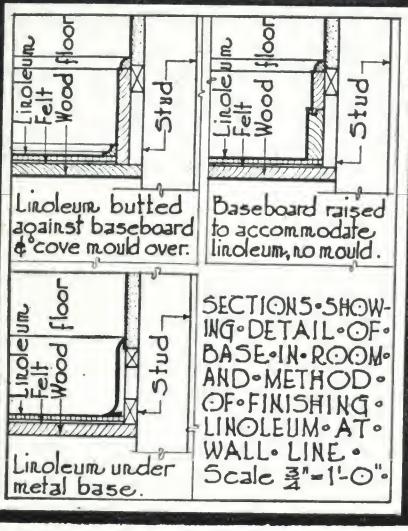

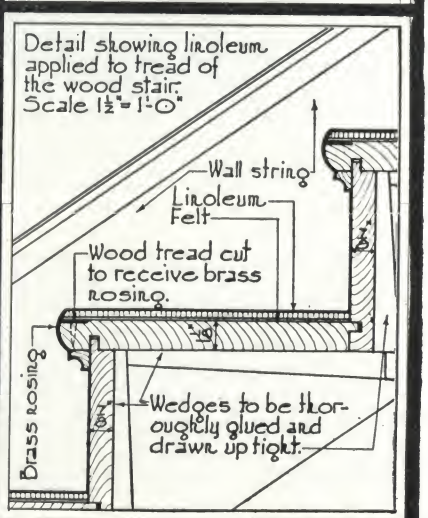

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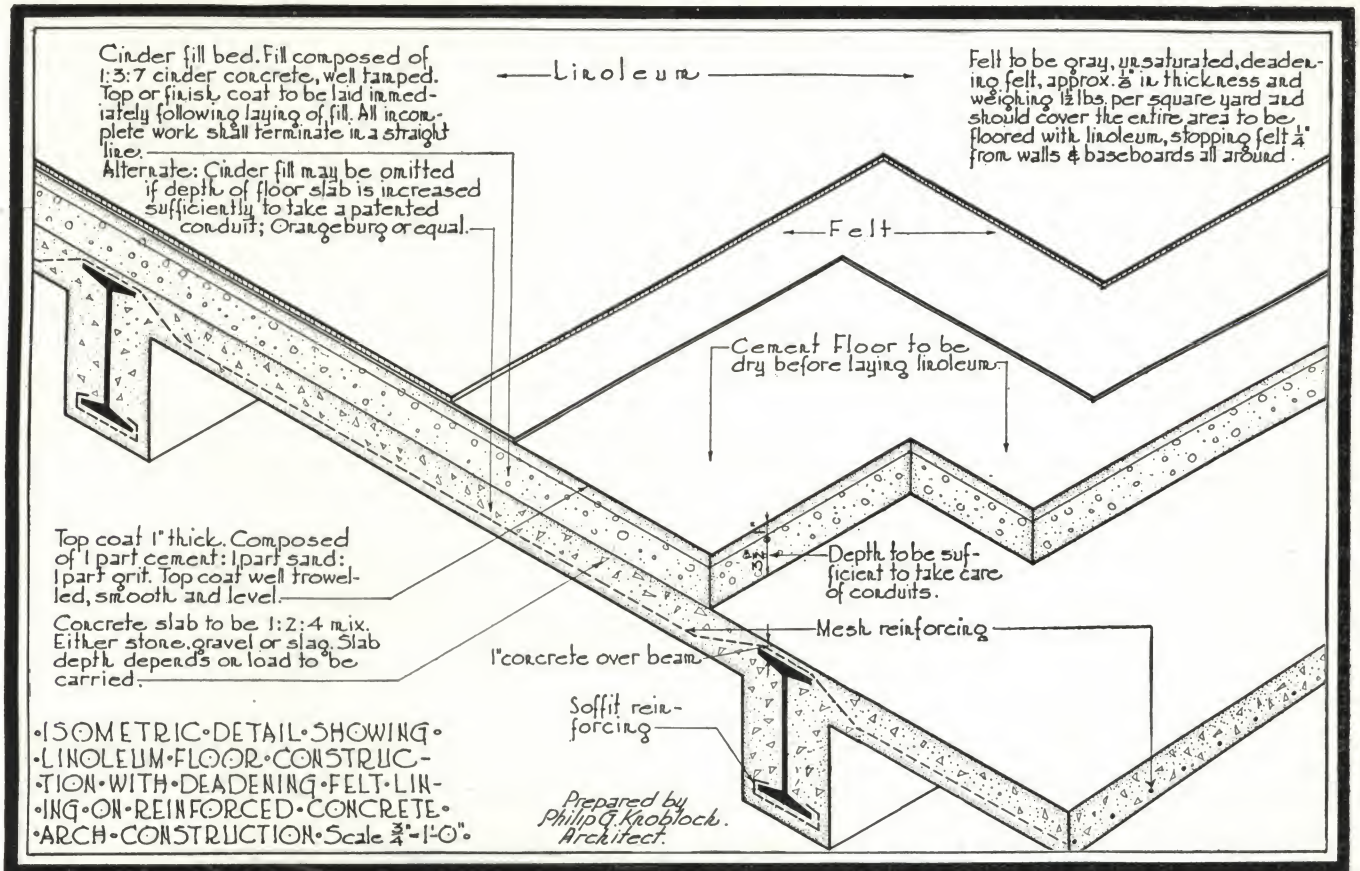
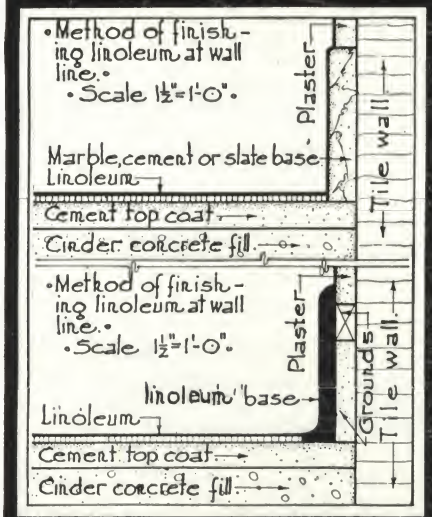
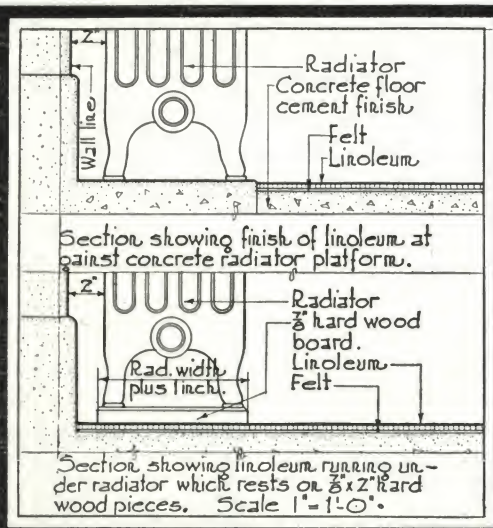
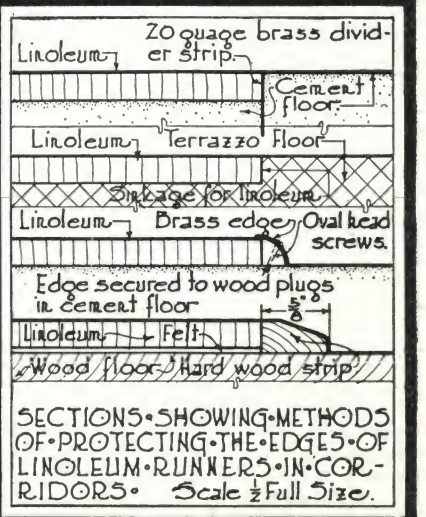
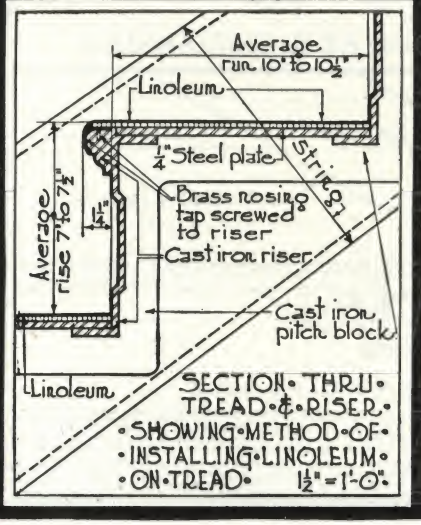


•ISOMETRIC•DETAIL•SHOWING•LINOLEUM•FLOOR•CONSTRUCTION•WITH•DEADENING•FELT•LINING•ON•REINFORCED•CONCRETE•ARCH•CONSTRUCTION•Scale ¾"=1'-0"•

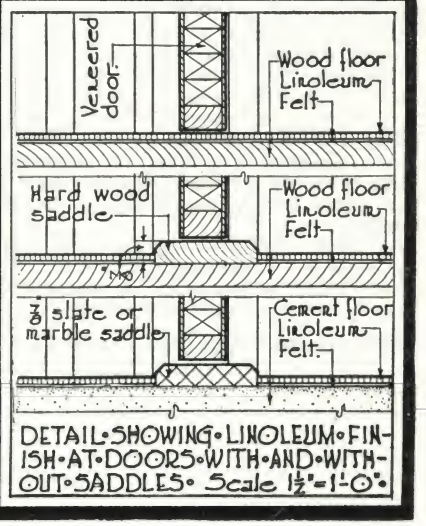








This improved furniture glider, called No-Mar Furniture Rest, is sold by the Bassick Co., Bridgeport, Conn. Made in several sizes. Finished in dark brown. Sold by furniture dealers



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tractor shall notify the architect (or owner) to give him an opportunity to inspect the completed job.

(8) Protection—After the linoleum floors have been inspected and approved, the general contractor shall cover with heavy paper the linoleum in those rooms where painting or other further work is to be done, as protection until the building is ready for occupancy.

(9) Lighting, Heating, Hoisting, and Power—Without cost to the linoleum contractor, the owner or general contractor shall maintain a temperature of at least 70° F. during the time the linoleum work is being done; he shall light the rooms sufficiently for efficient work; he shall furnish hoisting service (he shall furnish whatever power is necessary to scrub and polish the floor).

(10) Guarantee—The linoleum contractor shall guarantee the floor against all defects in material and workmanship for one year from date of completion of the job.

Other Types of Linoleum Installations

For specifications covering other types of linoleum installations and the dampproofing of concrete floors, write the Armstrong Cork Company, Floor Division, Lancaster, Pa.

Method of Laying Linoleum and Cork Carpet

Linoleum should be installed over a layer of linoleum lining felt.

Armstrong's Lining Felt, weighing 1½ lb. per sq. yd., and made in both 36 and 45-in. widths, should always be used in laying Armstrong's Linoleum. The felt is first pasted to the floor and the linoleum is then pasted to the felt. Seams and edges of the linoleum are sealed with waterproof cement. Laid in this manner, linoleum will wear longer and retain its resiliency indefinitely without buckling or shrinking. No retrimming is required. On concrete floors, linoleum should always be cemented, preferably over Armstrong's Lining Felt.

Method of Maintaining Linoleum Floors

The care of linoleum has for years been given much attention and study by the Armstrong Research Department, both in its laboratories and in the field. The development of the Accolac Process is one of the results of this research work. By this process, the surface of Armstrong's Linoleum is rendered practically dirt-proof and stain-proof through the application of a tough, transparent nitro-cellulose lacquer which seals the pores of the material, penetrating sufficiently to form a lasting bond. The result is a satin-smooth surface, in appearance very like a richly polished wax finish.

On small areas, where traffic is not severe, as in residences, small offices, shops, etc., this Accolac Process surface can be easily and beautifully maintained with a simple daily dust brushing or dry mopping. As appearance requires, the linoleum may be washed with clear warm water, or suds made with a mild soap like Ivory. The surface should then be polished about every six months, as appearance requires and traffic makes necessary, with Armstrong's Linoleum Wax.

Floors on which things are spilled or dirt is tracked, as in kitchens, bathrooms, and entries, should be given an occasional coat of Armstrong's Linoleum Lacquer. *Never attempt to relacquer waxed linoleum without first removing all the wax.*

Armstrong's Linoleum takes a beautiful wax finish, and on large areas, where traffic is heavy, waxing and polishing is the recommended treatment. As the surface of the linoleum is effectively sealed by the Accolac Process, only a small quantity of wax is required.

Where dirt and mud are tracked in from the street, a thorough washing with an occasional application of Armstrong's Linoleum Lacquer is recommended. But even on these restricted areas a properly developed wax finish forms a lustrous film, which takes the wear and also prevents the grime from being pounded down into the surface.

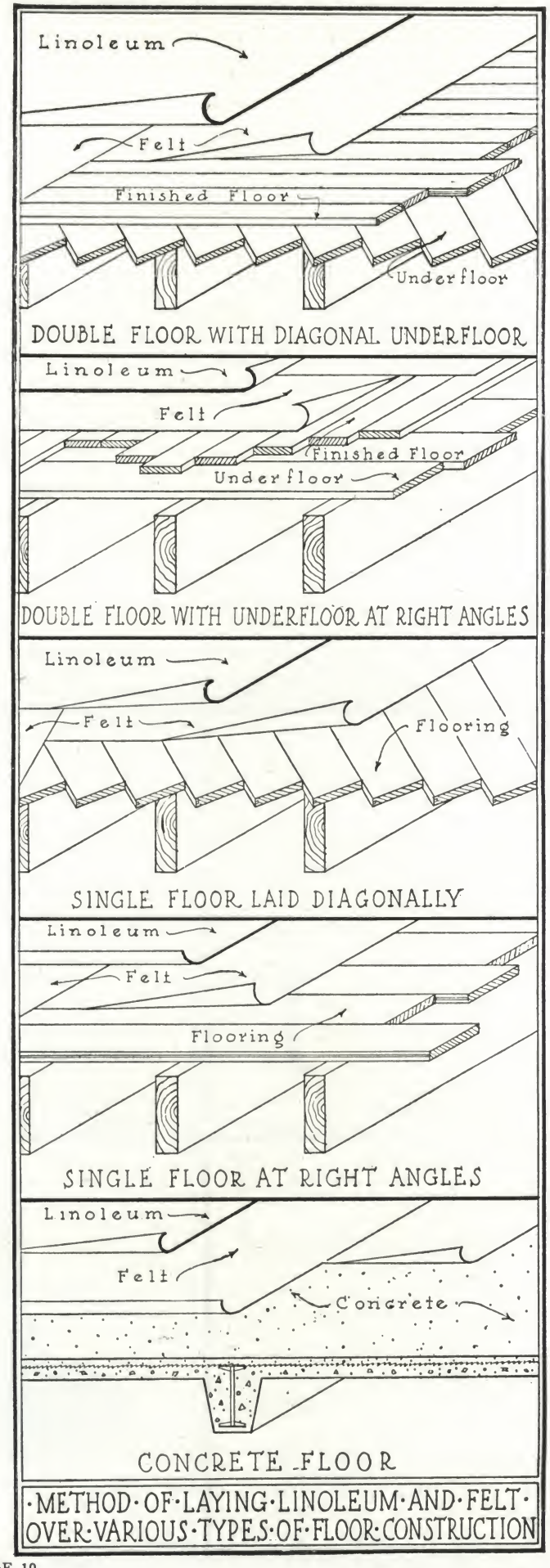
Daily or occasional polishings with an electric floor machine will help maintain the fine finish, with judicious applications of liquid wax wherever appearance demands. A complete rewaxing of the linoleum should prove necessary only a few times a year, depending on the severity of the usage of the floor.

Neither alkaline soaps nor scrubbing powders should be used on linoleum. Automobile and mild household soaps, such as Ivory, are recommended. A complete list of soaps that have been tested and found safe for linoleum will be sent on request.

Linoleum and the Fire Hazard

Scientific fire tests performed under exactly similar conditions on both linoleum and maple floors have shown that linoleum does not burn so readily nor hold fire so long as wood.

Linoleum is given a credit of 7% over wood floors in fireproof buildings by the Western Actuarial Bureau. This rating places linoleum in the same classification as concrete, terrazzo, and ceramic tile.



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Armstrong's Linotile and Armstrong's Cork Tile Made by the Makers of Armstrong's Linoleum

Armstrong's Resilient Tile Floors

For many years Armstrong's Linotile and Cork Tile have been giving satisfactory service, not only in all sections of the United States, but in foreign countries as well. Available in a wide variety of colors and sizes, Armstrong's Linotile and Cork Tile afford ample opportunity for the selection of individual designs and color schemes, and are now distributed through the leading retail handlers of Armstrong's Linoleum.

Guarantee

Armstrong's Linotile and Armstrong's Cork Tile are guaranteed by the Armstrong Cork Company, Floor Division, against defect in manufacture. The installation of floors will be guaranteed by local contractors who sell and lay the floors.

Short Specification

Architects desiring to use a brief form of specification will find the following entirely adequate:

Floors of Armstrong's Linotile and Cork Tile, of thickness, color, and design to be approved by the architect (owner) shall be furnished and installed in accordance with the standard Armstrong Specifications, by a qualified handler of Armstrong's Linotile and Cork Tile, whose work has been approved by the Armstrong Cork Company.

Samples and Literature

The book, "Custom-Built Floors of Cork," containing full information on Armstrong's Linotile and Cork Tile, with designs illustrated in full color, will be sent on request, with sample tiles.

Armstrong's Linotile

Linotile is a composition of powdered cork, oxidized linseed oil, gums, and pigments, thoroughly mixed and calendered into sheets ¼ in. thick. After being subjected to a seasoning process, these are cut into square or oblong tiles of various sizes and into narrow strips used for interlining between the tiles. At all stages of manufacture the sheets and tiles are kept flat to eliminate any tendency to curl.

Advantages

Because of the elasticity of the ingredients, Linotile is resilient and restful underfoot, non-slippery and practically noiseless. Being impervious to moisture, Linotile is perfectly sanitary, soilproof, and easy to clean.

Linotile can be laid over any smooth, dry base—wood, concrete, or metal. Special dampproofing is required when Linotile is installed over any base which rests directly on the ground.

Because of its wide range of colors and sizes, Linotile can be laid in a great variety of designs and lends itself readily to individual treatment.

Durability

Linotile has no grain like wood and will not splinter; neither will it crumble nor "dust" like hard, brittle materials.

Its resistance to abrasion is such that, when properly laid and cared for, Linotile will last for years under heavy traffic.

As Linotile does not appreciably expand or contract, it does not buckle or warp on the floor.

Sizes and Shapes

Linotile is made in the following standard sizes:

Squares—2, 3, 4, 6, 8, 9, 10, 12, 16, 18, 24 and 30 inches.

Oblongs—2x4 in.; 2x6 in.; 2x8 in.; 3x6 in.; 3x12 in.; 4x8 in.; 4x16 in.; 6x9½ in.; 6x12 in.; 6x18 in.; 6x36 in.; 8x16 in.; 9x18 in.; 9x36 in.; 12x18 in.; 12x24 in.; 12x36 in.; and 12, 18, 21, 24, 27, and 30x36 in.

Interlining Strips—For use between tiles, ¼, ⅜, ½, ¾, and 1 in. wide.

Border Feature Strips—In any width from one inch to four inches and of any length between 18 and 36 inches.

Special Designs—Linotile Linosets, feature inset figures, in any combination of two colors, as well as any special designs, can be cut to order.

Cove and Base—Plain and marble colors, 4 inches and 6 inches high.

Beveled Linotile Edging—One inch by 36 inches in all plain and marble colors.

Installation

Armstrong's Linotile is sold through retail handlers of Armstrong's Linoleum who are properly qualified to install floors. These dealers are also qualified to submit estimates for furnishing and laying Linotile floors, and all maintain specially trained mechanics to install Linotile.

Armstrong's Cork Tile

Armstrong's Cork Tile is made from a select grade of corkwood carefully cleaned, compressed in molds, and baked. The effect of the heat is to drive off any moisture and to liquefy the natural gum in the cork, which gives the separate particles a waterproof coating and serves to bind them together. To the baking process, also, is due the beautiful brown color of cork tile, three shades—light, medium, and dark brown—being produced by varying the time of baking.

After removal from the molds, the sheets are cut into tiles, $\frac{9}{16}$ or $\frac{5}{16}$ inch in thickness, of the desired sizes and colors.

Advantages

Armstrong's Cork Tile can be laid over any smooth, dry base—wood, concrete, or metal. When installed in basements, or over any floor in direct contact with the ground, a special dampproofing specification (furnished upon application) must be used.

Armstrong's Cork Tile is yielding and practically noiseless underfoot. Due to the frictional quality of cork, it affords a firm and sure foothold even when laid on a sharp incline.

Cork is a nonconductor of heat; hence, a floor of cork tile is always comfortable. In cold weather it does not permit the heat to be drawn away from the feet, as is the case with a hard tile or concrete floor.

While not fireproof, Armstrong's Cork Tile is fire-retarding. It will not burn or support combustion without the application of heat from some external source.

Durability

Armstrong's Cork Tile will meet the most exacting demands on the score of durability. The toughness and elasticity of the cork and the tenacious binding quality of the natural gum give it a high power of resistance to wear, abrasion, and shock. It will not "dust" or crumble. It will stand comparatively heavy loads and sudden temperature changes without cracking or breaking; and it will not splinter or warp. With all its other distinctive merits, Armstrong's Cork Tile has the lasting endurance of many floorings much harder and more costly.

Durability has a most important bearing on the question of price. The first cost of Armstrong's Cork Tile, while higher than that of some other materials, is not excessive when considered in relation to the length of service rendered and the many advantages afforded.

Colors, Shapes, and Sizes

Armstrong's Cork Tile is made in three shades—light, medium, and dark brown—and in the following shapes and sizes:

Squares—2, 3, 4, 6, 9, 12, and 18 inches.

Oblongs—2x6 in.; 2x9 in.; 3x9 in.; 3x12 in.; 4x12 in.; 6x12 in.; 6x18 in.; 6x36 in.; 9x18 in.; 9x36 in.; 12x18 in.; 12x24 in.; 12x36 in.; and 18x36 in.

Border Feature Strips—In any width from one inch to four inches and of any length between 18 and 36 inches.

Cove and Base—Sanitary cove and base in the standard 6-inch height are furnished in all three shades.

Installation

Armstrong's Cork Tile is sold and installed by local retail handlers of Armstrong's Linoleum. These stores, located in all principal cities, have trained workmen and are qualified to furnish estimates of cost and other information.

Continued on next page

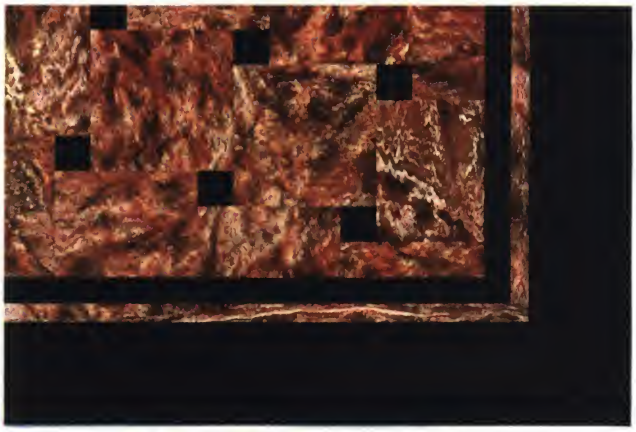
Armstrong's Linotile Design No. 500
Consists of: Tourmaline No. 100 and Matrix No. 110

Armstrong's Linotile Design No. 513
Consists of: Ivory No. 20, Light Gray No. 52, and Jade No. 70

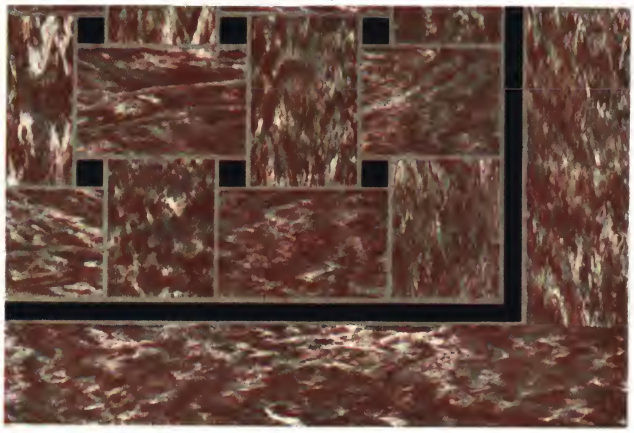
Armstrong's Linotile Design No. 515
Consists of: Ruby No. 11, Black No. 30, Light Gray No. 52
Dark Gray No. 54, Jade No. 70, and Emerald No. 75

Armstrong's Linotile Design No. 531
Consists of: Ivory No. 20, Black No. 30, Light Gray No. 52
and Dark Gray No. 54

Armstrong's Linotile Design No. 545
Consists of: Orange No. 80, Agate No. 102, Matrix No. 110
Ocean Green No. 131, and Pearl No. 140



Armstrong's Linotile Design No. 551
Consists of: Black No. 30 and Sienna No. 150



Armstrong's Linotile Design No. 563
Consists of: Black No. 30, Light Gray No. 52, and Sicilian No. 181

Armstrong's Linotile Design No. 661
Consists of: Black No. 30, Orange No. 80, Barite No. 103
Autumn No. 122, Zircon No. 134, and Alabaster No. 112

Continued on next page

Armstrong's Linotile Design No. 650
Consists of: Tourmaline No. 100 and Pearl No. 140

Armstrong's Linotile Design No. 671
Consists of: Red No. 10, Black No. 30, Navy No. 46, Dark Gray No. 54, Dark Brown No. 64, and Jade No. 70

Armstrong's Cork Tile—Light

Armstrong's Cork Tile—Medium

Armstrong's Cork Tile—Dark

Armstrong's Cork Tile Design No. 700
Consists of: Medium Shade and Dark Shade Cork Tiles

Armstrong's Cork Tile Design No. 720
Consists of: Light Shade and Dark Shade Cork Tiles

Armstrong's Cork Tile Design No. 740
Consists of: Light Shade, Medium Shade, and Dark Shade Cork Tiles

Armstrong's Cork Tile Design No. 750
Consists of: Medium Shade and Dark Shade Cork Tiles

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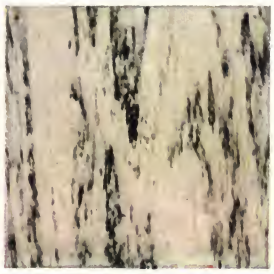
Tourmaline No. 100

Agate No. 102

Barite No. 103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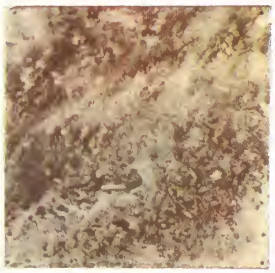
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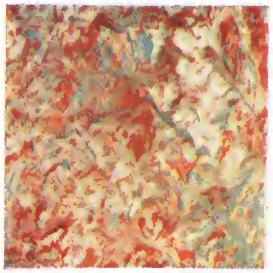
Onyx No. 120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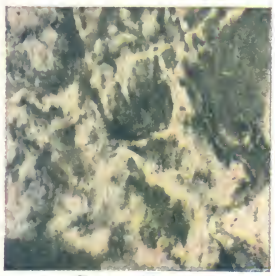
Algerian No. 124

Ocean Green No. 131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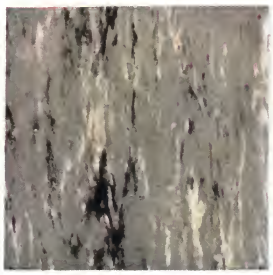
Pearl No. 140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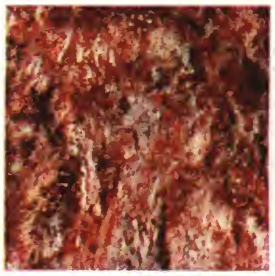
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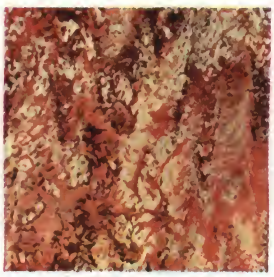
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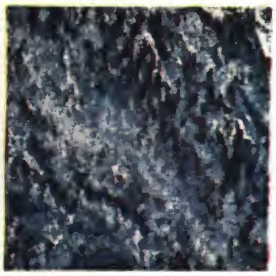
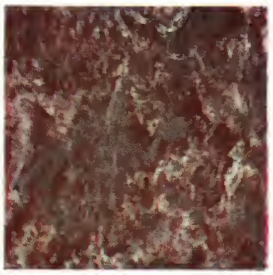

Delft No. 161

Celestite No. 162


Sicilian No. 181

Red No. 10

Ruby No. 11

Ivory No. 20

Black No. 30

Sky No. 41

Navy No. 46

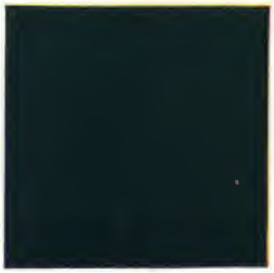
Light Gray No. 52

Dark Gray No. 54

Light Brown No. 62

Dark Brown No. 64

Jade No. 70


Emerald No. 75

Orange No. 80

CERTAIN-TEED PRODUCTS CORPORATION

FLOOR COVERING DIVISION

GENERAL OFFICES
100 East 42nd Street
NEW YORK, N. Y.

For Sales Offices, see Gypsum Plaster pages

PLANTS: PHILADELPHIA, PA., AND TRENTON, N. J.

Products

CERTAIN-TEED BATTLESHIP, PLAIN and INLAID LINOLEUM; LINOLEUM FELT; LINOLEUM PASTE; PREPARED WAX, Liquid and Paste.

For our other products, see Manufacturers' Index.

CERTAIN-TEED LINOLEUM

Certain-teed Linoleum, like all other products bearing the Certain-teed label, is of the highest quality. It is manufactured from the best raw materials obtainable. Each ingredient is carefully tested by expert chemists to assure maintenance of the rigid Certain-teed standards. Certain-teed Linoleum is used in important buildings all over the world and is unhesitatingly specified where quality is of prime consideration.

TRADE-MARK

It is germicidal, impervious to liquid, offers remarkable resistance to wear, is soft to the tread, resilient and quiet.

Certain-teed Linoleum is made under formulas that are the result of long, practical experience, by an organization that has been making these goods for many years. The manufacturing processes are under constant inspection and chemical control. Each piece of Certain-teed Linoleum is carefully inspected before it leaves the factory—only products measuring up to the exacting Certain-teed requirements are sold under the Certain-teed label.

Battleship Linoleum (U. S. Navy Standard)

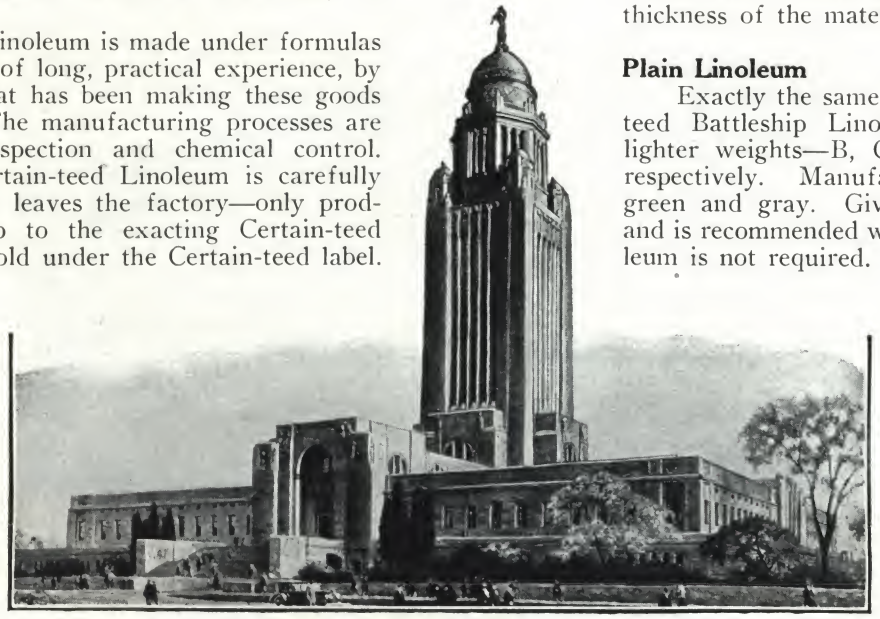
Certain-teed Battleship Linoleum is extensively used in office buildings, hospitals, schools and similar buildings where the floor surface is subjected to unusually hard wear.

The resilience, long-life, sound-deadening properties, economy and good appearance of this product recommend it to architects.

Made in brown, green and terra cotta gray, in three weights—heavy, medium and light—the only difference between the various weights being in the thickness of the material.

Plain Linoleum

Exactly the same product as Certain-teed Battleship Linoleum but made in lighter weights—B, C, D and E gauge, respectively. Manufactured in brown, green and gray. Gives excellent service and is recommended where the heavy linoleum is not required.



Nebraska State Capitol, Lincoln, Neb.
BERTRAM GROSVENOR GOODHUE ASSOCIATES, Architects
J. L. BRANDIES & SONS — ORCHARD & WILHELM, Linoleum Contractors
10,000 yd. of Certain-teed Battleship Linoleum

Process and Dimensions

Both Certain-teed Battleship Linoleum, U. S. Navy Standard, and Certain-teed Plain Linoleum are made by the Walton Process.

All Certain-teed Battleship and Plain Linoleum is manufactured 2 yards wide, and packed one roll of approximately 60 square yards to the case.

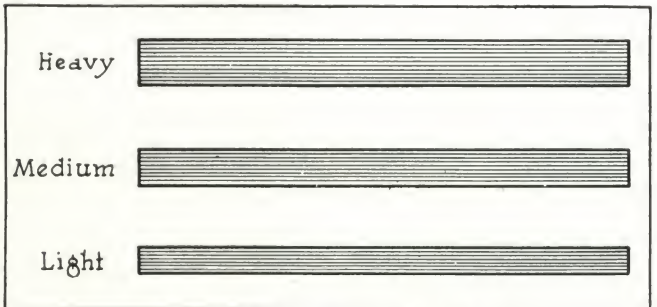


DIAGRAM OF GAUGES
Battleship Linoleum, U.S. Standard Gauge

BATTLESHIP LINOLEUM

Gauge	Average thickness	
	In.	Mm.
Heavy	.235	6.00
Medium	.187	4.76
Light	.142	3.60

PLAIN LINOLEUM

Gauge	Average thickness	
	In.	Mm.
"B"	.118	3.00
"C"	.095	2.40
"D"	.079	2.00
"E"	.071	1.75

Continued on next page

Cork Carpet

This material is unexcelled for its sound-deadening properties and resilience. It finds its greatest use in auditoriums, churches, libraries, and in gymnasiums as a covering for basketball floors and running tracks. It makes an attractive floor and will give years of service. It is made in brown and green.

Gauge	Thickness	
	In.	Mm.
"A"	.264	6.70
"AA"	.228	5.80

Inlaid Linoleum

The Certain-teed line offers a wide range of patterns and a variety of colors, giving many designs to match any color scheme.

Certain-teed Linoleum Felt

Linoleum Felt should always be used under linoleum or cork carpet, when laid over wood floors. The felt absorbs the seasonal expansion and contraction of the boards, prolongs the wear and increases the resilience of the linoleum. Over concrete floors, felt is not absolutely essential, but its use is recommended. It insures better adhesion, a smoother wearing surface, greater resilience, and makes it possible to take up and relay the linoleum without damage.

We recommend using Certain-teed Linoleum Felt, a resilient lining felt specially manufactured for use under linoleum. It comes in rolls of 25 to 50 yds. Weight about 1½ lb. per sq. yd.

Certain-teed Linoleum Paste

A non-waterproof linoleum paste that spreads easily and dries quickly. It is unaffected by heat or cold. One gallon covers about 12 square yards.

Certain-teed Waterproof Cement

Properly applied, this cement prevents seepage of cleaning water into joints at seams and edges. Characterized by exceptional adhesion, positive resistance to water, good covering power, and complete freedom from any ingredients harmful to linoleum. One gallon covers about 60 sq. ft., equivalent to the average seams and edges of 40 sq. yds. of linoleum.

Certain-teed Prepared Wax

A prepared wax of the highest quality. Especially suited for waxing Battleship, Plain and Inlaid Linoleum, in offices, public buildings or in homes. This wax forms a protective coating and imparts a highly lustrous finish that improves the appearance of the linoleum.

Recommended for use on linoleum and other surfaces requiring a high quality wax.

Available in both Paste and Liquid forms.

Park Square Building, Boston, Mass.
DENSMORE & LE CLEAR, Architects
31,000 yards of Certain-teed Linoleum used in this building

Architects' Specification for Laying Linoleum

General—The contractor shall furnish all material and labor necessary to properly lay the linoleum on the floors indicated on the drawing (or specified herein) as follows:

Lighting, Heating, Hoisting and Power—The required lighting, heating (maintained at 70° F.), hoisting and power will be provided by the General Contractor (or Owner) for the work under this contract.

This contractor shall notify the General Contractor (or Owner) when this service will be required.

Note: The above requirements regarding heat, etc., should be included in Specification for General Contract Work.

(1) Preparation of Floors—

Note: Use paragraph 1a, 1b or 1c depending on type of floor to be covered.

Note: Linoleum should not be laid on floors directly in contact with the ground or on any floor surface under which there is no air space of at least 18 in., unless floor is thoroughly waterproofed.

(1a) *Wood Floors*—Contractor shall make sure that all wood flooring is securely nailed to the supporting members; that floor surface is thoroughly seasoned. The floor shall be free from projecting nails, loose knots or protrusions. No foreign matter such as dirt, plaster, etc., shall be left on the floor surface.

The sub-floor shall be graded sufficiently below the finished floor level to allow for the thickness of linoleum selected and in addition the thickness of felt if any is used.

Sub-floor shall be planed, scraped or sanded to a smooth level finish. Contractor shall furnish a satisfactory crack and crevice filler and fill all seams or joints that are open more than ⅛ in. between boards.

(1b) *Concrete Floors*—Concrete sub-floor shall be cleaned smooth, and shall be properly seasoned and free from all moisture. Contractor shall make sure that sub-floor is in absolutely satisfactory condition before proceeding with the laying of linoleum. All cracks, expansion joints, etc., shall be filled with plaster of paris or similar material so as to give a smooth and level sub-floor surface.

The sub-floor shall be graded sufficiently below the finished floor level to allow for the thickness of linoleum selected and in addition the thickness of felt (about ⅛ in.) if any is used.

(1c) *Old Floors*—When linoleum is to be laid on an old floor which has been varnished or painted the varnish or paint

Continued on next page

must first be removed by sanding or by using paint and varnish remover.

When the old floor has been oiled it must first be scrubbed with a strong lye solution. This operation must be repeated every 24 hours until all traces of the oil have been removed.

When the old floor has been waxed, the old wax must be completely removed by washing with gasoline or a strong alkaline solution.

(2) Laying Felt—Where felt is specified for use under linoleum, it shall be cemented to the under floor with non-waterproof paste, which shall be evenly applied over the entire surface of the floor. Felt shall be laid in strips in the opposite direction to the run of the boards of a wood floor. It shall be neatly fitted around all projections, pipes, etc., to make a smooth surface free from cracks and unevenness. Strips shall not overlap, but shall be closely butted together and rolled with a heavy iron roller to remove air bubbles and to level off the surface.

(3) Linoleum—Linoleum used for this work shall be Certain-teed ..... (insert kind such as Battleship, Plain, Inlaid, etc.) Colors..... (insert brown, green, gray or terra cotta for Battleship; brown, green or gray for Plain). It shall have a thickness of ..... (see table for this information). Linoleum contractor shall furnish with this proposal three samples of linoleum on which his proposal is based. One sample shall be returned to the contractor, the others shall be retained by the architect for comparison with the linoleum furnished.

(4) Paste—Paste for laying linoleum shall be Certain-teed Linoleum Paste.

Note: Tests show that, in adhesive quality Certain-teed Linoleum Paste is equaled by few and surpassed by none. Although there is no Government standard for Linoleum Paste, our chemists have used the breaking point standard for waterproof cement, which is 300 lb. minimum. Certain-teed paste shows an average breaking point well in excess of this minimum.

Note: If joints and edges are to be waterproofed use par. (4a).

(4a) *Waterproof Cement*—Waterproof Cement for waterproofing all joints and edges of the linoleum shall be Certain-teed Waterproof Cement.

(5) Method of Application—

(5a) *Heating*—The linoleum contractor shall notify the general contractor sufficiently in advance so that the latter may supply a temperature of 70° F., starting at least 48 hours before the linoleum work is begun and maintained continuously until 24 hours after the linoleum has been laid.

The linoleum contractor shall be responsible for seeing that these conditions are met and shall not proceed with the laying of the linoleum until they have been met.

(5b) *Unrolling*—Linoleum shall not be unrolled until it has been subjected on the job to a temperature of 70° F. for a minimum of 48 hours with rolls loosened.

(5c) *Fitting*—Linoleum shall be rolled out and cut in lengths required with as few seams as possible. Allowances shall be made for trimming at the ends of each strip, also the edges of Battleship or Plain Linoleum shall have ½-in. lap along each sheet at seams. The sheets shall run parallel to the length of the room, if possible, and shall be straight and tight. Small pieces of linoleum which would produce unnecessary seams shall not be used.

In laying corridors over 6 ft. wide, one 6-ft. strip with a border on either side in the same color or in some harmonizing color may be centered; this puts the seams on either side of the line of maximum wear and gives a better appearance.

Linoleum shall be cut to fit accurately against all walls, pipes, outlets, or other permanent projections from the floor.

(5d) *Applying*—The body of the linoleum shall be secured with paste as specified in paragraph 4. This paste shall be applied evenly to the underflooring the full width of the linoleum strip. Sufficient paste shall be applied to cause the burlap to thoroughly adhere to the sub-floor.

Note: 1 gallon will be required to every 10 or 12 square yards.

The linoleum shall then be rolled thoroughly with a 150-lb. roller to smooth out any air pockets or blisters.

Seams where material has been overlapped shall be made smooth, even and tight by cutting through both thicknesses of the material with a sharp linoleum knife.

Note: This method can not be used on pattern goods. Pattern goods shall be trimmed and edges butted together with pattern evenly matched. Change the above paragraphs to cover this condition.

Edges shall then be rolled and weighed down with weights which are thoroughly dry. These weights shall remain on the seams for at least two hours. If paste should come in contact with the surface of linoleum it shall be wiped off immediately with a damp cloth.

Note: Where waterproof joints and edges are desired use the paragraph (5e).

(5e) *Waterproofing Joints* — All joints and edges shall be waterproofed. The method of application shall be the same as above except that an area 6 in. wide along the joints and edges is left uncovered with non-waterproof paste. The waterproof cement shall then be applied to this uncovered area.

(5f) *Protection*—When single strips of linoleum are laid as runners, the edges shall be protected with a strip or binder of wood or metal. The edges of linoleum at doorways, without thresholds, shall be similarly protected where linoleum is applied to the surface of the floors.

(5g) *Cleaning*—The linoleum contractor shall (upon completion of the work) clean the floors of all surface material leaving them ready for occupancy.

Note: If ordinary care is taken in laying the linoleum, it can be cleaned by a thorough sweeping. If dirt or other foreign matter cannot be removed by sweeping, go over the affected areas with a cloth dampened with cold water. In stubborn cases, use a cloth, warm water, and an alkali-free soap compound. Foreign matter not soluble in water can be removed with a gasoline-soaked cloth. Since the wax finish of the linoleum is somewrat soluble in gasoline, the removal of foreign matter by this method must be followed by the application of a coat of Certain-teed Prepared Wax. Allow the wax to dry ten minutes and buff.

United Shoe Machinery Building, Boston, Mass.
JOHN H. PRAY & SONS CO., Linoleum Contractors
PARKER, THOMAS & RICE, Architects
28,000 yd. of Certain-teed Battleship Linoleum

A Few Representative Installations of Certain-teed Linoleum

Daily News Building, New York, N. Y.
Hooper & Harrison's Building, Brisbane, Australia
First National Bank, St. Louis, Mo.
Chicago Trust Building, Chicago, Ill.
Yusen Building, Tokyo, Japan
Public Schools Nos. 31, 74, 63, 76, Buffalo, N. Y.
County Courthouse, Albany, N. Y.
Nebraska State Capitol, Lincoln, Neb.
University of California, Berkeley, Cal.
Chanin Building, New York, N. Y.
Standard Oil Co., Birmingham, Ala.
Mt. Holyoke College, Mt. Holyoke, Mass.
Hollywood Hospital, Hollywood, Cal.
Los Angeles Public Library, Los Angeles, Cal.
Receiving Hospital, Detroit, Mich.
Ford Assembly Plant, Charlotte, N. C.
First National Bank, Boston, Mass.
Chamber of Commerce Building, Boston, Mass.
U.S.S. Northampton
Anglo & London Paris National Bank, San Francisco, Cal.
Bethlehem Steel Co., Johnstown, Pa.
Phillips Andover Academy, Andover, Mass.
California Bank Building, Los Angeles, Cal.
Kresge Building, Detroit, Mich.
Kansas University, Lawrence, Kan.
Federal Reserve Bank, Minneapolis, Minn.
Schaff Building, Philadelphia, Pa.
Evansville College, Evansville, Ind.
National Cash Register Co., Dayton, Ohio
Lincoln Building, New York, N. Y.
Bank of Italy, San Jose, Cal.
Pacific Building, Portland, Ore.
Sacramento High School, Sacramento, Cal.
Genesee Building, Buffalo, N. Y.
First Wisconsin National Bank, Milwaukee, Wis.
Statler Hotel, Boston, Mass.

BARRY & STAINES LINOLEUM, INC.

EXCLUSIVE REPRESENTATIVE
ARTHUR T. LEYDEN
295 Fifth Avenue, NEW YORK, N. Y.

FACTORIES

ENGLAND: Staines, Middlesex SCOTLAND: Kirkcaldy FRANCE: Rouen CANADA: Farnham, Que.

Products

Staines Inlaid Linoleum.
Barry's Inlaid and Plain Linoleum.
Barry's Ruboleum.

History

This company is the result of a merger of the interests of the Linoleum Manufacturing Co. Ltd. and Barry, Ostlere & Shepherd, Ltd. The former company, established in 1864, is the original manufacturer of linoleum, and was formed to develop the patents of the inventor of linoleum, Frederick Walton.

Modest premises were taken at Staines, a little town on the River Thames, for the factory site. It is within twenty miles of the city of London.

Inlaid linoleum was first produced at Staines in 1880, and in 1894 Staines Carpet Inlaid Linoleum was developed. It faithfully reproduced the intricate designs and colorings of the Oriental rug, and is now successfully used on floors where the more severe tile effect is unsuitable.

These inventions revolutionized the linoleum industry. They and the still later developments which have arisen from them form the greater part of this company's business today.

Other Staines Products

Staines continued to create novelties, and in 1905 Staines Parquetry Linoleums, imitating patterned oak flooring, were introduced.

Staines Marble Linoleums followed in 1907, and held the market without a rival for many years.

In 1924 one of the greatest of Staines successes, Staines Patent Silver Grain Parquetry, was placed on the market. This floor covering reproduces precisely the quartered or silver grain of the oak, the delicate pink of tulipwood or the rich tone of mahogany. Beautiful patterns are obtained when the various wood effects are blended together.

Finest Quality of Raw Materials

The factory at Staines employs about 2000 people, and practically its whole output is high class Inlaid goods.

The linoleum composition is made from the best and purest ingredients that the markets of the world

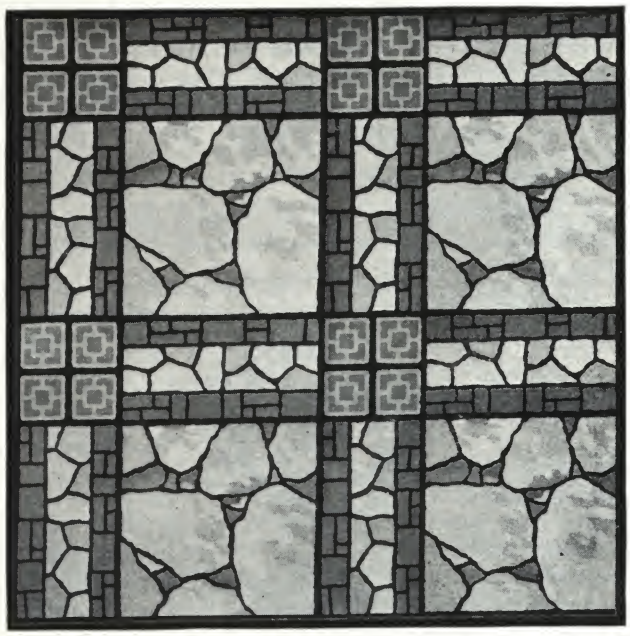
Library, St. John's College, Brooklyn, N. Y.—No. 1444 Staines First Gauge Super Marble with 6-in. Squares and Bands

Continued on next page

afford, and that money can buy. The policy is that the name of Staines must not appear on any goods but the best. The standard set is very high—being nothing less than absolute purity. Pure linseed oil, pure cork, pure Kauri gum, and pure pigments which are absolutely fast to sunlight, are used.

Barry, Ostlere & Shepherd, Ltd.

This old established Scotch firm of Linoleum manufacturers, the other firm involved in the merger, have a worldwide reputation as makers of all types of linoleum. They are particularly well known for the jaspés, moires and plain linoleums which they make. The colors are cunningly blended, so that beautiful pastel effects are obtained in the jaspés, and this type of linoleum is being used to a large extent in bedrooms as a fitting foundation for scatter rugs. Jaspé is also very popular in offices for its artistic effect.



No. 925 Staines Mosaic Linoleum with 12-in. Squares and 6-in. Bands

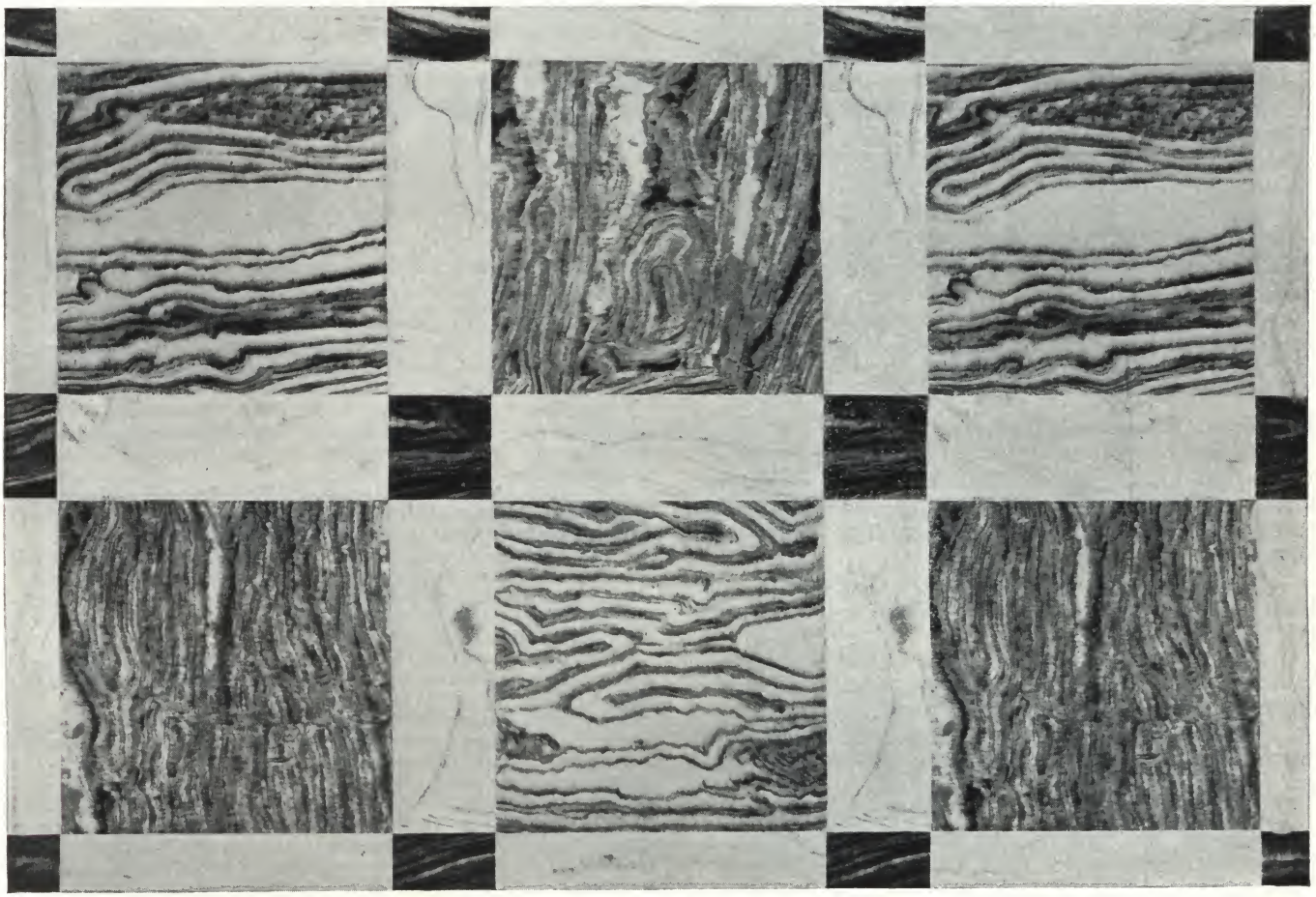
Ruboleum

Ruboleum is another product of Barry's, and is made in plain colors, as well as in reproductions of marbles and jaspé. This cloth—¼ in. in thickness—is cut up into various block patterns and installed similar to tile. It is used in spaces where a floor covering is required that will stand heavy wear.

Service and Information

Barry & Staines Linoleum is of the finest quality, guaranteed as to fastness of color, and to give the maximum wear and service. Due precautions should be taken in laying these fine grades of floor covering. Architects should use a good standard specification, and insist on careful laying, cementing, rolling and waxing. We shall be glad to submit samples and recommend colors and patterns for any installation that the architect may be called upon to specify.

Catalogue of patterns and designs sent upon request.



No. 1441 Staines First Gauge Super Marble Linoleum with 18-in. Squares and 6-in. Bands

THE GEORGE W. BLABON COMPANY

ESTABLISHED 1851

Manufacturers of Linoleum, Kindred Products and Linseed Oil

PHILADELPHIA, PA.

BRANCH OFFICES: NEW YORK, N. Y., and CHICAGO, ILL.

Address all communications to the Head Office of the Sales Department:
BLABON-SANDURA CO., INC., Finance Building, PHILADELPHIA, PA.

Products

BLABON'S "INVINCIBLE" BATTLESHIP LINOLEUM.
BLABON'S PLAIN LINOLEUM.
BLABON'S CORK CARPET.
BLABON'S JASPÉ LINOLEUM.
BLABON'S INLAID LINOLEUM: Marble Tile, Straight Line, Fine Line and Moulded.
BLABON'S PRINTED LINOLEUM.

Also Blabon's Rugs of Genuine Linoleum; Blabon's Linseed Oil; Blabon's Linoleum Lining Felt; Blabon's Linoleum Paste (Water Resistant); Blabon's Cement (Waterproof); Blabon's Linoleum Roller (150 lbs.); Portable "Scooter" Roller.

LABEL
The identifying mark on the face of all Blabon's Linoleum

Blabon's New Type Inlaid and Battleship Linoleum

Since June 20th, 1928, all grades of Blabon's Inlaid Linoleum have been given the exclusive LACAWAX finish. Blabon Inlaids are first processed with the highest grade, non-cracking lacquer, which is applied in such a manner that it hermetically seals the dirt-absorbing pores of the linoleum, after which a thick coat of wax is applied to the surface, making it lustrous and practically scratchproof.

A Finished Floor When Installed—Blabon's Inlaid Linoleum, being both processed with lacquer and surface-waxed, is ready to install as a *finished floor.* In this age, when the question of labor involved in any operation is of vital importance, this improved feature in Blabon's Inlaid Linoleum is greatly appreciated by all. Another exclusive feature is their resilient cork-filled back (patent applied for) which makes them hug the floor closely, and easier to lay. Blabon's Battleship Linoleum can now be supplied either lacquer-processed and waxed or with standard finish.

Linoleum Designs and Colors

Blabon's Linoleum is today made in a most satisfying variety of designs and color harmonies, portraying, most realistically, the style of tile, mosaic, marble, carpet, and other types of ornamentation suitable for almost any type building.

¼-in., 6 M/M and Light (⅛-in.) Battleship Linoleum comes in brown, gray and green; $\frac{3}{16}$-in. in brown, gray, green and black.

Plain Linoleum is made in A, B and C gauges in brown, gray, green, blue and black, while D gauge is made in brown, gray, green and black only.

Jaspé Linoleum is made in A and B gauges in brown, gray and apple green. $\frac{3}{16}$-in. jaspé in brown and gray only.

All Blabon's "Invincible" Battleship and Plain Linoleums are made by the famous Walton process, and in accordance with the rigid specifications of the United States Government. In fact, they are made even better than demanded by these specifications.

Architects' and Contractors' Service Bureau

This Bureau is entirely at your service without obligations, for the purposes of—recommending grades and thicknesses of Blabon's Linoleum best suited to specific conditions, furnishing technical data on the installation and care of linoleum floors, or writing specimen specifications. This department will also recommend competent laying organizations for the complete installation of linoleum floors by approved methods.

We have helpful booklets, folders, and quality samples, that this Service Bureau will cheerfully send (upon request) to architects, builders, decorators and linoleum contractors. The Blabon Pocket Size Pattern Book, showing all patterns in colors, and a large box of quality samples, containing specimens of various grades of Blabon's Linoleum, should be in every architect's files.

Warning

Linoleum should not be laid in a basement, or on floors that are in direct contact with the ground. The paste will not hold the linoleum in place and the dampness will gradually cause deterioration. Such installations should be made only at the owner's risk.

Note: Do not paste linoleum over a floor that has been previously oiled. Floors that have been painted should be sanded or treated with a paint remover.

Specifications for Laying Linoleum or Cork Carpet

The following specifications cover the installation of a linoleum floor over a wood or concrete base, as well as the preparation of the wood or concrete to receive the linoleum.

(1) **General**—The Linoleum Contractor shall furnish and install the material herein specified on the areas where indicated on the drawings (or listed below).

(2) The Linoleum shall be Blabon's (insert color here) Battleship (or, Plain, or, Jaspé) ....in. thick (or, Inlaid, Pattern No. ....), as manufactured by THE GEORGE W. BLABON COMPANY, Nicetown, Philadelphia.

(3) No seconds or remnants shall be allowed. The Linoleum shall be delivered in full rolls, and each roll will be marked with the maker's name, and grade of the Linoleum.

(4) The Linoleum shall be subjected to a temperature of 70° F. for at least 48 hours before it is unrolled, and this same temperature shall be maintained in all locations where the Linoleum is being laid, from the time the Linoleum is delivered until the completion of the contract.

(5) All accessories, such as linoleum paste, waterproof linoleum cement, felt lining (if required), shall be as manufactured by THE GEORGE W. BLABON COMPANY.

(6) **Installation Conditions**—Light, heat, hoist and power, if necessary for waxing, and safe storage facilities will be supplied without cost to the Linoleum Contractor.

Note: Provide for the above Installation Conditions in the General Contractor's Specification.

(7) **Inspection of Base**—The Linoleum Contractor shall inspect the floors before starting to install the Linoleum, and approve or reject the base, as presented to him. If they are not acceptable, he shall call it to the attention of the general contractor, and shall not proceed with the Linoleum installation until the floors are properly prepared. *(See following notes.)*

Continued on next page

(8) The Linoleum Contractor shall make the necessary tests for determining to his own satisfaction, whether the concrete is dry, and upon starting work on the installation of the Linoleum, the responsibility for dry concrete shall rest on him.

Note: The following paragraph should be included in Carpenter Work Specification.

(9) **Preparation of Wood Subfloors for Linoleum or Cork Carpet**—Wood floors shall be of well-dried ⅞-in. tongued and grooved boards, free from large or loose knots; not more than 3½-in. face, and thoroughly nailed to each bearing. These wood floors shall then be made true, even, level and broom-clean, and brought up to within .... in. of the finished floor line.

Note: The following paragraph should be included in Mason Work Specification.

(10) **Preparation of Concrete-Base for Linoleum or Cork Carpet**—Concrete floors shall be brought to a true, even finish up to within .... in. of the finished floor line, and troweled—not floated. Where joints are required they shall be cut through with pointed trowel and smoothed over with surface trowel, joints shall not be moulded with jointing tool.

(11) **Felt Base for Wood Subfloors**—Floor shall be covered with an approved builders' deadening felt, weighing not less than 1½ lb. to a square yard. This shall be pasted over its entire surface to the wood floors, and thoroughly rolled.

(12) The felt shall be laid at right angles to the floor boards, and carefully fitted into place, neatly and true, around the projections. The seams of the felt shall be butted.

(13) **Felt Base for Concrete Base**—See notes following:

Notes: If desired felt base may be omitted, in which case the heading "(13) Felt Base for Concrete Base" may be omitted.

If felt base is desired, use the same specification paragraphs as for "(11) Felt Base for Wood Subfloors," revising same to call for felt to be laid in same direction or parallel with the linoleum or cork carpet.

Note: Use either of the following paragraphs (14) or (15) according to the material selected.

(14) **Laying of Battleship (or, Plain or, Jaspé) Linoleum (or Cork Carpet)**—Shall be laid with seams overlapping approximately ½ in., which shall be allowed to remain in this position for several hours before trimming into place. They shall later be cut through both thicknesses simultaneously with a sharp knife to produce an accurately fitted and invisible seam.

(15) **Laying of Printed (or Inlaid) Linoleum**—Care must be taken to preserve the symmetry of the pattern. The seams shall be overlapped very slightly, and cut through both thicknesses simultaneously with a sharp knife, if the selvage of the goods will permit. Otherwise the selvage edges of Inlaids shall be block planed in the discretion of the mechanic.

Note: After either paragraphs (14) or (15) paragraphs (16), (17), (18), (19) and (20) should follow.

(16) The Linoleum shall be applied to the felt in the following manner: the Linoleum shall be run in the same direction as the felt, and shall be accurately fitted to the walls and around all pipes and other projections in the floor, but the seams of the Linoleum and the seams of the felt must not coincide. The entire felt surface shall be swept clean, and then covered with Blabon's Linoleum Paste, in sufficient quantity to insure firm adhesion, up to within 6 in. of the seams and edges, which shall be left bare for the later application of waterproof cement.

(17) The Linoleum shall be placed in position immediately after the paste is applied to the felt. Care must be taken not to spread too much paste in advance of having the Linoleum ready to apply. The surface of the Linoleum shall be rolled thoroughly with a 150-lb. linoleum roller, until, in the judgment of the Linoleum Contractor, all air pockets have been smoothed out, and the goods lie in a perfect, flat state of permanence.

(18) All seams, edges and joints in the Linoleum shall be sealed with Blabon's Waterproof Linoleum Cement, as follows: The edges of the Linoleum shall be lifted and the cement applied generously to the surface of the felt, as far back under the Linoleum as the edge of the coating of paste. The cemented edge of the Linoleum shall then be placed firmly into position, and immediately rolled with a 150-lb. roller, to insure a smooth surface. All seams, edges and joints, thus treated, shall be weighted down with bricks, sand bags or other suitable weights for not less than 24 hours.

(19) Any waterproof cement coming in contact with the surface of the Linoleum shall be immediately removed with denatured alcohol.

(20) Paste coming in contact with the surface of the Linoleum shall be removed with water.

(21) **Waxing**—Twenty-four (24) hours after the installation is finished, the Battleship, Plain or Jaspé Linoleum shall be carefully washed with lukewarm water and a good mild soap, and thoroughly dried, and given two coats of wax, and machine polished; then covered with heavy paper for protective purposes, which shall not be removed until the building is ready for occupancy. This covering shall be applied in some substantial manner, so as to avoid shifting around the floor, and exposing the Linoleum to abuse or accident while the building is under completion.

(22) **Guarantee**—The Linoleum Contractor shall guarantee the Linoleum Floors against defects in workmanship and material for one year from date of installation.

Note: If borders are desired insert the following paragraphs in the above specification as indicated by numbers in ( ).

(2a) Borders of Battleship (or, Plain, or, Jaspé) ... in. thick linoleum shall be provided, for all areas to be covered (or, in the following areas only):

(15a) All borders shall be approximately ... in. wide, and neatly fitted between the field and the wall base; all corners shall be cut with a mitered joint. The entire border and the seam between the border and the field shall be fastened down with waterproof cement, and rolled thoroughly and weighted with sand bags for at least 24 hours.

How to Clean and Preserve Linoleum

The life of linoleum will be greatly prolonged and the freshness and brightness of its color indefinitely preserved if it is washed or scrubbed with lukewarm water and a good soap containing no free alkali. Always avoid strong scouring soaps or quick-cleaning preparations as they are injurious to linoleum. A list of approved soaps, cleansers, etc., will be sent on request.

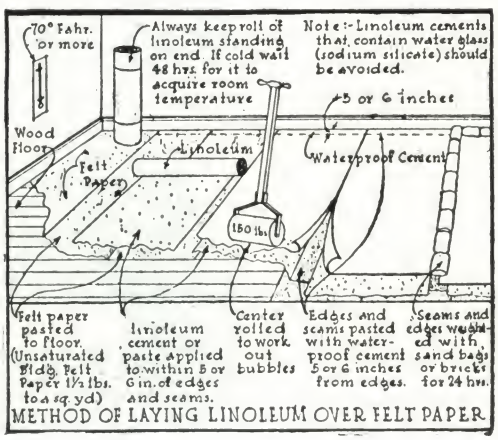
The beauty and wearing qualities of Inlaid, Jaspé or Plain Linoleum will be materially benefited by an occasional polishing with Blabon's Liquid Wax or any high grade floor wax.

A good method of preserving Printed Linoleum is to give the surface of the goods a coat of Blabon's Linoleum Varnish once or twice a year. This will brighten the appearance of the linoleum, preserve the original design, and make it easier to clean.

Where heavy furniture is used, glass shoes or rubber casters should be substituted for casters as the usual small metal casters cause undue wear and may cut through the linoleum. Glass shoes or rubber casters are made in several sizes, have a similar shank to that on a regular caster, and will fit into the same sockets. If glass shoes or rubber casters are not obtainable, ordinary glass "cups" placed under the legs of heavy furniture will answer the same purpose.

An Approved Method for Installing Blabon's Linoleum Over Lining Felt

In the following diagram you will note the method we recommend for installing linoleum.



METHOD OF LAYING LINOLEUM OVER FELT PAPER

CONGOLEUM-NAIRN INC.

Manufacturers of Resilient Floors

TELEPHONE
KEARNY 1000

KEARNY, N. J.

BRANCH OFFICES

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MINNEAPOLIS, MINN., Plymouth Building, 6th Street and Hennepin Avenue
DALLAS, TEX., Southwestern Life Building, Main and Akard Streets
SAN FRANCISCO, CALIF., 180 New Montgomery Street
ATLANTA, GA., Healey Building, Forsyth and Walton Streets
PITTSBURGH, PA., 717 Liberty Avenue
NEW ORLEANS, LA., Pere Marquette Building, Baronne and Common Streets
DETROIT, MICH., 647 Griswold Street
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MILLS AND FACTORIES

KEARNY, N. J. CAMDEN, N. J. MARCUS HOOK, PA. SALEM, N. J. ASBESTOS, MD.

Products

SEALEX LINOLEUM: Battleship; Plain; Jaspé; Straight-Line Inlaid; Straight-Line Inlaid Embossed; Karnean Marbled Inlaid; Moulded Inlaid; Granite.

GOLD SEAL CORK CARPET.

SEALEX TREADLITE TILE (Cork-composition): Plain Colors and Marble-ized.

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Use and Choice of Sealex Materials

The patterns reproduced on C-N pages 12 to 15 give some idea of the extraordinary versatility of *Sealex* Linoleum and *Sealex* Treadlite Tile. Congoleum-Nairn offers hundreds of ready-made patterns and boundless opportunity for distinctive, custom-made floors, wherein the pattern may assume almost any form designer chooses.

Considering this endless diversity of pattern, it is not surprising to find *Sealex* materials used in the widest variety of situations. In private homes, they have come out of the kitchen into the living room, dining room and bedrooms. Business offices and smart shops have discovered that *Sealex* floors make real *selling floors.* In hospitals and schools, *Sealex* Battleship Linoleum has long been recognized as the standard floor. Churches, theatres, gymnasiums, office buildings, clubs, hotels, apartment houses, ocean liners—it is practically impossible to think of any type of structure in which men live, work or play where *Sealex* Linoleum and *Sealex* Treadlite Tile have not been used again and again with conspicuous success.

SEALEX LINOLEUM

CONGOLEUM-NAIRN INC. is among the largest manufacturers of smooth surface floor-coverings in the world. We offer a complete line of linoleums which for forty years has represented the highest standards in quality, uniformity and staunch serviceability.

This year the variety of designs available for the architect's use has been greatly increased by the addition of new groups of uniquely decorative patterns. Exclusive developments in manufacturing processes have resulted in the utmost perfection of finish, great flexibility, unmatched ease of cleaning and unusual resilience and durability.

Sealex Linoleum takes its name from the exclusive *Sealex Process,* developed and perfected by our technical experts. The effect of the *Sealex Process* is to penetrate and seal the tiny, dirt-absorbing pores of the material, giving to *Sealex* Linoleum practical qualities never before possessed by linoleum.

An Office Reception Room in the Modern Style with a Unique Sealex Floor. Custom-Laid for Walker-Gordon Milk Co., Park Avenue, New York, N. Y.

Dirt cannot grind into these floors as into ordinary linoleum. Greases and liquids cannot penetrate them. Even hot fats, fruit juices, ink or ammonia can be easily removed without leaving damaging spots or stains.

Easier cleaning and lower maintenance costs are not the only advantages of these new linoleums. They wear longer, too, and their colors have depth and softness with no suggestion of glossy slipperiness.

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TYPES AND DESCRIPTIONS OF SEALEX LINOLEUM

Type	Thickness	Colors	Description
Sealex Battleship Linoleum See Specifications A and C, C-N page 8	Heavy (6 mm.) Medium ($\frac{3}{16}$ in.) Light (3.60 mm.)	Brown No. 1000 Green No. 1001 Terra Cotta No. 1002 Gray No. 1003 Mahogany No. 1004	*Sealex* Battleship Linoleum is manufactured to conform strictly to the rigid requirements of U. S. Government Master Specification No. 209. The 6-mm. thickness of *Sealex* Battleship Linoleum—the heaviest grade manufactured—is intended for extreme wear over a long period of years. The $\frac{3}{16}$-in. and light grades will give excellent satisfaction for periods ranging from 10 to 15 years if properly maintained and given reasonable care in upkeep. *Sealex* Battleship Linoleum is probably the cheapest good floor that money can buy.
Sealex Plain Linoleum See Specifications A and C, C-N page 8	"B" Gauge (3.00 mm.) "C" Gauge (2.40 mm.) "D" Gauge (2.00 mm.) "E" Gauge (1.70 mm.)	Brown No. 1100 Green No. 1101 Terra Cotta No. 1102 Gray No. 1103 Mahogany No. 1104 Black No. 1105	Exactly the same in quality as our *Sealex* Battleship Linoleum, from which it may be distinguished by the fact that its gauges are lighter and its burlap backing painted instead of plain. Under ordinary traffic conditions, *Sealex* Plain Linoleum will prove as satisfactory as the battleship grade at a material saving in first cost.
	"A" Gauge (3.60 mm.) "B" Gauge (3.00 mm.)	Light Green No. 1109 Yellow No. 1110 Orange No. 1111 Colonial Buff No. 1112 Ivory White No. 1113 Pacific Blue No. 1114	
Sealex Jaspé Linoleum See Specifications E and F, C-N page 9	$\frac{3}{16}$ in. Gauge (4.80 mm.) "A" Gauge (3.60 mm.) "B" Gauge (3.00 mm.)	Dark Gray No. 1252 Tan No. 1253 Brown No. 1254 Light Gray No. 1255	*Sealex* Jaspé Linoleum has all the recognized advantages of *Sealex* Battleship Linoleum and is manufactured with the same rigid care. The heavier gauges are extremely durable and are made for hard service. The two-toned, veined effect, resembling watered silk in appearance, is exceedingly rich looking and attractive. This type of floor is especially suitable for interiors where a happy medium is desired between a solid-color effect and the more decoratively patterned materials.
	$\frac{3}{16}$ in. Gauge (4.80 mm.) "A" Gauge (3.60 mm.)	Green No. 1256	
	"A" Gauge (3.60 mm.) "B" Gauge (3.00 mm.)	Apple Green No. 1258 Rose Glow No. 1259	
Sealex Embossed Linoleum (Straight-Line Inlaid) See Specifications B and D, C-N pages 8 and 9	"A" Gauge (3.00 mm.) "B" Gauge (2.40 mm.)	A variety of plain colors and exclusive marble effects. See pattern supplement C-N pages 12-15	*Sealex* Embossed Linoleum is offered in a well-balanced variety of clean cut smart-looking patterns. This material captures the quaintness, the charm and even the "feel" of hand-laid tiles. Many patterns are available with a variety of heraldic insets which add interest to the floor and increase the effect of a custom-made appearance.
Sealex Karnean Marbled Linoleum (Straight-Line Inlaid) See Specifications B and D, C-N pages 8 and 9	"A" Gauge (3.00 mm.) "B" Gauge (2.20 mm.) "D" Gauge (1.91 mm.)	A variety of true marble colorings (See pattern supplement C-N pages 12-15)	The Karnean Marbled group of patterns is one of the most popular types of *Sealex* Linoleum. The patterns reproduce the beautiful variegated veinings and colorings of fine marble, as free from artificiality as quarried stone itself. There is no telltale directional graining, such as one expects in the usual machine made product. Patterns range from conservative effects through the conventional square and checkerboard patterns, to more intricately designed effects.
Sealex Moulded Inlaid Linoleum See Specifications B and D, C-N pages 8 and 9	"D" Gauge (1.80 mm.)	Patterns in a variety of colors (See pattern supplement C-N pages 12-15)	In *Sealex* Moulded Inlaid Linoleum the colors merge softly into one another along the edges of the patterns. This attractive mellow-toned material is especially appropriate for use in homes. It is available in a variety of fire clay designs and cheerful toned carpet effects.
Sealex Granite Linoleum See Specifications B and D, C-N pages 8 and 9	1.75 mm. (.069 in.)	Green Brown Blue	*Sealex* Granite Linoleum is offered in an all-over granular effect resembling the texture of granite.

Continued on next page

TYPES AND DESCRIPTION OF GOLD SEAL CORK CARPET

Type	Thickness	Colors	Description
Polished	5.60 mm.	Brown Green	The outstanding advantage of Gold Seal Cork Carpet is quietness underfoot. The cork content is much coarser and rougher than that of battleship grades and there is considerably more of it in proportion to other materials. It is especially desirable for schools, libraries, auditoriums and other spaces where maximum quiet is required.
Unpolished	6.10	Brown Green	

SEALEX TREADLITE TILE

Sealex Treadlite Tile is a resilient composition of cork, oxidized linseed oil and other gums and pigments. It possesses to a remarkable degree the permanent resiliency, sure foothold and freedom from disintegration so characteristic of cork.

The "mix" of the ingredients which go to make up *Sealex* Treadlite Tile is pressed onto a large sheet of heavy mesh burlap. This is removed after the material is thoroughly cured and leaves a corrugated undersurface which insures a perfect bond with the underfloor. The material is then cut into large slabs, stored and machine-cut into the required size of tiles at the factory, which assures absolute accuracy in size and even, straight edges vital to perfect workmanship and good results.

Like *Sealex* Linoleum, *Sealex* Treadlite Tile is manufactured by our exclusive *Sealex Process* which gives to this material advantages heretofore unknown to resilient tile floors.

Sealex Treadlite Tile is non-absorbent; durable even beyond the requirements of the average floor; quiet, bright and clean in appearance; sanitary and easily washed. In fact, it satisfies every utilitarian floor requirement—and is equally at home in the corridor of a great office building or the living room in a private house. It can be adapted to any type of construction and it can be installed on any smooth, solid backing, such as wood, concrete, steel, marble, etc.

The wide choice of colors—plain and marble-ized—affords an opportunity to provide a floor which is artistic, distinctive and thoroughly in keeping with the general scheme of decoration and design of the room in which it is to be installed. There is practically no other floor material available at the reasonable cost of *Sealex* Treadlite Tile that so completely fills all of the many requirements of a satisfactory floor installation and is so in keeping with the most luxurious interiors.

TYPES AND DESCRIPTIONS OF SEALEX TREADLITE TILE

Type	Thickness	Colors	Description
Sealex Treadlite Tile Plain colors See Specifications G, C-N page 10	Full ¼ in. Standard sizes:— 6x6, 9x9, 12x12, 6x12, 9x18 and 12x24 in. Special sizes to order	Craft Brown, No. 1000 Moss Green, No. 1001 Terra Cotta, No. 1002 Slate Gray, No. 1003 Mahogany Brown, No. 1004 Stone Gray, No. 1005 Black, No. 1014 Pacific Blue No. 1036 Fawn Gray, No. 1050 Colonial Buff, No. 1056 Ivory White, No. 1057	The colors available in *Sealex* Treadlite Tile compare very favorably with those found in the most expensive ceramic tiles. They have a soft, mellow lustre which is enhanced by waxing.
Sealex Treadlite Marble-ized See Specifications G, C-N page 10	¼ in. Standard sizes:— 6x6, 9x9, 9x18, 12x12, 6x12 and 12x24 in. Special sizes to order	White Mottled Black, No. 1060 Black Mottled White, No. 1061 White, Black, Green, No. 1062 Turquoise Blue, No. 1063 Platinum Gray, No. 1064 Red Paisley, No. 1065 Light Sienna, No. 1066 Dark Sienna, No. 1067 Verde Antique, No. 1068	*Sealex* Marble-ized Treadlite Tile is constructed of the same ingredients that go into the Plain Color Tiles. A step further, however, is taken in the matter of appearance. By combining in the process of manufacture various colored materials of like composition, the pleasingly irregular variations and beauty of marble grainings are obtained. This floor possesses beauty, utility and comfort to a greater extent than other marble-ized tiles.

INSTALLATION OF SEALEX FLOORS

Sealex Linoleums are sold by leading floor-covering and furniture stores, rug and carpet houses, department stores and flooring contractors throughout the country. Most dealers who carry linoleum have competent laying departments, and bid on furnishing and laying linoleum. Names of reliable firms who handle large installations will be supplied on request. The durability and toughness of cork-composition floors, particularly in the heavier gauges, are universally known and require no additional comment. To obtain the full benefit of this inherent durability, it is extremely important that such floors be installed by skilled mechanics, that highest grade pastes be used, and that the correct method of installation be followed.

Specifications which specify only materials to be used and the method of laying, regardless of how carefully drawn, will not absolutely insure a satisfactory installation. The skilful handling of a linoleum knife, which is so essential in making watertight seams, trimming around pillars, radiators and the like, is not a thing that can be covered in a specification. Such an operation requires considerable skill and experience. It is unquestionably true that the best results and the best value per dollar of cost can be obtained when the architect specifies that the installation be made by one of a number of concerns who specialize in this type of work and maintain standards of workmanship which he knows to be satisfactory.

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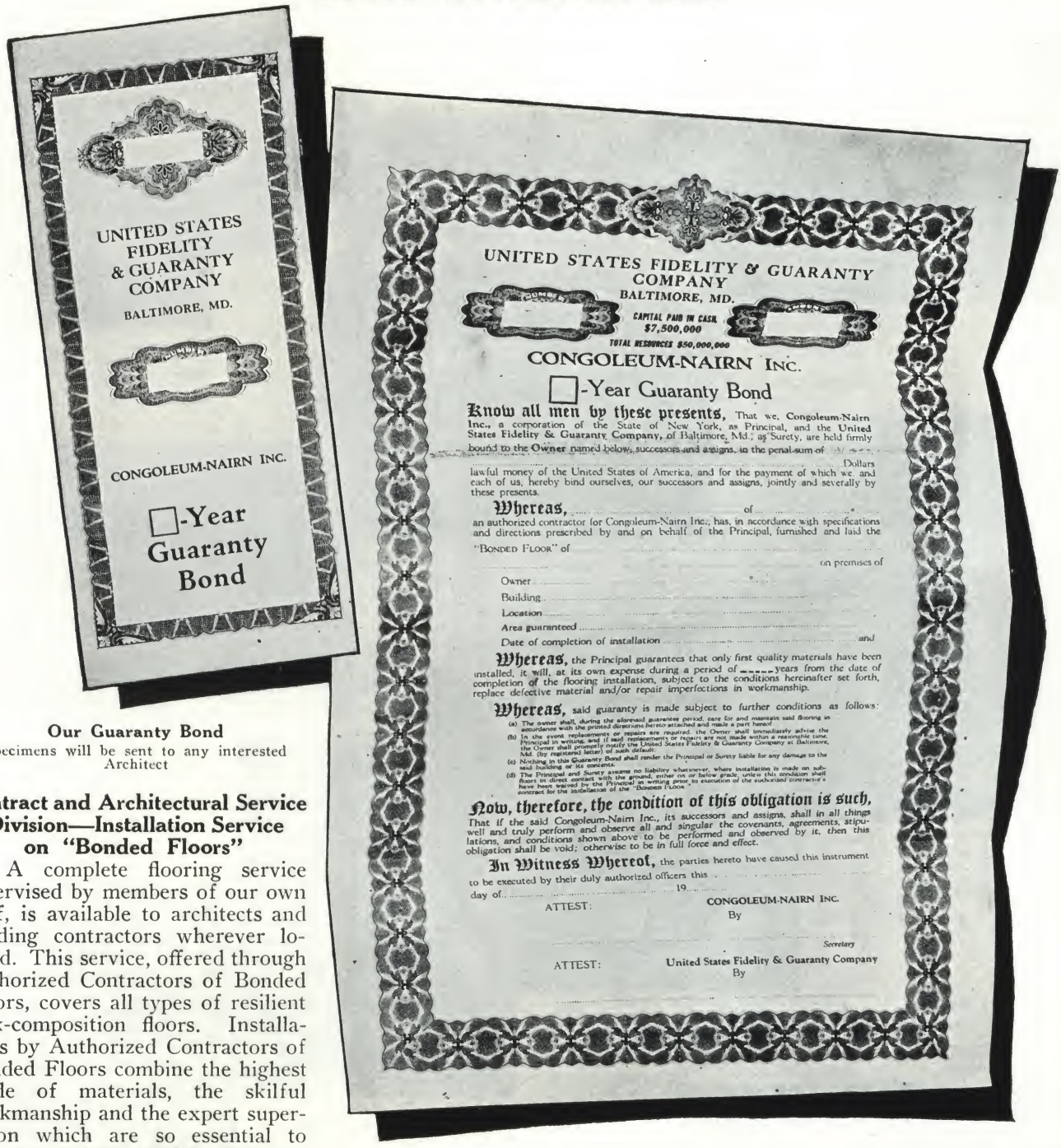
SERVICE AND GUARANTY BOND



Our Guaranty Bond
Specimens will be sent to any interested Architect

Contract and Architectural Service Division—Installation Service on "Bonded Floors"

A complete flooring service supervised by members of our own staff, is available to architects and building contractors wherever located. This service, offered through Authorized Contractors of Bonded Floors, covers all types of resilient cork-composition floors. Installations by Authorized Contractors of Bonded Floors combine the highest grade of materials, the skilful workmanship and the expert supervision which are so essential to proper installation and durability of all resilient floors.

A Guaranty Company Bond

A "Bonded Floor" is a floor of *Sealex* Linoleum, *Sealex* Treadlite Tile or *Gold Seal* Cork Carpet, installed by an Authorized Contractor of Bonded Floors and backed by a Guaranty Bond. A 1, 3 or 5-year guaranty is furnished—depending upon the material used and the conditions under which it is installed. This guaranty is given only on installations of Congoleum-Nairn materials, laid by Authorized Contractors for Bonded Floors and according to Congoleum-Nairn's specifications for Bonded Floors. See C-N pages 8, 9, 10 and 11 for specifications. The Guaranty Bond insures freedom from repair expense due to defects in material and workmanship and also proves that every possible precaution has been taken to avoid such defects.

Specifications for Bonded Floors call for high quality floor materials installed as such materials should be installed. The bond is tangible evidence of this high quality of materials and workmanship, as well as legal binder and protection against repair expense. Needless to say, such a guaranty can be offered only by a responsible concern, sure of its materials and installation methods. Realization of this truth makes unquestionable the bond's value to the owner and architect.

Authorized Contractors of Bonded Floors give this bond on installations of *Sealex* Linoleum, *Sealex* Treadlite Tile and *Gold Seal* Cork Carpet.

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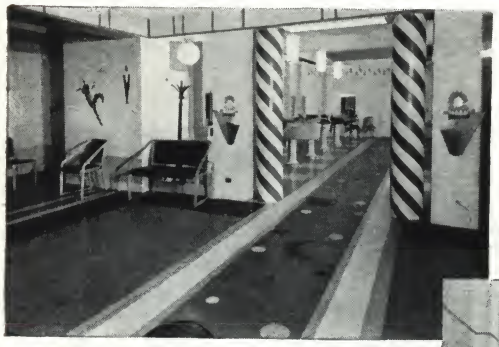
SOME EXAMPLES OF CUSTOM-DESIGNED SEALEX FLOORS



(Left) A colorful and sanitary *Sealex* Floor in the children's barber shop of L. Bamberger & Co., Newark, N. J. Note the inset circles and half moons

(Above) An unusual type of game-board and floor combined, illustrating the versatility of *Sealex* materials from a design standpoint

(Below) A floor design reflecting the character of a business. Reception room of Radio Station WAAM, Newark, N. J. The letters WAAM were hand cut from *Sealex* Linoleum and inset into the floor

(Above) A cheery kitchen floor design in *Sealex* Treadlite Tile the colors ranging in brown tones from dark Mahogany Brown to light Colonial Buff

(Above) This modernistic floor of *Sealex* Linoleum is carried out in Black, Dark Gray, Light Gray, Terra Cotta, and Green. A standard design for the chain of showrooms of the Skel-Gas Co., Division of Skelly Oil Co.

(Above) An excellent illustration of the effective use of an Inset. Judicial placement of insets in a floor area makes a pleasant departure from monotony

(Above) The random flagstone tile effect in First Methodist Church, Kalamazoo, Mich., was installed by an Authorized Contractor of Bonded Floors

(Above) A modernistic dressing room floor of *Sealex* Treadlite Tile. The ease with which this material may be cut renders it extremely adaptable for this type of design

(Above) A floor of Brown *Sealex* Battleship Linoleum in the gym of Blackhawk Park Field House, Chicago, Ill. Marker-outlines for games are inset with red, white and blue strips of the same material. *Gold Seal* Cork Carpet was used for the wainscoting and running track

(Left) That this foyer floor in Pawtucket High School, Pawtucket, R. I., was designed to order is unmistakable. Note how the floor design repeats that of the ceiling above

Continued on next page

(Above) A simple yet effective floor design in *Sealex* Treadlite Tile is the sole decoration in this modernistic office

(Below) A floor of *Sealex* Marble-ized Tile. Note the nicety of this installation in that there is no break in the pattern, even at the corners

(Above) The effect of old plank flooring is achieved through the use of tan *Sealex* Jaspé Linoleum, with "dowels," "butterflies," and interliners in Mahogany Brown

(Above) A reception room floored with *Sealex* Treadlite Tile in random flagstone design. Three tones of Gray with Black interliners were used

(Above) The trade-mark inset of the Food Craft Shops Inc., executed in *Sealex* Treadlite Tile, shows "Polly putting the kettle on"

(Above) Sealex Jaspé Linoleum in an interesting Tan and Brown parquetry effect. Winonah Public Library, Winonah, N. J.

SPECIALLY DESIGNED AND CUSTOM-LAID FLOORS

Within the past few years there has been an increasing tendency among architects and decorators to regard floors as a decorative element of any interior. The motif or design may be simple or ornate, depending on the nature of the space involved and the use to which the floor is put. Undoubtedly this tendency has developed from a desire to individualize homes, offices and stores, giving each a smart, distinctive note which at the same time, reflects the individual or the business itself. The effect thus achieved helps to create what is so often termed "atmosphere."

The use of *Sealex* Linoleum and *Sealex* Treadlite Tile for these specially designed custom-laid floors has steadily increased. This resilient material, long wearing and durable, may be easily cut into any shape or figure. With but a few strokes of a linoleum knife in the hands of a skilled mechanic, rich effects which formerly were possible only at excessive cost and with the employment of expensive materials, are now reproduced at comparatively slight expense with remarkable quickness and precision.

The modernistic vogue which at the present time is fast establishing itself as a definite type of decoration, finds in *Sealex* flooring materials an ideal medium to interpret its new and original floor creations. These versatile materials permit the architect free rein in design and no matter how far his fancy roams, his design can be faithfully executed.

On the other hand, more conservative designs which follow the different period styles may be easily carried out through the use of *Sealex* materials. Irregular flagstone effects, old-fashioned tile patterns, even the picturesque oak plank floorings of Colonial times with their "dowels" and "butterflies" can be cleverly simulated. Finally, any one of those luxurious marble floors that are always associated with classic or renaissance interiors may be beautifully reproduced.

Interest is often added by the placing of an occasional inset, particularly if the floor is a plain one. The inset itself may be simple or intricate depending on the floor requirements. A single inset may be placed in the center of the floor area, or at the entrance way or in any other advantageous position.

Business organizations may have their trade-marks cut out of linoleum and inset into their office floors. These, of course, are incorporated as integral parts of the design and will last the lifetime of the floors.

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SEALEX BORDERS AND BORDER ASSEMBLIES

The decorative possibilities of linoleum floors may be greatly enhanced by the use of borders of different but harmonious colors and by the general conformity of color to the interior decorations of the room in which they are installed.

For this purpose Congoleum-Nairn provides a variety of ready-cut borders and border strips (see color Supplement C-N page 15). These ready-cut strips of *Sealex* Linoleum are available in widths ranging from 12 in. down to 5/8 in. and in lengths from 90 ft. to 45 ft. With the well balanced *Sealex* assortment of colors, many interesting border effects can be built up *quickly* and *accurately*.

However, for those who prefer a strictly individual floor, custom-made borders can be provided. These are cut from any color of *Sealex* Linoleum or *Sealex* Treadlite Tile and are installed in the same manner as the ready-cut type.

SEALEX ONE-PIECE COVE BASE AND BORDER

While the usual factory made cove base furnishes a satisfactory job, Congoleum-Nairn has developed something even better in the form of a one-piece cove base and border which can be very readily installed on the job by a skilled mechanic.

The accompanying diagrams and illustrations explain the installation of this built-in cove base.

The one-piece base, border and cove, possesses certain definite points of superiority.

It lends itself to a much greater variety of decorative effects.

It makes possible a border of any width and in any color—as opposed to the strictly limited assortment of effects in the factory-made cove.

Furthermore, this Bonded Floors cove-and-border is structurally sounder than the old-style type. The number of cove cross-joints is reduced and it is less expensive to construct. This type does away with mopboards, makes it absolutely impossible for grease and grime to find a lodging place and adds a novel, modern touch to any room. In commercial and business installations, and particularly in installations in schools and hospitals, this built-in cove base has a general and a very useful application.

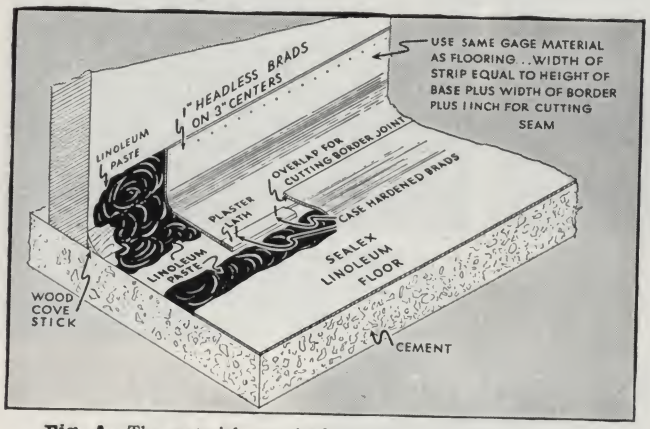


Fig. A—The materials required and the mechanical details of assembly. The cove stick is merely a piece of soft wood, triangular in shape, with 1½-in. legs rabbeted to a concave face.

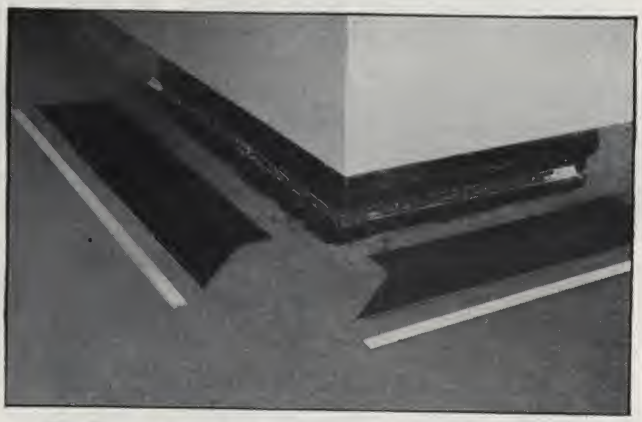


Fig. B—The method of cutting the cove base for an outside corner. (For an inside corner the angles are reversed.) The cove stick has been placed in position and *Sealex* Linoleum Paste applied to walls to the height of the base and on the floor to within 2 in. of the width of the border.

Fig. C—The mechanic is placing one of the linoleum strips to the proper height as specified, working the linoleum into the cove with the hand as headless brads are driven home through the linoleum at the top of the base. The plasterer's lath is then held tightly against the outer edge of the material and the merchandise is driven back against the wall and the cove stick, thus making a tight job at the cove and setting the goods in the linoleum paste. The lath is then nailed to the floor and sand bags placed in the cove to insure complete adhesion.

Fig. D—Note that the lapped edges at the corner have been sliced through forming a perfect miter joint. *Sealex* Inlaid Linoleum has been cut to a true straight line along the edge of the pattern and overlaps the base and border material approximately 1 in., this dimension being determined by the fit of the pattern to the width of the area being covered. Using the edge of the inlaid as a guide, the border is cut, insuring a tight seam between the border and the goods. *Sealex* Linoleum Paste is then applied under the edges of both border and goods.

Note: *The application of this Sealex one-piece cove base and border over a wood floor is exactly the same with the exception that lining felt should be laid before the work is started.*

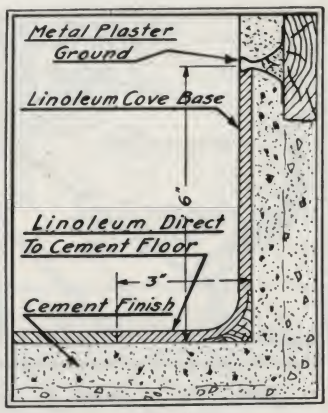
Continued on next page

SPECIFICATION A

Battleship Linoleum Over Concrete Underfloors

Linoleum—The contractor for this work shall furnish and install (Insert weight: Heavy, Medium, Light) weight (Insert color: Brown, Green, Gray, Mahogany Brown, or Terra Cotta), U. S. Government Standard Walton Process *Sealex* Battleship Linoleum as manufactured by CONGOLEUM-NAIRN INC., or approved equal, on the floors as indicated on the drawings and/or as herein specified.

This linoleum shall have the resistance to dirt, ink, grease stains, etc., possessed by *Sealex* Linoleum or approved equal. Material known to the trade as "two-cuts," resulting in unnecessary seams and joints, and/or as "seconds or remnants" will not be accepted. The material delivered to the job shall be in the manufacturer's original package, properly branded on the under side, and shall be equal in every respect to the sample which must be submitted to the architect for approval.



Scope of Work—(Specify rooms, corridors, stairs, landings, etc.)

Workmanship—The linoleum is to be laid with the fewest possible number of seams. The seams shall be lapped (not butted); the entire body of the linoleum secured to the underfloor, to within 4 in. of the seams, with an approved brand of linoleum paste as manufactured by CONGOLEUM-NAIRN INC., or approved equal, and immediately rolled thoroughly with a roller, weighing at least ten pounds per linear inch, to smooth out air blisters and secure proper adhesion. The lapped seams shall then be cut through both thicknesses; the linoleum scribed against all walls, columns, pipes, floor outlet boxes and other permanent projections in the floor; the seams and edges thoroughly secured to the underfloor and rolled so as to make tight and practically invisible joints. They shall be weighted down with sand bags until paste has thoroughly set.

Note: See Supplementary Specification below.

Inspection of Sub-floors—No linoleum is to be installed until the concrete sub-floors are clean, smooth and free from all moisture. Before commencing work, this contractor shall inspect the sub-floors. In the event that they or any conditions on the job are not suitable in every respect and in accordance with specifications, he shall notify the architect and/or general contractor, in writing, who will then cause any defects to be remedied.

Note: In Specifications for Heating, Light and Masonry, insert additional clauses as printed on C-N page 11.

Guaranty—The linoleum contractor shall guarantee his work against defects in material or workmanship for a period of .... years from date of completion, and shall furnish an Insurance Company Guaranty Bond in the full amount of the contract. Under this guaranty the contractor, upon receipt, within guaranty period, of written notice from the owner, shall replace defective material and/or repair imperfections in workmanship, at his own (the contractor's) expense.

See details of Bond on C-N page 4.

Supplementary Linoleum Specification

Linoleum Cove Base—The linoleum contractor shall also furnish and install (Insert height: 5 or 6 in.) high linoleum cove base of color to be selected by the architect around all walls of the spaces as indicated on the drawings and/or as herein specified.

SPECIFICATION B

Inlaid Linoleum Over Concrete Underfloors

Linoleum—The contractor for this work shall furnish and install *Sealex* Inlaid Linoleum (Insert weight and pattern number) as manufactured by CONGOLEUM-NAIRN INC., or approved equal, on the floors as indicated on the drawings or as herein specified. Material known to the trade as "two-cuts," resulting in unnecessary seams and joints, and/or as "seconds or remnants" will not be accepted. The material delivered to the job shall be in the manufacturer's original package, properly branded on the under side, and equal in every respect to the sample which must be submitted to the architect for approval.

Scope of Work—(Specify rooms, corridors, stairs, etc.)

Workmanship—(See Specification A under Workmanship.)

Inspection of Sub-floors—(See Specification A under Inspection of Sub-floors.)

Guaranty—(See Specification A under Guaranty.)

Linoleum Cove Base—(See Specification A under Linoleum Cove Base.)

Note: In Specifications for Heating, Light and Masonry, insert additional clauses as printed on C-N page 11.

SPECIFICATION C

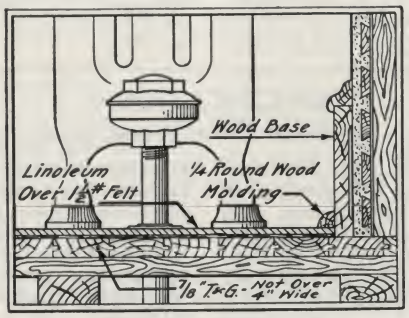
Battleship Linoleum Over Wood Underfloors

Linoleum—The contractor for this work shall furnish and install (Insert weight: Heavy, Medium, Light) weight (Insert color: Brown, Green, Mahogany Brown, Gray or Terra Cotta), U. S. Government Standard Walton Process *Sealex* Battleship Linoleum as manufactured by CONGOLEUM-NAIRN INC., or approved equal, on the floors as indicated on the drawings and/or as herein specified. This linoleum shall have the resistance to dirt, ink, grease, etc., possessed by (*Sealex* Linoleum or approved equal). Material known to the trade as "two-cuts," resulting in unnecessary seams and joints and/or as "seconds or remnants" will not be accepted. The material delivered to the job shall be in the manufacturer's original package, properly branded on the under side, and equal in every respect to the sample which must be submitted to the architect for approval.

Scope of Work—(Specify rooms, corridors, stairs, landings, etc.)

Workmanship—The linoleum shall be installed over 1½ lb. unsaturated building felt, the felt to be laid in opposite direction to that of the boards, seams carefully butted (not lapped) and thoroughly and entirely secured to the sub-floor with an approved brand of linoleum paste as manufactured by CONGOLEUM-NAIRN INC., or approved equal.

The linoleum then is to be laid over the felt in the opposite direction to the strips of felt and with the fewest possible number of seams. The seams shall be lapped (not butted); the entire body of the linoleum secured to the felt, to within 4 in. of the seams, with the above approved brand of linoleum cement and immediately rolled thoroughly with a roller, weighing at least ten pounds per linear inch, to smooth out air blisters and secure proper adhesion. The lapped seams shall then be cut through both thicknesses; the linoleum scribed against all walls, columns, pipes, floor outlet boxes and other permanent projections in the floor, the seams and edges thoroughly secured to the felt and rolled so as to make tight and practically invisible joints. They shall be weighted down with sand bags until paste has thoroughly set.



Note: See Supplementary Specification on page following.

Inspection of Sub-floors—No linoleum or felt is to be installed until the wood sub-floors are clean, smooth and firmly secured to the sleepers. Before commencing work, this contractor shall inspect the sub-floors and in the event they or any conditions on the job are not suitable in every respect and in accordance with specifications, shall notify the architect and/or general contractor, in writing, who will then cause any defects to be remedied.

Note: In Specifications for Heating, Light and Masonry, insert additional clauses as printed on C-N page 11.

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Guaranty—The linoleum contractor shall guarantee his work against defects in material or workmanship for a period of . . . years from date of completion, and shall furnish an Insurance Company Guaranty Bond in the full amount of the contract. Under this guaranty the contractor, upon receipt, within guaranty period, of written notice from the owner, shall replace defective material and/or repair imperfections in workmanship, at his own (the contractor's) expense.

See details of Bond on C-N page 4.

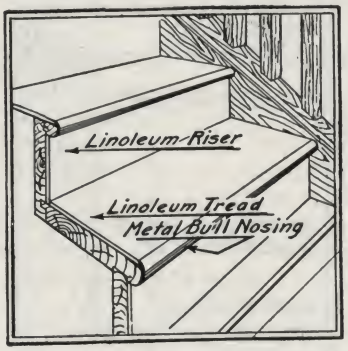
Supplementary Linoleum Specification

Linoleum Cove Base—The linoleum contractor shall also furnish and install (Insert height: 5 or 6 in.) high linoleum cove base of color to be selected by the architect around the walls of the spaces as indicated on the drawings and/or as herein specified.

SPECIFICATION D

Inlaid Linoleum Over Wood Underfloors

Linoleum—The contractor for this work shall furnish and install *Sealex* Inlaid Linoleum (Insert weight and pattern number) as manufactured by CONGOLEUM-NAIRN INC., or approved equal, on the floors as indicated on the drawings or as herein specified. Material known to the trade as "two-cuts," resulting in unnecessary seams and joints, and/or as "seconds or remnants" will not be accepted. The material delivered to the job shall be in the manufacturer's original package, properly branded on the under side and equal in every respect to the sample, which must be submitted to the architect for approval.



Scope of Work—(Specify rooms, corridors, stairs, landings, etc.)

Workmanship—(See Specification C under Workmanship.)

Inspection of Sub-floors—(See Specification C under Inspection of Sub-Floors.)

Guaranty—(See Specification C under Guaranty.)

Supplementary Linoleum Specification

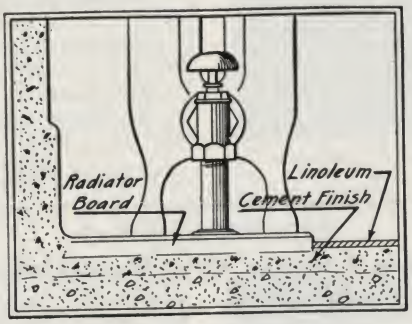
Linoleum Cove Base—(See Specification C under Linoleum Cove Base.)

Note: In Specifications for Heating, Light and Masonry, insert additional clauses as printed on C-N page 11.

SPECIFICATION E

Jaspé Linoleum Over Concrete Underfloors

Linoleum—The contractor for this work shall furnish and install (Insert weight: Medium ($\frac{3}{16}$-in.); "A" gauge (3.60 mm.); "B" gauge (3.00 mm.); (Insert color: Brown, Tan, Green, Rose Glow, Apple Green, Dark Gray or Light Gray), Walton Process *Sealex* Jaspé Linoleum as manufactured by CONGOLEUM-NAIRN INC., or approved equal, on the floors as indicated on the drawings and/or as herein specified. This linoleum shall have the resistance to dirt, ink, grease, etc., possessed by (*Sealex* Linoleum or approved equal) linoleum. Material known to the trade as "two-cuts" resulting in unnecessary seams and joints, and/or as "seconds or remnants" will not be accepted. The material shall be delivered to the job in the manufacturer's original package, properly branded on the under side and shall be equal in every respect to the sample which must be submitted to the architect for approval.



Scope of Work—(Specify rooms, corridors, stairs, landings, etc.)

Workmanship—The linoleum is to be laid with the fewest possible number of seams. The seams shall be lapped (not butted); the entire body of the linoleum secured to the underfloor, to within 4 in. of the seams, with an approved brand of linoleum paste as manufactured by CONGOLEUM-NAIRN INC., or approved equal, and immediately rolled thoroughly with a roller, weighing at least ten pounds per linear inch to smooth out air blisters and secure proper adhesion. The lapped seams shall then be cut through both thicknesses; the linoleum scribed against all walls, columns, pipes, floor outlet boxes and other permanent projections in the floor; the seams and edges thoroughly secured to the underfloor and rolled so as to make tight and practically invisible joints. They shall be weighted down with sand bags until paste has thoroughly set.

Note: See Supplementary Specification below.

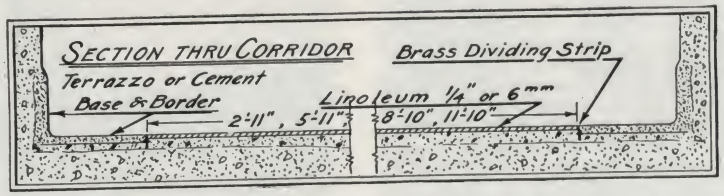
Inspection of Sub-floors—No linoleum is to be installed until the concrete sub-floors are clean, smooth and free from all moisture. Before commencing work, this contractor shall inspect the sub-floors. In the event that they or any conditions on the job are not suitable in every respect and in accordance with specifications, he shall notify the architect and/or general contractor, in writing, who will then cause any defects to be remedied.

Note: In Specifications for Heating, Light, and Masonry, insert additional clauses as printed on C-N page 11.

Guaranty—The linoleum contractor shall guarantee his work against defects in material or workmanship for a period of .... years from date of completion, and shall furnish an Insurance Company Guaranty Bond in the full amount of the contract.

Under this guaranty the contractor, upon receipt, within guaranty period, of written notice from the owner, shall replace defective material and/or repair imperfections in workmanship, at his own (the contractor's) expense.

See details of Bond on C-N page 4.



Supplementary Linoleum Specification

Linoleum Cove Base—The linoleum contractor shall also furnish and install (Insert height: 5 or 6 in.) high Jaspé linoleum cove base of color to be selected by the architect around all walls of the spaces as indicated on the drawings and/or as herein specified.

SPECIFICATION F

Jaspé Linoleum Over Wood Underfloors

Linoleum—The contractor for this work shall furnish and install (Insert weight: Medium ($\frac{3}{16}$ in.); "A" gauge (3.60 mm.); "B" gauge (3.00 mm.); (Insert color: Brown, Tan, Dark Gray, Light Gray, Green, Rose Glow, Apple Green), Walton Process *Sealex* Jaspé Linoleum as manufactured by CONGOLEUM-NAIRN INC., or approved equal, on the floors as indicated on the drawings and/or as herein specified. This linoleum shall have the resistance to dirt, ink, grease, etc., possessed by (*Sealex* Linoleum or approved equal) linoleum. Material known to the trade as "two-cuts," resulting in unnecessary seams and joints, and/or as "seconds or remnants" will not be accepted. The material shall be delivered to the job in the manufacturer's original package, properly branded on the under side and shall be equal in every respect to the sample which must be submitted to the architect for approval.

Continued on next page

Scope of Work—(Specify rooms, corridors, stairs, landings, etc.)

Workmanship—The linoleum shall be installed over 1½-lb. unsaturated building felt, the felt to be laid in opposite direction to that of the boards, seams carefully butted (not lapped) and thoroughly and entirely secured to the sub-floor with an approved brand of linoleum paste as manufactured by CONGOLEUM-NAIRN INC. or approved equal.

The linoleum then to be laid over the felt in the opposite direction to the strips of felt and with the fewest possible number of seams. The seams shall be lapped (not butted); the entire body of the linoleum secured to the underfloor, to within 4 in. of the seams, with the above approved brand of linoleum paste and immediately rolled thoroughly with a roller, weighing at least ten pounds per linear inch, to smooth out air blisters and secure proper adhesion. The lapped seams shall then be cut through both thicknesses; the linoleum scribed against all walls, columns, pipes, floor outlet boxes and other permanent projections in the floor; the seams and edges thoroughly secured to the felt and rolled so as to make tight and practically invisible joints. They shall be weighted down with sand bags until paste has thoroughly set.

Note: See Supplementary Specification following:

Inspection of Sub-floors—No linoleum is to be installed until the wood sub-floors are clean, smooth and firmly secured to the sleepers. Before commencing work, this contractor shall inspect the sub-floors and in the event they or any conditions on the job are not suitable in every respect and in accordance with specifications, shall notify the architect and/or general contractor, in writing, who will then cause any defects to be remedied.

Note: In Specifications for Heating, Light and Masonry, insert additional clauses as printed on C-N page 11.

Guaranty—The linoleum contractor shall guarantee his work against defects in material or workmanship for a period of .... years from date of completion, and shall furnish an Insurance Company Guaranty Bond in the full amount of the contract. Under this guaranty the contractor, upon receipt, within guaranty period, of written notice from the owner, shall replace defective material and/or repair imperfections in workmanship, at his own (the contractor's) expense.

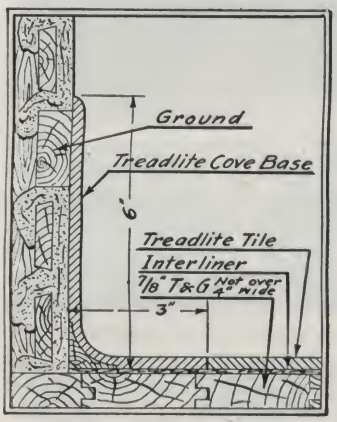
See details of Bond on C-N page 4.

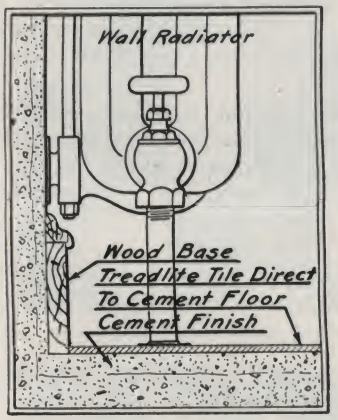
Supplementary Linoleum Specifications

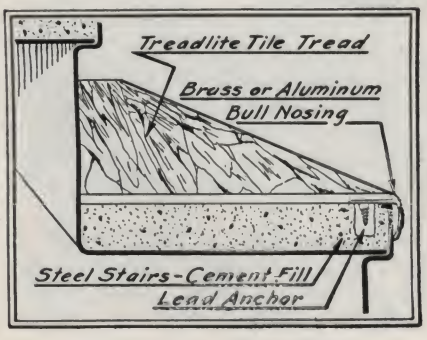
Linoleum Cove Base—The linoleum contractor shall also furnish and install (Insert height: 5 or 6 in.) high Jaspé linoleum cove base of color to be selected by the architect around the walls of the spaces as indicated on the drawings and/or as herein specified.

SPECIFICATION G

Sealex Treadlite (Cork-Composition) Tile Over Concrete or Wood Underfloors







The contractor for this work shall furnish and install *Sealex* Treadlite (Cork-Composition) Tile (plain or marble-ized) as manufactured by CONGOLEUM-NAIRN INC., or approved equal, on the floors as indicated on the drawings and/or as herein specified. It shall be full ¼ in. in thickness and homogeneous in texture throughout, cut true to size and shape, with absolutely square, clean-cut edges. The under side shall be scored to insure proper bond.

Samples of materials and shop drawings or layouts for selection of colors and design shall be prepared by this contractor and submitted for the architect's approval.

Scope of Work—(Specify rooms, corridors, stairs, landings, etc.)

Workmanship* — The wood floors shall first be covered with a suitable interliner, securely fastened to the underfloor and guaranteed by the contractor to provide suitable backing for the tile.

**Note:* Include above paragraph only if underfloors are of wood, otherwise omit.

The tile shall be cut to and fitted accurately against all walls, pipes, outlet boxes and permanent projections in the room, and shall be set with an approved and tested waterproof cement as manufactured by CONGOLEUM - NAIRN INC., or approved equal. The lines of border and tile and color arrangement shall correspond to the shop drawings or layouts which must be approved by the architect.

Note: See Supplementary Specification following.

Inspection of Sub-floors—No tile is to be installed until the underfloors are clean, smooth and free from all moisture and foreign materials.

Before commencing work the tile contractor shall inspect the sub-floors and in the event they and other conditions on the job are not suitable in every respect and in accordance with specifications, shall notify the architect or general contractor in writing, who will then cause any defects to be remedied.

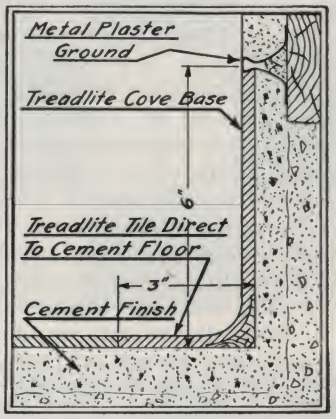
Note: In Specifications for Heating, Light and Masonry, insert additional clauses as printed on page 11.

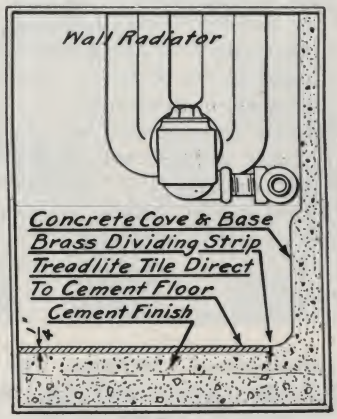
Guaranty—The tile contractor shall guarantee his work against defects of material or workmanship, for a period of ..... years from date of completion, and shall furnish an Insurance Company Guaranty Bond in the full amount of the contract. Under this guaranty the contractor, upon receipt, within guaranty period, of written notice from the owner, shall replace defective material, and/or repair imperfections in workmanship, at his own (the contractor's) expense.

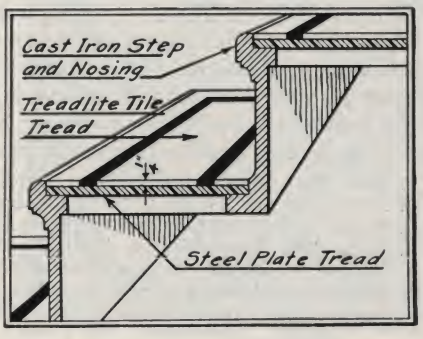
See details of Bond on C-N page 4.

Supplementary Tile Specification

Tile Cove Base—The tile contractor shall also furnish and install (Insert height: 5 or 6 in.) high Treadlite Tile cove base, of color to be selected by the architect, around all walls of the spaces as indicated on the drawings and/or as herein specified.







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ADDITIONAL CLAUSES TO BE INSERTED IN ARCHITECT'S SPECIFICATIONS

Heating—The General Contractor shall furnish without charge to the (Insert: Linoleum or Cork-composition Tile contractor) heat necessary to maintain a temperature of approximately 70 degrees F., in the spaces where (Insert: kind of floor) is to be laid—commencing 48 hours before the work is to start and continuously until finished.

Lighting—The General Contractor shall furnish without charge to the (Insert: Linoleum, Cork-composition Tile contractor) light, storage space, electrical current and hoisting facilities for the proper performance of the (Insert kind of floor) work.

Carpentry—Wood Floor Not on Ground (New Work)—Where (Insert: kind of floor) is shown and/or specified, the wood floor shall be at least (⅞ in.) thick and not more than (4 in.) wide, well-seasoned tongue and groove flooring, free from large or loose knots, driven tight, well nailed, joints and butts planed smooth, finished true and level, and shall be delivered to the (Insert: Linoleum, Cork-composition Tile) contractor broom clean and free from foreign material.

Wood Floors (Old Work)—Where (Insert: kind of floor) is shown and/or specified, the old wood floors shall be thoroughly surface nailed to secure all springy boards, loose butts or joints; joints or butts scraped or planed smooth and even. All badly worn, or decayed boards, and boards containing knot holes or loose knots, shall be removed and replaced with new lumber.

Plastering and/Carpentry and/or Masonry—Plaster (or other materials) against which (Insert: kind of material) cove base is to be installed shall have a smooth, even surface and shall be carried down to and finished square with the subfloor, making a clean, straight right angle with same and free from lumps, dirt or other obstructions. A ⅞ in. x 1½ in. furring strip shall be provided, the top edge of which shall be approximately 5½ in. from the floor level.

Note: **Include above paragraph only if cove base is specified, otherwise omit.**

MAINTENANCE OF RESILIENT FLOORS

The proper maintenance of *Sealex* Linoleum and *Sealex* Treadlite Tile floors does not require elaborate equipment or highly trained employees. The observance of a few simple and ordinary precautions will result in maximum service and satisfaction.

Just as the dropping of a heavy weight on the best marble floor will cause cracks and chipping, and just as hardwood floors will scratch and splinter if abused, so will resilient floors be marred if too great concentration of heavy furniture, desks or large chairs on small bearing-surfaces be permitted.

The uniform, attractive smoothness of these floors can be maintained by using glass sliders or round-edged cups of glass or bakelite instead of metal casters and silencers. A 2½-in bearing surface is most desirable.

Strong soaps or washing compounds containing free alkali or abrasives are not necessary and should never be used. Such cleaning agents will attack ordinary cork-composition materials, causing them to harden in time and will shorten their natural longevity. Neither is it necessary nor desirable to flood the floors with water. The Pittsburgh Testing Laboratory has tested a large number of soaps. We will gladly furnish a list of those approved.

Every-day effects of traffic can readily be removed with damp cloth or mop or, if the floors are much soiled, can be removed by the use of lukewarm water and a mild soap, or our special cleanser, especially prepared for such purposes. The latter is absolutely non-injurious, at the same time an efficient cleaning agent.

Waxing is recommended as being the most beneficial and economical method to employ. It adds protection to the surface against wear and acts as a preservative of the material itself. In addition, it reduces the possible excessive use of water and injurious cleaning compounds, as waxed floors require only occasional washings and rewaxing. The ordinary accumulation of dirt and dust can be easily brushed off each day. Waxing also vastly enhances the general appearance of the floors.

As an additional service to our customers we are now prepared to furnish our own *Gold Seal* Floor Wax.

If *Sealex* Linoleum or Tile has not been waxed or if the wax has been removed, lacquer can be used with good results. However, it is particularly recommended that this be applied with an air-gun rather than a brush, in order to obtain a smooth finish.

Informative Literature for Architects

Competent architects have collaborated with our flooring engineers in the preparation of a series of pamphlets on the floor requirements of various types of buildings. In addition to considerable general information, each pamphlet contains a special chart which enables one to determine at a glance which type of floor is most suitable and economical for a given area in any of the buildings described. Any or all of the titles listed will be sent to architects upon request.

1. Facts You Should Know about Resilient Floors for Schools.
2. Facts You Should Know about Resilient Floors for Hospitals.
3. Facts You Should Know about Resilient Floors for Offices.
4. Facts You Should Know about Resilient Floors for Stores.
5. Facts You Should Know about Resilient Floors for Churches.
6. Facts You Should Know about Resilient Floors for Libraries.
7. Facts You Should Know about Resilient Floors for Clubs, Lodges, Apartments and Hotels.

Specifications

Specifications for Resilient Floors: A handy reprint edition of SWEET'S CATALOGUE in A.I.A. filing folder.

1931 Pattern Reproductions

The patterns and colors of *Sealex* materials illustrated on the following pages are but a few of the large number available. Lack of space and the fact that this catalogue is delivered just before the announcement of our many new designs and new colors for 1931 makes impossible a complete showing. By all means, get for your files reproductions of our complete 1931 line of resilient floor materials.

Write our Architectural Service Department, at Kearny, New Jersey.

Continued on next page

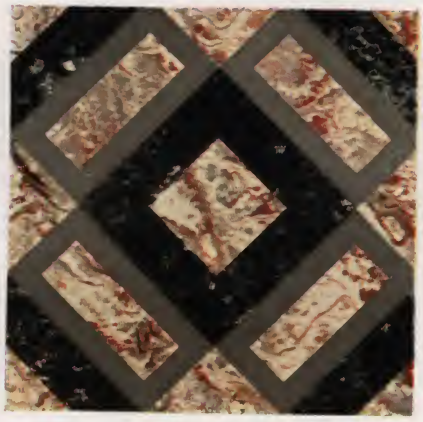
SEALEX LINOLEUM—KARNEAN MARBLED INLAID

"Leonardo"—No. 3225, A Gauge

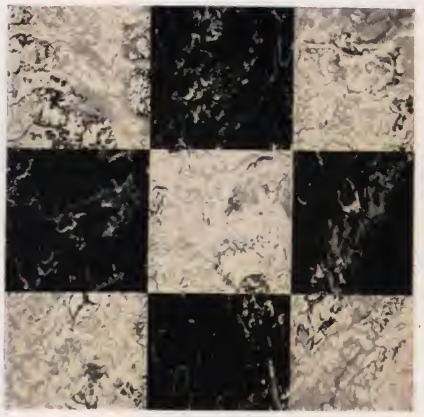
"Caribbean"—No. 3224, A Gauge

"Virginian"—No. 3227, A Gauge

"Bermuda"—No. 3038, A Gauge



"Crusader"—No. 3092, A Gauge



"Foyer"—No. 3104, A Gauge

"Tunis"—No. 6232, B Gauge

"Exeter"—No. 6055, B Gauge

"Algiers"—No. 6233, B Gauge

"Patio"—No. 7281, D Gauge

"Elysee"—No. 7263, D Gauge

"Pharaoh"—No. 7283, D Gauge

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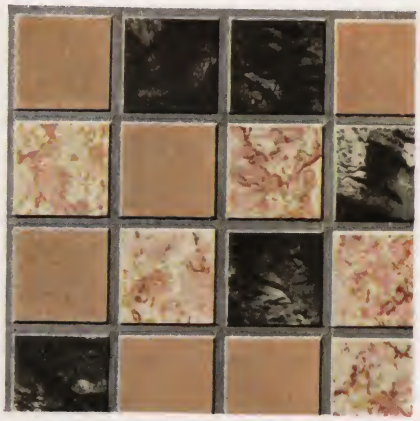
SEALEX LINOLEUM—EMBOSSED INLAID—MOULDED

"Pasha"—No. 3510, Embossed, B Gauge



"Thebes"—No. 3516, Embossed, B Gauge

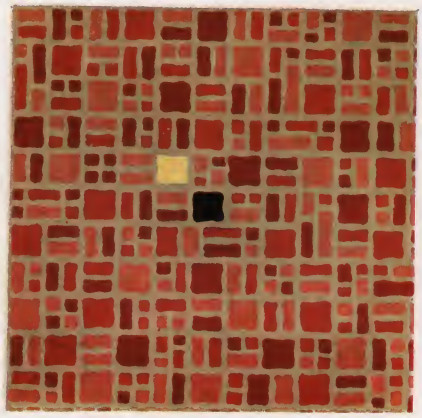
"Sicilian"—No. 3513, Embossed, B Gauge

"Ruby"—No. 3500, Embossed, B Gauge

"Sierra"—No. 3504, Embossed, B Gauge

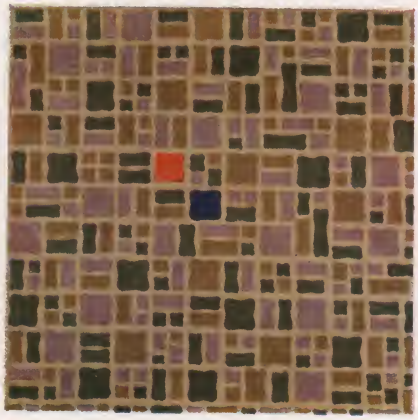
"Baronial"—No. 3501, Embossed, B Gauge

Moulded, No. 4227, D Gauge



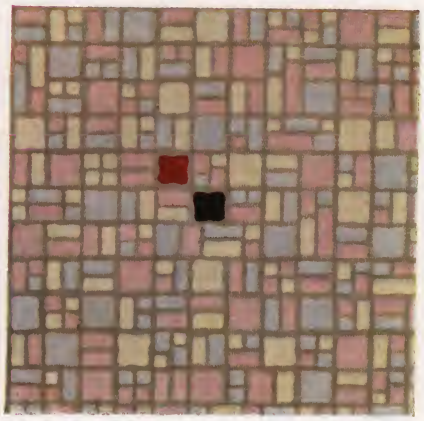
Moulded, No. 4245, D Gauge

Moulded, No. 4229, D Gauge



Moulded, No. 4247, D Gauge

Moulded, No. 4228, D Gauge



Moulded, No. 4246, D Gauge

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SEALEX LINOLEUM—JASPÉ—BATTLESHIP—PLAIN

Brown Jaspé. No. 1254

Tan Jaspé, No. 1253

Rose-Glow Jaspé. No. 1258

Dark Gray Jaspé, No. 1252

Apple-Green Jaspé. No. 1259

Light Gray Jaspé. No. 1255

Green Jaspé, No. 1256

Brown Battleship and Plain

Green
Battleship and Plain

Terra Cotta
Battleship and Plain

Gray
Battleship and Plain

Mahogany Brown
Battleship and Plain

Pacific Blue
Plain only

Colonial Buff
Plain only

Ivory White
Plain only

Light Green
Plain only

Yellow
Plain only

Orange
Plain only

Black
Plain Only

For weights, gauges and other data on *Sealex* Jaspé, Battleship and Plain Linoleum see C-N pages 1 and 2.

CUT-TO-ORDER FLOORS AND LINSIGNIA

Opportunity for individuality and artistry in design is afforded by the wide range of patterned, jaspé and plain linoleum in the *Sealex* line. That opportunity is further enlarged by our service on custom floors. This service includes cut-to-order and custom-laid materials for an entire floor area, as well as special insets—*Sealex* Linsignia—such as those illustrated below. These are *not* stock insets—they are merely indicative of what can be done. Your own designs—or those illustrated—will be made up to order, at reasonable cost.

"Owl and Pussycat"

"Caduceus"

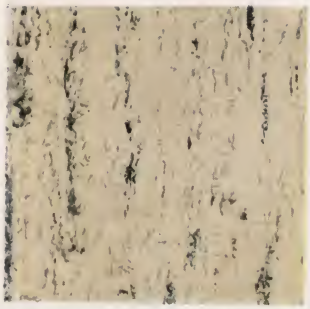
"Compass"

"Ancient Galley"

Continued on next page

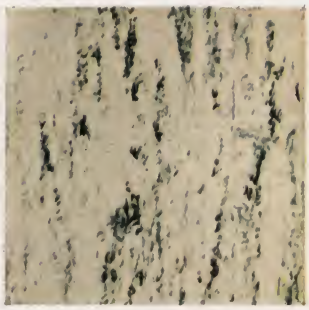
SEALEX TREADLITE TILE—PLAIN COLORS AND MARBLE-IZED

Sealex Treadlite Tile is available in eleven plain colors and nine marble-ized colors. Craft Brown, Moss Green, Terra Cotta, Slate Gray, Mahogany Brown, Pacific Blue, Colonial Buff and Ivory White are the same colors as Plain Linoleum, illustrated on C-N page 14. Other plain color tiles, not illustrated, are Stone Gray, Fawn Gray and Black. Marble-ized colors are Verde Antique (not illustrated), and those shown below. Additional information about *Sealex* Treadlite Tile may be found on C-N page 3.

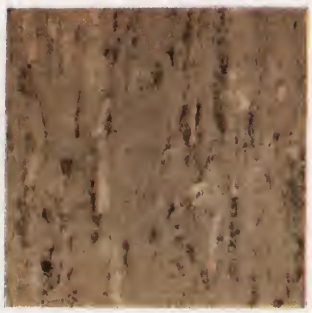


White Mottled Black, No. 1060

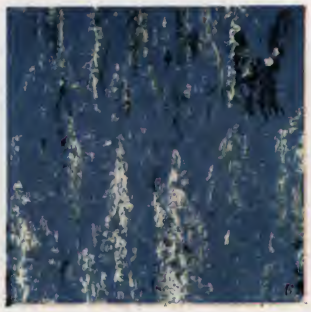
Black Mottled White, No. 1061



White, Green and Black, No. 1062



Light Sienna, No. 1066



Turquoise Blue, No. 1063

Platinum Gray, No. 1064

Red Paisley, No. 1065

Dark Sienna, No. 1067

SEALEX GRANITE LINOLEUM—GOLD SEAL CORK CARPET

Granite, No. 501

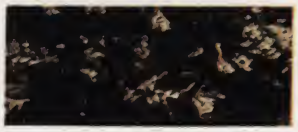
Brown Cork Carpet, No. 1200
Unpolished Polished

Green Cork Carpet, No. 1201
Unpolished Polished

SEALEX BORDER STRIPS AND BORDER ASSEMBLIES

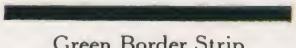
Black Border
60-90 foot lengths

Plain Green Border
60-90 foot lengths

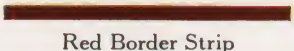


Black Marble Border
60-90 foot lengths

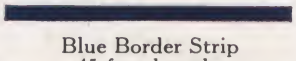
Black Border Strip
45 foot lengths



Green Border Strip
45 foot lengths



Red Border Strip
45 foot lengths



Blue Border Strip
45 foot lengths

Gray Border Strip
45 foot lengths

Four possible border assemblies are illustrated at the extreme right and left, combining various borders and border strips shown.

L. MUNDET & SON, INC.

461 Eighth Avenue, NEW YORK, N. Y.

DOMESTIC FACTORIES: HILLSIDE, N. J., BROOKLYN, N. Y.

BRANCHES

ATLANTA, GA.
BOSTON, MASS.
BUFFALO, N. Y.
CHARLOTTE, N. C.
CHICAGO, ILL.
CINCINNATI, OHIO
DETROIT, MICH.
HOUSTON, TEX.
KANSAS CITY, MO.
LOS ANGELES, CAL.
MEMPHIS, TENN.
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NEW YORK, N. Y.
PHILADELPHIA, PA.
ST. LOUIS, MO.
SAN FRANCISCO, CAL.
TULSA, OKLA.

AGENTS

CLEVELAND, OHIO, C. S. Ross
DES MOINES, IOWA, John Kennedy
MINNEAPOLIS, MINN., Insulation Sales Co.
PORTLAND, ORE., F. J. Leonard
PORTLAND, ORE., Pacific Asbestos & Supply Co.
SALT LAKE CITY, UTAH, L. A. Roser
SEATTLE, WASH., Pacific Asbestos & Supply Co.
UTICA, N. Y., George Weisenberger
VANCOUVER, B. C., CANADA, T. M. Grindley Company, Ltd.

Products

Mundet "Jointite" Corktile Flooring.

For other Mundet products, including Cork Insulation and Cork Bulletin Board, see Manufacturers' Index.

"Jointite" Cork Tile Flooring

Mundet "Jointite" Cork Tile is manufactured in two thicknesses, namely $\frac{5}{16}$ and ½ in.

Mundet "Jointite" Cork Tile is composed of the very best selected cleaned and screened cork shavings. These shavings are placed in moulds of the proper depth to produce the tile thicknesses desired and are subjected to tremendous pressure to insure the proper density for floor use. The moulds are then placed in an oven maintained at a relatively high degree of heat (approximately 600° F.). This heat allows the rosin in the cork shavings to liquify and acts as a binder for the shavings, thus no foreign substance is needed to hold the shavings together and the natural properties of the cork shavings are not impaired in any way.

"Jointite" Cork Tile is produced in three shades, all of which are brown in color, some light, some medium and some dark. These shades are obtained by governing the period of baking. Proper designs and arrangements of an artistic nature can be obtained by laying the tile in the different shades.

Ideal for

Corridors, halls, vestibules, ramps, stair treads, hospitals, schools, colleges, railroad stations, libraries, telephone rooms, offices, gymnasiums, churches, bathrooms, bedrooms, sleeping porches, nurseries, banks, theatres, courtrooms, art galleries, museums, etc.

Uses and Advantages

(1) Comes in various sizes, suitable for any floor.
(2) Does not shrink, swell or warp.
(3) Only absolutely pure cork used in its manufacture.
(4) Immune to grease, ink and most liquids.
(5) Cannot catch or absorb dirt or moisture.
(6) Easily cleaned, washable with soap and water.
(7) Varying shades of color are created by varying the temperature when baking. No coloring matter is used.
(8) Cannot splinter, tear, corrode, rot or crumble.
(9) Easy to walk upon due to its natural elasticity.
(10) Hard heels on Mundet "Jointite" Cork Tile are noiseless.
(11) Cosy and warm owing to its insulating qualities.
(12) Restful to the eye as well as to the ear.
(13) Highly compressed, hence strong, firm and durable.
(14) Not slippery, even when wet.

Sizes

12x36 in. is standard size. We also make standard 6, 9 and 12-in. squares; special 3, 4 and 5-in. squares; 3x18, 4x18, 6x18 and 9x18-in. border strips; and 9x36, 6x36, 6x12, 4x36, 4x8, 4x12, 3x12, 3x9 and 3x6-in. oblong strips.

Cove Base

We furnish Mundet "Jointite" Cork Tile Sanitary Cove Base in all heights.

Specifications

All cork tile stair treads and cork tile floors to be ½ or $\frac{5}{16}$-in. thick cork tile.

The tile to be highest grade pure cork throughout, solid, compressed, properly baked. There must be no forcing substances whatever in the tile. Only high grade, waterproof, elastic cement shall be used in applying the tile. All joints to be securely and hermetically cemented.

Where wood is used as a base under tile, nothing inferior to tongued and grooved flooring ⅞ in. thick, 6 in. maximum width, shall be used to support Mundet "Jointite" Cork Tile. It must be well fitted, tight, firmly nailed, smooth and level.

Where cement is used as a base under tile, it must be of a nailing quality and it shall be at least 1 in. thick and shall be made of 5 parts of acceptable clean screened sand, and 1 part fresh cement. It must be troweled smooth. Allowance must be made for ½ or $\frac{5}{16}$-in. thickness of tile. Do not lay cork tile before the concrete has set and dried.

Note (1): **Nosing**—Mundet "Jointite" Cork Tile is adaptable to any type of nosing on stair treads.

Note (2): **Cove Base**—The wall and floor must make a true and smooth right angle with each other so that the Mundet "Jointite" Cork Tile Cove Base will fit evenly throughout with both the wall and floor. There must be no foreign lumps or dirt on the surfaces. Surfaces may be of any standard acceptable backing—wood, plaster, cement, etc.

The Norwood Telephone Exchange, Cincinnati, Ohio—Flooring of "Jointite" Cork Tile

W. & J. SLOANE MANUFACTURING COMPANY

W. & J. Sloane Linoleum

Trenton, New Jersey

SOLE SELLING AGENTS
W. & J. SLOANE
577 Fifth Avenue, NEW YORK, N. Y.

BRANCH OFFICES

BALTIMORE, MD., 505 Manufacturers Exchange Building
BOSTON, MASS., Walker Building, 120 Boylston Street
CHICAGO, ILL., New Starck Building, 228 So. Wabash Avenue
CINCINNATI, OHIO, 519 Dixie Terminal Building
DALLAS, TEX., Santa Fe Building, 1200 Commerce Street
DENVER, COLO., Jacobson Building, 16th and Arapahoe Streets
DETROIT, MICH., Book Building
KANSAS CITY, MO., 503 Interstate Building
LOS ANGELES, CAL., Textile Center Bldg., E. 8th St. and Maple Ave.
PHILADELPHIA, PA., Public Ledger Building
PORTLAND, ORE., 12th and Morrison Streets
ST. LOUIS, MO., Ambassador Bldg., N. W. Corner 7th and Locust Sts.
SAN FRANCISCO, CAL., 180 New Montgomery Street
SEATTLE, WASH., 609 Terminal Sales Building

WAREHOUSES

CHICAGO, ILL. — CINCINNATI, OHIO — DALLAS, TEX. — DENVER, COLO. — DETROIT, MICH. — LOS ANGELES, CALIF. — PORTLAND, ORE. — RICHMOND, VA. — SAN FRANCISCO, CALIF. — SEATTLE, WASH.

Products

BATTLESHIP LINOLEUM.
PLAIN LINOLEUM.
INLAID LINOLEUM:
Contract Marble Tile "A"
Contract Marble Tile "Junior"
Pompeiian
Embossed Moulded Inlaid "A"
Embossed Moulded Inlaid "B"
Embossed Moulded Inlaid "C"
PRINTED LINOLEUM.
JASPÉ LINOLEUM.
CORK CARPET.
Straight Line
"Clearline"

Also W. & J. Sloane Passage Linoleum, Felt-Base Rugs and Yard Goods.

The W. & J. Sloane Linoleum Plant

The W. & J. Sloane Linoleum Plant was built at a cost of many millions of dollars, bringing under roof nearly 22 acres of floor space. The modern one-story buildings have horizontal conveyors, allowing a free flow of operation from raw material storage at the rear to the warehousing and shipment of finished goods at the front. In practically every department there are improved processes or machinery which result in superior quality of product, without increasing manufacturing cost. This plant represents the utmost advance to date in linoleum manufacturing efficiency, based on the company's 40 years' experience of marketing linoleum.

Plant of the W. & J. Sloane Manufacturing Company, Trenton, N. J.

Sloane Improved Manufacturing Methods

Special Over-size Calenders—An example of the improved manufacturing methods employed in the Sloane plant is found in the calenders that roll the final mixture of cork, linseed oil and other ingredients on to the burlap back and make the finished product.

This is one of the most important operations in the process of manufacture as the density, uniformity and natural finish of the completed goods depend in a large degree on pressure.

To secure best results without slowing down production, W. & J. Sloane had calender rolls with a diameter of 49 in. built to their own design, whereas a 36-in. calender was the largest previously made. Hence, Sloane calenders, run at usual speed, provide about 25% additional roll contact with a corresponding improvement in quality.

Furthermore, these rollers are manufactured to specifications so as to insure uniform thickness to 1/1000 of an inch throughout the goods.

Importance of Testing Raw Materials

The quality of the raw materials used has a most important effect on the final goods. Therefore the W. & J. Sloane plant maintains a completely modern laboratory in charge of competent chemists.

In addition to testing raw materials, the chemists make physical and chemical analyses

Massive Electrical Cork Grinders

Powerful 49-in. Linoleum Calender

Continued on next page

regularly at various stages in manufacturing process. Each batch of oil, each "mix" of linoleum cement is carefully analyzed to make sure that it has the proper physical and chemical properties.

Goods in the heaters are continually being tested. The final test determines when goods are properly seasoned.

W. & J. Sloane Double-Wax Finish

All W. & J. Sloane Battleship and Inlaid Linoleums are delivered to the job double-waxed. The matter of linoleum finish is not adequately covered in standard government specifications, but has become of increasing importance to large buyers of linoleum, both for the actual appearance of the goods and because the finish is an indication of quality.

In the W. & J. Sloane manufacturing process a superfine *natural* finish is produced without artificial means by extra grinding and mixing of raw materials and by super-calendering. To this unusually smooth and compact natural finish is added two separate and individual waxing operations by a special process developed in the Sloane plant. Double waxing at the plant eliminates the necessity for surface treatment after the linoleum is laid. It brings out the sheen and beauty of pattern and color and makes the goods ready for use when laid.

Oxidizing Linseed Oil for Linoleum

W. & J. Sloane Guarantee

All W. & J. Sloane Linoleum is guaranteed to be made of the best raw materials. It is rigidly tested and inspected throughout all the processes of manufacture and is uniform in gauge and weight and of the highest standard in wearing quality and finish.

Every yard of Sloane Linoleum and Felt-base Floor Covering is guaranteed to give satisfactory service.

Where W. & J. Sloane Linoleum May Be Secured

In nearly every city there are one or more retailers or linoleum contractors carrying the W. & J. Sloane line. They will gladly show samples of all patterns and grades, submit estimates and attend to all details of installation. Names of local dealers or contractors on request.

Where Linoleum Is Used

In private homes linoleum is used not only in kitchen and bathroom but also makes a wonderfully attractive and economical floor for halls, dining and living rooms, sunrooms, bedrooms, etc.

Where decorative features are essential—as in banks, clubrooms, lobbies, stores, showrooms and in private homes—a comprehensive selection of patterns and colorings in either large or small designs is available in the W. & J. Sloane Contract Marble Tiles, Straight Line Inlaids, Pompeiian, Embossed Moulded Inlaids and "Clearline" Inlaids.

In schools, hospitals, libraries, office buildings, Federal, State, county and municipal buildings, churches, college buildings, museums, lodges, theaters, restaurants, cafes, hotels, apartment houses, automobile showrooms, display rooms of all kinds and residences of all descriptions, W. & J. Sloane Battleship, Plain or Jaspé Linoleums are most suitable. These provide the greatest resistance to wear and offer sound-deadening qualities and relief of eyestrain.

Final Inspection and Finishing Room

For areas subject to an unusual amount of wear, a heavier grade of linoleum should be selected than where there is only average wear.

An increasing use of W. & J. Sloane Linoleum is made in structures built for investment purposes. This covers office buildings, apartments and private homes. The inclusion of linoleum in the specifications adds a finishing touch which helps to sell or rent more quickly.

GAUGES AND WEIGHTS

Grades	Finished, in.	Gauge mm.	Nearest fraction, in.	Average weight of roll crated, lb.	Average weight of square yard crated, lb.	Square yards to roll
Inlaid (2 yd. wide)						
Contract marble tile "A"	.118	3.00	1/8	553	9.2	60
Contract marble tile "Junior"	.098	2.50	3/32	441	7.3	60
Pompeiian marble tile	.082	2.10	5/64	400	6.6	60
Embossed Moulded "A"	.118	3.00	1/8	505	8.4	60
Embossed Moulded "B"	.095	2.40	3/32	440	7.3	60
Embossed Moulded "C"	.078	1.98	5/64	365	6.1	60
Straight line A gauge	.118	3.00	1/8	553	9.2	60
Straight line D gauge	.071	1.80	5/64	350	5.8	60
"Clearline" C gauge	.078	2.00	5/64	365	6.1	60
"Clearline" D gauge	.066	1.70	5/64	320	5.3	60
Printed						
E quality 8/4 (2 yd. wide)	.066	1.70	1/16	260	4.3	60
E quality 16/4 (4 yd. wide)	.066	1.70	1/16	530	4.4	120
E passage 5/8 (22½ in. wide)	.066	1.70	1/16	170	3 lin. yd.	30
E passage 3/4 (27 in. wide)	.066	1.70	1/16	200	3.3 lin. yd.	30
E passage 24 in.	.066	1.70	1/16	175	2.8 lin. yd.	30 lin.
Felt-Base Yard Goods						
A quality 8/4 (2 yd. wide)	.070	1.80	1/16	250	4.2	60
A quality 12/4 (3 yd. wide)	.070	1.80	1/16	360	4.	90
A quality passage 24 in.	.070	1.80	1/16	165	2.7 lin. yd.	30 lin.
Battleship Linoleum (2 yd. wide)						
6 mm. hvy. U. S. N. standard	.236	6.00	15/64	811	13.5	60
3/16" med. U. S. N. standard	.187	4.75	3/16	646	10.7	60
Lt. wgt. U. S. N. standard	.142	3.60	5/32	501	8.3	60
Plain Linoleum (6 ft. wide)						
A gauge	.142	3.57	9/64	525	8.75	60
B gauge	.118	3.00	1/8	445	7.4	60
D gauge	.078	2.00	5/64	310	5.2	60
Jaspé Linoleum (6 ft. wide)						
3/16"	.187	4.76	3/16	715	11.9	60
A gauge	.142	3.60	5/32	565	9.4	60
Cork Carpet						
XXX	.250	6.85	1/4	600	10.0	60
Special	.240	6.10	1/4	550	9.16	60

Aristocrat Felt-Base Rugs	Weight per carton, lb.	Standard Felt-Base Rugs	Weight per carton, lb.
6x9 ft.	28	6x9 ft.	21
7.6x9 ft.	36	7.6x9 ft.	25
9x9 ft.	42	9x9 ft.	27
9x10.6 ft.	48	9x10.6 ft.	34
9x12 ft.	54	9x12 ft.	38
3x9 ft. (3 per carton, 1 pattern)	33	9x15 ft.	46
4.6x9 ft. (3 per carton, 1 pattern)	55	3x9 (3 per carton, 1 pattern)	26
		4.6x9 (3 per carton, 1 pattern)	48

Note: The gauges shown are subject to an allowable variation of .005 inches over or under the figures given. For purposes of figuring freight the average weight of crated rolls will answer all practical purposes, subject to slight variations due to differences in length of roll and to the weight of the crate.

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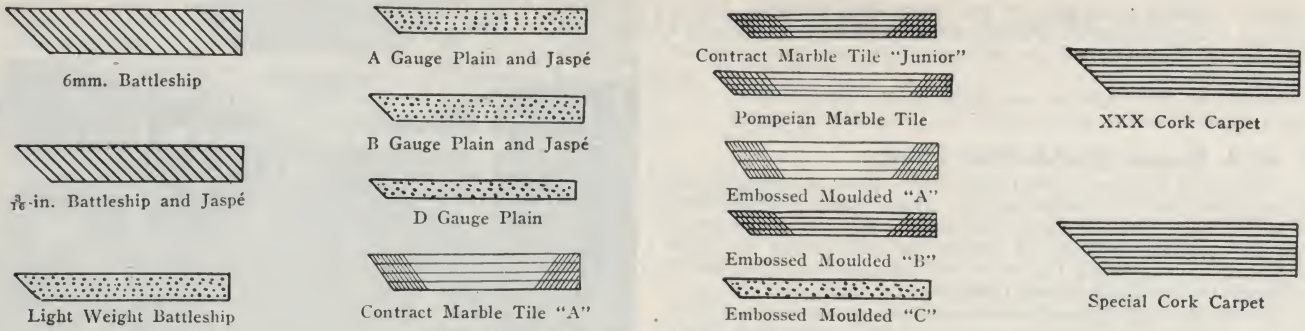


Actual Thickness of W. & J. Sloane Linoleum

Advantages of Linoleum Floors

Economy—When included in original plans and laid over subfloors, the installation cost of linoleum is generally considerably less than hard wood. Yet it is long-wearing and thus low in ultimate cost. No costly refinishing operations are ever required.

Long Wear—A floor of W. & J. Sloane Linoleum will wear for years, even when submitted to hard and constant use. The actual length of life will depend on the grade selected and the care given to it.

Germproof—A linoleum floor is highly sanitary. Its smooth, close-knit surface, free from cracks or any unevenness, prevents the absorption of dust and germs. This is particularly true of a floor of W. & J. Sloane Linoleum which is subjected to greater pressure in the manufacturing process, thereby attaining greater density and smoothness.

Easily Cleaned—Because of its non-absorptive qualities, the day-to-day care of W. & J. Sloane Linoleum is ordinarily only a matter of sweeping with a soft brush or wiping with a damp mop. An occasional waxing will both preserve inlaid linoleum and help keep cleaning costs at a minimum. An occasional coat of varnish is recommended for printed linoleum and felt base.

Fireproof—It has been thoroughly demonstrated to the fire prevention boards of nearly all large cities that linoleum is suitable for fireproof construction.

Pleasing Appearance—Whether in plain colors or in patterns, linoleum floors offer a neat and pleasing appearance. The patterns present unusual decorative possibilities.

Insulation—When cemented to the floor, linoleum prevents any passage of air in either direction. It helps to maintain an even room temperature in the winter and retards the heat from permeating the rooms in the summer.

Comfort—Linoleum floors are resilient and easy to walk on, quiet, odorless and soundproof.

Decorative Features—The W. & J. Sloane Manufacturing Company have given particular emphasis to the development of authentic designs and colorings which can be employed by architects in their original plans.

Start Your Decorative Treatment with the Floors—In the W. & J. Sloane line, there is a pattern or color that will meet decorative requirements and become a permanent flooring, when properly laid, for every room in the house.

Doing Over Old Wood Floors—By laying linoleum where old or unsightly floors exist in the home, an entirely new atmosphere can be obtained, and one that usually alters the entire appearance of the room. This is far less costly and troublesome than ripping up the wood and laying new—and permits of the use of color effects.

Description of W. & J. Sloane Grades

Battleship and Plain Linoleum—A plain colored linoleum made to specifications of U. S. Government to withstand the hardest kind of wear. Due to special processing and use of finest quality materials, Sloane Battleship Linoleum has an unusual density and pliability, a superfinish and a uniform color throughout. Brown, green, gray and black.

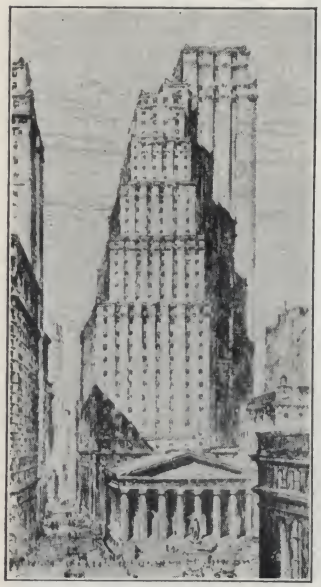
Jaspé Linoleum—Similar to Battleship and Plain goods, but with two-tone effect instead of the solid color, particularly desirable for contract work. Also used for residences as a background for rugs and furnishings.

Cork Carpet—This is an exceptionally resilient floor covering. Particularly suitable for libraries, churches, schools, etc., where noise must be eliminated. In brown and green.

Inlaid Linoleum—Different grades of inlaid linoleums in the W. & J. Sloane line offer a wide variety of patterns and colors which go clear through from surface to burlap back and form the longest wearing of all patterned linoleums.

For large contracts the grades generally used are Contract Marble Tiles "A," Contract Marble Tiles "Junior," Embossed Moulded "A," and "A" Gauge Straight Lines. These grades contain a number of unusual effects in geometric patterns of original Sloane design, some with large figures, some with small, the majority having a beautiful veined effect akin to marble. These are the heaviest gauges of inlaids and hence the most resistant to wear. For smaller jobs where wear is lighter, an equally good selection of patterns and colors is offered in the lighter gauge of Straight Line Inlaids, Pompeiian Marble Tile, Contract Marble Tile "Junior," Embossed Moulded "B" and "C," and in the "Clearline" Inlaids. Pompeiian Marble Tile is genuine marble tile linoleum in a variety of unusually attractive color combinations made in a light gauge for household use. Straight Line Inlaid is made in clean-cut squares and geometric effects. "Clearline" Inlaid has unusual varied patterns and color styles. This linoleum is made by a process permitting unusually wide latitude in color and pattern effects.

Printed Linoleum—Printed Linoleums are made by printing patterns with high grade oil paints on the surface of the lighter gauges of genuine plain linoleum.



Chase National Bank, New York, N. Y.

Chase National Bank Interior
3/16-in. Brown Battleship, 12,000 sq. yds.
6-mm. Brown Battleship, 800 sq. yds.

Yale University

Continued on next page

COMPARISON OF GOVERNMENT STANDARD SPECIFICATIONS NO. 209 WITH PITTSBURGH LABORATORY TEST OF W. & J. SLOANE BATTLESHIP LINOLEUM, OCT. 14, 1929

		6 mm.		3/16 in.		Lt. Wt.		
		Gov.	Sloane	Gov.	Sloane	Gov.	Sloane	
Weight	From a sample approximately 12 in. square, the weight of 1 sq. yd. is calculated to the nearest gram.	Weight per square yard in lbs. 10.50	11.58	8.00	9.44	6.50	7.38	According to actual tests W. & J. Sloane Linoleum far exceeds the Government specifications in weight.
Gauge	The sample is calipered at ten equally spaced points, at least ¾ in. from a cut edge.	Minimum ins. .230	.234	.182	.189	.137	.138	One of the largest calenders in the world gives to Sloane Linoleum a hard, smooth surface insuring an even thickness throughout.
		Maximum ins. .240	.240	.192	.192	.147	.148	
Keying	According to Government specifications a pull of 6 lbs. is required to tear the burlap away from the linoleum mix.	Load in lbs. required to strip burlap backing Warp .6	16	Warp 6	16	Warp 6	15	The Government specifies that a pull of 6 lbs. be required to pull the burlap from the linoleum. Pittsburgh Laboratory Test shows that W. & J. Sloane Linoleum will stand much more than this.
		Fill 6	18	Fill 6	16	Fill 6	14	
Indentation	A pressure of 80 lbs. is applied to the upper surface of a piece of Battleship Linoleum for a period of 60 seconds by means of a flat-ended cylindrical steel bar .282 in. in diameter. When the load has been removed 1 hour, the indentation shall not exceed .010 in.	Depth of indentation in ins. .010	.0025	.010	.0025	.010	.0012	"All of the samples stood up exceptionally well which we would consider a very important test under these specifications." U. S. Government Report.
Absorption	A sample of Battleship Linoleum is immersed in water for 24 hours and shall be weighed before and after immersion. The percentage of increase in weight shall not exceed the figures shown.	Percentage of Increase 2.5%	1.47%	4.0%	1.89%	5.5%	1.87%	The percentage of absorption in W. & J. Sloane Linoleum was very small because of the improved manufacturing methods which make for durability.
Pliability	Strips of 6 mm. Battleship Linoleum are bent around mandrels 3 in. in diameter. Also 3/16 in. and Light Weight Battleship are bent around mandrels of 2-in. diameter.							Government specifications were followed with the result that there was no sign of the linoleum cracking or breaking.

Note: In all instances W. & J. Sloane Linoleum does more than meet the requirements of the Government specifications. The results of the Pittsburgh Testing Laboratories of Pittsburgh, Pa., show the rigid specifications that the W. & J. Sloane Manufacturing Company have set as a standard for this product.

Architects' Contract Service

We have a contract department and experts who will be glad to offer their experience to architects in selecting the proper grade of linoleum to use for special services.

Our expert linoleum men will be glad to suggest the proper gauge to give the most satisfactory service for the particular problem under consideration. They will also prepare specifications, secure estimates, etc., if the architect so desires.

There is no charge for this service. Write Architects' Service Department, W. & J. Sloane, 577 Fifth Avenue, New York, N. Y.

Essential Points to Watch When Linoleum Is Being Laid

Storing of Linoleum on the Job—Linoleum should be stored in a dry place in a temperature of at least 70° for 48 hours previous to using. The crates should be placed on end—not flat—and in no case should a crate be allowed to drop on its side as it is liable to injure the linoleum.

Unpacking Linoleum—In unpacking linoleum it is essential that it be done in a temperature of at least 70°. Cold decreases the pliability of linoleum and it is more liable to be injured when handled. The rolls should be loosened up and allowed to stand in the warm temperature for 2 or 3 days before being used, after which it will be in a pliable condition and will lay flat.

Floor Must Be Dry—One of the most essential conditions for laying linoleum on a cement floor is that the cement floor must

Board of Transportation Building, New York, N. Y.
6mm. Brown Battleship, 13,560 sq. yds.

W. & J. Sloane Linoleum—An Aid to Decoration

Continued on next page

be absolutely dry. Linoleum can never be laid satisfactorily on a floor containing any moisture. If there is any moisture in floor or slab beneath it, the laying of linoleum seals the surface and dampness is brought to top. This loosens cement and causes linoleum to curl or blister.

Cement Floors in Contact with Earth—Linoleum should never be laid over cement floors which are in contact with earth. Condensation or moisture is almost certain to be brought to surface of concrete as soon as surface is sealed by laying linoleum over it, and the linoleum will be loosened from cement floor and spoiled.

The Doctors Hospital, New York, N. Y.
Light Brown Jaspé, 12,429 sq. yds.
$\frac{3}{16}$-in. Brown Jaspé, 923 sq. yds.
$\frac{3}{16}$-in. Green Battleship, 2,585 sq. yds.
Installed by NATHAN STRAUS & SONS, New York, N. Y.

Use of Deadening Felt Under Linoleum—***Over Cement Floors***—Although not essential, its use under linoleum makes it easier to take up the linoleum in case it becomes necessary to move. The extreme pliability of Sloane's Linoleum when laid directly over a concrete floor makes a particularly resilient floor without deadening felt.

Over Wood Floors—On account of shrinking and swelling of wood floor boards, the use of builder's deadening felt allows a certain amount of play between linoleum and boards. It also helps to bridge over small cracks in floor and to keep linoleum from following the impression of the cracks. An uneven or worn wood floor can also be built up with the felt to make a comparatively level floor.

Builder's deadening felt is made 1 yd. wide and the grade recommended weighs 1½ lbs. to the sq. yd., and is approximately ⅛ in. thick. Felt should be run lengthwise across boards, butt-joined and cemented to wood floor with linoleum paste. Linoleum is cemented to felt, the strips running parallel with felt.

Linoleum Cements—There are two types of cements used for linoleum—waterproof cement and water-resistant paste.

Specifications for Laying Linoleum

Scope of Work—Linoleum contractor shall furnish all labor and materials for covering spaces hereafter called for in the specifications or where indicated on drawings to be covered with linoleum.

The spaces to be covered are as follows: (Here give rooms, halls, closets, stairs, etc., to receive linoleum and grade and design of linoleum for each room.)

Linoleum—Linoleum shall be W. & J. Sloane Linoleum of the grades and kinds as called for under list of spaces to be covered. Samples shall be submitted with the estimate of the grade and colors called for.

Finish—Linoleum shall be delivered to the job with a double-wax surface dressing already applied.

Felt—Where felt underlining is called for it shall be of good quality, unsaturated builder's deadening felt weighing not less than 1½ lb. per sq. yd.

Linoleum Cements—Cements shall be delivered to the job in manufacturers' original containers. Several approved pastes, waterproof and water-resistant, are easily obtainable. A list will be mailed on request. We recommend W. & J. Sloane Linoleum Cement (water-resistant).

Floor Preparation—The surfaces of floors, etc., where linoleum is specified, shall be delivered to contractor broom clean, free from any inequalities in surface, lime, oil, dampness, etc. Contractor shall report to architect or general contractor in writing any defects which will prevent the laying of a good job.

Cement Floors—New Work—If linoleum is to be laid on cement floors, the floor shall be troweled smooth and hard. All ruling off of cement finish into squares shall be omitted in finished coats.

Old Work—Just as in new cement floors, it is necessary that an old floor be made clean and smooth. Any lining off of blocks in finish coat or holes in floor shall be filled with plaster of paris by linoleum contractor.

If the cement floor has been painted, paint shall be cleaned off or linoleum paste or cement will not stick. Paint can be softened with paint remover or lye and then scraped off. Care must be taken to see that the material used in removing paint is also throughly cleaned off.

Oil should also be removed or cleaned off as much as possible, and the cleaner also removed before laying linoleum.

Cracks—Cracks in cement floors must be filled with plaster of paris and smoothed down evenly and brought to a level surface.

Wood Floors—Wood floors on which linoleum is to be laid, must be smooth and floor boards nailed tight.

New—For new floors the boards should not be more than 3 or 3½-in. face. A double floor should be used and top floor blind nailed. To obtain the best job, a sanding machine should be first run over floor and a crack filler used to fill up any large cracks.

Old—Old floors should be made as smooth as possible. All loose boards should be securely nailed. Face nailing should be avoided unless nails are toed in and countersunk. Floors which have been painted or varnished should have these finishes removed as described for cement floors.

Cracks and Seams—Wide cracks in wood floors should be filled with wooden strips, nailed in place and plane leveled with the balance of the floor. Small cracks must be filled with approved material.

Workmanship—The contractor shall furnish competent labor thoroughly trained in the laying of linoleum.

The name of subcontractors for linoleum work shall be submitted to architect for approval before contract shall be awarded.

Delivery of Material—Linoleum contractors shall notify general contractor sufficiently in advance so that latter may supply a temperature of 70° F., starting at least 24 hours before linoleum work is begun and continuing for 24 hours after it is finished.

Laying Felt—Where felt is specified to be used, it shall be cemented to underfloor with linoleum paste. Paste shall be spread over entire surface of floor. Felt shall

A Modern Floor in a Modern Kitchen
Pompeian Marble Tile No. 445

Continued on next page

be laid in strips in opposite direction to run of boards of a wood floor. It shall be neatly fitted around all projections, pipes, etc., to make a smooth surface free from cracks, inequalities, etc. All seams of felt shall be butted, not lapped. After laying, felt shall be rolled with iron roller to remove air blisters and secure proper adhesion.

Laying the Linoleum—Before starting to lay linoleum, surface on which it is to be laid shall be perfectly smooth, clean and free from all dirt, moisture or oil. Linoleum contractor shall satisfy himself that surface is in condition to start laying and shall not commence until surfaces are satisfactory.

After felt has been properly laid over wood floors, linoleum shall be laid over felt with fewest possible seams and no small patches will be permitted. Seams shall run parallel with joints in felt and care shall be taken that seams in felt and linoleum do not come over one another.

Linoleum shall be laid over cement floor with fewest possible seams.

Plain linoleum shall be laid so that joints lap about ½ in. It shall be fitted accurately around all pipes, against walls and other projections in room. Figured linoleum joints shall be butted to match out the pattern.

Body of linoleum, to within 6 in. of joints and edges, shall be cemented down with an approved linoleum paste.

Linoleum shall then be thoroughly rolled with a 150-lb. steel roller to remove all air blisters and secure proper adhesion.

In plain linoleum, joints shall be cut through both pieces with one cut so as to make an accurate and close joint.

Edges and seams shall be turned back and then cemented down with an approved waterproof cement. Joints and edges shall be rolled as above specified, and any surplus cement which may be left on surface shall be removed immediately.

Edges and joints shall then be weighted down with sand bags or bricks for 24 hours.

Contractor shall leave floor in a clean condition, ready for occupancy on completion, and protected with heavy paper.

Guarantee—Linoleum contractor shall guarantee his work for one year to owner or general contractor, as directed by architect, against all defects of material and workmanship. He shall, on receipt of written notice from owner, make at his own expense, any repair that may be necessary except repairs of injury from any cause other than ordinary wear and tear.

A Few W. & J. Sloane Linoleum Installations

Sq. Yd.

Los Angeles, Cal.—Los Angeles City Hall
Battleship 20,000

Sacramento, Cal.—Strub Building (Motor Vehicle Dept.)
3/16-in. Brown Battleship 7,000

New Haven, Conn.—Yale University
3/16-in. Brown Battleship 9,535
3/16-in. Green Battleship 7,696
Installed by The Chamberlin Co., New Haven, Conn.

Washington, D. C.—Acacia Mutual Life Insurance Building
6-mm. Battleship 10,000
Installed by W. B. Moses & Sons

Jersey City, N. J.—Nurses' Home—Jersey City Hospital
"A" Gray Jaspé 13,700
"A" Black Jaspé 1,100
Installed by W. J. Duffy, Jersey City, N. J.

Kearney, N. J.—Western Electric Co.
6-mm. Brown 12,000
Installed by Simon Manges & Son, New York, N. Y.

Somerset Hills, N. J.—U. S. Government Hospital
3/16-in. Brown Battleship 12,100
Installed by Dewalt Co.

Marcey, N. Y.—Utica State Hospital
Light Weight Brown 10,994
Installed by Buffalo Floor Covering Co., Buffalo, N. Y.

Sq. Yd.

New York, N. Y.—
(1) Chase National Bank
3/16-in. Brown Battleship 12,000
Installed by Simon Manges & Son
(2) New York & Queens Electric Light Co.
Brown Battleship 8,000
(3) Presbyterian Hospital
3/16-in. Brown Battleship 60,000
(4) Board of Transportation, 250 Hudson Street
6-mm. Brown Battleship 13,560
Installed by Simon Manges & Son
(5) Sloane's Memorial Y. M. C. A., 412 Ninth Avenue
3/16-in. Green Jaspé 17,407
Installed by Simon Manges & Son
(6) Doctors Hospital, East End Avenue and 87th Street
Light Weight Brown Jaspé 12,429
3/16-in. Brown Jaspé 923
3/16-in. Green Battleship 2,585
Installed by Nathan Straus & Son, New York City
(7) Kings County Hospital
¼-in. Brown Battleship 12,000
Installed by Simon Manges & Son
(8) London Terrace Apartment
"Clearline" Inlaid No. 1200 8,000
Installed by Janbus Co.

San Francisco, Cal.—Russ Building
3/16-in. Brown Battleship 40,000

Detroit, Mich.—Michigan Bell Telephone Co.
3/16-in. Brown Battleship 2,800

Trenton, N. J.—Trenton Central High School
6-mm. Brown Battleship 10,000

Creedmore, N. Y.—Brooklyn State Hospital
Light Battleship 18,000

Orangeburg, N. Y.—Orangeburg State Hospital
"A" Brown Jaspé 12,000

Poughkeepsie, N. Y.—Vassar College
6-mm. Brown Battleship 2,200

Wassaic, N. Y.—Wassaic State School
"A" Brown Jaspé 13,000

Charlotte, N. C.—Southern Power Co.
6-mm. Battleship 5,000
Installed by Flexible Floors

Philadelphia, Pa.—University of Pennsylvania
Light Weight Brown Battleship 1,400
3/16-in. Brown Battleship 1,100

Portland, Ore.—Pacific Telephone Co.
6-mm. Brown Battleship 4,000
Light Weight Brown Battleship 3,000

Fort Worth, Tex.—Southwestern Bell Telephone Co.
¼-in. Gray Battleship 2,500

London Terrace Apartments, New York, N. Y.

FINNELL SYSTEM, INCORPORATED

ESTABLISHED 1906

Manufacturers of Electric Floor Scrubbing-Polishing Machines

ELKHART, IND. OTTAWA, CANADA

BRANCH OFFICES AND WAREHOUSES IN ALL PRINCIPAL CITIES OF THE UNITED STATES AND CANADA

AMSTERDAM, HOLLAND LONDON, ENGLAND BUENOS AIRES, ARGENTINE PARIS, FRANCE STOCKHOLM, SWEDEN

Electric Floor Scrubbing-Polishing Machines

Floors and floor coverings are subjected to more use and abuse than any other part of a building. Representing large investments they are expected to serve satisfactorily for varying periods of years.

The return on the investment in any floor or floor covering will depend to a large extent upon the way in which it is maintained. Old-fashioned hand scrubbing and pole mopping cleaning methods, and antiquated weighted brush polishing methods are steps in advance of utter neglect, but the modern scientific upkeep methods are those of the Electric Floor Scrubber-Polisher and auxiliary units.

FINNELL SYSTEM, INCORPORATED, manufactures eight sizes of electric floor machines, four sizes of mop trucks, two sizes of vacuum moppers and water absorbers (for removing dirty water). This furnishes about twenty different systems to serve as many different floor conditions.

It is no more reasonable to assume that the world could standardize on one or two sizes of electric floor machines and get efficiency in caring for floors than that one or two sizes of ships could efficiently serve all the requirements of ocean, coastwise, lake and river commerce.

FINNELL SYSTEM, INCORPORATED, makes a survey of each floor condition and then recommends for installation that combination of units which 24 years of practical experience in the design, development and construction of floor maintenance machines shows would net the buyer the highest possible returns on the investment. It is not a case of selling a "floor machine"—it is a case of FINNELL installing the *right* "floor maintenance system" for each and every condition.

FINNELL SYSTEM, INCORPORATED, guarantees *clean* floors or beautifully wax-polished floors at a saving in time, labor and money. Finnell machines are virtually *noiseless,* thus being the preference for hospitals and other institutions. They are a quality product which G-E motors and Timken roller bearings attest.

Warehouse Stocks and Delivery

We carry stocks in all principal cities. If need is urgent wire us at our general office, or write us direct to counsel with you for the installation of the right FINNELL SYSTEM for your client's requirements.

Prices range from $50.00 to $1200.00.

Model HC Scrubber-Polisher

Has a 10-in. diam. brush ring making 230 r.p.m. Water fed to floor through center of brush ring from tank on handle. ¼ hp. G-E motor.

Same design with 15-in. brush ring, ⅓ hp. motor and 8-in. double disc wheels is *Model No. 16F*

Below

No. 9 Vacuum Mopper

An indispensable auxiliary unit to scrubbing machines in getting spotlessly clean floors with a saving in time and labor over hand mopping methods. Dirty water tank capacity, 2½ gal.; squilgee, 18 in.; motor, G-E., 1/7 hp.; wheels, 3¾ in. rubber tired; cable, 50 ft.

No. 8 has 4-gal. dirty water tank and 4-gal. clean water tank; squilgee arms, 27 in. tip to tip; cable, 100 ft. on automatic rewinding drum and overhead trolley; wheels, 8-in. double disc, rubber tired; 1/7 hp., G-E Universal motor

No. 9 Vacuum Mopper

Model No. 17-F Scrubber-Polisher

Most popular size floor machine. It combines versatility and handiness in operation with great capacity. An 18-in. brush ring is driven 175 r.p.m. by a ¾ hp. G-E waste packed motor. Water tank capacity is 4 gal.

Model No. 17F-R is the same but mounts the reel and trolley assemblies of the Model No. 20. Timken roller bearing equipped

Model No. 20 Scrubber

Largest and most powerful scrubbing machine built. Has a 24-in. brush ring making 144 r.p.m. Equipped with ¾ hp. G-E waste packed motor. Has 10-gal. water tank, 8-lb. scouring powder compartment and 100-ft. of rubber covered cable on automatic rewinding drum. Worm driven gears are enclosed in grease

No. 50 Scrubber-Polisher

Machine has great capacity for its size; weighs only 20 lb.; heavy enough for the job, but can be transported up and down stairs with ease. Runs under desks, chairs, tables, and low objects; does light sanding, applies wax, polishes, scrubs and removes paint, varnish or shellac, if desired. Twin 5-in. discs making 400 r.p.m.

No. 2D Mop Truck

Mop Trucks

No. 2D has clean water and dirty water tanks of 26-gal. capacity each. 8-in. double disc wheels; Bronze bearings equipped.

No. 2F is similar but truck is mounted on 4 wheels.

No. 3A has tanks of 13-gal. each.

No. 4A has tanks of 7½-gal. capacity each

THE BUTCHER POLISH CO.

Manufacturers of Floor Polish and Floor Wax

84 Broad Street
BOSTON, MASS.

Products

BUTCHER'S BOSTON POLISH, a hard wax finish; BUTCHER'S LIQUID WAX; BUTCHER'S No. 3 REVIVER.

Also, Butcher's Weighted Floor Polishing Brushes and the Butcher Everyday Polisher.

Scope and General Information

The products of this company, having been on the market for nearly fifty years and having given throughout that period consistent satisfaction, have become recognized as standard by architects, interior decorators and painters.

This is particularly true in the case of large institutions, hospitals, colleges, etc., that employ superintendents whose purchases are based on experience.

Butcher's Boston Polish, a Hard Wax Finish

Butcher's Boston Polish is a perfectly transparent finish for floors, interior woodwork, furniture and linoleum.

Butcher's Boston Polish or Hard Wax Finish Can
(1-lb. size)

It preserves the natural color and beauty of the wood, and as it is not brittle it will not scratch or deface like shellac or varnish, nor will it become soft and sticky like beeswax.

It has the reputation of being the best floor polish made and the only one without objectionable features, and is especially adapted for hardwood floors, bowling alleys and linoleum.

It is manufactured from pure materials perfectly blended so that it has great density and lasting qualities.

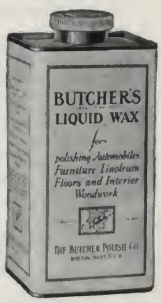
Its extreme density and high melting point result in a hard coating of considerable body, which can not be obtained with polishes manufactured with soft waxes and cheap highly volatile solvents.

Covering Capacity—After surface has been properly filled, 1 lb. of Butcher's Boston Polish will cover 300 sq. ft.

Butcher's Liquid Wax

Butcher's Liquid Wax is used for repolishing floors, furniture or interior woodwork and is particularly adapted to the maintenance of linoleum as recommended by linoleum manufacturers.

After the floors, or other woodwork, have been properly finished with Butcher's Boston Polish and require freshening up, dampen a cloth or mop with Butcher's Liquid Wax, rub over the surface and polish at once by rubbing with a dry, soft cloth.

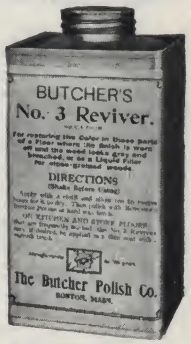


Butcher's Liquid Wax Can
(¼-gal. size)

Butcher's No. 3 Reviver

Floors of hard pine, maple, or other close grained woods will not take a filler. For such floors apply a coat of Butcher's No. 3 Reviver, which will give a warm and even color to the wood. It should be left overnight to dry and then treated with Butcher's Boston Polish according to the directions given herewith.

To restore the color of the parts of the floor where the finish is worn off and the wood looks gray and bleached, dampen a cloth with the Reviver and rub over the defaced portions; let it remain 24 hours to dry; then polish with Butcher's Boston Polish according to directions.



Butcher's No. 3 Reviver Can
(¼-gal. size)

For kitchen, store, and piazza floors that need to be washed often, lay on a thin coat of Butcher's No. 3 Reviver, with an ordinary varnish brush, or dampen a cloth and go over as directed above, rubbing off well before leaving to dry. Repeat when the wood begins to look gray and worn.

Covering Capacity—1 gal. will cover about 2000 sq. ft. of surface.

General Specifications

Do not specify "or equal" as this only leads to the use of inferior grades. Experience in actual use should be the determining factor in specifying a wax polish.

Floors (without Varnish)—***(a) Open Grain Woods, Oak and Others***—The floors shall first be filled with a paste filler satisfactory to the architect, allowed to dry and thoroughly rubbed off.

After 24 hours a coat of Butcher's Boston Polish or Hard Wax Finish shall be spread evenly over the floor with a cloth and allowed to dry for ½ hour. The floor shall then be polished with an approved electric polishing machine or a long handled weighted brush (25-lb.) rubbing first across the grain and then with the grain.

Just before the floors are put in use a second coat shall be applied and finished as the first.

Note: In addition to the filler a thin coat of shellac may be laid on and sandpapered slightly before applying the finish coat of wax.

(b) Close Grained Wood (Hard Pine, Maple, etc.)—The floors shall first receive a coat of Butcher's No. 3 Reviver applied with a cloth and allowed to dry for 24 hours.

Then apply Butcher's Boston Polish as above.

Varnished Floors—Insert varnish specification, then specification for 1 coat of Butcher's Boston Polish.

Interior Woodwork and Standing Finish—Specifications similar to the foregoing, except that after applying Butcher's Boston Polish it shall be polished with a brush of the stiffness of a shoe brush and afterwards with dry soft cloths.

Kitchen and Piazza Floors—Shall be finished with a thin coat of Butcher's No. 3 Reviver laid on with a varnish brush.

Territory

Butcher's products are for sale everywhere by paint and hardware dealers and department and drug stores.

CONTINENTAL CHEMICAL CORPORATION

Compounds for Conditioning and Maintaining All Types of Floor Surfaces

WATSEKA, ILL.

BRANCH OFFICES

ATLANTA, BOSTON, CHICAGO, CLEVELAND, JACKSONVILLE, FLA., *DALLAS, DES MOINES, *DETROIT, *TORONTO, ONT., *HOUSTON, LOUISVILLE, INDIANAPOLIS, *KANSAS CITY, *LOS ANGELES, *MINNEAPOLIS, *NEW ORLEANS, *NEW YORK, WASHINGTON, D. C., PHILADELPHIA, PITTSBURGH, *ST. LOUIS, *SEATTLE, *PORTLAND, ORE., *GREENVILLE, S. C., *SAN FRANCISCO, TOLEDO, *MEMPHIS

*Also warehouse stocks, including Salt Lake City and Cambridge

Car-Na-Var Combines Varnish Gums and Waxes in Liquid Form

Filler and finish (stain when wanted) in one, applied with mop for all floors, except rubber and certain soft composition floors.

CAR-NA-VAR — THE PERFECT FLOOR TREATMENT

Approved by leading floor manufacturers, including cork, linoleum, tile, wood, magnesite, cement, etc. Car-Na-Var is an ideal treatment for old or new floors permitting low maintenance costs for keeping the floors in the best of condition at all times.

(1) It has about twice the endurance of floor wax and polishes easier.
(2) It is resilient—will never become brittle as does varnish.
(3) It instantly and completely unites with previous Car-Na-Var coatings—eliminating the "lap" which is inevitable in varnish repairs.
(4) It dries completely almost immediately after application—may be applied, polished and ready for traffic in an hour.
(5) It gives a non-slippery, glossy finish resembling varnish.
(6) It is a permanent part of the floor—penetrates very deeply.
(7) It is made in "Natural" (stainless) and popular colors, including:

Dark oak	Mahogany	Walnut	Mission (transparent black)
Light oak	Maroon	Olive green	Malachite (bright green)
Golden oak	Cherry		Ebony

COVERING CAPACITY OF ONE GALLON OF CAR-NA-VAR

Hard wood (unfilled)	1st coat—	900 to 1200 sq. ft.
	2nd coat—	1500 to 2500 sq. ft.
	3rd coat—	2500 to 3000 sq. ft.
Soft wood (unfilled), terrazzo, magnesite, faience tile, flexstone, linoleum, marbleloid	1st coat—	800 to 1000 sq. ft.
	2nd coat—	1000 to 1500 sq. ft.
	3rd coat—	1500 to 2500 sq. ft.
Cork, cement	1st coat—	500 to 1000 sq. ft.
	2nd coat—	800 to 1500 sq. ft.
	3rd coat—	1000 to 2500 sq. ft.
Mastic	1st coat—	900 to 1200 sq. ft.
	2nd coat—	2500 to 3500 sq. ft.
Painted, varnished, shellaced	1 coat—	2500 to 3000 sq. ft.

Note: Where any of the above floors have been previously "filled" with regular "filler," shellac or good floor wax, the capacity of the first coat will equal that indicated for the third, and one coat will often suffice.

Rubber-Var

Fills, preserves, waterproofs and finishes rubber tile, terrazzo and soft composition floors. See our full instructions for conditioning asphaltic type floors.

RUBBER-VAR — FOR TREATING RUBBER FLOORS

Is the same as Car-Na-Var, except the thinners which are harmless to rubber, asphalt, etc. Rubber-Var has great wearing qualities. Is applied with a mop, drying almost as fast as it is applied. It takes a high non-slippery finish when polished.

COVERING CAPACITY OF ONE GALLON OF RUBBER-VAR

New rubber	1st coat—	4000 to 5000 sq. ft.
	2nd coat—	5500 to 6000 sq. ft.
Old rubber	1st coat—	3000 to 3500 sq. ft.
	2nd coat—	4000 to 5000 sq. ft.

Clean-O-Shine (Forerunner for Car-Na-Var)

Filler, neutralizer and treatment for all floors except rubber.

CLEAN-O-SHINE

Has a linseed oil base and is a neutral cleaner for floors, neutralizing alkali or acid. Especially adapted for rejuvenating linoleum, cement, terrazzo, tile and similar floors. Approved by leading linoleum manufacturers, also Rubberstone Corp., Tile-Tex Co., Flint Faience & Tile Co., etc.

Nu-Tro-Fil

A filler, neutralizer and preservative for pine, oak, maple, cement, asphaltic and other floors.

NU-TRO-FIL

It is similar to Clean-O-Shine, except it has a harder solid base, combining varnish and waxes with linseed oil. Creamy liquid in form and used to fill floors, neutralizing alkali, acid, etc. Takes place of floor oil, yet it will not darken the floor and repairs do not show worn places. It dries hard and does not collect dirt. It is economical in cost.

COVERING CAPACITY OF ONE GALLON OF NU-TRO-FIL

Wood	1500 to 2500 sq. ft.	Composition	1000 to 2500 sq. ft.
Cement	1200 to 2000 sq. ft.	Tile	2000 to 2500 sq. ft.
Linoleum	1500 to 3000 sq. ft.		

De-Ter-Go

DE-TER-GO — WONDER CLEANER

A rubber floor treatment, approved by leading rubber floor manufacturers.

For cleaning rubber, tile, terrazzo, cement, wood and oil soaked floors. Contains no soap, soda ash, sal soda, caustics, acids, ammonia or abrasives.

TRI-C

Conditioning and Maintaining Floors with Guaranteed Tri-C Products

The procedure given below is not in every case essential. The different processes are results of long experience and observation and offered in the form of recommendations so that the architect may easily put them in the form of specifications.

Detailed instructions for application of each product, and instructions covering any problem of conditioning and maintaining floors sent on request.

Newly Laid Unfilled Wood Floors—(A) For filling or preserving apply 1 coat of Nu-Tro-Fil, rubbing same out well and into pores.

(B) For treating and finishing: Clean and neutralize floor with Clean-O-Shine or Nu-Tro-Fil. Apply one or more coats of Car-Na-Var as required, specifying Natural or color, following directions of manufacturer.

Filled Wood Floors—(A) Clean floor with Clean-O-Shine according to instructions of manufacturer.

(B) When floor is dry, apply 1 coat of (specify color) or (Natural) Car-Na-Var according to directions of manufacturer. If desired polish is not obtained, apply a second coat.

Terrazzo, Quarry, Faience Tile, Travertine and Other Marble—(A) In the case of a new terrazzo floor, it should be cleaned two or three times with Clean-O-Shine. Clean-O-Shine acts as a solvent of the free lime, cement, acid or alkali which may exist on the new floor; and is also a hardener and partial filler. When dry apply 1 or 2 coats of Rubber-Var.

(B) On a terrazzo floor that has been in use for a time and that has had several scrubbings, it should merely be cleaned with Clean-O-Shine to remove surface dirt and stains. When thoroughly dry, apply 1 or 2 coats of Rubber-Var.

(C) On dark colored floors of this type, we recommend Car-Na-Var instead of Rubber-Var.

Mastic and Similar Floors—(A) Remove surface dirt and stains with Clean-O-Shine. When dry apply 2 coats of Car-Na-Var.

(B) On soft mastic, or any composition floor of which the colors are too soluble for mineral solvents, we recommend our Rubber-Var. To ascertain if colors are soluble in mineral solvents, rub a small spot with rag moistened in gasoline, turpentine or benzine. If the color does not dissolve, Car-Na-Var should be used.

(C) In cases where the floor is one solid color, even if the color is raised by Car-Na-Var it will dry so quickly that the color will sink back into the floor without any injurious effect. Car-Na-Var, therefore, may be used with safety on a one-color floor of this type, it being necessary to use the same mop throughout the operation. The treatment will even up the color, giving the floor a more uniform shade.

(D) If the one-color floor is pitted or rough, apply 1 coat of Car-Na-Var which will smooth the surface. Allow to thoroughly dry before using the floor. Then apply Rubber-Var for subsequent treatments, since Rubber-Var will neither dissolve the color nor soften the floor.

(E) Two-colored asphaltic tile floors when new, or if uneven, should first be mopped with Nu-Tro-Fil to fill the small depressions, using 1 qt. Nu-Tro-Fil to 16 qt. water. Polish when dry. Then apply 1 coat of Rubber-Var and polish when dry.

Cement, Marbleloid, Magnesite and Similar Floors—(A) If very soiled, or discolored, clean first with De-Ter-Go following with Clean-O-Shine. If only surface dirt is to be removed, use only the Clean-O-Shine. When thoroughly dry apply 3 coats of Car-Na-Var. If floor is very porous, it may require a fourth coat for initial treatment.

(B) If the cement floor is of the usual "dirty gray" type we would suggest using our Car-Na-Var Maroon, Tan or Green Stain. Polish same as Natural.

Linoleums—(A) New battleship and inlaid linoleum, as well as some other types, are at times covered with a thin film of free oil and for that reason should be washed with Clean-O-Shine before applying any kind of treatment. In the case of used linoleums, it is only necessary to remove surface dirt and stains.

(B) When floor is dry, apply 2 coats of Car-Na-Var, following with a third coat if necessary, polishing each coat when dry.

Cork Floors—(A) Remove surface dirt or stains by cleaning with Clean-O-Shine.

(B) When dry apply 3 coats of Car-Na-Var. As "unfilled" cork floors are unusually porous, a fourth coat may be necessary before desired results are obtained—bearing in mind that the first coats are more or less permanently embedded and that each subsequent coat will bring your cork floor nearer perfection.

(C) A cork floor can be built up with a very high sheen if first coat is rubbed in with electric floor machine while Car-Na-Var is wet.

Soft Composition Floors—(A) Remove surface dirt, stains, etc., with Clean-O-Shine or Nu-Tro-Fil. It is advisable to polish when the Clean-O-Shine or Nu-Tro-Fil is dry.

(B) Apply 2 thin coats of Rubber-Var with Tri-C Lambs Wool Mop, rubbing each coat out thoroughly and polishing each when dry. Should the coating become too dry before it is rubbed out, sprinkle with a little clear water and continue rubbing. Like Car-Na-Var, Rubber-Var must be used sparingly—*never apply thickly.* It may be polished with either weighted brush or floor machine.

(C) To clean a Rubber-Vared floor, sweeping will usually suffice, but when mopping is necessary, use clear, cold water and mop dry. If luster should be dimmed, repolish in the usual way.

Rubber Floors—Clean with De-Ter-Go until all oils, soaps, "bloom," etc., are washed away. Rinse with clear water; then allow to dry. Then apply Rubber-Var in a thin coat, polishing when dry. When too thick, Rubber-Var may be diluted with warm water.

HILLYARD CHEMICAL CO.

SHINE-ALL SALES CO. DISTRIBUTOR

EXECUTIVE OFFICES

ST. JOSEPH, MO.

BRANCH OFFICES AND WAREHOUSES IN FOLLOWING CITIES

ATLANTA, GA.	CINCINNATI, OHIO	HOUSTON, TEX.	MILWAUKEE, WIS.	PORTLAND, ORE.
BALTIMORE, MD.	CLEVELAND, OHIO.	INDIANAPOLIS, IND.	MINNEAPOLIS, MINN.	ST. LOUIS, MO.
BATTLE CREEK, MICH.	DALLAS, TEX.	JACKSONVILLE, FLA.	NEW ORLEANS, LA.	SAN ANTONIO, TEX.
BIRMINGHAM, ALA.	DENVER, COLO.	JERSEY CITY, N. J.	NEW YORK, N. Y.	SAN FRANCISCO, CAL.
BOSTON, MASS.	DETROIT, MICH.	KANSAS CITY, MO.	OKLAHOMA CITY, OKLA.	SEATTLE, WASH.
BUFFALO, N. Y.	GREELEY, COLO.	KOKOMO, IND.	PHILADELPHIA, PA.	TAMPA, FLA.
CHICAGO, ILL.	HARTFORD, CONN.	LOS ANGELES, CAL.	PITTSBURGH, PA.	WASHINGTON, D. C.

The Company

HILLYARD CHEMICAL Co. are expert floor maintenance and sanitation authorities.

Shine-All

Shine-All is a cleanser, polish and preservative for every floor surface. While the primary qualities and uses of Shine-All are as a cleanser, it also contains a light filler which produces a polish and also acts as a preservative through the protective surface finish it leaves. Shine-All is liquid in nature, not a heavy sticky soap, but an efficient chemical agent neutral in character and free from caustic, alkali, soda, lye or abrasives. Shine-All is recommended for use on all types of floor coverings and is not injurious to the hands.

Faience, Matte Finish, Quarry Tile, etc.

All tile with rough finish or of semivitreous character which should not be washed with acid to remove the cement from the face may be treated with Shine-All as a preventive of cement stains. Shine-All will eliminate the unsightly appearance of efflorescence.

Specifications—Tile should be treated with a solution of pure Shine-All, a product manufactured by the HILLYARD CHEMICAL Co., of St. Joseph, Mo. The Shine-All is to be applied before the joints are grouted to protect the tile from becoming stained.

Tile, Marble, Terrazzo

The use of Shine-All should be specified in the final cleaning of such flooring surfaces as of above materials. Shine-All will remove all grease and traffic stains, leaving a light protective finish which will prevent further staining of such floor surfaces. Among the tile, marble and terrazzo contractors, Shine-All has an extensive patronage caused by the savings in labor costs in cleaning to be effected through its use.

In the case of Terrazzo floors, Shine-All gives a positive finish, sealing the pores of these floors, and preventing their staining.

Specifications—*Terrazzo*—When work has been completed and is ready for final cleaning, a solution of 1 part of Shine-All to 16 parts of water shall be used. This solution is to be applied freely and permitted to remain on floor for 15 to 20 minutes. Floors should then be thoroughly dried.

Linoleum, Cork, Asphaltic Tile and Composition Floors

Resilient floor manufacturers (names on application), have found that Shine-All is not only a cleanser of a strictly neutral character, but also that the filler compound in it will, through continuous use, build up a protective sheen on such floor coverings, enhancing their beauty and affording protection to the surface of the floors. It may be specified for use in the place of wax on extensive areas where heavy traffic would not permit the use of wax because of excessive costs.

Specifications—Upon completion of the laying, all cement stains should be carefully removed with 3% solution of sodium hydroxide and a solution of 1 part Shine-All to 12 parts water should be used for initial cleaning and floors should be thoroughly dried. This operation is to be repeated with a clean solution of same proportions as given above and after final drying, the floors should then be buffed with weighted brush or polishing machine.

Special Gymnasium Floor Finish (Non-slip)

Produces a tough, lustrous non-slippery surface. Easy to maintain. Extra durable, eliminates annual refinishing or treatment.

Specifications—Clean floor thoroughly with Shine-All; if previously treated with oil clean with Formula No. 100. After drying, apply 1 coat Premier Wood Filler according to manufacturer's directions. Allow 12 hours for drying of filler after which apply first coat of Special Gymnasium Finish flowing on with good grade varnish brush. Allow 18 to 24 hours for drying then apply second coat.

Hillyard Method of Wood Floor Maintenance

To keep wood floors clean, dustless and attractive, after cleaned and filled, maintain with automatic dustless floor brush dampened with Trackless Dressing. Only necessary to clean by washing once a year.

Specifications—The wood floors to be treated with Hillyard Method. Floors are first to be thoroughly cleaned with Shine-All and allowed to dry for 24 hours, after which 1 coat of Hillyard's Premier Wood Filler is to be applied according to manufacturer's directions. Allow 12 hours for the drying of the filler, after which Hillyard's Trackless Floor Dressing is to be applied.

Onex-Seal (Sealing and Waterproofing Concrete, Terrazzo, Tile, etc.)

Seals, polishes, waterproofs and stops efflorescence. Produces tough trackless finish easy to maintain. Emphasizes color in floors and protects against heavy traffic.

Specifications—Clean floor with Shine-All. Apply Onex-Seal with automatic brush. Distribute evenly with brush or electric waxer. Allow to dry 5 minutes then polish with dry brush or with machine equipped with dry polishing brushes.

Special Shine-All Finish

A permanent clear lacquerlike finish for floors. This material will not give "off-shade cast" to any type or color of floors upon which it is used.

Specifications—Where a permanent, waterproof, dirt and oil resistant surface is desired on wood, linoleum, cork and various resilient types of floors, *apply 2 coats of Special Shine-All Finish according to manufacturer's directions.*

For rough face semi-vitreous tile, terrazzo or new rubber tile, *apply 2 coats of Hillyard's Seal* (which is lighter in body but of the same base as Special Shine-All Finish).

Liquid and Paste Waxes

Hillyard's Liquid and Paste Waxes produce a superhard lustrous surface. Only hard waxes used in manufacture—no paraffin—hence they make floor waterproof, acid and alkali resistant.

Specification—Apply with cheesecloth or wool applicator. Allow to dry and then polish with electric polishing machine or weighted hand polishers.

Literature

"Modern Floors—Their Maintenance." A treatise covering maintenance of every floor. Write for your free file copy.

VESTAL CHEMICAL LABORATORIES, INC.

Manufacturers of Products for Floor Maintenance

HOME OFFICE
ST. LOUIS, MO.

NEW YORK OFFICE, 385 Gerard Avenue, New York City

NEW YORK, N. Y.	CHICAGO, ILL.	ATLANTA, GA.	KANSAS CITY, MO.
PHILADELPHIA, PA.	MILWAUKEE, WIS.	MEMPHIS, TENN.	DALLAS, TEX.
CLEVELAND, OHIO	MINNEAPOLIS, MINN.	NEW ORLEANS, LA.	HOUSTON, TEX.
DETROIT, MICH.	COLUMBUS, OHIO	CHARLOTTE, N. C.	DENVER, COLO.

Briten-All "The Protective Cleanser"

For Terrazzo—As a conditioning agent for new terrazzo, Briten-All corrects efflorescense and removes the bloom. Brings out the natural colors of the marble chips, seals the pores and produces that beautiful lustre ordinarily acquired only with age. Briten-All neutralizes the acid or alkaline condition of a new floor. The Briten-All Treatment for a new terrazzo floor is endorsed and approved by the largest terrazzo contractors.

Important—The Briten-All Treatment shall be applied by the VESTAL CHEMICAL LABORATORIES or under the supervision of their authorized representative.

Hotel New Yorker, New York, N. Y.
SUGARMAN & BERGER, Architects

Estimates furnished by any Branch Office, or by the Home Office in St. Louis, Missouri.

Specifications for Terrazzo Treatment — After all trades have finished in the building and all tools, equipment and rubbish have been removed from the premises, the terrazzo areas shall be treated and conditioned by the Briten-All Method as outlined by the VESTAL CHEMICAL LABORATORIES, INC.

General Maintenance—Briten-All is recommended for the general maintenance of terrazzo. The continued use of Briten-All will not only keep the floor clean but will improve the appearance and leave a protective finish on the surface.

Asphalt Tile—The manufacturers of asphalt tile recommend Briten-All for new installations and for general maintenance.

Linoleum and Linoleum Tile—Briten-All is a satisfactory cleaner recommended by these manufacturers. Its continued use produces a natural sheen or polish.

Vesta-gloss

A wax treatment for asphalt tile and rubber tile floors.

Due to the introduction of Vesta-Solvent into the manufacture of this product, Vesta-Gloss may be used on asphalt tile or rubber tile without the slightest injury, either to the materials or to the color pigments in them.

Vesta-Gloss, therefore, marks a radical departure from the use of solvents, such as turpentine, gasoline, naphtha, carbon tetra-chloride, and other spirituous materials—all of which, while non-injurious to most types of floors, will dissolve asphalt and rubber tile.

Leading manufacturers of asphalt and rubber tile specifically approve and recommend Vesta-Gloss for the polishing and preservation of their floors.

Gymnasium Floors

Gymnasium floors should be properly sealed to avoid stains and to preserve the wood.

Vesco-Seal penetrates, seals the surface and produces a tough, elastic, durable finish. Floors finished with Vesco-Seal withstand the jars and jolts to which a gymnasium floor is subjected and do not mar or craze. Vesco-Seal produces an attractive floor, with a non-slippery surface that is easily maintained.

Specifications—Floors should first be sanded. Apply one coat of Vesco-Seal with special Applicator according to directions of manufacturer. Coverage—approximately 500 sq. ft. per gal. When Vesco-Seal has thoroughly oxidized or completely dried, paint on boundary lines.

Daily Maintenance—Sweep with special Gym Buffing Mop treated with Vesco-Lite. This buffing mop picks up the dust; cleans and polishes in one operation.

Wood Floor Treatment

For schools, institutions, clubs, etc.

Wood floors should be properly sealed with a good preservative. Depreciation begins when the floor is laid and continues at a rapid rate unless properly treated. Neglect means not only unsightly floors but also expensive replacement resulting in such losses as labor, material and time. Serious thought should therefore be given to the proper treatment and care of wood floors.

Pyra-Seal penetrates, seals and finishes in one operation. It penetrates the cells and binds together the fibrous texture of the wood, making the floor resistant to traffic. Pyra-Seal gives a permanent attractive, clear floor—easily maintained by waxing.

De Paul Hospital, St. Louis, Mo.
O'MEARA & HILLS, Architects

Our Research Laboratories have developed Pyra-Cote, a hard finish liquid wax containing certain resins and gums that produce a non-slip, tough, wear resisting finish.

Floors that have been Pyra-Sealed should be given two applications of Pyra-Cote. Floors finished by this method will retain their beauty and can be maintained at a minimum of time and labor.

Specifications—***New Floors***—Maple and close grained woods.

Apply two thin coats of Pyra-Seal with Vestal Lamb's Wool Applicator allowing 24 hours between coats for drying. When floor is thoroughly dry, apply two applications of Pyra-Cote, each coat to be rubbed out thoroughly and polished or burnished when dry. Polish with weighted brush or electric polishing machine. Pyra-Cote is quickly and easily applied with Vestal Applicator.

The above method is also recommended for oak floors.

Coverage—Pyra-Seal approximately 500-600 sq. ft. per gal. Pyra-Cote approximately 1200-1500 sq. ft. per gal.

To Finish Old Floors—First clean thoroughly with a solution of Briten-All and Millionite. All traces of floor wax, oils and grease must be entirely removed before applying Pyra-Seal.

After floor is thoroughly dry, finish same as new floor. If floors are very rough it may be necessary to resand floors before applying Pyra-Seal.

Daily Care—Such floors require only sweeping with a Vestal Buffing Mop. This mop is chemically treated, picks up and holds the dust.

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JAMES McWALTERS & SON, Inc.
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Robert Vail Cole Jr, AIA
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